

#	Titlul	Jurnal	Abstract	Finantare	Autori	FI	AIS	DOI	Q
1.	Bulks of Al-B-C obtained by reactive spark plasma sintering and impact properties by Split Hopkinson Pressure Bar	<i>SCIENTIFIC REPORTS</i> , 9, 19484 (2019)	Mixtures of B ₄ C, alpha-AlB ₁₂ and B powders were reactively spark plasma sintered at 1800 degrees C. Crystalline and amorphous boron powders were used. Samples were tested for their impact behavior by the Split Hopkinson Pressure Bar method. When the ratio $R = B_4C/\alpha-AlB_{12} \geq 1.3$ for a constant B-amount, the major phase in the samples was the orthorhombic AlB ₂₄ C ₄ , and when $R < 1$ the amount of AlB ₂₄ C ₄ significantly decreased. Predictions that AlB ₂₄ C ₄ has the best mechanical impact properties since it is the most compact and close to the ideal cubic packing among the Al-B-C phases containing B-12-type icosahedra were partially confirmed. Namely, the highest values of the Vickers hardness (32.4 GPa), dynamic strength (1323 MPa), strain and toughness were determined for the	UEFISCDI project, Romania [POC 37_697, 28/01.09.2016 REBMA T]	Vasykiv, O; Borodianska, H; Demirskyi, D; Li, P; Suzuki, TS; Grigorescu, MA; Pasuk, I; Kuncser, A; Badica, P	4.011	1.286	10.1038/s41598-019-55888-z	Q1

			<p>samples with $R = 1.3$, i.e., for the samples with a high amount of AIB24C4. However, the existence of a maximum, detectable especially in the dynamic strength vs. R, indicated the additional influence of the phases and the composite's microstructure in the samples. The type of boron does not influence the dependencies of the indicated mechanical parameters with R, but the curves are shifted to slightly higher values for the samples in which amorphous boron was used.</p>						
2.	<p>Enhancement of the supercapacitive properties of laser deposited graphene-based electrodes through carbon nanotube loading and</p>	<p><i>PHYSICAL CHEMISTRY CHEMICAL PHYSICS</i>, 21, pp.25175-25186 (2019)</p>	<p>Several technological routes are being investigated for improving the energy storage capability and power delivery of electrochemical capacitors. In this work, ternary hybrid electrodes composed of conducting graphene/reduced graphene oxide (rGO), which store charge mainly through electric double-layer mechanisms, covered by NiO</p>	<p>Spanish Ministry of Economy, Industry and Competitiveness [ENE2017-89210-C2-1-R]; AGAUR of Generalitat de Catalunya; Agència de Gestió d'Ajuts Universitat</p>	<p>del Pino, AP; Lopez, MR; Ramadan, MA; Lebierre, PG; Logofatu, C; Martinez-Rovira, I; Yousef, I; Gyorgy, E</p>	3.567	0.942	10.1039/c9cp04237g	Q1

	nitrogen doping		<p>nanostructures, for adding pseudocapacitance, were fabricated through a matrix assisted pulsed laser evaporation technique. The incorporation of multiwall carbon nanotubes (MWCNTs) provokes an increase of the porosity and thus, a substantial enhancement of the electrodes' capacitance (from 4 to 20 F cm⁻³ at 10 mV s⁻¹). Volumetric capacitances of 34 F cm⁻³ were also obtained with electrodes containing just carbon nanotubes coated with NiO nanostructures. Moreover, the use of nitrogen containing precursors (ammonia, urea) for laser-induced N-doping of the nanocarbons also provokes a notable increase of the capacitance. Remarkably, N-containing groups in rGO-MWCNTs mainly add electric double layer charge storage, pointing to an increase of</p>	<p>aris de Recerca Agaur (AGAU R) [2017 SGR 1086]; Spanish Ministry of Economy and Competitiveness, through the "Severo Ochoa" Programme for Centres of Excellence in RD [SEV-2015-0496]</p>					
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			<p>electrode porosity, whereas redox reactions contribute with a minor diffusion fraction. It was also observed that the loading of carbon nanotubes leads to an increase of diffusion-controlled charge storage mechanisms versus capacitive ones in rGO-based electrodes, the opposite effect being observed in graphene electrodes.</p>						
3.	<p>Influence of Sintering Strategy on the Characteristics of Sol-Gel Ba_{1-x}Ce_xTi_{1-x/4}O₃ Ceramics</p>	<p><i>NANOMATERIALS</i>, 9, 1675 (2019)</p>	<p>Single-phase Ce³⁺-doped BaTiO₃ powders described by the nominal formula Ba_{1-x}Ce_xTi_{1-x/4}O₃ with x = 0.005 and 0.05 were synthesized by the acetate variant of the sol-gel method. The structural parameters, particle size, and morphology are strongly dependent on the Ce³⁺ content. From these powders, dense ceramics were prepared by conventional sintering at 1300 degrees C for 2 h, as well as by spark plasma sintering at 1050 degrees C for 2 min. For the conventionally sintered ceramics,</p>	<p>Romanian CNCS-UEFISCDI Project [PN-III-P4-ID-PCE-2016-0072]</p>	<p>Stanciu, CA; Pintilie, I; Surdu, A; Trusca, R; Vasile, BS; Eftimie, M; Ianculescu, AC</p>	4.034	0.704	10.3390/nano9121675	Q1

			<p>the XRD data and the dielectric and hysteresis measurements reveal that at room temperature, the specimen with low cerium content ($x = 0.005$) was in the ferroelectric state, while the samples with significantly higher Ce^{3+} concentration ($x = 0.05$) were found to be in the proximity of the ferroelectric-paraelectric phase transition. The sample with low solute content after spark plasma sintering exhibited insulating behavior, with significantly higher values of relative permittivity and dielectric losses over the entire investigated temperature range relative to the conventionally sintered sample of similar composition. The spark-plasma-sintered Ce-BaTiO₃ specimen with high solute content ($x = 0.05$) showed a fine-grained microstructure and an almost temperature-independent colossal dielectric constant</p>						
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			which originated from very high interfacial polarization.						
4.	Animal Origin Bioactive Hydroxyapatite Thin Films Synthesized by RF-Magnetron Sputtering on 3D Printed Cranial Implants	<i>METALS</i> , 9 ,1332 (2019)	Ti6Al4V cranial prostheses in the form of patterned meshes were 3D printed by selective laser melting in an argon environment; using a CO2 laser source and micron-sized Ti6Al4V powder as the starting material. The size and shape of prostheses were chosen based on actual computer tomography images of patient skull fractures supplied in the framework of a collaboration with a neurosurgery clinic. After optimizations of scanning speed and laser parameters, the printed material was defect-free (as shown by metallographic analyses) and chemically homogeneous, without elemental segregation or depletion. The prostheses were coated by radio-frequency magnetron sputtering (RF-MS) with a bioactive thin layer of hydroxyapatite using	Romanian Ministry of Research and Innovation [PN-III-P2-2.1-PED-2016-1309 (PED241/2017), PN-III-P1-1.1-TE-2016-2015 (TE136/2018), PN-III-P1-1.1-PD-2016-1568 (PD6/2018)]; PCCDI-UEFISCDI [PN-III-P1-1.2-PCCDI-2017-0062, 58PCCDI/2018, 2, 21N/2019]; Romanian	ChioibasuD; Duta, L; Popescu-Pelin, G; Popa, N; Milodin, N; Iosub, S; Balescu, LM; Galca, AC; Popa, AC; Oktar, FN; Stan, GE; Popescu, AC	2.259	0.361	10.3390/met9121332	Q1

		<p>a bioceramic powder derived from biogenic resources (Bio-HA). Initially amorphous, the films were converted to fully-crystalline form by applying a post-deposition thermal-treatment at 500 degrees C/1 h in air. The X-ray diffraction structural investigations indicated the phase purity of the deposited films composed solely of a hexagonal hydroxyapatite-like compound. On the other hand, the Fourier transform infrared spectroscopic investigations revealed that the biological carbonation of the bone mineral phase was well-replicated in the case of crystallized Bio-HA RF-MS implant coatings. The in vitro acellular assays, performed in both the fully inorganic Kokubo's simulated body fluid and the biomimetic organic-inorganic McCoy's 5A cell culture medium up to 21 days, emphasized both the good</p>	<p>Ministry of Research and Innovation, PCCDI-UEFISCDI within PNCDI III [PN-III-P1-1.2-PCCDI-2017-0224, 77PCCDI/2018]; [16N/2019]</p>					
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			<p>resistance to degradation and the biomineralization capacity of the films. Further in vitro tests conducted in SaOs-2 osteoblast-like cells showed a positive proliferation rate on the Bio-HA RF-MS coating along with a good adhesion developed on the biomaterial surface by elongated membrane protrusions.</p>						
5.	<p>Core-shell nanowire arrays based on ZnO and CuxO for water stable photocatalysts</p>	<p><i>SCIENTIFIC REPORTS</i>,9,17268 (2019)</p>	<p>Staggered gap radial heterojunctions based on ZnO-CuxO core-shell nanowires are used as water stable photocatalysts to harvest solar energy for pollutants removal. ZnO nanowires with a wurtzite crystalline structure and a band gap of approximately 3.3 eV are obtained by thermal oxidation in air. These are covered with an amorphous CuxO layer having a band gap of 1.74 eV and subsequently form core-shell heterojunctions. The electrical characterization of the ZnO pristine and ZnO-CuxO core-shell nanowires emphasizes the</p>	<p>Executive Agency for Higher Education, Research, Development and Innovation Funding (UEFISCDI), Romania [PN-III-P2-2.1-PED-2016-1249]; Romanian Ministry of Research and Innovation</p>	<p>Florica, C; Costas, A; Preda, N; Beregoi, M; Kuncser, A; Apostol, N; Popa, C; Socol, G; Diculescu, V; Enculescu, I</p>	4.011	1.286	10.1038/s41598-019-53873-0	Q1

			charge transfer phenomena at the junction and at the interface between the nanowires and water based solutions. The methylene blue degradation mechanism is discussed taking into consideration the dissolution of ZnO in water based solutions for ZnO nanowires and ZnO-CuxO core-shell nanowires with different shell thicknesses. An optimum thickness of the CuxO layer is used to obtain water stable photocatalysts, where the ZnO-CuxO radial heterojunction enhances the separation and transport of the photogenerated charge carriers when irradiating with UV-light, leading to swift pollutant degradation.	[NANO BIOSURF-SMIS 103528, IDEI124/2017, 12PFE/2018, PN18-11, 3N/2018]					
6.	Structure and low field magnetic properties in phosphate-tellurite glasses	<i>JOURNAL OF NON-CRYSTALLINE SOLIDS</i> , 524 , UNSP 119651 (2019)	Phosphate-tellurite glasses exhibit magnetic properties, due to the presence of the small metallic Te colloids which were revealed in low field magnetic circular dichroism. These metallic colloids induce the red coloring of these	Romanian Ministry of Research and Innovation, CCCDI-UEFISCI [PN III-PI-1.2-	Polosana, S	2.6	0.414	10.1016/j.jnoncryso1.2019.119651	Q1

			<p>glasses together with the absorbance in the visible region. The temperature dependence of the absorption spectrum and the A-term in magnetic circular dichroism are specific for Te metallic nanoparticles, which results during the melting procedure over 1000 degrees C due to the conversion of Te⁴⁺ in Te⁰ atoms. The X-ray photoelectron spectroscopy supports this fact due to the presence of small peaks as satellites in the region of Te 3d core-level spectrum. Quantification of these satellites compared with Te 3d(3/2) and 3d(5/2) peaks suggests a 14% concentration of Te metallic nanoparticles in these phosphate-tellurite glasses. The presence of metallic particles induces the crystallization effects of Te micrograins upon thermal treatments at higher temperatures.</p>	PCCDI-2017-0871]					
7.	Synthesis and character	<i>APPLIED SURFACE SCIENCE</i> , 494 ,	The bone regeneration field targeted lately the	European Regional Develop	Dasca lu, CA;	5.155	0.671	10.1016/j.apusc.2	Q1

	erization of biocompatible polymer-ceramic film structures as favorable interface in guided bone regeneration	pp.335-352 (2019)	development of new products based on precursors of natural origin. This study aimed to obtain the optimal design of polymer-ceramic composites for guided bone regeneration application from cellulose acetate (CA) and hydroxyapatite (HA) by varying three relevant parameters: the amount of HA powder added to the CA matrix (in the 20-40 wt% range), the HA particles size (max. 20 μm vs. max. 40 μm) and the homogenization time required for HA powder dispersion in the CA matrix (1 min vs. 4 min). For polymer-ceramic film structures preparation, the phase inversion by immersion in water method was used. This involved the deposition of composite solution (i.e. CA with 20-40 wt% HA) on a glass support, followed by sizing it at a thickness of 0.2 mm. The obtained film structures were investigated in terms of	ment Fund through Competitiveness Operational Program 2014-2020, Priority axis 1, , Innovative Technologies for Materials Quality Assurance in Health, Energy and Environmental - Center for Innovative Manufacturing Solutions of Smart [P_36_611, 107066]; Romanian National Authority for Scientific Research and Innovation, CNCS	Maidaniuc, A; Pandele, AM; Voicu, SI; Machedon-Pisu, T; Stan, GE; Cimpean, A; Mitran, V; Antoniac, IV; Miculescu, F	019.07.098	
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			<p>morphocompositional and structural properties. The surface features evaluation was achieved by surface wettability, roughness, water permeation, protein retention and in vitro evaluation of MC3T3-E1 morphology and viability. Further, ceramic particle distribution throughout samples volume was provided by computed tomography methods. These investigations targeted the validation of the prepared composite film structures as viable solutions for guided bone regeneration.</p>	- UEFISC DI [PN-III-P2-2.1-PED-2016-0892]					
8.	<p>PCL-ZnO/TiO₂/HA Electrospun Composite Fibers with Applications in Tissue Engineering</p>	<p><i>POLYMERS</i>, 11, 1793 (2019)</p>	<p>The main objective of the tissue engineering field is to regenerate the damaged parts of the body by developing biological substitutes that maintain, restore, or improve original tissue function. In this context, by using the electrospinning technique, composite scaffolds based on polycaprolactone (PCL) and inorganic</p>	<p>Executive Unit for Financing Higher Education, Research, Development and Innovation (UEFISC DI) [66/2018, PN-III-</p>	<p>Jinga, SI; Zamfirescu, AI; Voicu, G; Enculescu, M; Evangelidis, A; Busuioc, C</p>	3.164	0.592	10.3390/polym1111793	Q1

			<p>powders were successfully obtained, namely: zinc oxide (ZnO), titanium dioxide (TiO₂) and hydroxyapatite (HAp). The novelty of this approach consists in the production of fibrous membranes based on a biodegradable polymer and loaded with different types of mineral powders, each of them having a particular function in the resulting composite.</p> <p>Subsequently, the precursor powders and the resulting composite materials were characterized by the structural and morphological point of view in order to determine their applicability in the field of bone regeneration. The biological assays demonstrated that the obtained scaffolds represent support that is accepted by the cell cultures.</p> <p>Through simulated body fluid immersion, the biodegradability of the composites was highlighted, with fiber fragmentation and surface</p>	P1-1.1-TE-2016-0871]; Politehnica University of Bucharest					
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			degradation within the testing period.						
9.	Electronic Structure of a Graphene-like Artificial Crystal of NdNiO ₃	<i>NANO LETTERS</i> , 19 , pp.8311-8317 (2019)	Artificial complex-oxide heterostructures containing ultrathin buried layers grown along the pseudocubic [111] direction have been predicted to host a plethora of exotic quantum states arising from the graphene-like lattice geometry and the interplay between strong electronic correlations and band topology. To date, however, electronic-structural investigations of such atomic layers remain an immense challenge due to the shortcomings of conventional surface-sensitive probes with typical information depths of a few angstroms. Here, we use a combination of bulk-sensitive soft X-ray angle-resolved photoelectron spectroscopy (SX-ARPES), hard X-ray photoelectron spectroscopy (HAXPES), and state-of-the-art first-principles calculations to demonstrate a direct	U.S. Department of Energy, Office of Science, Office of Basic Energy Sciences, Materials Sciences, and Engineering Division United States Department of Energy (DOE) [DE-SC0019297]; U.S. Army Research Office [W911N F-15-1-0181]; Gordon and Betty Moore Foundation EPIQS Initiative [GBMF4534]; German Science FoundationGerma	Arab, A; Liu, XR; Koksal, O; Yang, WB; Chandrasena, RU; Middey, S; Kareev, M; Kumar, S; Husanu, MA; Yang, ZZ; Gu, L; Strocov, VN; Lee, TL; Minar, J; Pentcheva, R; Chakhalian, J; Gray, AX	12.279	4.018	10.1021/acs.nanolett.9b03962	Q1

			<p>and robust method for extracting momentum-resolved and angle-integrated valence-band electronic structure of an ultrathin buckled graphene-like layer of NdNiO₃ confined between two 4-unit cell-thick layers of insulating LaAlO₃. The momentum-resolved dispersion of the buried Ni d states near the Fermi level obtained via SX-ARPES is in excellent agreement with the first-principles calculations and establishes the realization of an antiferro-orbital order in this artificial lattice. The HAXPES measurements reveal the presence of a valence-band bandgap of 265 meV. Our findings open a promising avenue for designing and investigating quantum states of matter with exotic order and topology in a few buried layers.</p>	<p>n Research Foundation (DFG) [CRC/TRR80]; DST Nanomission Grant [DST/NM/NS/2018/246]; Ministry of Education, Youth, and Sports of Czech Rep. [CZ.02.1.01/0.0/0.0/15.003/0000358]</p>					
10.	Designing functional	<i>NEW JOURNAL OF PHYSICS</i> , 21 , 113005 (2019)	The fundamental phenomena at ferroelectric interfaces have been	Romanian Ministry of	Dorin, R.; Filip, LD;	3.783	1.489	10.1088/1367-2630/ab4d8b	Q1

	<p>ferroelectric interfaces from first-principles: dipoles and band bending at oxide heterojunctions</p>		<p>the subject of thorough theoretical and computational studies due to their usefulness in a large variety of emergent electronic devices, solar cells and catalysts. Ferroelectricity determines interface band-bending and shifts in electron energies, which can be beneficial or detrimental to device performance. However, the underlying mechanisms are still the subject of debate and investigation, as a deeper understanding of the electrochemistry is required to develop bona fide design principles for functional ferroelectric surfaces and interfaces. Here, using first principles calculations within the GGA + U formalism, we investigate the problem of band alignment in non-defective, asymmetric SrRuO₃/PbTiO₃/SrRuO₃ capacitors with ultra-thin ferroelectric layers. The effects of the dielectric size on the</p>	<p>Research and Innovation through the Core Program of NIMP [PN18-110101, PFE-CDI-339, 12]; PCCF project - Ministry of Research and Innovation through UEFISC DI [PN-III-P4-ID-PCCF-2016-0047, 16]</p>	<p>Pintilie, L; Butler, KT; Plugaru, N</p>				
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			<p>polar distortion stability and interface-specific properties are analyzed. It is shown that the critical size of the dielectric for polarization switching is approximate to 2 nm (5 PbTiO₃ u.c.). Below this limit there is no bulk-like region in the dielectric, the space charge accumulated at interfaces leads to the presence of gap states in the whole PbTiO₃ layer and ferroelectricity vanishes. We draw the band alignment diagrams as given by the band line-up and band structure terms, as well as by taking Ti 3s semi-core states as reference. In the ferroelectric structures, both approaches predict a strong effect of band-bending on the type of contact, Schottky or Ohmic, at the asymmetric interfaces. The effect of interface states on the interface dipole amplitude and band alignment is discussed.</p>						
11.	Fluorescent coumarin	<i>MICROPOROUS AND MESOPOROUS</i>	Three novel fluorescent mesoporous silica	EU (ERDF) European	Tudos e, M; Culita,	4.182	0.67	10.1016/j.microm	Q1

<p>n-modified mesoporous SBA-15 nanocomposite : Physico-chemical characterization and interaction with prokaryotic and eukaryotic cells</p>	<p><i>S MATERIALS</i>, 288, UNSP 109583 (2019)</p>	<p>composites were obtained through the covalent immobilization of 7-amino-4-(trifluoromethyl)coumarin, 6-aminochromen-2-one and 7-amino-4-methyl-3-coumarinylacetic acid, respectively, inside the channels of mesoporous silica SBA-15. Presence of fluorescent moieties was assessed by elemental analysis, thermal analysis, infrared, UV-Vis, Si-29- and C-13-CP/MAS NMR, and fluorescence spectroscopy. Reduction of specific surface area of the composites by 50-60% and also the average pore size diameter by 0.5-0.55 nm compared to unfunctionalized SBA-15 was evidenced by N-2 adsorption-desorption analysis. Their antioxidant, antimicrobial activity and cytotoxicity on HeLa-2 cells were evaluated in order to formulate some potential applications of the obtained compounds. The obtained results recommend the</p>	<p>Union (EU) [INFRA NANOCHEM 19/01.03.2009]; Romania Government [INFRA NANOCHEM 19/01.03.2009]; Romania Ministry of Research and Innovation [PN 18-110201]; "Petru Poni" Institute of Macromolecular Chemistry through the European Social Fund for Regional Development, Competitiveness Operational Program</p>	<p>DC; Voice scu, M; Musuc, AM; Kuncser, AC; Bleotu, C; Popa, M; Marutescu, L; Chifiruc, MC; Niculescu, M; Deleanu, C</p>		<p>so.2019.109583</p>	
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			obtained fluorescent mesoporous nanocomposites as potential candidates for the development of novel probes for the in situ tracking of oxidative stress, as well as for antimicrobial applications.	me Axis 1, Project InoMatPol [P_36_570, 142/10.10.2016, MySMIS : 107464]					
12.	Orthorhombic HfO ₂ with embedded Ge nanoparticles in nonvolatile memories used for the detection of ionizing radiation	<i>NANOTECHNOLOGY</i> , 30 , 445501 (2019)	Trilayer memory capacitors of control HfO ₂ /floating gate of Ge nanoparticles in HfO ₂ /tunnel HfO ₂ /Si substrate deposited by magnetron sputtering and subsequently annealed are investigated for the first time for applications in radiation dosimetry. In the floating gate (FG), amorphous Ge nanoparticles (NPs) are arranged in two rows inside the HfO ₂ matrix. The HfO ₂ matrix is formed of orthorhombic/tetragonal nanocrystals (NCs). The adjacent thin films to the FG are also formed of orthorhombic/tetragonal HfO ₂ NCs. This phase is formed during annealing, in samples with thick control HfO ₂ , in the presence of Ge, being induced by the stress. In the rest of	Executive Agency for Higher Education, Research, Development and Innovation UEFISCDI [PCCF 7/2018, PED 122/2017, TE 19/2018, PCCDI 75/2018] ; Romania Ministry of Research and Innovation (NIMP Core Program) [PN19-03, 21	Palade, C.; Slav, A.; Lepadau, AM; Stavara, I.; Dascalescu, I.; Maraloiu, AV; Negrila, C; Logofatu, C; Stoica, T; Teodorescu, VS; Ciurea, ML; Lazanu, S	3.399	0.744	10.1088/1361-6528/ab352b	Q1

			<p>the control oxide, HfO₂ NCs are monoclinic. Orthorhombic HfO₂ has ferroelectric properties and therefore enhances the memory window produced by charge storage in Ge NPs to above 6 V. The high sensitivity of 0.8 mV Gy⁽⁻¹⁾ to a particle irradiation from a Am-241 source was measured by monitoring the flatband potential during radiation exposure after electrical writing of the memory.</p>	N/08.02.2019]					
13.	<p>Low value for the static background dielectric constant in epitaxial PZT thin films</p>	<p><i>SCIENTIFIC REPORTS</i>, 9, 14698 (2019)</p>	<p>Ferroelectrics are intensively studied materials due to their unique properties with high potential for applications. Despite all efforts devoted to obtain the values of ferroelectric material constants, the problem of the magnitude of static dielectric constant remains unsolved. In this article it is shown that the value of the static dielectric constant at zero electric field and with negligible contribution from the ferroelectric polarization (also</p>	<p>Romanian Ministry of Research and Innovation [CEPRO FER/PN-III-P4-ID-PCCF-2016-0047]; Core Program of NIMP; [12PFE/2018]</p>	<p>Boni, GA; Chirila, CF; Hrib, L; Negrea, R; Filip, LD; Pintilie, I; Pintilie, L</p>	4.011	1.286	10.1038/s41598-019-51312-8	Q1

			<p>called static background dielectric constant, or just background dielectric constant) can be very low (between 10 and 15), possibly converging towards the value in the optical domain. It is also found that the natural state of an ideal, mono-domain, epitaxial ferroelectric is that of full depletion with constant capacitance at voltages outside the switching domain. The findings are based on experimental results obtained from a new custom method designed to measure the capacitance-voltage characteristic in static conditions, as well from Rayleigh analysis. These results have important implications in future analysis of conduction mechanisms in ferroelectrics and theoretical modeling of ferroelectric-based devices.</p>						
14.	Optical properties of folic acid in phosph	<i>SCIENTIFIC REPORTS</i> , 9, 14278 (2019)	Using UV-VIS absorption spectroscopy, photoluminescence (PL) and photoluminescence	European Regional Development Fund under the	Baibarac, M; Smaranda, I; Nila, A;	4.011	1.286	10.1038/s41598-019-50721-z	Q1

	<p>ate buffer solutions: the influence of pH and UV irradiation on the UV-VIS absorption spectra and photoluminescence</p>		<p>excitation (PLE), the photodegradation reactions of folic acid (FA) in phosphate buffer (PB) solutions were studied. Regardless of the PB solution's pH, the UV-VIS spectra showed a gradual decrease in absorbance at 284 nm simultaneous with an increase in the absorbance of another band in the spectral range of 320-380 nm, which was downshifted under UV irradiation. The relative intensity of the FA PL band, situated in the spectral range 375-600 nm, was dependent on the pH of the PB solution. The FA PL intensity increased as increasing UV irradiation time up to 281 min. in PB solutions with pH values of 6.4 and 5.4. Under an emission wavelength of 500 nm, the position of the FA PLE spectrum changed as the PB solution pH varied from 7 to 5.4 and the irradiation time increased to 317 min. These changes were correlated with</p>	<p>Competitiveness Operational Program [58/05.09.2016]; National Authority for Scientific Research and Innovation as an Intermediate Body on behalf of the Ministry of European Funds as Managing Authority for Operational Program Competitiveness (POC) [2626/04.12.2017]</p>	<p>Serbski, C</p>				
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			<p>the formation of two photodegradation products, namely, pterine-6-carboxylic acid and p-amino-benzoyl-L-glutamic acid. According to UV-VIS spectroscopy and PL and PLE studies, the presence of various excipients in commercial pharmaceutical tablets does not affect the photodegradation of FA in PB solutions. Using IR spectroscopy, new evidences for the formation of the two photodegradation products of FA in PB solutions are shown.</p>						
15.	<p>Bi_{1-x}Eu_xFeO₃ Powder Synthesis, Characterization, Magnetic and Photoluminescence Properties</p>	<p><i>NANOMATERIALS</i>, 9, 1465 (2019)</p>	<p>Europium substituted bismuth ferrite powders were synthesized by the sol-gel technique. The precursor xerogel was characterized by thermal analysis. Bi_{1-x}Eu_xFeO₃ (x = 0-0.20) powders obtained after thermal treatment of the xerogel at 600 degrees C for 30 min were investigated by X-ray diffraction (XRD), scanning electron microscopy (FE-SEM), transmission electron</p>	<p>Romanian National Authority for Scientific Research, CNCS-UEFISCDI [PN-III-P4-ID-PCE-2016-0072]</p>	<p>Surdu, VA; Truscă, RD; Vasile, BS; Oprea, OC; Tanasa, E; Diamandescu, L; Androrescu, E; Ianculescu, AC</p>	4.034	0.704	10.3390/nano9101465	Q1

			<p>microscopy (TEM), Raman spectroscopy, and Mossbauer spectroscopy. Magnetic behavior at room temperature was tested using vibrating sample magnetometry. The comparative results showed that europium has a beneficial effect on the stabilization of the perovskite structure and induced a weak ferromagnetism. The particle size decreases after the introduction of Eu^{3+} from 167 nm for $x = 0$ to 51 nm for $x = 0.20$. Photoluminescence spectroscopy showed the enhancement of the characteristic emission peaks intensity with the increase of Eu^{3+} concentration.</p>						
16.	Thermal, structural, magnetic and magneto-optical properties of dysprosium-doped	<i>JOURNAL OF NON-CRYSTALLINE SOLIDS</i> , 521 , U NSP 119545 (2019)	The work is dedicated to the investigation of optical, structural, magnetic and magneto-optical properties of an aluminophosphate glass doped with Dy^{3+} ions, for specific applications as Faraday rotators in the visible spectral domain. The vitreous	UEFISCDI (Executive Unity for Financing of Higher Education, Research and Innovation)	Elisa, M; Stefan, R; Vasiliu, IC; Rusu, MI; Sava, BA; Boroiuca, L; Sofronie,	2.6	0.414	10.1016/j.jnoncrysol.2019.119545	Q1

	phosphate glass		<p>material belongs to the $16\text{Li}(2)\text{O}-8\text{Al}(2)\text{O}(3)-6\text{BaO}$ center dot $60\text{P}(2)\text{O}(5)-10\text{Dy}(2)\text{O}(3)$ system. Optical homogeneity measured by a polariscopic method, as well as by polarimetry and interferometry revealed an optical quality glass. Time dependent electrical conductance measurements have shown a high chemical strength of the glass. Optical absorption of the doped glass in the visible domain evidenced the specific absorption lines of dysprosium ions, whereas structural investigations made by FTIR and Raman spectroscopy put in evidence the vitreous network forming role of phosphorous pentoxide. Magnetic and magneto-optical measurements demonstrated paramagnetic features of the doped glass, as well as a Verdet constant of about -0.05 min/Oe/cm at 600 nm wavelength.</p>	<p>[186/2012, 7-081/2013-M-ERA.NE T, 16N/2019, 18N/2019, 21N/2019, PN-III-P1-1.2-PCCDI-2017-0871, 47PCCDI/2018, PN-III-P1-1.2-PCCDI-2017-0619, 42PCCDI/2018]; Ministry of Research and Innovation through Program I - Development of the National R&D System, Subprogram 1.2 - Institutional Performance -</p>	<p>M; Kuncser, V; Galca, AC; Beldiceanu, A; Volceanov, A; Eftimie, M</p>				
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				Projects for Excellence Financing in RDI [19PFE/17.10.2018]					
17.	Internal and external surface features of newly developed porous ceramics with random interconnected 3D channels by a fibrous sacrificial porogen method	<i>APPLIED SURFACE SCIENCE</i> , 489 , pp.226-238 (2019)	The bone remodeling research field has shifted focus towards sustainable, eco-friendly and reproducible manufacturing technologies of 3D structures. It is now accepted that a suitable internal architecture and an active interface between the 3D structure and host bone-tissue constitute the two most critical traits for a successful bone tissue engineering application. A completely reproducible synthesis set-up was recently developed for calcium phosphate (CaP) bioceramics preparation from natural highly available marble and seashells. The influence of the pressing force in the fabrication process of porous 3D scaffolds derived	Romanian Ministry of Research and Innovation, CCCDI - UEFISCDI [PN-III-P1-1.2-PCCDI-2017-0062, 58, 2]; European Regional Development Fund through Competitiveness Operational Program 2014-2020, Priority axis 1 [P_36_611, 107066]	Mocanu, AC; Miculescu, M; Machedon-Pisu, T; Maidaniuc, A; Ciocoiu, RC; Ionita, M; Pasuk, J; Stan, GE; Miculescu, F	5.155	0.671	10.1016/j.apsusc.2019.05.354	Q1

			<p>from such CaPs by a sacrificial porogen method using natural fibers is here investigated. The fiber-ceramic based-products underwent thermal processing, followed by surface and volume features characterization. After fibers' thermal removal, interconnected 3D channels were obtained, which could allow a suitable in vivo irrigation and implant-associated negative side-effects prevention. This method provides the prospect of tunable HA/beta-TCP content in the case of both precursors' derived-scaffolds. The morphological results revealed the internal and external pores dimensions, modulated through different pressing forces that led to a controlled total porosity, evidenced by computed tomography techniques. Further, the wettability and mechanical features supported the advance of the novel porous-ceramic-structure designs as</p>						
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			reliable bone reconstruction alternatives.						
18.	Imaging dopant distribution across complete phase transformation by TEM and upconversion emission	<i>NANOSCALE</i> , 11 , pp.16743-16754 (2019)	<p>Correlating dopant distribution to its optical response represents a complex challenge for nanomaterials science. Differentiating the "true" clustering nature from dopant pairs formed in statistical distribution complicates even more the elucidation of doping-functionality relationship. The present study associates lanthanide dopant distribution, including all significant events (enrichment, depletion and surface segregation), to its optical response in upconversion (UPC) at the ensemble and single-nanoparticle level. A small deviation from the Er nominal concentration of a few percent is able to induce clear differences in Er UPC emission color, intensity, excited-state dynamics and ultimately, UPC mechanisms, across tetragonal to</p>	CNCS-UEFISCDI [PN-III-P4-ID-PCE-2016-0305, PCE 67/2017]; Romania Ministry of Research and Innovation [PN18110201, PN-III-P4-ID-PCE-2016-0692]	Avram, D; Colbea, C; Florea, M; Lazar, S; Stroppa, D; Tiseanu, C	6.97	1.591	10.1039/c9nr04345d	Q1

			<p>monoclinic phase transformation in rationally designed Er doped ZrO₂ nanoparticles. Rare evidence of a heterogeneous dopant distribution leading to the coexistence of two polymorphs in a single nanoparticle is revealed by Z- and phase contrast transmission electron microscopy (TEM). Despite their spatial proximity, Er in the two polymorphs are spectroscopically isolated, i.e. they do not communicate by energy transfer. Segregated Er, which is well imaged in TEM, is absent in UPC, while the minor phase content overlooked by X-ray diffraction and TEM is revealed by UPC. The outstanding sensitivity of combined TEM and UPC emission to subtle deviations from uniform doping in the diluted concentration regime renders such an approach relevant for various functional oxides supporting lanthanide dopants as emitters.</p>					
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19.	Cu _x CeMgAlO mixed oxide catalysts derived from multicationic LDH precursors for methane total oxidation	<i>APPLIED CATALYSIS A-GENERAL</i> , 586 , 117215 (2019)	A series of five Cu _x CeMgAlO mixed oxides with different copper contents (x) ranging from 6 to 18 at. % with respect to cations, but with fixed 10 at. % Ce and Mg/Al atomic ratio of 3, were prepared by thermal decomposition of layered double hydroxide (LDH) precursors at 750 degrees C. The solid containing 15 at. % Cu, i.e. Cu ₍₁₅₎ CeMgAlO, was also calcined at 550 and 650 degrees C. Powder XRD was used to characterize the crystalline structure and SEM-EDX was used to monitor the morphology and chemical composition of both as prepared and calcined materials. Additionally, the textural properties and the reducibility of the mixed oxide catalysts were studied by nitrogen adsorption/desorption and temperature programmed reduction with hydrogen (H ₂ -TPR) techniques, respectively. X-ray		Al-Aani, HMS; Iro, E; Chirra, P; Fecete, I; Badea, M; Negrila, C; Popescu, I; Olea, M; Marcu, IC	4.63	0.77	10.1016/j.apcata.2019.117215	Q1
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			<p>photoelectron spectroscopy (XPS) was used to determine the chemical state of the elements on the catalyst surface and the diffuse reflectance UV-vis spectroscopy, to obtain information about the stereochemistry and aggregation of copper in the Cu-containing mixed oxides. Their catalytic properties in the total oxidation of methane, used as a volatile organic compound (VOC) model molecule, were evaluated and compared with those of an industrial Pd/Al₂O₃ catalyst. Their catalytic behavior was explained in correlation with their physicochemical properties. Cu(15)CeMgAlO mixed oxide was shown to be the most active catalyst in this series, with a T-50 (temperature corresponding to 50% methane conversion) value of only ca. 45 degrees C higher than that of a commercial Pd/Al₂O₃ catalyst.</p>					
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			<p>This difference becomes as low as ca. 25 degrees C for the Cu(15)CeMgAlO system calcined at 550 degrees C. The influences of the contact time and of the methane concentration in the feed gas on the catalytic performances of the Cu(15)CeMgAlO catalyst have been investigated and its good stability on stream was evidenced.</p>						
20.	<p>Synthesis and thermal, emission and dielectric properties of liquid crystalline Eu(III), Sm(III) and Tb(III) complexes based on mesogenic 4-pyridone ligands function</p>	<p><i>JOURNAL OF MOLECULAR LIQUIDS</i>, 290, UNSP 111184 (2019)</p>	<p>New thermotropic lanthanidomesogens based on Eu(III), Sm(III) and Tb(III) with N-alkylated 4-pyridones mesogenic ligands, having two cyanobiphenyl groups attached via long alkoxy spacers, with 6, 9 and 10 carbons atoms in 3,5-positions of a benzyl unit, have been designed and investigated. The liquid crystal behavior was assessed by differential scanning calorimetry, the mesophases being assigned by polarized light microscopy based on their characteristic textures and</p>	<p>Romanian Ministry of Education and Research [21N/2019]</p>	<p>Chiriac, LF; Ganea, PC; Manaila-Maximean, D; Pasuk, I; Circu, V</p>	4.561	0.58	10.1016/j.molliq.2019.111184	Q1

	nalized with cyanobiphenyl groups		confirmed by variable temperature X-ray powder diffraction analysis. The three N-alkylated 4-pyridones nematic ligands reacted with lanthanide nitrates to yield new lanthanidomesogens with a stable and reproducible smectic A phase up to 125 degrees C. The emission spectra of the complexes have shown the characteristic emission of the lanthanide trivalent ions, over the entire temperature range of SmA phase up to isotropic state. The dielectric spectroscopy measurements performed in the temperature range of existence of the liquid crystal phase, both in the low frequency (LF) domain 0.01-10 MHz and in the high frequency (HF) range, 1 MHz-3 GHz, revealed three dipolar relaxation processes. The characteristic times have been obtained by fitting the spectra of the dielectric loss with a two					
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			component Havriliak-Negami function. The activation constant/energy was determined from the Vogel-Filcher- Tammann law. (C) 2019 Elsevier B.V. All rights reserved.						
21.	Backaction effects in cavity- coupled quantum conductors	<i>PHYSICAL REVIEW B</i> , 100 ,125416 (2019)	We study the electronic transport through a pair of distant nanosystems (S-a and S-b) embedded in a single-mode cavity. Each system is connected to source and drain particle reservoirs and the electron-photon coupling is described by the Tavis- Cummings model. The generalized master equation approach provides the reduced density operator of the double system in the dressed-states basis. It is shown that the photon-mediated coupling between the two subsystems leaves a signature on their transient and steady-state currents. In particular, a suitable bias applied on subsystem S-b induces a photon- assisted current in the other subsystem S-a which is	CNCS - UEFISC DI [PN- III-P4- ID-PCE- 2016- 0221]; Romanian Core Program PN19-03 [21 N/08.02. 2019]; Reykjavik University [815051] ; Research Fund of the University of Iceland Istanbul University; Icelandic Research Fund [163082- 051]	Moldovan, V; Dinu, IV; Manolescu, A; Gudmundsson, V	3.736	1.089	10.1103/ PhysRev B.100.12 5416	Q1

			<p>otherwise in the Coulomb blockade. We also predict that a transient current passing through one subsystem triggers a charge transfer between the optically active levels of the second subsystem even if the latter is not connected to the leads. As a result of backaction, the transient current through the open system develops Rabi oscillations (ROs) whose period depends on the initial state of the closed system.</p>						
22.	<p>Manipulating the Optical Properties of Carbon Dots by Fine-Tuning their Structural Features</p>	<p><i>CHEMSUSCHEM</i>, 12, pp.4480-4486 (2019)</p>	<p>As a new class of sustainable carbon material, "carbon dots" is an umbrella term covering many types of materials. Herein, a broad range of techniques was used to develop the understanding of hydrothermally synthesized carbon dots, and it is shown how fine-tuning the structural features by simple reduction/oxidation reactions can drastically affect their excited-state properties. Structural and spectroscopic studies found that photoluminescence</p>	<p>Chinese government; European regional Development Fund through the Welsh Government; Dutch organization for scientific research (NWO) Netherlands Organization for Scientific</p>	<p>Luo, H; Papai Ioannou, N; Salvadori, E; Roessler, MM; Ploenes, G; van Eck, ERH; Tanase, LC; Feng, JY; Sun, YW; Yang, Y;</p>	7.804	1.625	10.1002/cssc.201901795	Q1

			<p>originates from direct excitation of localized fluorophores involving oxygen functional groups, whereas excitation at graphene-like features leads to ultrafast phonon-assisted relaxation and largely quenches the fluorescent quantum yields. This is arguably the first study to identify the dynamics of photoluminescence including Stokes shift and allow the relaxation pathways in these carbon dots to be fully resolved. This comprehensive investigation sheds light on how understanding the excited-state relaxation processes in different carbon structures is crucial for tuning the optical properties for any potential commercial applications.</p>	<p>Research (NWO); Edinburgh Instruments; Diamond Light Source [EM17587]</p>	<p>Danaie, M; Jorge, AB; Sapelkin, A; Durrant, J; Dimitrov, SD; Titirici, MM</p>				
23.	<p>Probing single-unit-cell resolved electronic structure modulation</p>	<p><i>PHYSICAL REVIEW B</i>, 100, 125119 (2019)</p>	<p>Control of structural coupling at complex-oxide interfaces is a powerful platform for creating ultrathin layers with electronic and magnetic properties unattainable in the bulk. However, with the capability to</p>	<p>U.S. Department of Energy (DOE), Office of Science, Office of Basic Energy Sciences,</p>	<p>Yang, W; Chandrasena, RU; Gu, M; dos Reis, RMS; Moon,</p>	3.736	1.089	10.1103/PhysRevB.100.125119	Q1

<p>ions in oxide superlattices with standing-wave photoemission</p>		<p>design and control the electronic structure of such buried layers and interfaces at a unit-cell level, a new challenge emerges to be able to probe these engineered emergent phenomena with depth-dependent atomic resolution as well as element- and orbital selectivity. Here, we utilize a combination of core-level and valence-band soft x-ray standing-wave photoemission spectroscopy, in conjunction with scanning transmission electron microscopy, to probe the depth-dependent and single-unit-cell resolved electronic structure of an isovalent manganite superlattice [Eu_{0.7}Sr_{0.3}MnO₃/La_{0.7}Sr_{0.3}MnO₃] x 15 wherein the electronic-structural properties are intentionally modulated with depth via engineered oxygen octahedra rotations/tilts and A-site displacements. Our unit-cell resolved measurements reveal significant</p>	<p>Materials Sciences and Engineering Division United States Department of Energy (DOE) [DE-SC0019297]; U.S. Army Research Office [W911NF-15-1-0133, W911NF-15-1-0181]; U.S. DOE United States Department of Energy (DOE) [DE-SC0012375]; Presidential Early Career Award for Scientists and Engineers (PECASE) through</p>	<p>EJ; Arab, A; Husanu, MA; Nemsak, S; Gullikson, EM; Ciston, J; Stroco v, VN; Rondinelli, JM; May, SJ; Gray, AX</p>				
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			<p>transformations in the local chemical and electronic valence-band states, which are consistent with the layer-resolved first-principles theoretical calculations, thus opening the door for future depth-resolved studies of a wide variety of heteroengineered material systems.</p>	<p>the U.S. Department of Energy; Swiss Excellence Scholarship grant ESKAS [2015.0257]; U.S. Department of Energy, Office of Science, Office of Basic Energy Sciences United States Department of Energy (DOE) [DE-AC02-06CH11357]; Office of Science, Office of Basic Energy Sciences, of the U.S. DOE United States Department of Energy (DOE) [DE-</p>					
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				AC02-05CH11231]					
24.	Efficacy of annealing and fabrication parameters on photo-response of SiGe in TiO2 matrix	<i>NANOTECHNOLOGY</i> , 30 ,365604 (2019)	SiGe nanoparticles dispersed in a dielectric matrix exhibit properties different from those of bulk and have shown great potential in devices for application in advanced optoelectronics. Annealing is a common fabrication step used to increase crystallinity and to form nanoparticles in such a system. A frequent downside of such annealing treatment is the formation of insulating SiO2 layer at the matrix/SiGe interface, degrading the optical properties of the structure. An annealing process that could bypass this downside would therefore be of great interest. In this work, a short-time furnace annealing of a SiGe/TiO2 system is applied to obtain SiGe nanoparticles without formation of the undesired SiO2 layer between the dielectric matrix (TiO2) and SiGe. The structures were prepared by	M-ERA.NET project Photo-Nano PUEFIS CDI [33/2016]; PCE project UEFISCDI [122/2017]; Romania Ministry of Research and Innovation through NIMP Core Program [PN19-03, 21N/08.02.2019]; Technology Development Fund of the Icelandic Centre for Research [159006-0611]	Sultan, MT; Gudmundsson, JT; Manolescu, A; Teodorescu, VS; Ciurea, ML; Svavarsson, HG	3.399	0.744	10.1088/1361-6528/ab260e	Q1

			<p>depositing alternate layers of TiO₂ and SiGe films, using direct-current magnetron sputtering technique. A wide range spectral response with a response-threshold up to similar to 1300 nm was obtained, accompanied with an increase in photo-response of more than two-orders of magnitude. Scanning electron microscopy, transmission electron microscopy, energy-dispersive x-ray spectroscopy and grazing incidence x-ray diffraction were used to analyze the morphological changes in respective structures. Photoconductive properties were studied by measuring photocurrent spectra using applied dc-voltages at various temperatures.</p>						
25.	<p>Photoluminescent Hydroxylapatite: Eu³⁺ Doping Effect on Biological</p>	<p><i>NANOMATERIALS</i>, 9, 1187 (2019)</p>	<p>Luminescent europium-doped hydroxylapatite (Eu(X)HAp) nanomaterials were successfully obtained by co-precipitation method at low temperature. The morphological, structural and optical properties were</p>	<p>project "Innovative biomaterials for treatment and diagnosis"</p>	<p>Andronescu, E; Predoi, D; Neacsu, IA; Paduraru, AV; Musuc,</p>	4.034	0.704	10.3390/nano9091187	Q1

	Behavior		investigated by scanning electron microscopy (SEM), transmission electron microscopy (TEM), X-ray diffraction (XRD), Fourier Transform Infrared (FT-IR), UV-Vis and photoluminescence (PL) spectroscopy. The cytotoxicity and biocompatibility of Eu(X)HAp were also evaluated using MTT (3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide)) assay, oxidative stress assessment and fluorescent microscopy. The results reveal that the Eu ³⁺ has successfully doped the hexagonal lattice of hydroxylapatite. By enhancing the optical features, these Eu(X)HAp materials demonstrated superior efficiency to become fluorescent labelling materials for bioimaging applications.	[PN-IIIIP1-1.2-PCCD-I2017-0629]; EUEuropean Union (EU) [638/12.03.2014, 1970, 48652]	AM; Trusca, R; Oprea, O; Tanasa, E; Vasile, OR; Nicora, AI; Surdu, AV; Iordache, F; Birca, AC; Iconaru, SL; Vasile, BS				
26.	Synthesis, Characterization, and Antimicrobial	<i>NANOMATERIALS</i> , 9,1295 (2019)	Obtaining nanoscale materials has allowed for the miniaturization of components, which has led to the possibility of	Romanian Ministry of Research and Innovation	Predoi, D; Iconaru, SL; Predoi, MV; Stan,	4.034	0.704	10.3390/nano9091295	Q1

	<p>Activity of Magnesium-Doped Hydroxyapatite Suspensions</p>		<p>achieving more efficient devices with faster functions and much lower costs. While hydroxyapatite [HAp, Ca-10(PO₄)(₆)(OH)(₂)] is considered the most widely used material for medical applications in orthopedics, dentistry, and general surgery, the magnesium (Mg) is viewed as a promising biodegradable and biocompatible implant material. Furthermore, Mg is regarded as a strong candidate for developing medical implants due to its biocompatibility and antimicrobial properties against gram-positive and gram-negative bacteria. For this study, magnesium-doped hydroxyapatite (Ca_{10-x}Mg_x(PO₄)(₆)(OH)(₂), x(Mg) = 0.1), 10MgHAp, suspensions were successfully obtained by an adapted and simple chemical coprecipitation method. The information regarding the</p>	<p>n (PCCDI-UEFISCDI) [PN-III-P1-1.2-PCCDI-2017-0062, 58, 2]</p>	<p>GE; Buton, N</p>				
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			<p>stability of the nanosized 10MgHAp particles suspension obtained by zeta-potential analysis were confirmed for the first time by a non-destructive ultrasound-based technique. Structural and morphological studies of synthesized 10MgHAp were conducted by X-ray diffraction (XRD), Fourier-transform infrared (FTIR) spectroscopy in attenuated total reflectance (ATR) mode and scanning electron microscopy (SEM). The XRD analysis of the 10MgHAp samples confirmed that a single crystalline phase associated to HAp with an average grain size about 93.3 nm was obtained. The FTIR-ATR spectra revealed that the 10MgHAp sample presented broader IR bands with less visible peaks when compared to a well-crystallized pure HAp. The SEM results evidenced uniform MgHAp nanoparticles with spherical shape. The</p>						
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			antimicrobial activity of the 10MgHAp suspension against gram-positive strains (Staphylococcus aureus ATCC 25923, Enterococcus faecalis ATCC 29212), gram-negative strains (Escherichia coli ATCC 25922, Pseudomonas aeruginosa ATCC 27853), as well as a fungal strain (Candida albicans ATCC 90029) were evaluated.						
27.	Conductance Model for Single-Crystalline/Compact Metal Oxide Gas-Sensing Layers in the Nondegenerate Limit: Example of Epitaxial SnO ₂ (101)	ACS <i>SENSORS</i> ,4, pp.2420-2428 (2019)	Semiconducting metal oxide (SMOX)-based gas sensors are indispensable for safety and health applications, for example, explosive, toxic gas alarms, controls for intake into car cabins, and monitor for industrial processes. In the past, the sensor community has been studying polycrystalline materials as sensors where the porous and random microstructure of the SMOX does not allow a separation of the phenomena involved in the sensing process. This led to conduction	Romanian National Authority for Scientific Research [PN19-03, 21 N/08.02.2019, PN-III-P1-1.1-MC-2017-1917/2017]; Alexander von Humboldt FoundationAlexander von Humboldt Foundati	Simion, CE; Schipani, F; Papadogian, A; Stanoiu, A; Budde, M; Oprea, A; Weimar, U; Bierwagen, O; Barsan, N	6.944	1.462	10.1021/acsensors.9b01018	Q1

			<p>models that can model and predict the behavior of the overall response, but they were not capable of giving fundamental information regarding the basic mechanisms taking place. The study of epitaxial layers is a definite improvement, allowing clarifying the different aspects and contributions of the sensing mechanisms. A detailed analytical model of the transduction function for n- and p-type single-crystalline/compact metal oxide gas sensors was developed that directly relates the conductance of the sample with changes in the surface electrostatic potential. Combined dc resistance and work function measurements were used in a compact SnO₂(101) layer in operando conditions that allowed us to check the validity of our model in the region where Boltzmann approximation holds</p>	<p>on; Leibniz associati on</p>					
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			to determine the surface and bulk properties of the material.						
28.	The influence of UV light on the azathioprine photodegradation: New evidences by photoluminescence	<i>RESULTS IN PHYSICS</i> ,14,102443 (2019)	In this work, we report a photodegradation process of azathioprine (AZA) highlighted by correlated studies of photoluminescence (PL) and the UV-VIS and IR absorption spectroscopy. The photodegradation process of AZA is observed by the gradual increasing in the intensity of the PL spectrum recorded under the excitation wavelength of 300 nm. This behaviour is accompanied, in the photoluminescence excitation (PLE) spectra, by a gradual intensity decreasing of the PLE band situated in the 250-320 nm spectral range simultaneous with the intensity increasing of the PLE band localized in the 325-425 nm spectral range. Regardless if the immunosuppressive compound is in the state of powder, tablet or solution, the	European Regional Development Fund under the Competitiveness Operational Program 2014-2020 entitled "Physico-chemical analysis, nanostructured materials and devices for applications in the pharmaceutical field and medical in Romania"; National Institute of Materials Physics [58/05.09.2016,	Smaranda, I; Nila, A; Manta, CM; Samohvalov, D; Ghercia, D; Baibarac, M	3.042	0.368	10.1016/j.rinp.2019.102443	Q1

			<p>PL and UV-VIS absorption spectroscopy studies have demonstrated that a photodegradation process under UV light takes place. According to the PL studies carried out in ambient and vacuum condition, the photodegradation process of AZA was demonstrated to be influenced by the oxygen from air. The presence of a new IR band with maximum at 1745 cm(-1) confirms the AZA photodegradation pathway proposed in this work.</p>	4529/29.11.2017]					
29.	<p>Cavity-Photon-Induced High-Order Transitions between Ground States of Quantum Dots</p>	<p><i>ANNALENDER PHYSIK</i>, 531, 1900306 (2019)</p>	<p>It is shown that quantum electromagnetic transitions to high orders are essential to describe the time-dependent path of a nanoscale electron system in a Coulomb blockade regime when coupled to external leads and placed in a 3D rectangular photon cavity. The electronic system consists of two quantum dots embedded asymmetrically in a short quantum wire. The two lowest in</p>	<p>University of Iceland; Icelandic Research Fund [163082-051]; Icelandic Instruments Fund; CNCS - UE-FISCDI grant [PN-III-P4-ID-PCE-2016-0084]; Romanian Core</p>	<p>Gudmundsson, V; Abdullah, NR; Tang, CS; Manolescu, A; Moldoveanu, V</p>	3.276	1.151	10.1002/andp.201900306	Q1

			<p>energy spin degenerate electron states are mostly localized in each dot with only a tiny probability in the other dot. In the presence of the leads, a slow high-order transition between the ground states of the two quantum dots is identified. The Fourier power spectrum for photon-photon correlations in the steady state shows a Fano type of resonance for the frequency of the slow transition. Full account is taken of the geometry of the multilevel electronic system, and the electron-electron Coulomb interactions together with the para- and diamagnetic electron-photon interactions are treated with step-wise exact numerical diagonalization and truncation of appropriate many-body Fock spaces. The matrix elements for all interactions are computed analytically or numerically exactly.</p>	Program [PN19-03, 21 N/08.02. 2019]					
30.	Formation peculiar	<i>CERAMICS INTERNATIONAL</i> , 45 ,	Formation peculiarities of highly-doped	National Academy of	Kryzhanovska,	3.45	0.454	10.1016/j.ceramint	Q1

ities and optical properties of highly-doped (Y(0.86)La(0.09)Vb(0.05))(2)O-3 transparent ceramics	pp.16002-16007 (2019)	<p>(Y(0.86)La(0.09)Vb(0.05))(2)O-3 transparent ceramics have been studied by X-ray diffraction and electron microscopy methods. The phase composition evolution of 1.81Y(2)O(3).0.18La(2)O(3)0.01Yb(2)O(3) powder mixtures annealed at the temperatures of 1100, 1200, 1300, and 1400 degrees C has been studied by XRD. It has been shown that Yb2O3 phase dissolves in Y2O3 matrix in the calcination temperature range of 1300-1400 degrees C. Complete dissolution of La2O3 in Y2O3 matrix occurs at temperatures above 1400 degrees C. La3+ ions enter in Y2O3 and Yb2O3 crystal structures simultaneously in the 1200-1300 degrees C range, which leads to a remarkable increase in the volume of the corresponding crystal lattices. The possible reasons for suppressing the crystalline growth of Y2O3 and Yb2O3 cubic phases have</p>	Sciences of Ukraine [KPKVK 6541230]; Chinese Academy of Sciences	OS; Baumer, VN; Parkhomenko, SV; Doroshenko, AG; Yavetskiy, RP; Balabanov, AE; Tolmachev, AV; Skorik, SN; Li, J; Kuncser, A			.2019.05.111	
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			<p>been discussed. Finally, (Y(0.86)La(0.09)Vb(0.05))(2)O-3 transparent ceramics have been obtained by solid-state vacuum sintering at 1650-1750 degrees C. Ceramics synthesized at a temperature of 1750 degrees C have been characterized by an in-line optical transmittance of 60% and a homogeneous distribution of constituent components within the volume and along the grain boundaries.</p>						
31.	<p>Nanoclustered Pd decorated nanocrystalline Zn doped SnO2 for ppb NO2 detection at low temperature</p>	<p><i>SENSORS AND ACTUATORS B-CHEMICAL</i>, 294, pp.148-156 (2019)</p>	<p>Nanoclustered Pd (2 mol%) was used to decorate Zn doped SnO2 (10 mol% Zn) in order to increase its sensing performances. Zn doped SnO2 built from nanoparticles was prepared by a hydrothermal method using a nonionic surfactant - Brij52 and Tripropylamine (TPA) as co-templates. The presence of well-dispersed Zn²⁺ ions in the SnO2 matrix leads to a nonstoichiometric surface. Pd was</p>	<p>CNCS-UEFISCDI [PN-III-P4-ID-PCE-2016-0529]; Romanian National Authority for Scientific Research through the Core Programs [PN18-110101, PN19-03, 21N/08.02.2019]</p>	<p>Somacescu, S; Ghica, C; Simion, CE; Kuncser, AC; Vlaicu, AM; Stefan, M; Ghica, D; Florea, OG; Meroni, IF; Stanoiu, A</p>	6.393	0.824	10.1016/j.snb.2019.05.033	Q1

			<p>deposited by subsequent wet impregnation using hydrazine as reducing agent. The as obtained powders were deposited as thick layers onto commercial substrates, in order to obtain the sensitive structures. The coexistence of a mixture of valence states (Pd⁰, Pd²⁺ and Pd⁴⁺) was highlighted on the surface of the as prepared layers. Several aspects have been followed regarding the Zn and Pd dispersion into the SnO₂ matrix: the large scale and low scale morphology (SEM and TEM/HRTEM) in relation with the synthesis route, the obtained crystallographic phases (XRD, SAED) and the way in which the Zn²⁺ ions are inserted into the SnO₂ structure (XRD, XPS, EPR), the spatial distribution of the added chemical elements, Zn and Pd (SEM, STEM, EDS). All these morphological and structural aspects, as</p>						
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			well as the Pd surface chemistry, have been correlated with the sensing properties of the nanostructured materials under controlled gas atmosphere. Through this study, we could harvest the specific role of the aforementioned loadings towards selective detection of low NO ₂ concentrations, between 350 ppb to 5 ppm, at low operating temperature of 100 degrees C, for infield conditions.						
32.	Spectroscopic investigations of Pr ³⁺ doped CNGG and CLNGG single crystals	<i>JOURNAL OF ALLOYS AND COMPOUNDS</i> , 799 , pp.288-301 (2019)	Spectroscopic characteristics of Pr ³⁺ ions doped CNGG and CLNGG single crystals were investigated in order to assess their potential as laser materials for visible emission. The Judd-Ofelt intensity parameters for the f-f transitions of Pr ³⁺ ions were used to determine spectroscopic and laser emission features. The temperature dependence of the absorption spectra for the H-3(4) -> P-3(0) transition was	Romanian National Authority for Scientific Research and Innovation, CNCS-UEFISCDI [PN-III-P4-ID-PCE-2016-0853, 119/2017]; Romania National Authority	Hau, S; Gheorghes, C; Gheorghes, L; Voicu, E; Greuleasa, M; Stancu, G; Broasca, A; Enculescu, M	4.175	0.601	10.1016/j.jallcom.2019.05.154	Q1

		<p>used to highlight the multicenter structure, different Stark levels, hot bands, and also the connection between the vibronic and electronic lines. The presence of electron-phonon interaction was also observed in the emission spectra corresponding to the P-3(0) → H-3(4) transition under different excitation wavelengths. Based on low temperature absorption and emission spectra, partial energy level diagrams of Pr³⁺ ions doped in CNGG and CLNGG single crystals were obtained. The emission cross-sections for different transitions of Pr³⁺ ions were evaluated by the Fuchtbauer-Ladenburg formula. The fluorescence decay curve of the D-1(2) level was measured under selective excitation at different concentrations and temperatures. The concentration quenching process for the D-1(2) state was also studied. (C) 2019 Elsevier B.V. All rights reserved.</p>	<p>y for Scientific Research and Innovation through the program NUCLEU LAPLAS VI [16N/08.02.2019]; Romania National Authority for Scientific Research and Innovation through the program NUCLEU [21N/2019]</p>				
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33.	Memcomputing and Nondestructive Reading in Functional Ferroelectric Heterostructures	<i>PHYSICAL REVIEW APPLIED</i> , 12 , 024053 (2019)	Multiple nonvolatile and well-separated capacitive states can be obtained in a two-terminal ferroelectric capacitor setup by fine tuning the polarization switching process. This approach allows for the implementation of memcomputing (same platform for storage and computing) capable ferroelectric structures. Digital and analog storage modes are exemplified in this work together with an algorithm for simple binary computation functions such as OR/NOR and AND/NAND for data processing on the same device. Results are obtained by controlling the polarization switching process in ferroelectric multilayers such as Pb (Zr _{0.2} Ti _{0.8})O ₃ /SrTiO ₃ /Pb (Zr _{0.2} Ti _{0.8})O ₃ and Pb (Zr _{0.2} Ti _{0.8})O ₃ /BaTiO ₃ /Pb (Zr _{0.2} Ti _{0.8})O ₃ . Besides memcomputing, these results can be used for	Romanian Ministry of Research and Innovation through the Core Program of NIMP [PN18-110101]; PCCF project - Ministry of Research and Innovation through UEFISCDI Executive Unit 6 [PN-III-P4-ID-PCCF-2016-0047]	Boni, GA; Filip, LD; Chirila, C; Iuga, A; Pasuk, I; Hrib, L; Trupina, L; Pintilie, I; Pintilie, L	4.532	1.832	10.1103/PhysRevApplied.12.024053	Q1
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			nondestructive capacitive reading of information in simple ferroelectric capacitors or can open the way toward applications such as neuromorphic and chaotic circuits.						
34.	Nanostructured palladium doped nickel electrodes for immobilization of oxidases through nickel nanoparticles	<i>ELECTROCHIMICA ACTA</i> , 315 , pp.102-113 (2019)	The present investigation deals with the development, characterization and application of nanostructured Pd doped Ni electrodes (Pd@Ni), which uses the electrochemical properties of Pd in synergy with the magnetic properties of Ni for biosensors development. The Pd@Ni electrodes have been characterized by X-ray diffraction, scanning electron microscopy with energy dispersive X-ray spectroscopy and X-ray photoelectron spectroscopy. It has been shown that palladium presented spherical assemblies ranging 150-200 nm medium diameter size that covers large areas of the electrode surface while metallic nickel, which confers magnetic properties, showed a uniform	Romanian Ministry of Research and Innovation through Operational Programme Competitiveness [NANO BIOSUR F-SMIS 103528, PN19-03, 21 N/08.02.2019]	Barsan, MM; Matei, E; Enculescu, M; Costescu, R; Preda, N; Enache, TA; Enculescu, I; Diclescu, VC	5.383	0.81	10.1016/j.electacta.2019.04.143	Q1

			<p>granular structure with sizes between 20 and 50 nm. Cyclic voltammetry and electrochemical impedance spectroscopy were performed to understand the electrochemical process at the Pd@Ni electrodes in neutral media. The Pd@Ni electrodes were applied for the electrochemical detection of H₂O₂. Finally, Ni nanoparticles (NiNP) functionalized with the model enzyme glucose oxidase (GOx-NiNP) have been attached to the Pd@Ni electrode solely through magnetic interactions, and the obtained GOx-NiNP/Pd@Ni biosensor applied for glucose determination in aqueous solutions by fixed potential amperometry at -0.05 V (vs Ag/AgCl) with reduced interferences. (C) 2019 Elsevier Ltd. All rights reserved.</p>						
35.	Adsorption of 1,4-phenylene	<i>SCIENTIFIC REPORTS</i> , 9, 11968 (2019)	Adsorption processes of 1,4-phenylene diisothiocyanate (PDITC) on two new platforms of the type	National Institute of Materials Physics	Baibarac, M; Daescu, M;	4.011	1.286	10.1038/s41598-019-48314-x	Q1

	<p>diisothiocyanate onto the graphene oxide sheets functionalized with polydiphenylamine in doped state</p>		<p>graphene oxide (GO) sheets and GO layers functionalization with polydiphenylamine (PDPA) are studied by Raman scattering and photoluminescence (PL). An interaction in solid state phase of the two constituents, i.e. PDITC and GO sheets, and a deposition of PDITC onto the PDPA functionalized GO layers, respectively, by the drop casting method, were performed. In the first case, it is shown that interaction in solid state phase of GO with PDITC leads to an intercalation of the organic compound between GO sheets simultaneously with the appearance of the o-thiocarbamate groups, that induces: (i) an enhancement of the PDITC Raman lines situated in the 400-800 and 1000-1300 cm^{-1} spectral ranges, (ii) a change in the ratio between the relative intensities of the two Raman lines peaked at 1585 and 1602 cm^{-1} accompanied</p>	<p>[58/05.09.2016, 2570/29.11.2017]; National Authority for Scientific Research and Innovation [58/05.09.2016]; Pro-Vitam Ltd. [2570/29.11.2017]</p>	<p>Fejer, SN</p>				
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			<p>by an up-shift in the case of the second line and (iii) a down-shift of the PDTIC PL band from 502 to 491 nm. Using cyclic voltammetry, an electrochemical functionalization of the GO layers with PDPA doped with H₃PMo₁₂O₄₀ heteropolyanions takes place, as demonstrated by Raman scattering and FTIR spectroscopy. The presence of the amine groups in the molecular structure of the doped PDPA functionalized GO layers induces a chemical adsorption of PDITC on this platform, when the thiourea groups appear simultaneously with o-thiocarbamate groups. A chemical mechanism is proposed to take place at the interface of the GO sheets and the doped PDPA functionalized GO layers, respectively, with PDITC.</p>						
36.	Mineralization-Inspired Synthesis of Magnet	<i>ANGEWANDT E CHEMIE-INTERNATIONAL EDITION</i> , 58 ,	Metal-organic frameworks (MOFs) capable of mobility and manipulation are attractive materials for potential	European Research Council Starting Grant ELECTR	Terzopoulos, A; Hoop, M; Chen,	12.257	3.243	10.1002/anie.201907389	Q1

	ic Zeolitic Imidazo le Framew ork Compo sites	pp.13550- 13555 (2019)	applications in targeted drug delivery, catalysis, and small-scale machines. One way of rendering MOFs navigable is incorporating magnetically responsive nanostructures, which usually involve at least two preparation steps: the growth of the magnetic nanomaterial and its incorporation during the synthesis of the MOF crystals. Now, by using optimal combinations of salts and ligands, zeolitic imidazolate framework composite structures with ferrimagnetic behavior can be readily obtained via a one-step synthetic procedure, that is, without the incorporation of extrinsic magnetic components. The ferrimagnetism of the composite originates from binary oxides of iron and transition metals such as cobalt. This approach exhibits similarities to the natural mineralization of iron oxide species, as	OCHEM BOTS (ERC- 2013- STG) [336456] ; microCry sFact (ERC- 2015- STG) [677020] ; ETH Grant Mofbots [ETH-33 17-1]; Swiss National Science Foundati onSwiss National Science Foundati on (SNSF) [200021_ 181988]; ETH Career Seed Grant [SEED- 14 16-1]; Generalit at de Cataluny aGeneral itat de Cataluny a [2017- SGR- 292]; Spanish	XZ; Hirt, AM; Charil aou, M; Shen, Y; Musht aq, F; del Pino, AP; Logof atu, C; Simon elli, L; de Mello, AJ; Doona n, CJ; Sort, J; Nelso n, BJ; Pane, S; Puigm arti- Luis, J				
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			is observed in ores and in biomineralization.	Government Spanish Government [MAT2017-86357-C3-1-R]					
37.	Nitrogen-doped graphene as metal free basic catalyst for coupling reactions	<i>JOURNAL OF CATALYSIS</i> , 37 , pp.238-247 (2019)	N-doped defective graphene [(N)G] obtained by pyrolysis at 900 degrees C of chitosan contains about 3.7% of residual N atoms, distributed as pyridinic, pyrrolic and graphitic N atoms. It has been found that (N)G acts as basic catalyst promoting two classical C-C bond forming nucleophilic additions in organic chemistry, such as the Michael and the Henry additions. Computational calculations at DFT level of models corresponding to the various N atoms leads to the conclusion that N atoms are more stable at the periphery of the graphene sheets and that H adsorption on these sites is a suitable descriptor to correlate with the catalytic activity of the various sites.	UEFISC DI [PN-III-P4-ID-PCE-2016-0146, 121/2017, PN-III-P1-1.1-TE-2016-2191, 89/2018]; Spanish Ministry of Economy and Competitiveness [CTQ2015-69653-CO2-R1]; Generalitat Valenciana Generalitat Valenciana [2017-083]; Spanish Ministry of Science and	Candun, N; Man, I; Simion, A; Cojocaru, B; Coman, SM; Bucur, C; Primo, A; Garcia, H; Parvulescu, VI	7.723	1.561	10.1016/j.jcat.2019.07.011	Q1

			<p>According to these calculations the most active sites are pyridinic N atoms at zig-zag edges of the sheets. In addition, N as dopant changes the reactivity of the neighbour C atoms. Water was found a suitable solvent to achieve high conversions in both reactions. In this solvent the initial distribution of N atoms is affected due to the easy protonation of the N-py to N-pyH sites. As an effect, C edge sites adjacent at N-PyH with an appropriate reactivity towards the alpha-C-H bond breaking are formed. The present results show the general activity of N-doped graphene as base catalysts and illustrate the potential of carbocatalysis to promote reactions of general interest in organic synthesis. (C) 2019 Elsevier Inc. All rights reserved.</p>	Innovation					
38.	Dramatic impact of pressure and	<i>APL MATERIALS</i> , 7, 081109 (2019)	The crystallization of ferroelectric (Hf,Zr)O ₂ thin films is achieved by playing on the deposition pressure	European Union European Union (EU) [780302]	Bouaziz, J; Romeo, PR; Baboux, N;	4.296	1.409	10.1063/1.5110894	Q1

	<p>annealing temperature on the properties of sputtered ferroelectric HZO layers</p>		<p>during reactive magnetron sputtering from a Hf/Zr metallic target. Postdeposition annealing was tried at different temperatures in order to optimize the quality of the samples. Structural characterizations are performed by transmission electron microscopy (TEM) and electrical characterizations are carried out. TEM analyses reveal that the samples deposited at a low working pressure show no orthorhombic phase, and thus are not ferroelectric, whereas the samples deposited at higher working pressure show the orthorhombic ferroelectric phase. The maximum remnant polarization is $6 \mu\text{C}/\text{cm}^2$ and is obtained for the sample annealed at 600 degrees C. The maximum cycles to breakdown is higher than 2×10^{10} cycles and is reached for the sample annealed at 400 degrees C. These results are discussed</p>	<p>; GDR OxyFun</p>	<p>Negrea, R; Pintilie, L; Vilquin, B</p>				
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			in the matter of phase transition and oxygen vacancies redistribution. (c) 2019 Author(s). All article content, except where otherwise noted, is licensed under a Creative Commons Attribution (CC BY) license (http://creativecommons.org/licenses/by/4.0/).						
39.	Fabrication of graphene-based electrochemical capacitors through reactive inverse matrix assisted pulsed laser evaporation	<i>APPLIED SURFACE SCIENCE</i> , 484 , pp.245-256 (2019)	Electrodes constituted by nitrogen-doped reduced graphene oxide (NrGO) in combination with NiO nanostructures were fabricated by means of reactive inverse matrix assisted pulsed laser evaporation technique. The structure-composition of the electrode composites was tailored by laser-inducing chemical reactions of graphene oxide (GO) flakes with different precursor molecules (citric acid, ascorbic acid and imidazole) during GO deposition. Structural characterizations reveal the formation of wrinkles and nanoholes in the NrGO sheets,	Spanish Ministry of Economy, Industry and Competitiveness [ENE2017-89210-C2-1-R]; AGAUR of Generalitat de Catalunya aAgencia de Gestio D'Ajuts Universitat de Recerca Agaur (AGAU R) [2017 SGR 1086]; Spanish Ministry of Economy	del Pino, AP; Ramadan, MA; Leberre, PG; Ivan, R; Logofatu, C; Yousef, I; Gyorgy, E	5.155	0.671	10.1016/j.apsusc.2019.04.127	Q1

			<p>besides their coating with NiO nanostructures. Compositional studies disclose that imidazole precursor promotes the synthesis of NrGO with the largest degree of reduction and nitrogen doping (mainly with graphitic and pyridinic N). Electrochemical analyses of the obtained electrodes reveal that NiO nanostructures increase surface charge storage processes (double layer - pseudocapacitive) over diffusive ones, being the imidazole-based electrodes the ones exhibiting the best performance (up to 114 F cm⁻³ at 10 mV s⁻¹). Symmetric and asymmetric electrochemical capacitors were also fabricated showing excellent robustness over 10,000 charge-discharge cycles at high specific currents.</p>	and Competitiveness, through the "Severo Ochoa" Programme for Centres of Excellence in RD [SEV-2015-0496]					
40.	3D hybrid structures based	<i>MATERIALS SCIENCE & ENGINEERING C-MATERIALS</i>	The paper describes an innovative bio-design of some hybrid nanoarchitectures	JINR - Romania (University of Buchares	Barbinta-Patrascu, ME;	4.959	0.751	10.1016/j.msec.2019.03.069	Q1

<p>on biomimetic membranes and Caryophyllus aromaticus - "green" synthesized nano-silver with improved bioperformances</p>	<p><i>FOR BIOLOGICAL APPLICATIONS</i>, 101, pp.120-137 (2019)</p>	<p>containing bioartificial membranes and silver nanoparticles phytogenerated by using a natural extract Caryophyllus aromaticus (cloves) that contains many bioactive compounds. Two kinds of liposomes with and without chlorophyll a (Chla) obtained through thin film hydration method were used to achieve bio-green-generated hybrids by a simple, cost effective bottom-up approach. The characteristic peaks of CE-nAg monitored by UV-Vis absorption have firstly demonstrated the biohybrids formation. The slightly blue shift and fluorescence quenching observed by fluorescence emission spectra highlighted the formation of hybrid systems by biointeraction between lipid vesicles and silver nanoparticles. The incorporation of silver nanoparticles in lipid vesicles resulted in significant changes</p>	<p>t) [48/2018, 322/21.05.2018, 04-4-1121-2015/2020, 4726-4-18/2]; Romania National Authority for Scientific Research, CNDI-UEFISCDI [PN 16 42 02 03]; Romania Ministry of Research and Innovation through the NIMP Core Program [21N/2019]</p>	<p>Badea, N; Bacalum, M; Ungureanu, C; Suica-Bunghieze, IR; Lordache, SM; Pirvuc, C; Zgura, I; Maraloiu, VA</p>				
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			<p>of FT-IR spectra of liposomes, indicating a reorganization of biomimetic membranes. All the microscopic methods (SEM, AFM and TEM) confirmed the biosynthesis of "green" AgNPs together with associated biohybrids, their spherical and quasi-spherical shapes with nano-scaled size. By TEM assay it was shown that CE-nAg are surrounded by petal like cloud structures that consist of biopolymers like proteins or polysaccharides and other phytochemicals arising from clove extract. EDS spectra confirmed the formation of phyto-nanoAg and also the presence of silver in the biohybrids. In addition, Selected Area Electron Diffraction showed characteristic polycrystalline ring patterns for a cubic structure of the clove-generated AgNPs. The hybrid materials showed efficient physical stability, ie. xi value of - 28.0 mV (for</p>					
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			<p>biohybrids without Chla, BH) and of -31.7 mV (for biohybrids labelled with Chla, Chla-BH), assured by strong electrostatic repulsive forces between particles. The "green" nano-silver particles (CE-nAg) showed remarkable antioxidant activity (AA = 90.2%). The biohybrids loaded with clove-AgNPs proved to be more effective, scavenging about 98.8% of free radicals (in case of ChlaBH), and of 92.6% (in case of BH). The antibacterial effectiveness showed that green AgNPs combine in a synergistic manner the antibacterial properties of clove extract with those of silver, resulting in an enhancement of inhibition diameter, by 20%. Chla-BH proved to be more potent against Escherichia coli, than BH, exhibiting an inhibition diameter of 42 mm. Regarding the in vitro cytotoxicity against tumour cells, the CE-nAg</p>					
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			<p>concentration significantly influenced the cell viability, ie. IC50 was 3.6% (v/v) for HT-29 cells. Chla-BH was more effective against HT-29 cancer cells at the concentrations ranging from 0 to 18% (v/v), when the normal cells were not affected. Clove-generated AgNPs exhibited haemolytic activity against hRBCs, while the biohybrids were haemocompatible. The action mechanism on the two cell lines (mouse fibroblast L929 cells and human colorectal adenocarcinoma HT-29 cells) investigated by fluorescence microscopy demonstrated that CE-nAg killed almost all the cells (94%) through necrosis at a concentration of 33.4% (v/v). The treatment of HT-29 cells with BH resulted in: 71.5% viable cells, 19.5% apoptotic and only 9% necrotic cells, while in the case of Chla-BH treatment, only 77.5% cells were viable, 16%</p>						
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			cells were apoptotic and 6.5% were necrotic. In this way, the developed silver-based nanoparticles can represent viable promoters to develop new biohybrids with improved features, e.g. antioxidant and antibacterial effectiveness, haemolytic activity and greater specificity towards tumour cells.						
41.	Physical properties of the ferroelectric capacitors based on Al-doped HfO ₂ grown via Atomic Layer Deposition on Si	<i>APPLIED SURFACE SCIENCE</i> , 483 , pp.324-333 (2019)	Ferroelectric capacitors based on aluminium (Al) doped hafnium oxide (HfO ₂) thin films grown on silicon substrates were fabricated by Atomic Layer Deposition (ALD), taking into account two methods. The first one involved the growth of a binary oxide, in a laminar way, by alternating the ALD cycles of HfO ₂ and Al ₂ O ₃ , and the second, the two precursors were sequentially mixed on the surface. The composition and structure of deposited aluminium doped hafnium oxide (Al: HfO ₂) thin films have been studied using X-ray photoelectron	Ministry of Research and Innovation, CNCSd-UEFISCDI [PN-III-P4-ID-PCCF-2016-0033, PN-III-P1-1.1-PD-2016-1322]	Vulpe, S; Nastase, F; Drago man, M; Dinescu, A; Romanitan, C; Iftime, S; Moldovan, A; Apostol, N	5.155	0.671	10.1016/j.apsusc.2019.03.166	Q1

			<p>spectroscopy (XPS) and grazing incidence X-ray diffraction (GIXRD). XPS measurements show the formation of opposite ferroelectric polarization areas. Via GIXRD, it was found that the Al:HfO₂ films deposited on Si have a structure with polycrystalline domains. Recording and investigation of ferroelectric domains were performed by Piezoresponse Force Microscopy (PFM), while the electrical performances of obtained devices were analysed by capacitance-voltage (C-V) and current-voltage (I-V) characteristics. The PFM measurements show there is a mechanical non-zero response even outside the written area and for an appropriate value of the electrical stress the difference in phase between successive areas is saturated to a value close to 180 degrees. The atomic force microscopy (AFM) analyses indicate a very low value of</p>						
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			<p>roughness average, for all grown thin films, similar to 0.2 nm, for a thickness of similar to 7 nm. From C-V characteristics, the memory window was extracted and the calculated values were found to be 0.8 V for the device obtained by the first ALD method, and 0.44 V for the second one, respectively. Moreover, in the case of the device based on the ferroelectric layer grown by the second ALD method, the memory window extends over a much wider applied voltage domain, in the range (+/- 4 V; +/- 8 V), at a signal of 100 kHz.</p>						
42.	Ge nanoparticles in SiO ₂ for near infrared photodetectors with high performance	<i>SCIENTIFIC REPORTS</i> , 9, 10286 (2019)	<p>In this work we prepared films of amorphous germanium nanoparticles embedded in SiO₂ deposited by magnetron sputtering on Si and quartz heated substrates at 300, 400 and 500 degrees C. Structure, morphology, optical, electrical and photoconduction properties of all</p>	M-ERA.NET PhotoNanoP [33/2016]; PCE [122/2017]; TE (PNCDI III) - CNCS-UEFISCDI [30/2018];	Stavarache, I; Teodorescu, VS; Prepelita, P; Logofatu, C; Ciurea, ML	4.011	1.286	10.1038/s41598-019-46711-w	Q1

		<p>films were investigated. The Ge concentration in the depth of the films is strongly dependent on the deposition temperature. In the films deposited at 300 degrees C, the Ge content is constant in the depth, while films deposited at 500 degrees C show a significant decrease of Ge content from interface of the film with substrate towards the film free surface. From the absorption curves we obtained the Ge band gap of 1.39 eV for 300 degrees C deposited films and 1.44 eV for the films deposited at 500 degrees C. The photocurrents are higher with more than one order of magnitude than the dark ones. The photocurrent spectra present different cutoff wavelengths depending on the deposition temperature, i.e. 1325 nm for 300 degrees C and 1267 nm for 500 degrees C. These films present good responsivities of 2.42 AW(-1) (52 mu W</p>	<p>Romanian Ministry of Research and Innovation through NIMP Core Program [21N/2019]</p>					
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			incident power) at 300 degrees C and 0.69 AW(-1) (57 mW) at 500 degrees C and high internal quantum efficiency of similar to 445% for 300 degrees C and similar to 118% for 500 degrees C.						
43.	Effect of Zn content on structural, morphological and magnetic behavior of Zn _x Co _{1-x} Fe ₂ O ₄ /SiO ₂ nanocomposites	<i>JOURNAL OF ALLOYS AND COMPOUNDS</i> , 792 , pp.432-443 (2019)	Zn _x Co _{1-x} Fe ₂ O ₄ /SiO ₂ (x = 0, 0.25, 0.50, 0.75, 1.00) nanocomposites (NCs) have been investigated through structural, morphological and magnetic measurements. X-ray diffraction and Mossbauer data indicated the presence of nanocrystalline mixed cubic spinel. The lattice parameters gradually decreased with increasing Zn content and follow Vegard's law. The crystallite size, X-ray density and porosity of Zn _x Co _{1-x} Fe ₂ O ₄ decreased with increasing Zn content. The ferrite nanoparticles spherical shape and size (32.0-6.5, 17.5-8.1 and 36.2-18.6 nm for the NCs annealed at 500, 800 and 1100 degrees C,	[PN-III-P4-ID-PCE-2016-0534]; [PN-III-P4-ID-PCCF-2016-0112]; [19PFE/17.10.2018]	Dippong, T; Deac, IG; Cadar, O; Levei, EA; Diamandescu, L; Borodi, G	4.175	0.601	10.1016/j.jallcom.2019.04.059	Q1

			<p>respectively) was established by transmission electron microscopy. The Mossbauer spectra showed the characteristic magnetic patterns of Co and Zn spinels. The shape of hysteresis loops revealed the dependence of superparamagnetic behavior on the structural properties. The saturation magnetization (M-s) and coercive field (H-c) were also influenced by Co substitution with Zn, showing the decrease of M-s and H-c. The replacement of magnetic Co²⁺ with the zero magnetic moment Zn²⁺ induces a gradual reduction of magnetocrystalline anisotropy and decrease of H-c. (C) 2019 Elsevier B.V. All rights reserved.</p>						
44.	Impact on Ferroelectricity and Band Alignment of Gradually Grown	<i>PHYSICA STATUS SOLIDI-RAPID RESEARCH LETTERS</i> , 13 , 1900077 (2019)	The competition between interface barrier in the Schottky-Mott limit and polarization driven mechanism is established during gradual formation of metal (Au) - ferroelectric (BaTiO ₃) interface.	Romanian Ministry of Research and Innovation through the UEFISCDI	Popescu, DG; Husanu, MA; Chirila, C; Pintilie, L; Teodo	3.729	0.79	10.1002/pssr.201900077	Q1

	Au on BaTiO3		<p>X-ray photoelectron spectroscopy provides core level energies and valence band positions in the contact region, to monitor the band alignment from the very first stages of metal deposition on BaTiO3. The band bending at metal/ferroelectric (FE) interface is extracted from the shift of core levels (Ba 3d, Ti 2p) as a function of the metal thickness. It is shown that the interface band alignment mechanism involves a well-defined polarization orientation washing out the bending expected from the work function difference. The sudden modification of the binding energies within ferroelectric at the first 2 angstrom Au indicates that the ferroelectric compensation mechanism triggered by the metal overlayer initiates already at ultrathin top layer, while subsequent growth contributes only at a gradual correction of the potential in the</p>	<p>Agency [PN-III-P4-ID-PCCF2016-0047]; Institute of Atomic Physics [18-ELI/2016]; [PN-II-RU-TE-2014-4-1117]</p>	rescu, CM				
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			FE. The emerging picture is confirmed in first-principle calculation indicating the preferences of Au to grow preferentially to different terminated regions and to stabilize distinct ferroelectric polarization.						
45.	Evaluating the biological potential of some new cobalt (II) complexes with acrylate and benzimidazole derivatives	<i>APPLIED ORGANOMETALLIC CHEMISTRY</i> , 33 , e4976 (2019)	This paper presents the synthesis, physico-chemical and biological properties of four new coordination compounds with mixed ligands: acrylate ion (acr) and benzimidazole/benzimidazole derivatives with the general formula [Co(L)(2)(acr)(2)]center dot nH(2)O [(1) L: benzimidazole (HBzIm), n: 0.5; (2) L: 2-methylbenzimidazole (2-MeBzIm), n: 0.5; (3) L: 5-methylbenzimidazole (5-MeBzIm), n: 0; (4) L: 5,6-dimethylbenzimidazole (5,6-Me(2)BzIm), n: 0]. Their chemical formulae were achieved correlating the chemical analysis with mass spectrometry data, the ligands	European Social Fund/European Social Fund (ESF); Romania Government [SOP HRD/107/1.5/S/82514]; Sectorial Operational Programme Human Resources Development (SOP HRD)	Vlaicu, ID; Olar, R; Maxim, C; Chifiruc, MC; Bleotu, C; Stanica, N; Scaeteanu, GV; Dulea, C; Avram, S; Badea, M	3.259	0.334	10.1002/aoc.4976	Q1

		<p>coordination modes were assigned by Fourier transform-infrared measurements, and the trigonal bipyramidal geometry of cobalt ion in complexes was assigned by data correlation of UV-Vis-NIR spectra and magnetic moments measurements. Single-crystal X-ray diffraction reveals a mononuclear structure with a pentacoordinated cobalt (II) ion, connected to two acrylate coordinated in different modes and two unidentate 5,6-dimethylbenzimidazole ligands for compound (4). The biological tests were performed against several microbial strains, the cytotoxicity was evaluated on HCT8 cellular lines and the cell cycle analysis was performed on HT29 cellular lines. Microbiological assays indicated that Co (II) complexes present a very good to good activity against <i>Candida albicans</i> 1760, <i>Enterococcus</i></p>						
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			<p>faecium E5, Bacillus subtilis ATCC 6683 and Escherichia coli ATCC 25922. Predictive pharmacokinetic (ADME), toxicity and drug-likeness profiles were evaluated for Co (II) complexes. Our results highlight that Co (II) complexes depicted in the present study are suitable to be used as efficient pharmacological agents.</p>						
46.	<p>The Quality of Fe14Cr ODS Powder Alloys During Milling and Upon Heating and Its Impact on the Mechanical Properties of Consolidated Steels</p>	<p><i>METALLURGICAL AND MATERIALS TRANSACTIONS A-PHYSICAL METALLURGY AND MATERIALS SCIENCE</i>, 50A, pp.3282-3294 (2019)</p>	<p>Oxide dispersion-strengthened ferritic steels (ODSFSs) are promising structural materials for applications in fusion and fission power reactors, but further improvement in their (high-temperature) mechanical properties and ferrite phase stability is required. This work demonstrates that an approach to produce Fe14Cr ODSFSs with a stable ferrite phase and improved strength could involve grain size strengthening by long-term milling with a tiny amount of nitrogen. Fe-14Cr-3W-0.4Ti-0.25Y(2)O(3)</p>	<p>European Community of the European Fusion Development Agreement (EFDA) [WP13-MAT]; Romanian Ministry of Research and Innovation [PN19-03, 21N/08.02.2019]; CCDI-UEFISCDI [PN-III-P1-</p>	<p>Mihalache, V; Walter, M; Mercioniu, I; Ordas, N</p>	1.985	0.533	10.1007/s11661-019-05264-3	Q1

		<p>powders were ball-milled up to 170 hours under an argon atmosphere. In addition to X-ray diffraction, the change in product quality during milling and upon heating was thoroughly investigated by more sensitive magnetic and thermal analysis by measuring the saturation magnetization $\sigma(s)$, coercivity $H-c$, Curie temperature $T-c$, and temperature of ferrite-austenite ($\alpha \rightarrow \gamma$) transition $T-\alpha \rightarrow \gamma$. A pronounced modification of magnetic and microstructure parameters was observed when milling over 70 hours and upon heating above 800 degrees C and was found to be generated by long-term milling with a tiny amount of nitrogen. Upon heating, the nitrogen, incorporated during milling, developed a transition region, with the decomposition of</p>	<p>1.2-PCCDI-2017-0871, 47PCCDI/2018]</p>					
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			<p>nitrides precipitated at the earlier stage of heating followed by austenite decomposition, nitrogen degassing, and microstructure refinement to a grain size of a few tenths of a nm (e.g., 28 nm by heating at 910 degrees C of 100-hour milled powder). The resulting ferrite phase with refined grains is highly stable to (further) heating. The powders milled for 70 and 100 hours containing 0.175 and 0.500 wt pct nitrogen, respectively, were consolidated at 1100 degrees C with subsequent annealing at 1050 degrees C and subjected to Vickers hardness and 3-point bending tests. The steel produced from the powder milled for 70 hours shows lower hardness, higher density (close to the theoretical value of 7.8 g/cm³), and fracture strain. The ductility of this ODS alloy (0.075 fracture strain) is comparable with Eurofer97 (0.075 fracture strain), whereas its</p>					
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			<p>strength (2070 MPa ultimate stress) is significantly higher than that of Eurofer97 (1222 MPa ultimate stress). This improvement was attributed to grain size strengthening-the refined grains (promoted by milling with nitrogen) could be effectively pinned by Y-Ti-O dispersoids.</p>						
47.	<p>Electrochemical assay for 20S proteasome activity and inhibition with anticancer drugs</p>	<p><i>TALANTA</i>,199, pp.32-39 (2019)</p>	<p>The majority of eukaryotic regulated protein turnover is performed by the proteasome, a multicatalytic enzyme. Due to the fact that proteasome enzyme abnormal functioning was observed in different malignant cells, the proteasome is becoming a target for medical treatment. In order to evaluate the mechanisms of action of pharmaceutical compounds on proteasome enzyme inhibition, detecting and characterizing its activity is essential. An electrochemical assay that allows the monitoring of the chymotrypsin-like activity and inhibition of the 20S</p>	<p>Romanian Ministry of Research and Innovation de Jesus, CSH; Chiorcea-Paquim, AM; Barsan, MM; Diculescu, VC</p>		4.916	0.762	10.1016/j.talanta.2019.02.052	Q1

			<p>proteasome enzyme, based on the electrochemical detection of an electroactive compound released upon proteolysis of an adequate chymotrypsin-substrate is described. By employing differential pulse voltammetric measurement, the activity of the 20S proteasome enzyme was investigated for different incubation times of 20S with oligopeptide substrate as well as for different concentrations of substrate. Enzyme kinetic parameters were determined by voltammetry and the electrochemical assay compared with fluorescence spectroscopy. Electrochemical quartz crystal microbalance and atomic force microscopy were also used to investigate substrate interaction with the 20S proteasome and their adsorption at the electrode surface. Finally, the new electrochemical assay allowed to</p>						
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			investigate the mechanisms of two different proteasome inhibitor drugs, bortezomib and oprozomib, underlying the applicability of the assay for understanding proteasome inhibitor action.						
48.	The influence of the nanocrystals size and surface on the Yb/Er doped LaF3 luminescence properties	<i>JOURNAL OF ALLOYS AND COMPOUNDS</i> , 791 , pp.1098-1104 (2019)	Up-conversion luminescence and thermoluminescence properties of LaF3 nanocrystals, with sizes of about 20 nm, were studied and discussed in relation to -size and surface related effects. XPS spectra have evidenced the presence of oxidized Er and La ions within a thin layer (of about 1 nm thickness) at the nanocrystals surface, as well as Yb ions bonded with fluorine ions. The green ((H-2(11/2), S-4(3/2)) -> I-4(15/2)) and red (F-4(9/2) -> I-4(15/2)) up-conversion emissions of Er3+ ions are influenced by the relative dominance of Er ions that reside within the thin oxidized layer. The broad thermoluminescence	Romanian Ministry of Research and Innovation through Core Program (2019); POC (European Regional Development Fund, Operational Fund Competitiveness) [54/05.09.2016]	Secu, CE; Matei, E; Negri, C; Secu, M	4.175	0.601	10.1016/j.jallcom.2019.03.267	Q1

			curves are assigned to the recombination of trap defects associated with surface states and within the oxidized surface layer. (C) 2019 Elsevier B.V. All rights reserved.						
49.	Enhanced photoconductivity of embedded SiGe nanoparticles by hydrogenation	<i>APPLIED SURFACE SCIENCE</i> , 479 , pp.403-409 (2019)	We investigate the effect of room-temperature hydrogen-plasma treatment on the photoconductivity of SiGe nanoparticles sandwiched within SiO ₂ layers. An increase in photocurrent intensity of more than an order magnitude is observed after the hydrogen plasma treatment. The enhancement is attributed to neutralization of dangling bonds at the nanoparticles and to passivation of nonradiative defects in the oxide matrix and at SiGe/matrix interfaces. We find that increasing the partial pressure of hydrogen to pressures where H-3(+) and H-2(+) were the dominant ions results in increased photocurrent.	M-ERA. NET Project PhotoNanoP UEFISC DI [33/2016]; PCE project UEFISC DI [122/2017]; Romania Ministry of Research and Innovation through NIMP Core Program [PN16-480102]; Technology Development Fund of the Icelandic Centre for Research	Sultan, MT; Gudmundsson, JT; Manolescu, A; Stoica, T; Ciurea, ML; Svavarsson, HG	5.155	0.671	10.1016/j.apsusc.2019.02.096	Q1

				[159006-0611]					
50.	Multilayer protective coatings obtained by pulsed laser deposition	<i>APPLIED SURFACE SCIENCE</i> , 479 , pp.1124-1131 (2019)	Devices developed for the aeronautic or space industries must be able to operate in harsh environments. In order to protect devices such as microstrip antennae, various coatings have to be used. Herein, we present the results of obtaining YSZ/Al ₂ O ₃ heterostructures by Pulsed Laser Deposition (PLD) for the protection of planar monopole antennas without changing their performances after the deposition process. The theoretical SRIM-TRIM simulation code results on the effects of ionized radiations incident on a YSZ/Al ₂ O ₃ heterostructure, as well as the physical properties of the YSZ/Al ₂ O ₃ thin films obtained by the PLD technique are also presented. The SRIM studies show that at the same energy range the proton penetration depth is higher than the alpha penetration depth, giving	Ministry of National Education and Scientific Research, RDI Program for Space Technology and Advanced Research - STAR [168/20.07.2017]	Ion, V; Scarisoreanu, ND; Bonciu, A; Moldovan, A; Gheneșcu, V; Gheneșcu, M; Banciu, MG; Andrei, A; Dinescu, M	5.155	0.671	10.1016/j.apsusc.2019.02.186	Q1

			insights about the penetration depth of proton and alpha particles in the studied targets. Our goal is to obtain a multilayer structure able to enhance the endurance of the antenna and microwave circuitry in harsh space environment without reducing the performances under nominal operation conditions.						
51.	Direct Immobilization of Biomolecules through Magnetic Forces on Ni Electrodes via Ni Nanoparticles: Applications in Electrochemical Biosensors	<i>ACS APPLIED MATERIALS & INTERFACES</i> , 11 , pp.19867-19877 (2019)	The present work describes a new simple procedure for the direct immobilization of biomolecules on Ni electrodes using magnetic Ni nanoparticles (NiNPs) as biomolecule carriers. Ni electrodes were fabricated by electroplating, and NiNPs were chemically synthesized. The chemical composition, crystallinity, and granular size of Ni electrodes, NiNP, and NiNP-modified Ni electrodes (NiNP/Ni) were determined by X-ray diffraction, scanning electron microscopy, and X-ray	Romanian Ministry of Research and Innovation through Operational Programme Competitiveness [NANO BIOSURF-SMIS 103528, PN19-03, 21 N/08.02. 2019]	Barsana, MM; Enache, TA; Preda, N; Stan, G; Apostol, NG; Matei, E; Kuncser, A; Diclescu, VC	8.456	1.65	10.1021/acsami.9b04990	Q1

			<p>photoelectron spectroscopy (XPS). The electrochemical characterization of Ni electrodes by cyclic voltammetry and electrochemical impedance spectroscopy confirmed the existence of nickel oxides, hydroxides, and oxohydroxide films at the surface of Ni. Magnetic characterization and micromagnetic simulations were performed in order to prove that the magnetic force is responsible for the immobilization process. Further, Ni electrodes were employed as amperometric sensors for the detection of hydrogen peroxide because it is an important performance indicator for a material to be applied in biosensing. The working principle for magnetic immobilization of the enzyme-functionalized NiNP, without the use of external magnetic sources, was demonstrated for</p>					
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			glucose oxidase (GOx) as a model enzyme. XPS results enabled to identify the presence of GOx attached to the NiNP (GOx-NiNP) on Ni electrodes. Finally, glucose detection and quantification were evaluated with the newly developed GOx-NiNP/Ni biosensor by amperometry at different potentials, and control experiments at different electrode materials in the presence and absence of NiNP demonstrated their importance in the biosensor architecture.						
52.	Effect of high gamma radiations on physical properties of In ₂ S ₃ thin films grown by chemical bath deposition for buffer layer	<i>RESULTS IN PHYSICS</i> , 13 ,102115 (2019)	Polycrystalline In ₂ S ₃ thin films have been grown on SnO ₂ /glass substrates by chemical bath deposition technique and irradiated at different high gamma doses 3, 7, 15 and 40 kGy. X-ray diffraction, Scanning Electron Microscope (SEM), Energy Dispersive Spectroscopy (EDS), Spectrophotometer, Photoluminescence and Thermoluminescence		Souli, M; Bensalem, Y; Secu, M; Bartha, C; Enculescu, M; Mejri, A; Kamun-Turki, N; Badica, P	3.042	0.368	10.1016/j.rinp.2019.02.051	Q1

	applicat ions	<p>were used to investigate physical properties of In₂S₃ thin films induced by gamma irradiation. After being irradiated, structural properties of In₂S₃ thin films have shown that preferred orientation has been moved from (4 0 0) plan at $2\theta(1)=33.42$ degrees to a new created orientation at $2\theta(2)=38.06$ degrees for 40 kGy gamma dose. EDS analysis has shown that atomic percentage (S/In) has been strongly varied for 40 kGy which indicate significant changes in stoichiometry. Thermoluminescence of irradiated In₂S₃ thin films has revealed a good sensitivity toward absorbed gamma dose. After irradiation, optical transmittance of In₂S₃ thin films has been increased from 50% to a maximum value of 70% in the visible range for 15 kGy dose. Band gap energy E_g has been slightly decreased. Other optical parameters such</p>						
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			absorption and extinction coefficients, refractive index and permittivity have been determined. These experimental results show that gamma radiations can be used for tuning physical properties of In ₂ S ₃ thin films for photovoltaic applications.						
53.	Structure and magnetic properties of highly coercive L1(0) nanocomposite FeMnPt thin films	<i>MATERIALS CHARACTERIZATION</i> , 152 , pp.245-252 (2019)	Among the rare-earth-free systems that are currently investigated in search for novel permanent magnet solutions for various applications, with special emphasis on the magnets required to operate in extreme conditions, the FePt binary system, where the tetragonal hard magnetic L1(0) phase can be formed by suitable microstructure processing via annealing, has been extensively studied. A variation of this system, the ternary FeMnPt system, has been also recently shown to exhibit good permanent magnet behavior due to the suitable formation of the L1(0) phase. In	Romanian Ministry of Research and Innovation [PN-III-P4-ID-PCE-2016-0833]; EU Competitiveness Operational Programme POC Project [P_37_697]	Crisan, O; Vasiliu, F; Crisan, AD; Meroni, I; Schintie, G; Leca, A	3.22	0.74	10.1016/j.matchar.2019.04.028	Q1

			<p>addition to be likely to form the L1(0) phase as its parent binary system, the ternary FeMnPt benefits from the reduced costs due to the reduced amount of Pt and may exhibit particular magnetic structure due to the influence of the antiferromagnetic Mn. In the present work, we have employed a mixed sputtering technique, based on the use of both elemental and compound target for developing L1(0) FeMnPt thin films with specific structural features that triggers better magnetic performances in terms of coercivity and maximum energy products. The as-obtained films have been thermally annealed and characterized by means of transmission electron microscopy, X-ray diffraction, Mossbauer spectroscopy, magneto-optic Kerr effect (MORE) and SQUID magnetometry. The aim is to correlate the Mn induced</p>					
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			microstructural and lattice changes with the magnetic properties and to optimize the microstructure for an early formation of the ordered L1(0) phase and increased coercivity compared to the as-prepared, structurally disordered, face centred cubic initial state of the films.						
54.	Hybrid layered double hydroxides-curcumin thin films deposited via Matrix Assisted Pulsed Laser Evaporation-MAPLE with photoluminescence properties	<i>APPLIED SURFACE SCIENCE</i> , 478 , pp.754-761 (2019)	Curcumin (CR) is a natural compound with a well-known antioxidant and therapeutic activity. Its stability may be enhanced when incorporated in different matrices as a layered double hydroxides (LDH) matrix. Curcumin intercalated layered double hydroxide nanohybrid is a potential drug delivery system for effective photodynamic therapy in human breast cancer or skin cancer. The synthesis of the hybrid LDH-CR powder implies the dissolution of CR in water or in another organic solvent which is miscible with water. Since the solubility of curcumin in water is	Executive Agency for Higher Education, Research, Development and Innovation Funding (UEFISCDI) Romania [PN-III-P1-1.2-PCCDI-2017-0387 (PCCDI-80/2018), PN-III-P1-1.1-PD-2016-1072]	Andrei, F; Vlad, A; Birjega, R; Tozar, T; Secu, M; Urzica, I; Dinescu, M; Zavoianu, R	5.155	0.671	10.1016/j.apsusc.2019.02.011	Q1

			<p>very weak, the aim of this study is to investigate the effect of the solvent employed for its dissolution on the structural and physico-chemical photoluminescent properties of the resulting hybrid materials. Four powders of curcumin (CR)-containing Mg_{2.5}Al-LDH hybrids (Mg/Al molar ratio of 2.5) were prepared by coprecipitation (P) and reconstruction (R) using two different solvents for the dissolution of curcumin: (i) an alkaline aqueous solution (A), and (ii) ethanol (E). The reconstruction used the calcinated (460 degrees C for 18 h) form of the parent Mg_{2.5}Al-LDH powder. All the solids were characterized by X-ray diffraction (XRD), and FTIR spectroscopy. The FTIR-ATR spectra of the all the powders except the powder prepared via reconstruction in ethanol exhibit LDH characteristics, consistent with the</p>					
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			<p>XRD results. Matrix Assisted Pulsed Laser Evaporation (MAPLE) was employed for the deposition of hybrid LDH-CR thin films. Aqueous solutions of the as prepared hybrid LDH-CR powders were frozen and used as targets for MAPLE depositions. The films were deposited using a nanosecond laser emitting at 266 nm. MAPLE is considered a "soft" deposition technique suitable to conserve the CR stability. XRD, scanning electron microscopy, FT-IR spectroscopy and fluorescence measurements were used to characterize the deposited films in order to evidence the influence of the preparation methods on the structural and photophysical characteristics of the hybrid LDH-CR films.</p>						
55.	Effect of nickel content on structural, morphological	<i>JOURNAL OF ALLOYS AND COMPOUNDS</i> , 786 , pp.330-340 (2019)	NixCo1-xFe2O4/SiO(2)nanocomposites (x = 0, 0.25, 0.50, 0.75 and 1.00) were synthesized by a modified solgel method. The X-ray diffraction (XRD)	Sectorial Operational Program "Increase of Economic Competit	Dippong, T; Levei, EA; Cadar, O; Deac, IG; Diama	4.175	0.601	10.1016/j.jallcom.2019.01.363	Q1

	<p>and magnetic properties of $Ni_xCo_{1-x}Fe_2O_4/SiO_2$ nanocomposites</p>		<p>patterns revealed the crystalline phases and the crystallite size variation with increasing annealing temperature and Ni content. The lattice constants, cell volume, X-ray density, hopping length in A and B sites, average crystallites size and relative crystallinity calculated from XRD data are consistent with the mixed spinel structure. The transmission electron microscopy images reveal the spherical shape of nanoparticles and their size increase with increasing annealing temperature. The magnetic properties such as saturation magnetization (M-s), remanent magnetization (M-r), coercivity (H-c), magnetic moments per unit cell (n(B)) and anisotropy (K) decrease with increasing Ni content, but they increase with the annealing temperature due to the influence of the cation stoichiometry and their specific sites occupancy. The</p>	<p>iveness" Priority Axis II, INOVA-OPTIMA, [1887, SMIS-CSNR 49164]; Romania Ministry of Research and Innovation, CNCS - UEFISCDI within PNCDI III [PN-III-P1-1.1-MC-2018-0816]; CNCS - UEFISCDI Romania [PN-III-P4-ID-PCE-2016-0534, PN-III-P4-ID-PCCF-2016-0112]; Core Program [PN10N]</p>	<p>ndescu, L; Barbutian, L</p>				
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			<p>Mossbauer spectra showed the characteristic magnetic patterns of Co and Ni spinels and revealed only the presence of Fe³⁺. The Ni-rich nanocomposites presented superparamagnetic behavior, while the Ni-poor nanocomposites ferromagnetic behavior. (C) 2019 Elsevier B.V. All rights reserved.</p>						
56.	<p>CO₂ methanation catalyzed by oriented MoS₂ nanoplatelets supported on few layers graphene</p>	<p><i>APPLIED CATALYSIS B-ENVIRONMENTAL</i>, 245, pp.351-359 (2019)</p>	<p>Powders of molybdenum disulfide platelets strongly grafted on graphene have been prepared by pyrolysis of ammonium alginate containing adsorbed various proportions of (NH₄)₂MoS₄. After pyrolysis, formation of MoS₂ supported on graphene was determined by XRD and electron microscopy and spectroscopic techniques. MoS₂/G exhibits catalytic activity for the methanation of CO₂, the performance being optimal at intermediate loadings. The catalytic activity of</p>	<p>UEFISC DI [PN-III-P4-ID-PCE-2016-0146, 121/2017, PN-III-P1-1.2-PCCDI-2017-0541]; Spanish Ministry of Economy and Competitiveness [CTQ2015-69653-CO2-R1]; Generalitat Valencia [Promete</p>	<p>Primo, A; He, JB; Jurca, B; Cojocaru, B; Bucur, C; Parvulescu, VI; Garcia, H</p>	14.229	1.918	10.1016/j.apcatb.2018.12.034	Q1

			sharply contrasts with that of bulk MoS ₂ that promotes the reverse water gas shift, affording CO as the main product. Characterization of the spent MoS ₂ /G catalyst shows the partial conversion of external MoS ₂ into MoO ₃ . Comparison of the catalytic activity of MoS ₂ /G with that of MoO ₃ /G shows that the latter is less efficient, but more selective for CO ₂ methanation.	o 2017-083]					
57.	Highly sensitive near infrared luminescent nanothermometers based on binary mixture	<i>JOURNAL OF ALLOYS AND COMPOUNDS</i> , 785 , pp.250-259 (2019)	We propose a simple strategy to obtain a luminescence intensity ratio nanothermometer operating in the near infrared range (1000-1700 nm) by use of binary mixtures of lanthanide doped Y ₂ O ₃ selected as 1% Ho - Y ₂ O ₃ + 1%Er - Y ₂ O ₃ and 1%Ho - Y ₂ O ₃ + 1%Nd - Y ₂ O ₃ . All nanoparticles were synthesized by citrate complexation method and thermally annealed at 800 degrees C. The temperature evolution of the emission properties was monitored in the range of 297-472 K and analyzed in	Romanian Ministry of Research and Innovation [PN 18 13 01 02, PN19-030101]; Romanian National Authority for Scientific Research and Innovation, CNCS - UEFISCDI [PN-III-P4-ID-	Avram, D; Colbea, C; Florea, M; Tiseanu, C	4.175	0.601	10.1016/j.jallcom.2019.01.162	Q1

			<p>terms of emission shape, intensity, dynamics, excitation wavelength, acquisition mode and weight ratio of the binary mixture. A maximum relative sensitivity of 1%K⁻¹ at 297 K was recorded for the 3/1 weight ratio Ho - Y₂O₃ + Er - Y₂O₃ binary mixture upon excitation at 536.8 nm. For the more appropriate excitation wavelength for bioimaging applications at 649.7 nm, a relative sensitivity of 0.55-0.6% K⁻¹ was recorded in the relevant physiological temperature range (300-320 K) for the 3/1 weight ratio Ho - Y₂O₃ + Er - Y₂O₃ binary mixture. To the best of our knowledge, our study also represents a first report on the near -infrared luminescence (around 1200 nm) lifetime thermometry for a Ho doped nanoparticle. Comparison with the literature demonstrates that our system represents a</p>	PCE2016-0692]					
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			promising near-infrared thermometer, with a non-sophisticated and reproducible configuration that is open to multiple optimization routes. (C) 2019 Elsevier B.V. All rights reserved.						
58.	The hysteresis-free behavior of perovskite solar cells from the perspective of the measurement conditions	<i>JOURNAL OF MATERIALS CHEMISTRY C</i> , 7, pp.5267-5274 (2019)	We investigate how far the hysteresis-free behavior of perovskite solar cells can be reproduced using particular pre-conditioning and measurement conditions. As there are currently more and more reports of perovskite solar cells without J-V hysteresis it is crucial to distinguish between genuine performance improvements and measurement artifacts. We focus on two of the parameters that influence the dynamic J-V scans, namely the bias scan rate and the bias poling voltage, and point out measurement conditions for achieving a hysteresis-free behavior. In this context we discuss the suitability of	National Ministry of Research and Innovation [PN18-090205, PN19-030101]; UEFISCDI [PN-III-P1-1.1-PD-2016-1546, PN-III-P4-ID-PCE-2016-0692]	Nemnes, GA; Beslea, C; Tomulescu, AG; Leonard, LN; Stancu, V; Florea, M; Manolescu, A; Pintilie, I	6.641	1.159	10.1039/c8tc05999c	Q1

			<p>defining a hysteresis index (HI) for the characterization of dynamic J-V scans. Using HI, aging effects are also investigated, establishing a potential connection between the sample degradation and the variation of the maximal hysteresis on one hand, and the relaxation time scale of the slow process on the other hand. Pre-poling induced recombination effects are identified. In addition, our analysis based on sample pre-biasing reveals potential indications regarding two types of slow processes, with two different relaxation time scales, which provides further insight regarding ionic migration.</p>						
59.	<p>La_{0.75}Sr_{0.25}XO₃ (X = Fe, Mn or Cr) with coking tolerance for CH₄/H₂O reaction : effect</p>	<p><i>CATALYSIS SCIENCE & TECHNOLOGY</i>, 9, pp.2351-2366 (2019)</p>	<p>The influence of the B type cation from the ABO₃ perovskite formulation La_{0.75}Sr_{0.25}XO₃ (LSX, where X is Fe, Mn or Cr) on the C and H₂S tolerance and its catalytic activity for the methane/water reaction has been studied. The samples</p>	<p>French Ministry of Foreign Affairs [38371YC]; UEFISC DI [83BM/2017]</p>	<p>Florea, M; Somacescu, S; Postole, G; Urda, A; Neatu, F; Neatu, S; Massi</p>	5.726	1.131	10.1039/c9cy00065h	Q1

	<p>of H₂S on catalytic performance</p>	<p>were prepared by a simple and cost-efficient citrate method. The exhaustive characterization of the bulk and surface properties of the catalysts has been accomplished by means of complementary methods: nitrogen adsorption-desorption isotherm measurements, XRD, TPR and XPS. Their catalytic properties in CH₄/H₂O reactions (CH₄/H₂O molar ratios of 10 and 1) were studied in the presence and absence of H₂S in order to evaluate their potential use as anode materials in solid oxide fuel cells operated on natural gas. Before addition and upon suppression of H₂S, the activity varied in the following order: LSF > LSM >> LSC. This correlates with the oxygen mobility determined by TPR. A strong promoting effect of H₂S on the catalytic activity is observed for LSC, which makes this sample the most active of the series, while H₂S has a</p>		<p>n, L; Gelin, P</p>				
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			<p>weak influence on the other perovskites. The oxygen vacancies and the presence of S²⁻ were identified as being responsible for the enhanced catalytic activity upon H₂S addition.</p>						
60.	<p>Tailoring the Dopant Distribution in ZnO:Mn Nanocrystals</p>	<p><i>SCIENTIFIC REPORTS</i>, 9, 6894 (2019)</p>	<p>The synthesis of semiconductor nanocrystals with controlled doping is highly challenging, as often a significant part of the dopant ions are found segregated at nanocrystals surface, even forming secondary phases, rather than incorporated in the core. We have investigated the dopant distribution dynamics under slight changes in the preparation procedure of nanocrystalline ZnO doped with manganese in low concentration by electron paramagnetic resonance spectroscopy, paying attention to the formation of transient secondary phases and their transformation into doped ZnO. The acidification of the</p>	<p>UEFISCDI [PN18-110201]; Romanian Ministry of Research and Innovation [PN-II-RU-TE-2014-4-0939, PN-III-P4-ID-PCE-2016-0529, PN-III-P1-1.2-PCCDI-2017-0062, 12/2018]</p>	<p>Ghica, D; Vlaicu, ID; Stefan, M; Maraloiu, VA; Joita, AC; Ghica, C</p>	4.011	1.286	10.1038/s41598-019-43388-z	Q1

			<p>starting solution in the co-precipitation synthesis from nitrate precursors lead to the decrease of the Mn^{2+} ions concentration in the core of the ZnO nanocrystals and their accumulation in minority phases, until similar to 79% of the Mn^{2+} ions were localized in a thin disordered shell of zinc hydroxynitrate (ZHN). A lower synthesis temperature resulted in polycrystalline Mn-doped ZHN. Under isochronal annealing up to 250 degrees C the bulk ZHN and the minority phases from the ZnO samples decomposed into ZnO. The Mn^{2+} ions distribution in the annealed nanocrystals was significantly altered, varying from a uniform volume distribution to a preferential localization in the outer layers of the nanocrystals. Our results provide a synthesis strategy for tailoring the dopant distribution in ZnO nanocrystals for</p>						
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			applications ranging from surface based to ones involving core properties.						
61.	Dextran-Coated Zinc-Doped Hydroxyapatite for Biomedical Applications	<i>POLYMERS</i> , 11, 1886 (2019)	Dextran-coated zinc-doped hydroxyapatite (ZnHApD) was synthesized by an adapted sol-gel method. The stability of ZnHApD nanoparticles in an aqueous solution was analyzed using ultrasonic measurements. The analysis of the evolution in time of the attenuation for each of the frequencies was performed. The X-ray diffraction (XRD) investigations exhibited that no impurity was found. The morphology, size and size distribution of the ZnHApD sample was investigated by transmission electron microscopy (TEM) and scanning electron microscopy (SEM). The TEM and SEM results showed that the ZnHApD particles have an ellipsoidal shape and a narrow distribution of sizes. The cell growth and toxicity of HEK-293 cells were	Romanian Ministry of Research and Innovation [PN-III-P1-1.2-PCCDI-2017-0629, 43PCCDI/2018]	Predoi, D; Iconaru, SL; Predoi, MV	3.164	0.592	10.3390/polym11050886	Q1

			<p>investigated on the ZnHApD solution for four different concentrations and analyzed after 24 and 48 h. The ZnHApD solution presented a non-toxic activity against HEK-293 cells for all analyzed concentrations. The antibacterial assay revealed that all the tested microorganisms were inhibited by the ZnHApD dispersion after 24 and 48 h of incubation. It was observed that the effect of the ZnHApD solution on bacteria growth depended on the bacterial strain. The <i>Porphyromonas gingivalis</i> ATCC 33277 bacterial strain was the most sensitive, as a growth inhibition in the presence of 0.075 $\mu\text{g/mL}$ ZnHApD in the culture medium was observed.</p>						
62.	Pulsed Laser Fabrication of TiO ₂ Buffer Layers for Dye Sensitized	<i>NANOMATERIALS</i> , 9, 746 (2019)	We report on the fabrication of dye-sensitized solar cells with a TiO ₂ buffer layer between the transparent conductive oxide substrate and the mesoporous TiO ₂ film, in order to improve the	Romanian Ministry of Research and Innovation through the Core Programme	Lungu, J; Socol, G; Stan, GE; Stefan, N; Luculescu, C;	4.034	0.704	10.3390/nano9050746	Q1

Solar Cells		<p>photovoltaic conversion efficiency of the device. The buffer layer was fabricated by pulsed laser deposition whereas the mesoporous film by the doctor blade method, using TiO₂ paste obtained by the sol-gel technique. The buffer layer was deposited in either oxygen (10 Pa and 50 Pa) or argon (10 Pa and 50 Pa) onto transparent conducting oxide glass kept at room temperature. The cross-section scanning electron microscopy image showed differences in layer morphology and thickness, depending on the deposition conditions. Transmission electron microscopy studies of the TiO₂ buffer layers indicated that films consisted of grains with typical diameters of 10 nm to 30 nm. We found that the photovoltaic conversion efficiencies, determined under standard air mass 1.5 global (AM 1.5G) conditions, of the</p>	[LAPLAS VI 16N/08.0 2.2019]	Georgescu, A; Popescu-Pelin, G; Prodan, G; Girtu, MA; Mihailescu, IN				
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			<p>solar cells with a buffer layer are more than two times larger than those of the standard cells. The best performance was reached for buffer layers deposited at 10 Pa O₂. We discuss the processes that take place in the device and emphasize the role of the brush-like buffer layer in the performance increase.</p>						
63.	<p>Multiferroic (Nd,Fe)-doped PbTiO₃ ceramics with coexistent ferroelectricity and magnetism at room temperature</p>	<p><i>CERAMICS INTERNATIONAL</i>, 45, pp.9390-9396 (2019)</p>	<p>We report the structural, dielectric, elastic, ferroelectric and ferromagnetic properties of multiferroic (Nd, Fe)doped PbTiO₃ perovskite ceramics with composition (Pb-0.88 Nd-0.08)(Ti-0.94 Fe-0.04 Mn-0.02)O₃, prepared by different solid state reaction methods: the first one based on a single-stage calcination (Method I) and the second based on a double-stage calcination (Method II). Structural, dielectric and anelastic measurements evidenced a double phase transition for samples prepared by Method I, which has</p>	<p>Joint Project CNR, Italy - Romania Academy "Study and Development of Single-Phase Multiferric Perovskite Ceramic and Thin Films for Multifunctional Devices"; European Union (EU);</p>	<p>Craciun, F; Cordeiro, F; Cernea, M; Fruth, V; Atkins, I; Stanica, N; Vasile, BS; Trusca, R; Iuga, A; Galizia, P; Galassi, C</p>	3.45	0.454	10.1016/j.ceramint.2018.08.147	Q1

			<p>been attributed to phase separation. This phase separation has been confirmed also by TEM and HRTEM investigations. Samples prepared by Method II showed a single phase transition from paraelectric to ferroelectric phase. We found coexistent ferroelectric and ferromagnetic properties, also at room-temperature, but only for ceramics prepared by Method II. The crucial role of calcination process for avoiding phase separation and obtaining homogeneous structures with ferroelectric and ferromagnetic order is underlined.</p>	Romanian Government, under POS-CCE project CEURE MAVSU [01/01.03.2009]; [PN09-450]					
64.	<p>Deposition temperature influence on the wear behaviour of carbon-based coatings deposited on</p>	<p><i>APPLIED SURFACE SCIENCE</i>, 475, pp.762-773 (2019)</p>	<p>This paper presents an evaluation regarding the influence of substrate material characteristics and deposition parameters on the tribological behaviour of carbon-based coatings. Chromium nitride ceramic interlayers and carbon-based thin films were deposited by</p>	<p>PRO-DD (POSCC E, O.2.2.1.) [123, 11/2009, SMIS 2637]</p>	<p>Feldioaran, D; Cristea, D; Tieraan, M; Croitoru, C; Gabor, C; Jakab-Farkas, L; Cunha, L;</p>	5.155	0.671	<p>10.1016/j.apsusc.2019.01.028</p>	Q1

	hardened steel		<p>magnetron sputtering on hardened AISI 5115 (16MnCr5) case hardening steel. The physical vapour deposition (PVD) deposition was performed at three different temperatures: 180 degrees C, 200 degrees C and 250 degrees C. The chemical composition of the samples was assessed by Rutherford Backscattering Spectroscopy (RBS), the structure by X-ray Diffraction (XRD), and the surface morphology by Atomic Force Microscopy (AFM). The surface chemistry was analysed by X-ray Photoelectron Spectroscopy (XPS) and Raman Spectroscopy. The coatings are homogeneous, amorphous, with a smooth surface. The mechanical behaviour has been assessed on a pin-on disk rotational tribometer (wear characteristics), on a micro scratch tester (adhesion to the substrate), by ball-</p>	<p>Barra das, NP; Alves, E; Craciun, V; Marin, A; Moura, C; Leme, J; Socol, M; Craciun, D; Cosnita, M; Munteanu, D</p>				
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			cratering (film thickness) and by nanoindentation (hardness and the modulus of elasticity). A strong correlation has been observed between the substrate characteristics and, more importantly, the deposition temperature, and the mechanical properties of the assembly. The fracture toughness is positively influenced by the presence of the ceramic chromium nitride interlayer. The modulus of elasticity and friction coefficient (both in dry and lubricated conditions) are decreased for higher deposition temperatures, however the higher deposition temperature negatively affects the mechanical characteristics of the steel substrate.						
65.	Negative ion-induced deuterium retention in mixed W-Al	<i>SURFACE & COATINGS TECHNOLOGY</i> , 363 , pp.273-281 (2019)	Co-sputtering of tungsten-aluminum fusion relevant materials in a dual-High Power Impulse Magnetron Sputtering discharge, operated in different Ar-D-2 gas mixtures,	EURATOM research and training programme 2014-2018 [633053]	Dinca, P; Tiron, V; Velicu, IL; Porosnicu, C;	3.192	0.512	10.1016/j.surfcoat.2019.02.019	Q1

layers co-deposited in dual-HiPIMS		<p>was investigated in gas phase by means of energy-resolving mass spectrometry. Experimental results indicate that the total ion flux and its composition are strongly dependent on sputtering gas composition and the average power applied to the targets. During single HiPIMS operation with W target, the D-ions are the most abundant species. The measured D- ion flux shows an increase with the rising of D-2 content in Ar-D-2 gas mixture and a linear increase with the power applied to the W target. In contrast, during dual-HiPIMS operation, a decrease of D- ion flux was observed when the input power applied to the Al target was increased. The origin of different deuterium ion species and retention mechanisms are discussed. The surface morphology, microstructure and chemical composition of the W-Al coatings obtained in Ar-D-2, were investigated by</p>	<p>; POSCCE -O 2.2.1, SMIS-CSNR 13984-901 [257/28.09.2010]</p>	<p>Butoi, B; Velea, A; Grigore, E; Costin, C; Lungu, CP</p>				
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			<p>means of, Atomic Force Microscopy, X-ray diffraction and Glow Discharge Optical Emission Spectroscopy. GDOES depth profiles show the presence of a large amount of deuterium (up to 21 at.%) in the mixed W-Al layers and indicate that the D retention in the mixed W-Al layers is mainly related to the W in-depth concentration and less dependent on the Al one. The intense and energetic bombardment of the growing film with D-ions seems to be responsible for the large amount of D retained in the W-Al layers.</p>						
66.	<p>Growth of Ag(111) on Si(111) with nearly flat band and abrupt interface</p>	<p><i>APPLIED SURFACE SCIENCE</i>, 473, pp.433-441 (2019)</p>	<p>Growth of Ag films of up to 30 nm thickness on Si(111) 7 x 7 at room temperature is investigated by low energy electron diffraction (LEED), X-ray photoelectron spectroscopy (XPS) and scanning tunneling microscopy (STM). LEED revealed the coexistence of Ag and Si spots starting with 1 monolayer (ML) of Ag</p>	<p>Romanian Ministry for Research and Innovation through the NIMP Core Program [PN18-11/2018]; UEFISCDI Agency</p>	<p>Bocirnea, AE; Costescu, RM; Apostol, NG; Teodorescu, CM</p>	5.155	0.671	<p>10.1016/j.apsusc.2018.12.167</p>	Q1

		<p>deposited. The Ag lattice constant, starting with 25 ML, is slightly higher than for bulk Ag and increase linearly with Ag thickness, reaching about 4.2 nm for the thickest films. The average terrace widths detected from LEED spot profile analysis are about 30 nm for clean Si(1 1 1) 7 x 7 and about 5.5 nm for the thickest Ag(1 1 1) film, in agreement with STM observations. The intensity variation of core levels analyzed by XPS is taken into account by a model assuming the initial formation of Ag islands with linear variation of coverage vs. the amount of Ag deposited, followed by growth in a quasi layer-by-layer mode. The interface barrier is in the range of 0.4 eV, lower than all values reported previously. Ag deposited on Si(1 1 1) 7 x 7 at room temperature provides flat Ag(1 1 1) for synthesis of 2D materials, and may be used for low barrier Schottky diodes.</p>	<p>[PN-III-P1-1.2-PCCDI-2017-0152, 75PCCDI/2018]; Institute of Atomic Physics [18-ELI/2016]</p>					
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67.	New electrochemical sensor based on CoQ(10) and cyclodextrin complexes for the detection of oxidative stress initiators	<i>ELECTROCHIMICA ACTA</i> , 302 , pp.441-448 (2019)	The development of coenzyme Q(10) (CoQ(10)) based electrochemical sensor for the detection of oxidative stress initiators is described for the first time. The sensor relies on CoQ(10) redox properties. CoQ(10) was immobilized at the surface of glassy carbon electrodes (GCE) in combination with cyclodextrins (CD), alpha-CD or beta-CD, that ensure the formation of a well dispersed CoQ(10) film. Nanostructured thin films of CoQ(10) alone and in complexes with alpha-CD or beta-CD at the electrode surface were characterized by scanning electron microscopy (SEM) and Fourier-transformed infrared spectroscopy (FTIR), enabling to identify the morphology of the films and the interactions between the CoQ(10) and CD. Nafion (R) was used to ensure sensor stability. The optimization of the CoQ(10) sensor configuration was	L'Oreal-UNESCO for Women in Science Program-Romania ; Romanian Ministry of Research and Innovation through Operational Programme Competitiveness 2014-2020 [NANO BIOSURF-SMIS 103528, PN18-110101]	Barsana, MM; Diculescu, VC	5.383	0.81	10.1016/j.electacta.2019.02.060	Q1
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			<p>made by assessing CoQ(10) redox properties through cyclic voltammetry (CV) and electrochemical impedance spectroscopy (EIS), correlated with the results obtained from SEM and FTIR characterization. Next, the sensor in the optimized configuration, GCE/alpha-CD + CoQ(10)/Nafion (R), was applied for the detection of oxidant molecules, hydrogen peroxide and the superoxide radical, through the evaluation of the CoQ(10) redox properties monitored by fixed potential chronoamperometry and square wave voltammetry (SWV). (C) 2019 Elsevier Ltd. All rights reserved.</p>						
68.	Radial heterojunction based on single ZnO-CuxO core-shell nanowire for photode	<i>SCIENTIFIC REPORTS</i> , 9, 553 (2019)	ZnO-CuxO core-shell radial heterojunction nanowire arrays were fabricated by a straightforward approach which combine two simple, cost effective and large-scale preparation methods: (i) thermal oxidation in air of a zinc foil	Executive Agency for Higher Education, Research, Development and Innovation Funding	Costas, A; Florica, C; Preda, N; Apostol, N; Kuncser, A; Nitescu, A;	4.011	1.286	10.1038/s41598-019-42060-w	Q1

	lector applications		for obtaining ZnO nanowire arrays and (ii) radio frequency magnetron sputtering for covering the surface of the ZnO nanowires with a CuxO thin film. The structural, compositional, morphological and optical properties of the high aspect ratio ZnO-CuxO core-shell nanowire arrays were investigated. Individual ZnO-CuxO core-shell nanowires were contacted with Pt electrodes by means of electron beam lithography technique, diode behaviour being demonstrated. Further it was found that these n-p radial heterojunction diodes based on single ZnO-CuxO nanowires exhibit a change in the current under UV light illumination and therefore behaving as photodetectors.	(UEFISCDI), Romania [PN-III-P2-2.1-PED-2016-1249, IDEI 124/2017]; Romanian Ministry of Research and Innovation [PN18-11]	Enculescu, I				
69.	Evaluation of Antibacterial Activity of Zinc-Doped Hydroxyapatite	<i>NANOMATERIALS</i> , 9, 515 (2019)	This study proves that the new developed zinc-doped hydroxyapatite (ZnHAp) colloids by an adapted sol-gel method can be widely used in the	Romanian Ministry of Research and Innovation [PN-III-P1-	Predoiu, D; Iconaru, SL; Predoiu, MV; Motilca-Heino,	4.034	0.704	10.3390/nano9040515	Q1

	<p>Colloids and Dispersion Stability Using Ultrasounds</p>		<p>pharmaceutical, medical, and environmental industries. ZnHAp nanoparticles were stabilized in an aqueous solution, and their colloidal dispersions have been characterized by different techniques. Scanning Electron Microscopy (SEM) was used to get information on the morphology and composition of the investigated samples. Energy-dispersive X-ray spectroscopy (EDX) analysis confirmed the elemental compositions of ZnHAp colloidal dispersions. The homogeneous and uniform distribution of constituent elements (zinc, calcium, phosphorus, oxygen) was highlighted by the obtained elemental mapping results. The X-ray diffraction (XRD) results of the obtained samples showed a single phase corresponding to the hexagonal hydroxyapatite. The characteristic bands of the hydroxyapatite structure were also evidenced by</p>	<p>1.2-PCCDI-2017-0629, 43PCCDN I/2018]</p>	<p>M; Guegan, R; Buton, N</p>				
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			<p>Fourier-transform infrared spectroscopy (FTIR) analysis. For a stability assessment of the colloidal system, zeta-potential for the ZnHAp dispersions was estimated. Dynamic light scattering (DLS) was used to determine particles dispersion and hydrodynamic diameter (D-HYD). The goal of this study was to provide for the first time information on the stability of ZnHAp particles in solutions evaluated by non-destructive ultrasound-based technique. In this work, the influence of the ZnHAp colloidal solutions stability on the development of bacteria, such as Escherichia coli (E. coli) and Staphylococcus aureus (S. aureus), was also established for the first time. The antimicrobial activity of ZnHAp solutions was strongly influenced by both the stability of the solutions and the amount of Zn.</p>					
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70.	Effect of the process control agent in the ball-milled powders and SPS-consolidation temperature on the grain refinement, density and Vickers hardnesss of Fe14Cr ODS ferritic alloys	<i>POWDER TECHNOLOGY</i> , 347, pp.103-113 (2019)	Fe-14Cr-0.4Ti-0.25Y(2)O(3) ferritic steels were produced by varying the amount of residual process control agent, PCA (ethanol), in the ball-milled powders and changing the spark-plasma-sintering, SPS, temperature. Near theoretical density (99.3%), high Vickers hardness (501-920 HV, measured by applying a load of 100 g for 5 s) and fine grain size (26-36 nm), very stable against heating, can be achieved on ODS ferritic steels, consolidated from powders with a low amount of PCA and processing temperature in the range of 1000 degrees C-1100 degrees C. Additional grain refinement occurs near alpha -> gamma transition which is generated by the reaction of the traces of PCA with the ferritic matrix upon heating. High local temperatures and the evolved thermally activated processes, at the contact points between particles/at	European CommunityEuropean Community (EC) [WP13-MAT]; Romania Ministry of Research and Innovation [PN18-110101]; CCDI-UEFISCDI [PN-III-P1-1.2-PCCDI-2017-0871, 47PCCDI/2018]	Mihalache, V; Mercioniu, I; Velea, A; Palade, P	3.413	0.588	10.1016/j.powtec.2019.02.006	Q1
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			<p>the particle surfaces during SPS-consolidation, were demonstrated to be the main factors responsible for improved densities and hardness. The role of PCA in the sintering, thermal and microstructure particularities and its impact on the quality of the final steel was thoroughly analysed throughout the work. (C) 2019 Elsevier B.V. All rights reserved.</p>						
71.	Spontaneous symmetry breaking in the laser transition	<i>PHYSICAL REVIEW B</i> , 99 , 115313 (2019)	<p>In analogy with equilibrium phase transitions, we address the problem of the instability to symmetry-breaking perturbations of systems undergoing a laser transition. The symmetry in question is the U(1) invariance with respect to a phase factor, and the perturbation is a coherent field E, coupled to the exciton. At the rate-equation level we analyze first the case of a cavity containing a single, two-level emitter, and then a chain of such cavities interacting by photon-hopping</p>	CNCS-UEFISCDI Grant [PN-III-P4-ID-PCE-2016-0221]	Gartner, P	3.736	1.089	10.1103/PhysRevB.99.115313	Q1

			<p>processes. In both cases, spontaneous symmetry breaking takes place when the system is in the lasing phase. For the laser transition, the analog of the thermodynamic limit is the scaling limit of vanishing cavity loss and light-matter coupling, $\kappa \rightarrow 0$, $g \rightarrow 0$, so that g^2/κ remains finite. We show that in the lasing regime, anomalous averages persist in the $E \rightarrow 0$ limit, provided that the scaling limit is performed first. Lasing diagnosis based on robust anomalous averages is compared numerically with the familiar coherence criterion $g^{(2)}(0) = 1$, and the advantages of the former are discussed.</p>						
72.	Next frontiers in cleaner synthesis: 3D printed graphene-supported CeZrLa mixed-oxide	<i>JOURNAL OF CLEANER PRODUCTION</i> , 2019, pp.606-614 (2019)	A rapidly-growing 3D printing technology is innovatively employed for the manufacture of a new class of heterogeneous catalysts for the conversion of CO ₂ into industrially relevant chemicals such as cyclic carbonates. For the	EPSRC Grand Challenge Network, the CO ₂ Chem for Seedcorn Grant (2016); HEFCE funding through	Middelkoop, V; Slater, T; Florea, M; Neatu, F; Danaci, S; Onyenkeadi, V;	6.395	0.864	10.1016/j.jclepro.2018.12.274	Q1

	<p>nanocatalyst for CO₂ utilisation and direct propylene carbonate production</p>		<p>first time, directly printed graphene-based 3D structured nanocatalysts have been developed combining the exceptional properties of graphene and active CeZrLa mixed-oxide nano particles. It constitutes a significant advance on previous attempts at 3D printing graphene inks in that it does not merely explore the printability itself, but enhances the efficiency of industrially relevant reactions, such as CO₂ utilisation for direct propylene carbonate (PC) production in the absence of organic solvents. In comparison to the starting powder, 3D printed GO-supported CeZrLa catalysts showed improved activity with higher conversion and no noticeable change in selectivity. This can be attributed to the spatially uniform distribution of nanoparticles over the 2D and 3D surfaces, and the larger surface area</p>	<p>the UK Research Partnership Investment Funding (UKRPIF) Manchester RPIF Round 2</p>	<p>Boone, K; Saha, B; Baragau, LA; Kellici, S</p>				
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			<p>and pore volume of the printed structures. 3D printed GO-supported CeZeLa catalysts compared to unsupported 3D printed samples exhibited higher selectivity and yield owing to the great number of new weak acid sites appearing in the supported sample, as observed by NH₃-TPD analysis. In addition, the catalyst's facile separation from the product has the capacity to massively reduce materials and operating costs resulting in increased sustainability. It convincingly shows the potential of these printing technologies in revolutionising the way catalysts and catalytic reactors are designed in the general quest for clean technologies and greener chemistry. 2019 Elsevier Ltd. All rights reserved.</p>						
73.	Very large remanent polarization in ferroelectric	<i>APPLIED PHYSICS LETTERS</i> , 114 , 112901 (2019)	Plasma assisted atomic oxygen deposition was used to grow polycrystalline ferroelectric Hf _{1-x} Zr _x O ₂ (x = 0.5-0.7) on technologically	European Union European Union (EU) [780302 -	Zacharakis, C; Tsipas, P; Chaitoglou, S;	3.521	0.866	10.1063/1.5090036	Q1

	<p>Hf_{1-x}Zr_xO₂ grown on Ge substrates by plasma assisted atomic oxygen deposition</p>		<p>important (100) Germanium substrates showing sharp crystalline interfaces free of interfacial amorphous layers and strong evidence for the presence of a predominately orthorhombic phase. The electrical properties, evaluated using metal-ferroelectric-semiconductor (MFS) capacitors, show symmetric and robust ferroelectric hysteresis with weak or no wake-up effects. The MFS capacitors with x = 0.58 show very large remanent polarization up to 34.4 $\mu\text{C}/\text{cm}^2$ or 30.6 $\mu\text{C}/\text{cm}^2$ after correction for leakage and parasitics, combined with good endurance reaching 10⁵ cycles at a cycling field of 2.3 MV/cm. The results show good prospects for the fabrication of Ge ferroelectric field effect transistors (FeFETs) for use in 1T FeFET embedded nonvolatile memory cells with improved endurance. (C) 2019 Author(s).</p>	<p>3eFERR O]</p>	<p>Fragkos, S; Axiotis, M; Lagoyiannis, A; Negrera, R; Pintilie, L; Dimoulas, A</p>				
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74.	Efficient glucose dehydration to HMF onto Nb-BEA catalysts	<i>CATALYSIS TODAY</i> , 325 , pp.109-116 (2019)	The one-pot production of HMF from glucose was investigated in pure hot water and biphasic water/methylisobutylketone (MIBK) solvent using mesoporous Nb(0.02 and 0.05 mol%)-Beta zeolites obtained by a post synthesis methodology. The mesoporous Nb-Beta zeolites present residual framework Al-acid sites, extra-framework isolated Nb(V) and Nb2O5 pore-encapsulated clusters in which Nb(V) O-H exhibit moderate strength Bronsted acidity. After optimization, the dehydration of glucose onto the Nb-modified Beta-zeolites occurred with a selectivity of 84.3% in HMF for a glucose conversion of 97.4%. This result has been obtained in a biphasic water/ MIBK solvent and in the presence of NaCl, at 180 degrees C, after 12 h.	UEFISCDI [PN-III-P4-ID-PCE-2016-0533]	Candu, N; El Fergani, M; Verziu, M; Cojocaru, B; Jurca, B; Apostol, N; Teodorescu, C; Parvulescu, VI; Coman, SM	4.888	0.852	10.1016/j.cattod.2018.08.004	Q1
75.	Charge separation and ROS generation	<i>APPLIED SURFACE SCIENCE</i> , 470 , pp.1053-1063 (2019)	The research focuses on a few key points concerning the light-driven processes taking place on TiO2		Preda, S; Anastasescu, C;	5.155	0.671	10.1016/j.apsusc.2018.11.194	Q1

	<p>on tubular sodium titanates exposed to simulated solar light</p>		<p>anatase and sodium titanates with tubular morphology, such as the relationship between the morphology and activity for H₂ and CO₂ production, density of surface hydroxyl groups, ROS (center dot OH and center dot O²⁻) production and photocatalytic activity, and charge separation at the interface of semiconducting domains and enhancement of activity. One key point discussed is whether the materials with peculiar morphologies (i.e. tubular) are superior to the conventional ones. The experimental evidences show that the main advantage of the tubular morphology of sodium titanate is given by its significantly higher surface area compared to parental anatase. FTIR and XPS progressive analyses evidence that the density of surface hydroxyl groups decreases with the development of the</p>		<p>Balint, I; Umek, P; Sluban, M; Negrila, CC; Angelescu, DG; Bratan, V; Rusu, A; Zahar escu, M</p>				
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			<p>tubular morphology. The radical trapping experiments show that the variation of surface hydroxyl density is, generally, followed by activities for center dot OH and center dot O-2(-) generation, as well as by the photocatalytic production of H-2 and CO2 from water/methanol mixture. Consequently, the ROS, formed by action of photogenerated electrons and holes on adsorbed O-2 and hydroxyl groups, respectively, play an important role in determining the photocatalytic activity of titania-based materials. The other major aspect revealed by this research is that the charge separation at the interfaces formed between anatase and sodium titanate crystalline phases has remarkable effect on the activity formation rates of H-2 and CO2.</p>						
76.	Antibacterial efficiency of alkali-	<i>CERAMICS INTERNATIONAL</i> , 45 , pp.4368-4380 (2019)	A series of seven alkali-free silica-based bioactive glasses (SBG) with ZnO and/or SrO	Romanian National Authority for	Popa, AC; Fernandes, HR;	3.45	0.454	10.1016/j.ceramint.2018.11.112	Q1

<p>free bio-glasses incorporating ZnO and/or SrO as therapeutic agents</p>			<p>additives (in concentrations of 0-12 mol%) were synthesized by melt-quenching, aiming to delineate a candidate formulation possessing (i) a coefficient of thermal expansion (CTE) similar to the one of titanium (Ti) and its medical grade super alloys (crucial for the future development of mechanically adherent implant-type SBG coatings) and (ii) antibacterial efficiency, while (iii) conserving a good cytocompatibility. The SBGs powders were multi-parametrically evaluated by X-ray diffraction, Fourier transform infrared and micro-Raman spectroscopy, dilatometry, inductively coupled plasma mass spectrometry, antibacterial (against <i>Staphylococcus aureus</i> and <i>Escherichia coli</i> strains) suspension inhibition and agar diffusion tests, and human mesenchymal stem cells cytocompatibility assays. The results</p>	<p>Scientific Research and Innovation, CNCS-UEFISCDI [PN-II-RU-TE-2014-4-0180, PN-III-P1-1.1-TE-2016-1501, PN18-110101]; CICECO -Aveiro Institute of Materials - FEDER funds through the Operational Programme Competitiveness Factors (COMPE TE 2020) [UID/CTM/50011/2013]; Portuguese Foundation for Science and</p>	<p>Neculescu, M; Luculescu, C; Cioanher, M; Dumitru, V; Stuart, BW; Grant, DM; Ferreira, JMF; Stan, GE</p>				
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			<p>showed that the coupled incorporation of zinc and strontium ions into the parent glass composition has a combinatorial and additive benefit. In particular, the "Z6S4" formulation (mol%: SiO₂-38.49, CaO-32.07, P₂O₅-5.61, MgO-13.24, CaF₂-0.59, ZnO-6.0, SrO-4.0) conferred strong antimicrobial activity against both types of strains, minimal cytotoxicity combined with good stem cells viability and proliferation, and a CTE (similar to 8.7 x 10⁽⁻⁶⁾ x degrees C⁽⁻¹⁾) matching well those of the Ti-based implant materials.</p>	<p>Technology (FCT); Fundaçã o para a Ciênci a e a Tecnologia (FCT), Portugal [SFRH/BPD/110883/2015]; Engineering and Physical Sciences Research Council via the Centre for Innovative Manufacturing in Medical Devices (MeDe Innovation) [EP/K029592/1]</p>					
77.	<p>Enhanced photoc conductivity of SiGe nanocrystals in SiO₂ driven by mild</p>	<p><i>APPLIED SURFACE SCIENCE</i>, 469, pp.870-878 (2019)</p>	<p>Photosensitive films based on finely dispersed semiconductor nanocrystals (NCs) in dielectric films have great potential for sensor applications. Here we report on preparation and characterization of</p>	<p>M-ERA.NET project PhotoNanoP UEFISCDI [33/2016]; PCE project UEFISCDI</p>	<p>Sultan, MT; Manolescu, A; Gudmundsson, JT; Torfason, K; Nemn</p>	5.155	0.671	<p>10.1016/j.apsusc.2018.11.061</p>	Q1

	annealing		<p>photosensitive Si_{1-x}Ge_x NCs sandwiched between SiO₂ matrix. A radio-frequency magnetron sputtering was applied to obtain a multilayer-structures (MLs) by depositing SiO₂/SiGe/SiO₂ films on Si (0 0 1) substrate. The Si_{1-x}Ge_x NCs were formed by a post-deposition annealing at 100-700 degrees C for 1-5 min. The effect of annealing temperature and time on MLs morphology and NCs size and density was studied using grazing incidence X-ray diffraction, transmission electron microscopy, X-ray photoelectron spectroscopy, energy-dispersive X-ray spectroscopy and measurements of spectral distribution of photocurrent. It is demonstrated how the photoconductive properties of the MLs can be enhanced and tailored by controlling the NCs formation conditions and the presence of stress field in MLs and defects acting as</p>	<p>[122/2017]; Romania Ministry of Research and Innovation through NIMP Core Program [PN16-480102]; Technology Development Fund of the Icelandic Centre for Research [159006-0611]</p>	<p>es, GA; Stavarache, I; Logofatu, C; Teodorcu, VS; Ciurea, ML; Svavarsson, HG</p>				
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			traps and recombination centers. All these features can be adjusted/controlled by altering the annealing conditions (temperature and time). The MLs photosensitivity was increased of more than an order of magnitude by the annealing process. A mechanism, where a competition between crystallization process (NCs formation and evolution i.e. size and shapes) and stress field appearance determines the peak position in the photocurrent spectra, was identified.						
78.	Do topology and ferromagnetism cooperate at the EuS/Bi ₂ Se ₃ interface?	<i>PHYSICAL REVIEW B</i> , 99 , 064423 (2019)	We probe the local magnetic properties of interfaces between the insulating ferromagnet EuS and the topological insulator Bi ₂ Se ₃ using low energy muon spin rotation (LE- μ SR). We compare these to the interface between EuS and the topologically trivial metal, titanium. Below the magnetic transition of EuS, we detect strong local magnetic fields	Swiss National Foundation (SNF) Swiss National Science Foundation (SNSF) [200021_165910]; NSF National Science Foundation (NSF)	Krieger, JA; Ou, Y; Caputo, M; Chikina, A; Dobeili, M; Husanu, MA; Keren, I; Proksha, T; Suter,	3.736	1.089	10.1103/PhysRevB.99.064423	Q1

			<p>which extend several nm into the adjacent layer and cause a complete depolarization of the muons. However, in both Bi(2)Se(3)and titanium we measure similar local magnetic fields, implying that their origin is mostly independent of the topological properties of the interface electronic states. In addition, we use resonant soft x-ray angle resolved photoemission spectroscopy (SX-ARPES) to probe the electronic band structure at the interface between EuS and Bi2Se3. By tuning the photon energy to the Eu antiresonance at the Eu M-5 pre-edge we are able to detect the Bi2Se3 conduction band, through a protective Al2O3 capping layer and the EuS layer. Moreover, we observe a signature of an interface-induced modification of the buried Bi2Se3 wave functions and/or the presence of interface states.</p>	<p>[DMR-1700137]; Office of Naval Research (ONR)Office of Naval Research [N00014-16-1-2657]; Science and Technology Center for Integrated Quantum Materials under NSF Grant [DMR-1231319]; Alfred P. Sloan Research FellowshipAlfred P. Sloan Foundation; ARO Young Investigator Program Award [W911NF1810198]</p>	<p>A; Chang, CZ; Moodera, JS; Stroscov, VN; Salzman, Z</p>				
79.	Energy-enhance	<i>SURFACE & COATINGS</i>	Bipolar Pulse High Power Impulse	Euratom research	Velicu, IL;	3.192	0.512	10.1016/j.surfcoat.	Q1

<p>d deposi on of copper thin films by bipolar high power impulse magnetron sputteri ng</p>	<p><i>TECHNOLOG</i> <i>Y</i>,359, pp.97- 107 (2019)</p>	<p>Magnetron Sputtering (BP- HiPIMS) was investigated and used in this work to control the ion bombardment process of growing thin films and to improve their structure and properties. Energy- resolving mass spectroscopy was used to investigate the effect of reverse target voltage on the ion energies and fluxes during BP- HiPIMS of a high- purity copper target, in argon gas. It was found that the reverse target voltage provides a wide range of ion energies and fluxes incident to the growing film, which, in turn, produce a wide variety of effects during the deposition process, improving the adhesion strength and influencing both surface and bulk properties. Fast ICCD imaging was used to investigate both HiPIMS and BP-HiPIMS plasma dynamics. The temporal and spatial distributions of plasma potential measurements were</p>	<p>and training program me 2014- 2018 [633053] ; PRO- DD (POS- CCE) [O.2.2.1, 123, SMIS 2637, 11/2009]</p>	<p>Ianos, GT; Poros nicu, C; Mihail a, I; Burdu cea, I; Velea, A; Criste a, D; Munte anu, D; Tiron, V</p>		<p>2018.12. 079</p>	
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			<p>performed in order to explain the mechanisms for accelerating the ions. The topological, structural and mechanical properties of the deposited coatings were investigated using atomic force microscopy (AFM), X-ray diffraction (XRD), Rutherford backscattering spectrometry (RBS), thermal desorption spectroscopy (TDS), scanning electron microscopy (SEM), nanoindentation and scratch tests. The obtained results indicate an energy-enhanced deposition process during BP-HiPIMS, the deposited films being characterized by smooth surfaces, dense microstructure, small inert gas inclusions, high elastic strain to failure, scratch resistance and good adhesion to the substrate. These improvements in the films' structure and properties may be attributed to the intense and energetic ion bombardment taking place during the deposition</p>						
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			process. During BP-HiPIMS operation, there is no net increase in the deposition rate as compared to the monopolar regime due to the re-sputtering process.						
80.	Highly transparent Yb:Y2O3 ceramics obtained by solid-state reaction and combined sintering procedures	<i>CERAMICS INTERNATIONAL</i> , 45 , pp.3217-3222 (2019)	(Y0.87-xLa0.1Zr0.03Ybx)(2)O-3 (x = 0.02, 0.04, 0.05) transparent ceramics were obtained by solid-state reaction and combined sintering procedures with La2O3 and ZrO2 as sintering additives. A method based on two-step intermediate sintering in air followed by vacuum sintering was applied in order to control the densification and grain growth of the samples during the final sintering process. The results indicate that La2O3 and ZrO2 co-additives can improve the microstructure and optical properties of Yb:Y2O3 ceramics at relatively low sintering temperature. On the other hand, the addition of Zr4+ ions leads to the formation of	Romanian National Authority for Scientific Research and Innovation through the program NUCLEU [LAPLAS V 3N/2018]; Laserlab-Europe EU-H2020 [654148]	Stanciu, G; Gheorghel, L; Voicu, F; Haul, S; Gheorghel, C; Croitoru, G; Enculescu, M; Yavetskiy, RP	3.45	0.454	10.1016/j.ceramint.2018.10.224	Q1

			<p>dispersed scattering volumes in the ceramic bodies. Transmittance of 78.8% was measured for the 2.0 at% Yb:Y2O3 ceramic sample at the wavelength of 1100 nm. The spectroscopic properties of Yb:Y2O3 ceramics were investigated at room temperature. The obtained results show that the absorption cross-section at 978 nm is in the range of 2.08×10^{-20} to 2.36×10^{-20} cm², whereas the emission cross-section at 1032 nm is similar to 1.0×10^{-20} cm².</p>						
81.	Electrochemical Sensor for Carbonyl Groups in Oxidized Proteins	<i>ANALYTICAL CHEMISTRY</i> , 91 , pp.1920-1927 (2019)	<p>The interaction of proteins with free radicals leads, among other types of damages, to the production of stable carbonyl groups, which can be used as a quantification of oxidative stress at proteins level. The aim of this study was the development of an electrochemical sensor for the detection of carbonyl groups in proteins oxidized by reactive oxygen species. Its working principle is</p>	Romanian Ministry of Research and Innovation through Operational Program me Competitiveness [NANO BIOSUR F-SMIS 103528]	Enache, TA; Matei, E; Diculescu, VC	6.35	1.348	10.1021/acs.analchem.8b03969	Q1

			<p>based on the redox properties of dinitrophenylhydrazine (DNPH). BSA was used as a model protein and its oxidation achieved through Fenton reactions. Using differential pulse voltammetry at glassy carbon electrode, the electrochemical behavior of DNPH and of the native and oxidized BSA was investigated in solution. It has been shown that the hydrazine moiety of the DNPH is the electroactive center and is responsible for carbonyl complexation. Special attention was paid to the immobilization of the DNPH in order to retain its redox properties, and this was achieved on a mixed 4-styrenesulfonic acid-nafion matrix. The sensor's surface characterization and the detection of carbonyl groups in oxidized protein were performed by voltammetry, Fourier-transformed infrared spectroscopy and</p>						
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			<p>scanning electron microscopy while the voltammetric results were confirmed by surface plasmon resonance measurements. It has been shown that upon interaction with carbonyl groups of the oxidized protein, the oxidation peak of the hydrazine moiety of DNP decreases as a function of incubation time and protein concentration. The sensor sensitivity was 0.015 nmol carbonyl per mg of oxidized protein and detection limits of 50 μg oxidized BSA and 0.75 pmol carbonyls.</p>						
82.	<p>Rhodium-Catalyzed Annulation of ortho-Alkenyl Anilides with Alkyne s: Formation of Unexpected Naphthalene Adducts</p>	<p><i>ANGEWANDT E CHEMIE-INTERNATIONAL</i>, 58, pp.1700-1704 (2019)</p>	<p>o-Alkenyl N-triflylanilides underwent rhodium(III)-catalyzed oxidative annulations with alkynes to produce different types of naphthylamides in a process which involves the cleavage of two C-H bonds. Remarkably, besides formal dehydrogenative (4C+2C) cycloadducts, the reaction also produces variable amounts of isomeric</p>	<p>Conselleria de Cultura, Educació i Ordenació Universitària [ED431C/2017/119-041, 2015-CP082]; Spanish grants [SAF2016-76689-R, CTQ201</p>	<p>Seoane, A; Comanescu, C; Casanova, N; Garcia-Fandino, R; Diz, X; Mascajenas, JL; Gulias, M</p>	12.257	3.243	10.1002/anie.201811747	Q1

			<p>naphthylamides, whose formation requires a formal migration of the alkenyl moiety from the ortho to the meta position of the anilide. The annulation reaction can be efficiently carried out in the absence of external oxidants, such as Cu(OAc)₂.</p>	<p>6-77047-P]; Conselleria de Cultura, Educacion e Ordenacion Universitaria (Centro Singular de Investigacion de Galicia accreditation) [ED431 G/09]; European Regional Development Fund (ERDF) European Union (EU); European Research Council (Advanced Grant) European Research Council (ERC) [340055]; Spanish Government MINECO [RYC-</p>					
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				RYC-2016-20335]; orfeo-cinca network [CTQ2016-81797-REDC]					
83.	Laser Processed Antimicrobial Nanocomposite Based on Polyani line Grafted Lignin Loaded with Gentamicin-Functionalized Magnet ite	<i>POLYMERS</i> ,11,283 (2019)	Composite thin coatings of conductive polymer (polyaniline grafted lignin, PANI-LIG) embedded with aminoglycoside Gentamicin sulfate (GS) or magnetite nanoparticles loaded with GS (Fe ₃ O ₄ @GS) were deposited by the matrix-assisted pulsed laser evaporation (MAPLE) technique. The aim was to obtain such nanostructured coatings for titanium-based biomedical surfaces, which would induce multi-functional properties to implantable devices, such as the controlled release of the therapeutically active substance under the action of a magnetic and/or electric field. Thus, the unaltered laser transfer of the initial biomaterials was	Romania n National Authorit y for Scientific Research , CNCS-UEFISCDI [63PCCDI (PN-III-P1-1.2-PCCDI2 017-0728), PN-III-P4-ID-PCE-2016-0884]; National Authorit y for Research and Innovatio n in the frame of NUCLE U Program me-LAPLAS V.	Visan, AI; Popescu-Pelin, G; Gherasim, O; Grumezescu, V; Socol, M; Zgura, I; Florica, C; Popescu, RC; Savu, D; Holban, AM; Cristescu, R; Matei, CE; Socol, G	3.164	0.592	10.3390/polym11020283	Q1

			<p>reported, and the deposited thin coatings exhibited an appropriate nanostructured surface, suitable for bone-related applications. The laser processing of PANI-LIG materials had a meaningful impact on the composites' wettability, since the contact angle values corresponding to the composite laser processed materials decreased in comparison with pristine conductive polymer coatings, indicating more hydrophilic surfaces. The corrosion resistant structures exhibited significant antimicrobial activity against Escherichia coli, Staphylococcus aureus, and Candida albicans strains. In vitro cytotoxicity studies demonstrated that the PANI-LIG-modified titanium substrates can allow growth of bone-like cells. These results encourage further assessment of this type of biomaterial for their application in controlled drug release at</p>					
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			implantation sites by external activation.						
84.	Growth of SrTiO ₃ Single Crystals with a Diameter of about 30 mm by the Verneuil Method	<i>CRYSTAL GROWTH & DESIGN</i> , 19 , pp.604-612 (2019)	The work demonstrates growth by the Verneuil method of SrTiO ₃ single crystals of 30 mm in diameter. Experiments are performed under an industrial environment. Growth was for 4.75 h, i.e., within one production shift. The optimum growth conditions for which the length of the region with bubbles D is zero and the effective length EL (i.e., the crystal length of commercial value) is maximized are for the amount of SrCO ₃ additive of similar to 3 wt % and for H-2 outer flow rate of similar to 35 L/min. These two parameters show the strongest influence on the bubble-free growth, but other growth parameters (H-2 inner flow rate, O-2 flow rate increase, rotation speed) were also optimized. Selected crystals are characterized from the structural, microstructural, optical, and THz spectroscopy	JSPS Kakenhi, Japan Ministry of Education, Culture, Sports, Science and Technology, Japan (MEXT) Japan Society for the Promotion of Science Grants-in-Aid for Scientific Research (KAKENHI) [15K05997, 15K06449]; MEN-UEFISCDI [POC37_697, 28/01.09.2016]; Core Program 2017/2018, Romania	Tateno, Y; Endo, K; Arisawa, S; Vlaicu, AM; Nedelcu, L; Preda, N; Secu, M; Iordanescu, R; Kuncser, AC; Badica, P	4.153	0.762	10.1021/acs.cgd.8b01004	Q1

			viewpoints, and they are compared with a commercial substrate and with crystals reported in the literature. This work opens the possibility for the industrial growth of large SrTiO ₃ single crystals and commercialization of large area substrates.						
85.	Voltammetric and mass spectrometry investigation of methionine oxidation	<i>JOURNAL OF ELECTROANALYTICAL CHEMISTRY</i> , 834 , pp.124-129 (2019)	The electro-oxidation mechanism of free methionine and bound within different peptide sequences was investigated by voltammetry, at glassy carbon electrode, and mass spectrometry. It is proposed that the electro-oxidation of free methionine occurs in two steps, each involving the transfer of one electron and turns pH-independent from mild acid to mild alkaline electrolytes. The first oxidation reaction leads to the formation of a cation radical stabilized either through the amino group resulting in the dehydromethionine intermediate, or by interaction with a neutral methionine	Romanian Ministry of Research and Innovation, CCCDI-UEFISCDI within PNCDI III [23ELI/2017, PN-III-P1-1.2-PCCDI-2017-0062, 58, 3]; Romanian Ministry of Research and Innovation, CCCDI-UEFISCDI through	Diculescu, VC; Enache, TA	3.218	0.488	10.1016/j.jelechem.2018.12.058	Q1

			<p>molecule leading to production of a dimer cationic radical. The dehydromethionine hydrolysis gave methionine sulfoxide as final oxidation product, whereas a future oxidation of methionine dimer cation radical, i.e. the second electro-oxidation step, results in a methionine dimer dication. Moreover, at high acid media, the protonated amino group influence the electro-oxidation process to take place via proton transfer mechanism. The presence of methionine sulfoxide and of the dimer cationic radical as oxidation products of methionine was confirmed by mass spectroscopy.</p>	Operational Programme Competitiveness [NANO BIOSUR F-SMIS 103528]					
86.	<p>Stable Hall voltages in presence of dynamic quasi-continuum bands in poly(3,4-ethylen</p>	<p><i>ORGANIC ELECTRONIC S</i>, 65, pp.412-418 (2019)</p>	<p>Topological and thermal disorder complicate the mobility characterization in poly(3,4-ethylenedioxythiophene) systems and presently leaves the exact transport mechanisms not fully understood. Here we show that ac-Hall measured by lock-in</p>	<p>OeAD Austria (WTZ) [IN10/2015]; Austrian Science Foundation Austrian Science Fund (FWF) [FWF</p>	<p>Stadler, P; Leont, LN; Menon, R; Coskun, H; van Frank, S; Rankl, C; Schar</p>	3.495	0.573	<p>10.1016/j.orgel.2018.12.001</p>	Q1

	e-dioxythiophene)		amplifier is able to resolve the Hall voltage in semimetallic polymers between room temperature and 32 K. These results are evaluated using an organic random phase model. This accounts for the role of tail states and, particularly, for thermal disorder of molecular semiconductors. We report band mobilities up to 3.7 cm ² V ⁻¹ s ⁻¹ in semimetallic polymers occurring in delocalized bands that originate from significant electron coherence across the polymer chains.	I3822-N37]; province of Upper Austria	ber, MC				
87.	Bimodal mesoporous NiO/CeO ₂ -delta-YSZ with enhanced carbon tolerance in catalytic partial oxidation of methane-	<i>APPLIED CATALYSIS B-ENVIRONMENTAL</i> , 241 , pp.393-406 (2019)	In the present study we report on the activity, selectivity and stability of the bimodal mesoporous NiO/CeO ₂ -delta-YSZ anodes for IT-SOFCs applications. These materials present high concentration of C ₃₊ ions stably retained in the lattice, which proved to be efficient for the catalytic partial oxidation of CH ₄ to syngas in the temperature range 600-800 degrees C. The excellent carbon	Romanian National Authority for Scientific Research through the Partnerships in priority S&T domains Program (PNII), MEN-UEFISCDI [26/2012	Somacescu, S; Cioateara, N; Osiceanu, P; Calderon-Moreno, JM; Ghica, C; Neatu, F; Florea, M	14.229	1.918	10.1016/j.apcatb.2018.09.065	Q1

Potential IT-SOFCs anode		<p>tolerance was proved by a comprehensive XPS analysis, which monitored the amount of carbon before and after catalytic partial oxidation of methane (CPOM) tests. The mesoporous anodes templated by hexadecyltrimethylammonium bromide (CTAB) and tripropylamine (TPA) were obtained using a hydrothermal synthesis route. The effect of Ni and Ce incorporation on the yttria stabilized zirconia (YSZ) structure, texture, morphology and surface chemistry was discussed and correlated with catalytic and electrochemical behavior. The exhaustive characterization of the bulk and surface properties of the catalysts have been accomplished by means of complementary methods: XRD, SEM / EDX / HR TEM, TGA / TPR, XPS. The electrochemical and catalytic performance were improved when the surface contains</p>	<p>]; Romanian National Authority for Scientific Research and Innovation, CNCS UEFISCDI within PNCDI III [PN-III-P4-ID-PCE-2016-0692, PN-III-P4-ID-PCE-2016-0529]; CNCS/CCDI-UEFISCDI within PNCDI III [PN-III-P2-2.1-PED-2016-1429]; Romanian Ministry of Research and Innovation [PN18-110101]</p>					
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			more reduced ceria and NiO was formed as secondary phase. These features lead to a large number of vacancies and consequently a better oxygen migration, which facilitate the carbon removal.						
88.	UV-vis light induced photocatalytic activity of TiO ₂ /graphene oxide nanocomposite coatings	<i>CATALYSIS TODAY</i> , 321 , pp.81-86 (2019)	Titanium dioxide (TiO ₂) and TiO ₂ - graphene oxide (GO) composite layers were deposited by spin coating technique onto SiO ₂ quartz substrates. TiO ₂ NPs and GO platelets were used as base materials for the preparation of the starting water/acetone dispersions. Polystyrene (PS) buffer layers were deposited by drop-cast method onto the substrates surface to ensure the adherence of the pure TiO ₂ /PS and TiO ₂ -GO/PS composite layer. The surface morphology and physico-chemical properties of the layers have been determined and correlated with their photocatalytic properties. It was found that GO oxygen functional groups are reduced by the presence of	Prometeo Program of the National Secretary of Education, Science, Technology and Innovation of the Ecuadorian Government (SENESCYT); Executive Unit for Financing Higher Education, Research, Development and Innovation of the Romanian Ministry of	Datcu, A; Mendoza, ML; del Pino, AP; Logofatu, C; Luculescu, C; Gyorgy, E	4.888	0.852	10.1016/j.cattod.2018.02.026	Q1

			<p>TiO₂ NPs in the composite materials. Photodegradation activity under UV-visible light irradiation was studied by measuring the concentration changes in time of organic methylene blue dye in aqueous solutions as well as the chemical oxygen demand for real wastewater samples. The obtained results revealed that the photocatalytic properties of the spin coated composites are determined by the graphene oxide concentration. The effect of the spontaneous reduction of GO in the presence of TiO₂ NPs on the photocatalytic activity of the TiO₂-GO/PS composites is discussed in detail.</p>	<p>Education and Scientific Research [PN-III-P2-2.1-PED-2016-1043]; Nucleus program at NILPRP [4N/9.03.2016 (16 47 01 02)]</p>					
89.	<p>Theoretical and Experimental Study of (Ba,Sr)TiO₃ Perovskite Solid Solutions and BaTiO₃</p>	<p><i>JOURNAL OF PHYSICAL CHEMISTRY C</i>, 123, pp.2031-2036 (2019)</p>	<p>The results of experimental and theoretical ab initio study of structural and piezoelectric properties of (Ba,Sr)TiO₃ perovskite solid solutions are discussed and compared. Experimentally, plate-like (Ba,Sr)TiO₃</p>	<p>ERA-NET HarvEnPiez project; Latvian State Education Development Agency; Slovenia</p>	<p>Rusevich, LL; Zvejnieks, G; Koto min, EA; Krzmic, MM; Meden, A;</p>	4.309	1.017	10.1021/acs.jpcc.8b09750	Q1

	/SrTiO3 Heterostructure s		<p>particles were synthesized by the topochemical conversion in the molten salt from Bi₄Ti₃O₁₂ template plates. All dimensions (side length approximate to 1 μm, thickness approximate to 200-400 nm) were well above the critical size necessary for observation of piezo- and ferroelectricity. The first-principles computations of the structural and electromechanical properties of solid solutions were performed with the CRYSTAL14 computer code within the linear combination of atomic orbitals approximation, using three advanced hybrid functionals of density functional theory. Different chemical compositions are considered for the ferroelectric and paraelectric phases. The calculated structural properties of solid solutions in tetragonal and cubic phases are in very good agreement with experimental data. Experimentally</p>	<p>Ministry of Higher Education, Science and Technology; Romanian National Authority for Scientific Research and Innovation, CCCDI-UEFISCDI within PNCDI III-M-ERANET Program [49/2016]</p>	Kunej, S; Vlaicu, ID				
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			<p>obtained and calculated band gaps are compared for cubic SrTiO₃ and tetragonal BaTiO₃. BaTiO₃/SrTiO₃ heterostructures were considered theoretically for different chemical compositions. The calculated piezoelectric properties of solid solutions and heterostructures in the ferroelectric phase are compared. It is predicted that both solid solutions and heterostructures improve the piezoelectric properties of bulk BaTiO₃, but solid solutions are more preferable for equal Sr concentrations.</p>						
90.	Complex exchange coupling mechanisms in SRO/BFO/Fe heterostructures	<i>JOURNAL OF ALLOYS AND COMPOUNDS</i> , 773 , pp.338-345 (2019)	<p>Temperature dependent interfacial coupling mechanisms in SRO/BFO/Fe layered structures were investigated. The BFO/Fe heterostructures were prepared by PLD and sputtering, respectively, on the STO(0 0 1) substrate with a 20 nm SRO buffer layer. An annealing treatment in external magnetic field was further</p>	Romania	Greuleasa, SG; Schintie, G; Hrib, LM; Stancu, V; Pasuk, I; Kuncser, A; Kuncser, V	4.175	0.601	10.1016/j.jallcom.2018.09.208	Q1

			<p>applied. Complex characterizations with X-ray diffraction, atomic force microscopy, Transmission Electron Microscopy, Mossbauer spectroscopy, magneto-optic Kerr effect and SQUID magnetometry were performed. Before annealing, the films show good crystallization and epitaxy of the SRO and BFO layers with smooth interfaces. Two coupling mechanisms of the ferromagnetic layers (top Fe and bottom SRO, respectively) to the epitaxial BFO film with mainly antiferromagnetic structure were evidenced in the as deposited samples at low temperatures. Negative exchange bias fields of up to 67(10) Oe and 37(5) Oe at low temperatures were observed for the two ferromagnetic components, respectively, depending on the thickness of the Fe layer. The field annealing treatments induce a specific</p>					
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			<p>morphology and magnetic spin structure at both interfaces of the BFO spacer layer, giving rise to a long range magnetostatic coupling between the two ferromagnetic films, in addition to the interfacial couplings. Moreover, the experimentally evidenced Fe clusters penetrating the BFO/Fe interface toward the BFO layer give support for this interaction. As an additional consequence, a considerable enhancement of both uniaxial and unidirectional anisotropies as well as an increased blocking temperature of exchange bias were obtained. The involved exchange coupling mechanisms were discussed in detail. (C) 2018 Elsevier B.V. All rights reserved.</p>						
91.	<p>Pd-Cu catalysts supported on anion exchange resin for the</p>	<p><i>APPLIED CATALYSIS A-GENERAL</i>, 570, pp.120-129 (2019)</p>	<p>The present work proposes the simultaneous removal of these classes of pollutants by a catalytic hydrotreatment processes. For this purpose, bimetallic</p>	<p>Executive Agency for Higher Education, Research, Development</p>	<p>Bradu, C; Capat, C; Papa, F; Frunza, L; Olaru,</p>	4.63	0.77	<p>10.1016/j.apcata.2018.11.002</p>	Q1

	<p>simultaneous catalytic reduction of nitrate ions and reductive dehalogenation of organochlorinated pollutants from water</p>		<p>Pd-Cu catalysts (with mass ratio Pd:Cu of 4:1) supported on macroporous strong base anion resin were prepared by different methods. The catalysts were characterized (by XRD, SEMEDX, XPS, AAS and H-2 chemisorption) and tested in a continuous flow system. The selected catalyst preparation protocol consists in a two-step method, which implies the deposition of palladium by ion exchange and the subsequent deposition of copper by controlled reaction on the surface of the pre-reduced palladium. The effectiveness of the catalyst in the simultaneous reduction of nitrate and hydrodechlorination of 4-chlorophenol was demonstrated. By adjusting the initial pH and the flow rate of the aqueous solution, nearly complete hydrodechlorination of 4-chlorophenol can occur together with selective nitrate reduction at a</p>	<p>ment and Innovation Funding of Romania (UEFISCDI) under the PNII Project [100/2012]</p>	<p>EA; Crini, G; Morin-Crini, N; Euvrard, E; Balint, I; Zgura, I; Munteanu, C</p>				
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			conversion of 95% and a selectivity to N-2 of 92% (this value contains the contribution of all gaseous products, including the eventually formed NOx). The bimetallic catalyst was found to remains relatively stable after 100 h of test time.						
92.	Unveiling the double-well energy landscape in a ferroelectric layer	<i>NATURE</i> , 565 , pp.464-+ (2019)	The properties of ferroelectric materials, which were discovered almost a century ago(1), have led to a huge range of applications, such as digital information storage(2), pyroelectric energy conversion(3) and neuromorphic computing(4,5). Recently, it was shown that ferroelectrics can have negative capacitance(6-11), which could improve the energy efficiency of conventional electronics beyond fundamental limits(12-14). In Landau-Ginzburg-Devonshire theory(15-17), this negative capacitance is directly related to the double-well shape of the ferroelectric	Electronic Component Systems for European Leadership Joint Undertaking [692519]; European Union European Union (EU); EFRE fund of the European Commission; Free State of Saxony (Germany); Core Program of NIMP (Romanian Ministry	Hoffmann, M; Fengler, FPG; Herzig, M; Mittmann, T; Max, B; Schroeder, U; Negra, R; Pintilie, L; Slesazek, S; Mikolajick, T	43.07	22.404	10.1038/s41586-018-0854-z	Q1

			<p>polarization-energy landscape, which was thought for more than 70 years to be inaccessible to experiments(18). Here we report electrical measurements of the intrinsic double-well energy landscape in a thin layer of ferroelectric Hf0.5Zr0.5O2. To achieve this, we integrated the ferroelectric into a heterostructure capacitor with a second dielectric layer to prevent immediate screening of polarization charges during switching. These results show that negative capacitance has its origin in the energy barrier in a double-well landscape. Furthermore, we demonstrate that ferroelectric negative capacitance can be fast and hysteresis-free, which is important for prospective applications(19). In addition, the Hf0.5Zr0.5O2 used in this work is currently the most industry-relevant ferroelectric</p>	for Research and Innovation)					
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			material, because both HfO ₂ and ZrO ₂ thin films are already used in everyday electronics(20). This could lead to fast adoption of negative capacitance effects in future products with markedly improved energy efficiency.						
93.	Akermanite-based coatings grown by pulsed laser deposition for metallic implants employed in orthopedics	<i>SURFACE & COATINGS TECHNOLOGY</i> , 357 , pp.1015-1026 (2019)	The aim of the present paper is to develop ceramic thin films by laser ablation in order to improve the biological behaviour of metallic implants dedicated to hard tissue restoration. The composition of the coatings was selected within SiO ₂ -P ₂ O ₅ -CaO-MgO-ZnO-CaF ₂ system, while their processing has gone through two stages: target preparation via a wet chemistry approach and films deposition through a physical deposition method, on titanium substrates. The characteristics of the final layered structures were evaluated by X-ray diffraction, Fourier-transform infrared spectroscopy, scanning and transmission electron microscopy, energy-	University POLITEHNICA of Bucharest [UPB-GEX2017, 76/25.09.2017, CH 38-17-06]	Negrea, R; Busuioc, C; Constantiniu, I; Miu, D; Enache, C; Iordache, F; Jinga, SI	3.192	0.512	10.1016/j.surfcoat.2018.11.008	Q1

			<p>dispersive X-ray spectroscopy and selected area electron diffraction. In vitro investigation techniques were employed for the bioactivity and biocompatibility assessment. The results indicated the growth of nanostructured akermanite-based thin films with an excellent bioactivity and a good effect on stem-type cells, which validates the suitability of such structures for medical implant applications.</p>						
94.	<p>NiTi coated with oxide and polymer films in the in vivo healing processes</p>	<p><i>JOURNAL OF MATERIALS RESEARCH AND TECHNOLOGY-JMR&T</i>,8, pp.914-922 (2019)</p>	<p>Plates of NiTi chemically etched, electro-polished, and sol gel coated with XO₂ (X =Ti, Si, Zr), or coated with oxides and dip-coated polymers of Dextro-Levo-lactide-co-glycolide (DL-PLG, 0.4 μm thickness), Dextro-Levo-lactic acid (DL-PLA, 1.3 μm) or poly methyl methacrylate polymer (PMMA, 1.7 μm) were obtained. Smooth and uniform NiTi surfaces without significant pitting, as revealed by AFM, were prepared for</p>	<p>Romanian National Authority for Scientific Research and Innovation, CCCDI-UEFISCDI [AMCSI T-CEEX/194 - ANGIOMAT, 74-COFUND-M-ERA.NE</p>	<p>Batalu, D; Nastase, F; Militaru, M; Gherghiceanu, M; Badica, P</p>	<p>3.327</p>	<p>Not Available</p>	<p>10.1016/j.jmrt.2018.06.015</p>	<p>Q1</p>

		<p>chemical etching of 120 s in HF:HNO₃:H₂O = 1:5:4, followed by electropolishing 120 s in H₂SO₄:CH₃OH:H₂O = 1:4:5 electrolyte and using a potential of 9 V. Dip-coated layer of PMMA has shown cracks and large pores and was eliminated from further experiments. Samples of pristine and coated NiTi were in vivo implanted into rabbits and extracted after 10 and 60 days. Clinically, all implants are biocompatible; all rabbits survived and a recovery process was observed for all cases. NiTi covered with SiO₂, DL-PLG and SiO₂/DL-PLG have shown the best healing evolution. For 10 and 60 days good recovery was found also for NiTi coated with TiO₂. Coatings of ZrO₂ and ZrO₂/DL-PLG have shown the poorest results. The oxide coating and the roughness R-ZJIS that contains information on the 'deep' large areas in the coatings show</p>	T II - BIOMB]					
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			the strongest influence on the healing processes. Work indicates the possibility of space- and time- scale controlled variation of the functional properties. (C) 2018 Brazilian Metallurgical, Materials and Mining Association. Published by Elsevier Editora Ltda.						
95.	Addition of carbon fibers into B4C infiltrated with molten silicon	<i>CERAMICS INTERNATIONAL</i> , 45 , pp.168-174 (2019)	Boron carbide added with 0-20 wt% carbon fibers was subject to Si infiltration. Samples mainly consist of B13C2, beta-SiC and unreacted Si. Some amount of SiB6 and alpha-SiC was also detected, while formation of B-12(B,C,Si)(3) phase was suppressed due to short infiltration time. The carbon fibers react with Si and result in formation of a composite core-shell fiber with SiC-shell and C-core. Theoretical estimations suggest that these composite fibers have a strong influence on the enhancement of the bending strength. Although apparently	Ministry of Education and Science of Ukraine [0117U006427, 0117U004301]; State Fund for Fundamental Research [F75/155-2018]; MEC-UEFISCDI, Romania [POC37_697, 28/01.09.2016 REBMA T]	Solodkyi, I; Bezdrozhev, O; Vterkovskiy, M; Bogomol, I; Bolbut, V; Kruger, M; Badica, P; Loboda, P	3.45	0.454	10.1016/j.ceramint.2018.09.148	Q1

			in good agreement with experimental data showing an increase of bending strength up to 510 +/- 27 MPa in the sample with 10 wt% carbon fiber, the implications of phase changes with the carbon fiber amount has to be carefully considered. At higher amounts of carbon fibers, bending strength decreases.						
96.	Structural, Compositional, and Mechanical Characterization of WxCry Fe1-x-y Layers Relevant to Nuclear Fusion, Obtained with TVA Technology	<i>MATERIALS</i> , 12,4072 (2019)	Reduced activation ferritic and martensitic steel like EUROFER (9Cr-1W) are considered as potential structural materials for the first wall of the future next-generation DEMONstration Power Station (DEMO) fusion reactor and as a reference material for the International Thermonuclear Experimental Reactor (ITER) test blanket module. The primary motivation of this work is to study the re-deposition of the main constituent materials of EUROFER, namely tungsten (W), iron (Fe), and chromium (Cr), in a DEMO	Romanian National Authority for Scientific Research -ANCS [LAPLAS VI, 16N/2019]	Lungu, M; Porosnicu, I; Dinca, P; Velea, A; Baiasu, F; Butoi, B; Pompilian, OG; Staicu, C; Constantina, PA; Porosnicu, C; Lungu, C; Tiseanu, I	2.972	0.608	10.3390/ma12244072	Q2

			<p>type reactor by producing and analyzing complex $W_xCr_yFe_{1-x-y}$ layers. The composite layers were produced in laboratory using the thermionic vacuum arc (TVA) method, and the morphology, crystalline structure, elemental composition, and mechanical properties were studied using scanning electron microscopy (SEM), X-ray diffraction (XRD), micro-X-ray fluorescence (micro-XRF), and glow discharge optical emission spectrometry (GDOES), as well as nanoindentation and tribology measurements. The results show that the layer morphology is textured and is highly dependent on sample positioning during the deposition process. The formation of polycrystalline $W_xCr_yFe_{1-x-y}$ was observed for all samples with the exception of the sample positioned closer to Fe anode during deposition.</p>					
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			<p>The crystalline grain size dimension varied between 10 and 20 nm. The composition and thickness of the layers were strongly influenced by the in-situ coating position, and the elemental depth profiles show a non-uniform distribution of Fe and Cr in the layers. The highest hardness was measured for the sample positioned near the Cr anode, 6.84 GPa, and the lowest was 4.84 GPa, measured for the sample positioned near the W anode. The tribology measurements showed an abrasive sliding wear behavior for most of the samples with a reduction of the friction coefficient with the increase of the normal load.</p>						
97.	<p>The Effect of the Ionizing Radiation on Hydroxyapatite - Polydimethyls</p>	<p><i>POLYMER ENGINEERING AND SCIENCE</i>, 59, pp.2406-2412 (2019)</p>	<p>The bio hydroxyapatite (HAp) was used from a long time in different medical and environmental applications. The HAp layers with a uniform surface were used for various medical applications such as orthopedic</p>	<p>UEFISCDI [PN-III-P1-1.2-PCCDI-2017-0629, 43PCCDI, PN-III-P1-1.2-PCCDI-2017-</p>	<p>Groza, A; Iconaru, SL; Jiga, G; Chaporn, P; Gaiaschi, S; Verga, N;</p>	1.92	0.293	10.1002/pen.25247	Q2

<p>siloxane Layers</p>			<p>and dental metal implants. In this work, we reported on the influence of X-ray radiation on the structural and morphological properties of composite layers based on HAp and polydimethylsiloxane (PDMS) deposited on titanium substrates. The HAp:PDMS layers were investigated by different complementary methods such as scanning electron microscopy (SEM), Fourier transform infrared spectroscopy (FTIR), and glow discharge optical emission spectrometry (GDOES). FTIR spectral analysis showed that the molecular structure of the coatings was not changed after their irradiation even though, the depth profile analysis performed by GDOES indicated a depletion of Ca and P elements from the HAp:PDMS irradiated samples. By SEM, we showed that the morphological features of the</p>	<p>0134, 23PCCD I/2018, PN19150 101/2019]</p>	<p>Beuran, M; Prodan, AM; Matei, M; Marinescu, SA; Truscua, R; Predoi, D</p>				
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			<p>coatings were also changed, as the irradiated layers are delaminated. The biological assays confirmed that the antibacterial activity of HAp:PDMS composite layers increased after irradiation. The results obtained in this study highlighted that the biological properties of HAp:PDMS layers could be influenced by irradiation. (C) 2019 Society of Plastics Engineers.</p>						
98.	<p>Preparations of Silver/Montmorillonite Biocomposite Multilayers and Their Antifungal Activity</p>	<p><i>COATINGS</i>, 9, 817 (2019)</p>	<p>In this study, the results about the influence of the surface morphology of layers based on montmorillonite (MMT) and silver (Ag) on antimicrobial properties are reported. The coating depositions were performed in the plasma of a radio frequency (RF) magnetron sputtering discharge. The studied layers were single montmorillonite layers (MMT) and silver/montmorillonite multilayers (MMT-Ag) obtained by magnetron sputtering</p>	<p>Romania Ministry of Research and Innovation [PN-III-P1-1.2-PCCDI-2017-0629, 43PCCDI/2018, PN-III-P1-1.1-TE-2016-1501, 04/2018]</p>	<p>Iconaru, SL; Groza, A; Stan, GE; Predoi, D; Gaiaschi, S; Truscă, R; Chifiruc, CM; Marutescu, L; Titea, T; Stancu, GA; Hristu, R;</p>	2.33	0.369	10.3390/coatings9120817	Q2

		<p>technique with a different surface thickness. The resultant MMT-Ag biocomposite multilayers exhibited a uniform distribution of constituent elements and enhanced antimicrobial properties against fungal biofilm development. Glow-discharge optical emission spectroscopy (GDOES) analysis revealed the formation of MMT-Ag biocomposite multilayers following the deposit of a silver layer for an MMT layer that was initially deposited on a Si substrate. The surface morphology and thickness evaluation of deposited biocomposite layers were performed by scanning electron microscopy (SEM). A qualitative analysis of the chemical composition of thin layers was performed and the elements O, Ag, Mg, Fe, Al, and Si were identified in the MMT-Ag biocomposite</p>		<p>Ghegoiu, L; Badea, ML; Turcul et, CS; Ganciu, M; Chapon, P</p>				
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			<p>multilayers. The in vitro antifungal assay proved that the inhibitory effect against the growth of <i>Candida albicans</i> ATCC 101231 CFU was more emphasized in the case of MMT-Ag biocomposite multilayers than in the case of the MMT layer. Cytotoxicity studies performed on HeLa cells showed that the tested layers did not show significant toxicity at the time intervals during which the assay was performed. On the other hand, it was observed that the MMT layers exhibited slightly higher biocompatible properties than the MMT-Ag composite layers.</p>						
99.	<p>Biocompatible Layers Obtained from Functionalized Iron Oxide Nanoparticles in Suspension</p>	<p><i>COATINGS</i>, 9, 773 (2019)</p>	<p>Iron oxide nanoparticles have been extensively studied for challenges in applicable areas such as medicine, pharmacy, and the environment. The functionalization of iron oxide nanoparticles with dextran opens new prospects for application.</p>	<p>Romanian Ministry of Research and Innovation (PCCDI-UEFISCDI) [PN-III-P1-1.2-PCCDI-2017-</p>	<p>Predoi, D; Iconaru, SL; Predoi, MV; Buton, N; Megier, C; Motelica-Heino, M</p>	2.33	0.369	10.3390/coatings9120773	Q2

			<p>Suspension characterization methods such as dynamic light scattering (DLS) and zeta potential (ZP) have allowed us to obtain information regarding the stability and hydrodynamic diameter of these suspended particles. For rigorous characterization of the suspension of dextran-coated iron oxide nanoparticles (D-MNPs), studies have been performed using ultrasound measurements. The results obtained from DLS and ZP studies were compared with those obtained from ultrasound measurements. The obtained results show a good stability of D-MNPs. A comparison between the D-MNP dimension obtained from transmission electron microscopy (TEM), X-ray diffraction (XRD), and DLS studies was also performed. A scanning electron spectroscopy (SEM) image of a surface D-MNP layer obtained from the stable suspension</p>	<p>0629, 43PCCD I/2018, PN-III-P1-1.2-PCCDI-2017-0134, 23PCCD I/2018]</p>					
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			<p>shows that the particles are spherical in shape. The topographies of the elemental maps of the D-MNP layer showed a uniform distribution of the constituent elements. The homogeneity of the layer was also observed. The morphology of the HeLa cells incubated for 24 and 48 h with the D-MNP suspension and D-MNP layers did not change relative to the morphology presented by the control cells. The cytotoxicity studies conducted at different time intervals have shown that a slight decrease in the HeLa cell viability after 48 h of incubation for both samples was observed.</p>						
100.	<p>Superconducting MgB₂ textured bulk obtained by ex situ spark plasma sintering from green</p>	<p><i>SUPERCONDUCTOR SCIENCE & TECHNOLOGY</i>, 32, 125001 (2019)</p>	<p>MgB₂ green bodies were prepared by magnetic field slip casting in ethyl alcohol with added polyethyleneimine dispersing agent under a high magnetic field, $\mu H-0(0) = 12$ T. Samples were further processed by spark plasma sintering (SPS) and</p>	<p>UEFISCDI, Romania [POC 37_697, 28/01.09.2016 REBMA T, ERA-M 74/2017 BIOMB]; NIMS;</p>	<p>Grigorescu, MA; Sandu, V; Kuncser, A; Pasuk, I; Aldica, G; Suzuki, TS; Vasyl</p>	2.489	0.746	10.1088/1361-6668/ab4620	Q2

	compact processed by slip casting under a 12T magnetic field		characterized for superconducting properties. Slip casting provides texturing of MgB ₂ (the degree of c-axis orientation is approximately 3.5%), which is further increased significantly (to about 21%) in the SPSed sample. The critical current density (J(c)) displays anisotropy relative to the orientation of the measuring magnetic field. Specific features of J(c)(H, T) and of the pinning force extracted from magnetic measurements with the field parallel and perpendicular to H-0 are discussed.	[PFE12/2 018]	kiv, O; Badic a, P				
101.	Modelling J?V hysteresis in perovskite solar cells induced by voltage poling	<i>PHYSICA SCRIPTA</i> , 94 ,1 25809 (2019)	We present an extension of the dynamic electrical model, which enable us to explain some important features of the perovskite solar cells (PSC), like the shape of the hysteresis and the appearance of the ?bump? in the so called reverse scan, without requiring any additional assumptions. We give analytical expressions in terms	Romanian Ministry of Research and Innovation [PN 19- 060101, PN 19- 060205, PN 19- 03]; Romania -JINR cooperation	Anghe l, DV; Nemnes, GA; Pintilie, I; Manolescu, A	2.151	0.442	10.1088/ 1402- 4896/ab3 47d	Q2

			<p>of the Lambert's function W for the open circuit voltage, the stationary current, and the instantaneous current, which can be written also in terms of elementary functions for the most part of the ranges of the physical parameters. The initial polarization of the cell, modeled as the charging of a capacitor with voltage dependent capacitance, is consistently determined in the model, from the initial stationary conditions. This is inline with a previously observed sharp increase of the PSC capacitance beyond the open-circuit voltage. Besides the known features, we obtain characteristics that were not yet analyzed experimentally, like the change of the bump from the reverse scan branch of the $J-V$ characteristic to the forward scan, with the increase of the poling voltage (or</p>	project [pp. 26/2019]					
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			the increase of the PSC capacitance).						
102.	Nonvolatile resistance switching in monolayer transition metal dichalcogenides: an explanation	<i>SEMICONDUCTOR SCIENCE AND TECHNOLOGY</i> , 34 , 125004 (2019)	Monolayers of transition metal (from the group VI B) dichalcogenides (MoS ₂ , MoSe ₂ , WS ₂ and WSe ₂) show nonvolatile resistance switching: a transition from a high to a low resistance state. Here we propose two explanations for this behaviour. The first one is that the transition metals swaps from a trigonal prismatic to an octahedral coordination (due to a high applied electric field and pressure) and thus the monolayer switches from a semiconducting to a metallic phase. The second one is a two-step process where the high electric field and pressure break the M-X bonds and the transition metal atoms become firstly tetrahedrally coordinated and afterwards square-planar coordinated. Thus, all transition metal and chalcogen atoms are in the same plane, and the transition metal atoms are in contact	Romanian Ministry of Research and Innovation	Mihai, C; Velea, A; Sava, F	2.654	0.576	10.1088/1361-6641/ab4b85	Q2

			with the atoms of the top and bottom electrodes.						
103.	Molecular dynamics in bulk and surface species of cyanophenyl alkyl benzoates with 2, 3 and 7 carbon atoms in the alkyl chain: comparison in the whole homologous series	<i>LIQUID CRYSTALS</i> , pp.- ()	Molecular mobility of cyanophenyl alkylbenzoates (CPnBs) (n = 2, 3, 7 - number of carbon atoms in the alkyl chain) in the bulk and in composites with aerosil A380 is investigated by broadband dielectric spectroscopy, while thermal analysis and infrared spectroscopy were applied to characterise the molecular species. The work completes preliminary results obtained for the members with n = 4 ... 6. An interaction by hydrogen bonding, between aerosil surface - OH groups and - CN or ester groups of the CPnB molecules takes place. It slows down the relaxation process as observed for related composites in comparison to the pure materials. The existence of two types of bonding might be the reason that Vogel temperature for the relaxation process in the surface layer	Romanian National Authority UEFISCDI (Executive Agency for Higher Education, Research, Development and Innovation Funding) [21 N/08.02.2019, PN19-03]	Frunza, S; Ganea, CP; Zgura, I; Frunza, L; Schonhals, A	3.078	0.32	10.1080/02678292.2019.1687768	Q2

			<p>does not show the odd-even effect. Temperature dependence of the relaxation rates for composites shows a crossover behaviour from a high to a low temperature regime. Moreover, the temperature dependence of the dielectric strength is unusual. As the loading degree is similar, comparison of the dielectric, spectroscopic and thermal data obtained here and with the results obtained for the composites with $n = 4 \dots 6$ can be directly done. Increasing the number of the members of the homologous series confirms and hardens the preliminary conclusions.</p>						
104.	<p>Comprehensive In Vitro Testing of Calcium Phosphate-Based Bioceramics with Orthopedic and</p>	<p><i>MATERIALS</i>, 12, 3704 (2019)</p>	<p>Recently, a large spectrum of biomaterials emerged, with emphasis on various pure, blended, or doped calcium phosphates (CaPs). Although basic cytocompatibility testing protocols are referred by International Organization for Standardization</p>	<p>Romanian Ministry of Research and Innovation, CCCDI-UEFISCDI [PN-III-P1-1.2-PCCDI-2017-</p>	<p>Albulescu, R; Popa, AC; Enciu, AM; Albulescu, L; Dudau, M; Popescu, ID;</p>	2.972	0.608	10.3390/ma12223704	Q2

	Dentistry Applications		<p>(ISO) 10993 (parts 1-22), rigorous in vitro testing using cutting-edge technologies should be carried out in order to fully understand the behavior of various biomaterials (whether in bulk or low-dimensional object form) and to better gauge their outcome when implanted. In this review, current molecular techniques are assessed for the in-depth characterization of angiogenic potential, osteogenic capability, and the modulation of oxidative stress and inflammation properties of CaPs and their cation- and/or anion-substituted derivatives. Using such techniques, mechanisms of action of these compounds can be deciphered, highlighting the signaling pathway activation, cross-talk, and modulation by microRNA expression, which in turn can safely pave the road toward a better filtering of the</p>	0062, 58, 7PFE/16. 10.2018]	Mihai, S; Codrici, E; Pop, S; Lupu, AR; Stan, GE; Mand a, G; Tanas e, C				
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			truly functional, application-ready innovative therapeutic bioceramic-based solutions.						
105.	Electronic phase separation at LaAlO ₃ /SrTiO ₃ interfaces tunable by oxygen deficiency	<i>PHYSICAL REVIEW MATERIALS</i> , 3 , 106001 (2019)	Electronic phase separation is crucial for the fascinating macroscopic properties of the LaAlO ₃ /SrTiO ₃ (LAO/STO) paradigm oxide interface, including the coexistence of superconductivity and ferromagnetism. We investigate this phenomenon using angle-resolved photoelectron spectroscopy (ARPES) in the soft-x-ray energy range, where the enhanced probing depth combined with resonant photoexcitation allow us access to fundamental electronic structure characteristics - momentum-resolved spectral function, dispersions and ordering of energy bands, Fermi surface - of buried interfaces. Our experiment uses x-ray irradiation of the LAO/STO interface to tune its oxygen deficiency, building up a	DFG German Research Foundation (DFG) [LE 2446/4-1]; Swiss National Science Foundation Swiss National Science Foundation (SNSF) [200021_ - 165529]; JUWELS Cluster of the Juelich Supercomputing Centre (JSC) [hhh08]	Strokov, VN; Chikina, A; Caputo, M; Husanu, MA; Bisti, F; Bracher, D; Schmitt, T; Granozio, FM; Vaz, CAF; Lechermann, F	2.926	1.022	10.1103/PhysRevMaterials.3.106001	Q2

			<p>dichotomic system where mobile weakly correlated Ti t(2g) electrons coexist with localized strongly correlated Ti e(g) ones. The ARPES spectra dynamics under x-ray irradiation shows a gradual intensity increase under constant Luttinger count of the Fermi surface. This fact identifies electronic phase separation (EPS) where the mobile electrons accumulate in conducting puddles with fixed electronic structure embedded in an insulating host phase, and allows us to estimate the lateral fraction of these puddles. We discuss the physics of EPS invoking a theoretical picture of oxygen-vacancy clustering, promoted by the magnetism of the localized Ti e(g) electrons, and repelling of the mobile t(2g) electrons from these clusters. Our results on the irradiation-tuned EPS elucidate the intrinsic one taking place at the stoichiometric LAO/STO interfaces.</p>						
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106.	Reticulated Mesoporous TiO ₂ Scaffold, Fabricated by Spray Coating, for Large-Area Perovskite Solar Cells	<i>ENERGY TECHNOLOGY</i> , 8, UNSP 1900922 (2020)	Development of reproducible, low-cost fabrication technologies that are readily adaptable to large-scale production, is one of the main challenges in the field of perovskite solar cells (PSCs). So far, for all the other layers in a solar cell, large-area deposition methods have been adapted, except for mesoporous fabrication. Herein, the fabrication of mesoporous TiO ₂ scaffolds using a large-area deposition technique, such as spray coating, is shown. Moreover, this technique induces the formation of a very specific reticulated structure with well-delimited, oval-shaped cavities. The cavities have irregular dimensions, with diameters in the range of 3-7 μm , approximate to 350 nm height, resulting in an overall increase in roughness of one order of magnitude, compared with the spin-coated mesoporous scaffold. Using this rough structured	UEFISCDI [PN-III-P1-1.1-PD-2016-0703]; Romania Ministry of Research and Innovation [PN19-03, PN-III-16-48-01, PN III-IDEI-177/2017]	Tomulescu, AG; Stancu, V; Beslea, C; Enculescu, M; Nemnes, GA; Florea, M; Dumitru, V; Pintilie, L; Pintilie, I; Leont, L	3.163	0.615	10.1002/ente.201900922	Q2
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			mesoporous TiO ₂ in PSCs not only does not affect the efficiency of solar cells but actually improves it from an average of 10% to 12% in comparison with the devices containing a spin-coated mesoporous scaffold.						
107.	Photoluminescence and thermoluminescence properties of the Sr ₃ Al ₂ O ₆ :Eu ³⁺ /Eu ²⁺ , Tb ³⁺ persistent phosphor	<i>JOURNAL OF LUMINESCENCE</i> , 214 , 116540 (2019)	Eu ³⁺ , Tb ³⁺ -doped Sr ₃ Al ₂ O ₆ powder phosphor was synthesized via a precursor route and subjected to a subsequent thermal treatment in reducing atmosphere. Photoluminescence and thermoluminescence properties of Sr ₃ Al ₂ O ₆ :Eu ³⁺ /Eu ²⁺ , Tb ³⁺ were investigated. The structure and morphology of oxides were investigated by X-ray diffraction (XRD) and scanning electron microscopy (SEM). X-ray photoelectron spectroscopy (XPS) was used for the nanocrystals surface composition analysis. X-ray diffraction patterns confirmed the formation of the cubic structure	Materials Science and Advanced Characterization Methods Programme of the "Ilie Murgulescu" Institute of Physical Chemistry; Romanian Academy; Romanian Ministry of Research and Innovation [PN18-110101]	Gingasu, D; Mindru, I; Ianculescu, A; Preda, S; Negrila, C; Secu, M	2.961	0.421	10.1016/j.jlumin.2019.116540	Q2

			<p>specific to Sr₃Al₂O₆ with space group Pa₃ and lattice parameter a = 15.8322 angstrom, while SEM investigations revealed equiaxial, polycrystalline particles, with sizes in the submicronic range, for both Sr₃Al₂O₆:Eu³⁺, Tb³⁺ and Sr₃Al₂O₆:Eu³⁺/Eu²⁺, Tb³⁺ samples. The photoluminescence spectra showed the typical f-f luminescence lines of the Tb(3+) and Eu³⁺ ions, accompanied by a broad Eu²⁺ luminescence band at 510 nm (after calcination in reducing atmosphere). The "after-glow" luminescence signal and the thermoluminescence were assigned to the recombination of close neighbor partners (electron and Eu²⁺ - hole centers) within the same complex of defects.</p>						
108.	Graphitic carbon nitride based photoan	<i>INTERNATIONAL JOURNAL OF HYDROGEN ENERGY</i> , 44 ,	Controlled deposition of g-C ₃ N ₄ films, used as photoelectrodes in PEC water splitting is still considered a	Romanian Ministry of Education and	Sima, M; Vasile, E; Sima, A;	4.084	0.581	10.1016/j.ijhydene.2019.07.243	Q2

odes prepared by spray coating method	pp.24430-24440 (2019)	<p>challenge. In this paper, nanosheets of g-C₃N₄ were deposited on FTO and FTO/TiO₂ substrates via spray coating method. This method allows the preparation of g-C₃N₄ films with a better exposure of nanosheet edges to the solution and light, favoring the photocatalytic process. The morphology, chemical composition and optical properties of these films were investigated, their behavior as photoanodes in photoelectrochemical water splitting being also evaluated. The results evidenced the formation of g-C₃N₄ films with an enhanced visible light absorption and improved photocatalytic activity. The interaction of these films with TiO₂ substrate consists in the insertion of nitrogen species in the TiO₂ lattice. A significant increase in bulk donor densities value correlated with a longer lifetime of</p>	Research [PN19-03, 21 N/08.02. 2019]	Preda, N; Logofatu, C				
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			photogenerated electrons was observed for TiO ₂ /g-C ₃ N ₄ photoanode. (C) 2019 Hydrogen Energy Publications LLC. Published by Elsevier Ltd. All rights reserved.						
109.	Photoluminescence and structural properties of the nitrogen doped TiO ₂ and the influence of SiO ₂ and Ag nanoparticles	<i>JOURNAL OF PHYSICS-CONDENSED MATTER</i> , 31 , 375201 (2019)	Mixtures of nitrogen-doped titanium dioxide (TiO ₂ :N) with different concentrations of Ag and/or SiO ₂ particles (0.5, 1 and 2 wt.%) were prepared in solid state by mechanico-chemical interactions. Using UV-VIS spectroscopy, Raman scattering, photoluminescence (PL) and photoluminescence excitation (PLE), the influence of the particles on the host material is evaluated. UV-VIS spectroscopy studies indicate a TiO ₂ :N band gap shift to the UV range with increasing concentrations of SiO ₂ and Ag particles. PL intensities decrease with increasing concentrations of Ag and/or SiO ₂ particles in the TiO ₂ :N host matrix, which in turn could effectively	Romanian Ministry of Research and Innovation, PCCDI-UEFISCDI within PNCDI III [PN-III-P1.2-PCCDI-2017-0743/44]; [PN18-110101]	Nila, A; Baibarac, M; Udrescu, A; Smaranda, I; Mateescu, A; Mateescu, G; Mereuta, P; Negrila, CC	2.711	0.846	10.1088/1361-648X/ab2692	Q2

			<p>restrict the electron and hole recombination. To explain these processes, the different de-excitation ways will be advanced, taking into account the energy levels diagram of TiO₂:N/Ag, TiO₂:N/SiO₂ and TiO₂:N/Ag/SiO₂ systems. PLE spectra show a gradual decrease in their relative intensities after 165 min of continuous irradiation due to photosensitivity of TiO₂:N. The plasmonic effect of Ag particles in the TiO₂:N/Ag system is highlighted for the first time by PLE studies.</p>						
110.	<p>Fabrication and characterization of Si_{1-x}Ge_x nanocrystals in as-grown and annealed structures: a compar</p>	<p><i>BEILSTEIN JOURNAL OF NANOTECHNOLOGY</i>, 10, pp.1873-1882 (2019)</p>	<p>Multilayer structures comprising of SiO₂/SiGe/SiO₂ and containing SiGe nanoparticles were obtained by depositing SiO₂ layers using reactive direct current magnetron sputtering (dcMS), whereas, Si and Ge were co-sputtered using dcMS and high-power impulse magnetron sputtering (HiPIMS). The as-</p>	<p>M-ERA.NE T project PhotoNanoP UEFISCDI [33/2016]; PCE project UEFISCDI [122/2017]; Romania Ministry</p>	<p>Sultan, MT; Maraloiu, AV; Stavarache, I; Gudmundsson, JT; Manolescu, A; Teodorescu,</p>	2.269	0.633	10.3762/bjnano.10.182	Q2

ative study		grown structures subsequently underwent rapid thermal annealing (550-900 degrees C for 1 min) in N-2 ambient atmosphere. The structures were investigated using X-ray diffraction, high-resolution transmission electron microscopy together with spectral photocurrent measurements, to explore structural changes and corresponding properties. It is observed that the employment of HiPIMS facilitates the formation of SiGe nanoparticles (2.1 +/- 0.8 nm) in the as-grown structure, and that presence of such nanoparticles acts as a seed for heterogeneous nucleation, which upon annealing results in the periodically arranged columnar self-assembly of SiGe core-shell nanocrystals. An increase in photocurrent intensity by more than an order of magnitude was achieved by	of Research and Innovation through NIMP Core Program [21 N/08.02.2019, PN19-03]; Technology Development Fund of the Icelandic Centre for Research [159006-0611]	VS; Ciurea, ML; Svavarsson, HG					
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			annealing. Furthermore, a detailed discussion is provided on strain development within the structures, the consequential interface characteristics and its effect on the photocurrent spectra.						
111.	Study of the Structure and Antimicrobial Activity of Calcium Deficient Ceramics on Chlorhexidine Nanoclay Substrate	<i>MATERIALS</i> , 12, 2996 (2019)	Novel biomedical composites, based on organically modified vermiculite and montmorillonite with deposited Calcium deficient hydroxyapatite (CDH), were prepared. The monoionic sodium forms of vermiculite and montmorillonite were intercalated with chlorhexidine diacetate (CA). The surfaces of organoclays were used for the precipitation of Calcium deficient hydroxyapatite. The composites with Calcium deficient hydroxyapatite showed very good antibacterial effects, similar to the antimicrobial activity of pure organoclay samples. Better antibacterial activity was shown in the organically modified montmorillonite	Ministry of Education, Youth and Sports of the Czech republic from the National Programme of Sustainability (NPU II) project "IT4Innovations excellence in science" [LQ1602]; Regional Materials Science and Technology Centre - Feasibility Program -	Pazourkova, L; Reli, M; Hundakova, M; Pazdziora, E; Predoi, D; Martynkova, GS; Lafdi, K	2.972	0.608	10.3390/ma12182996	Q2

			<p>sample with Ca-deficient hydroxyapatite compared with the vermiculite composite, but, in the case of Staphylococcus aureus, both composites showed the same minimum inhibitory concentration (MIC) value. The antimicrobial effect of composites against bacteria and fungi increased with the time of exposure. The structural characterization of all the prepared materials, performed using X-ray diffraction and FT infrared spectroscopy analysis, detected no changes in the original clay or CDH during the intercalation or precipitation process, therefore we expect the strength of the compounds to be in the original power.</p>	<p>Ministry of Education, Youth and Sports of the Czech Republic [LO1203]; Ministry of Education, Youth and Sport of the Czech Republic Ministry of Education, Youth & Sports - Czech Republic [SP2018/166, SP2018/112]</p>					
112.	Development of W-monoblock divertor components with	<p><i>FUSION ENGINEERING AND DESIGN</i>, 146, pp.1351-1354 (2019)</p>	<p>In the case of DEMO fusion reactor, the divertor should be able to extract a steady heat flux of about 10 MW/m². A promising concept is the W-monoblock which should be</p>	<p>Euratom research and training programme [633053]</p>	<p>Galatanu, M; Cioca, M; Ighigeanu, A; Ruiu, G;</p>	1.457	0.32	10.1016/j.fusengdes.2019.02.074	Q2

	<p>embedded thermal barrier interfaces</p>	<p>connected to a CuCrZr or an advanced Cu ODS alloy pipe passing through the W component. Taking into account the optimum operating temperature windows for W and existing Cu-based alloys and the thermal expansion coefficients mismatch of these two materials, a "thermal barrier" interface material is inserted in between in order to mitigate the thermal stresses and to optimize the heat flow through divertor components. In this work we investigate the feasibility to realize such divertor components using materials produced by FAST (field assisted sintering technology). This powder metallurgy technique was used firstly to produce W or W-based composites and the thermal barriers in an almost final shape and then to join the materials in realistic divertor mock-ups. The thermal barrier materials are various Cu-based composites</p>	<p>Enculescu, M; Popescu, B; Galatanu, A</p>				
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			which are included both as single material or as functionally graded components. The interface quality between different materials is investigated by scanning electron microscopy and the heat flow through components is evaluated using simulations.						
113.	Sintering and irradiation of copper-based high entropy alloys for nuclear fusion	<i>FUSION ENGINEERING AND DESIGN</i> , 146 , pp.1824-1828 (2019)	In this study, $Cu_xCrFeTiV$ ($x = 0.21, 0.44, 1$ and 1.7 M ratio) high entropy alloys have been devised for thermal barriers between the plasma facing tungsten tiles and the copper-based heat sink in the first wall of nuclear fusion reactors. The high entropy alloys were produced by ball milling the elemental powders, followed by consolidation with spark plasma sintering. Irradiation of the equiatomic $CuCrFeTiV$ sample was carried out at room temperature with $Ai(+)$ (300 keV) beams with a fluence of 3×10^{20} at/m ² . Structural changes prior and after irradiation were	European Union's Horizon 2020 research and innovation program [633053]; Fundacao para a Ciencia e Tecnologia Portuguese Foundation for Science and Technology [Pest-OE/SADG/LA0010/2013]; "Fundacao para a Ciencia e Tecnologia"	Dias, M; Antao, F; Catardino, N; Galatano, A; Galatano, M; Ferreira, P; Correia, JB; da Silva, RC; Goncalves, AP; Alves, E	1.457	0.32	10.1016/j.fusengdes.2019.03.044	Q2

			<p>investigated by scanning electron microscopy, coupled with energy dispersive X-ray spectroscopy, X-ray diffraction and thermal diffusivity. Preliminary results showed the presence of heterogenous and multiphasic microstructures in all samples. Moreover, with the increase of the Cu content it is possible to observe the formation of Cu-rich structures. The diffractogram of the CuCrFeTiV sample revealed major peaks of a BCC crystal structure and minor peaks of a FCC crystal structure. In addition, after irradiation no modifications in the CuCrFeTiV microstructure or in the diffractogram were observed.</p>	<p>(FCT)Portuguese Foundation for Science and Technology [PTDC/CTM/100163/2008, PEST-OE/CTM - UI0084/2011, UID/Multi/04349/2013]; FCTPortuguese Foundation for Science and Technology [SFRH/BPD/68663/2010]</p>					
114.	Thermophysical and mechanical properties of W-Cu laminates produced by	<p><i>FUSION ENGINEERING AND DESIGN</i>,146, pp.2371-2374 (2019)</p>	<p>W-laminates are multi layered composites realized from alternately stacked W and a second metal foils. Such materials are promising candidates for W-based structural materials for fusion reactors like DEMO or beyond concepts,</p>	<p>Euratom research and training programme [633053]</p>	<p>Galatana, A; Galatana, M; Enculescu, M; Reiser, J; Sickinger, S</p>	1.457	0.32	<p>10.1016/j.fusengdes.2019.03.193</p>	Q2

FAST joining			<p>due to the fact that cold-rolled ultrafine-grained thin W foils show exceptional properties in terms of ductility, toughness and ductile to brittle transition (DBT), in contrast to classic bulk W materials. Therefore, different routes to transfer the W foils properties to bulk materials have been investigated. In this work we present the results obtained for W-Cu laminates produced via a FAST (Field Assisted Sintering Technique) joining route. The main advantages of FAST resides in the short processing time, with subsequent lower recrystallization detrimental effects. Structural and thermophysical properties show that the best materials are obtained for about 100 μm thick W foils and 50-100 μm thick Cu foils, while tensile and Charpy impact tests results show that the FAST processed W-Cu laminates are similar to the W-Cu laminates obtained by diffusion bonding.</p>					
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115.	3D Superparamagnetic Scaffolds for Bone Mineralization under Static Magnetic Field Stimulation	<i>MATERIALS</i> , 12 , 2834 (2019)	We reported on three-dimensional (3D) superparamagnetic scaffolds that enhanced the mineralization of magnetic nanoparticle-free osteoblast cells. The scaffolds were fabricated with submicronic resolution by laser direct writing via two photons polymerization of Ormocore/magnetic nanoparticles (MNPs) composites and possessed complex and reproducible architectures. MNPs with a diameter of 4.9 +/- 1.5 nm and saturation magnetization of 30 emu/g were added to Ormocore, in concentrations of 0, 2 and 4 mg/mL. The homogenous distribution and the concentration of the MNPs from the unpolymerized Ormocore/MNPs composite were preserved after the photopolymerization process. The MNPs in the scaffolds retained their superparamagnetic behavior. The	Romanian National Authority for Scientific Research and Innovation, CNCS/CCDI-UEFISCDI within PNCD III [PN-III-P2-2.1-PED-2016-1787]; National Program National Program [PN 16 47-LAPLAS IV]; European Regional Development Fund through Competitiveness Operational Program 2014-2020, Priority axis 1 [P_36_6 11, 107066]	Paun, IA; Calin, BS; Mustaciosu, CC; Mihailescu, M; Moldovan, A; Crisan, O; Leca, A; Luculescu, CR	2.972	0.608	10.3390/ma12172834	Q2
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			<p>specific magnetizations of the scaffolds with 2 and 4 mg/mL MNPs concentrations were of 14 emu/g and 17 emu/g, respectively. The MNPs reduced the shrinkage of the structures from 80.2 +/- 5.3% for scaffolds without MNPs to 20.7 +/- 4.7% for scaffolds with 4 mg/mL MNPs. Osteoblast cells seeded on scaffolds exposed to static magnetic field of 1.3 T deformed the regular architecture of the scaffolds and evoked faster mineralization in comparison to unstimulated samples. Scaffolds deformation and extracellular matrix mineralization under static magnetic field (SMF) exposure increased with increasing MNPs concentration. The results are discussed in the frame of gradient magnetic fields of similar to 3×10^{-4} T/m generated by MNPs over the cells bodies.</p>						
116.	Physical properties of	<i>THIN SOLID FILMS</i> , 685 , pp.379-384 (2019)	Copper (Cu) and dysprosium (Dy) co-doped zinc oxide (ZnO) thin films	Executive Unit for Financin	Locovei, C; Coman, D;	1.888	0.324	10.1016/j.tsf.2019.06.027	Q2

	<p>Cu and Dy co-doped ZnO thin films prepared by radio frequency magnetron sputtering for hybrid organic/inorganic electronic devices</p>		<p>were fabricated by radio frequency magnetron sputtering (RF-magnetron sputtering) using a homemade target having the atomic percentage of Cu and Dy of 1%, onto optical glass substrates and quartz substrates. The structural, morphological, optical, and electrical properties of fabricated ZnO:(Cu, Dy) structures were analyzed and discussed. It was found that all samples have hexagonal Wurtzite structure. Optical transmission measurements indicate values larger than 75% in the 400-2500 nm ranges. The current-voltage characteristics of hybrid heterojunctions based on ZnO:(Cu, Dy) and poly(3-hexylthiophene-2.5-diyl) (P3HT) or copper (II) phthalocyanine (CuPc) thin films were acquired in the dark, in ambient atmosphere, and they exhibit the typical diode behavior,</p>	<p>g Higher Education, Research, Development and Innovation (UEFISCDI), FPRD grant [18/2018]</p>	<p>Radu, A; Ion, L; Antoh, VA; Vasile, N; Dumitru, A; Iftime, S; Antoh, S</p>				
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			almost free of electrical hysteresis.						
117.	Crystallization processes in europium-doped Bi ₄ Ge ₃ O ₁₂ glass materials	<i>JOURNAL OF LUMINESCENCE</i> , 213 , pp.235-240 (2019)	Crystallization processes of bismuth germanate glasses may be evidenced by the optical properties of Eu ³⁺ ions, used as probes because these ions substitute the Bi ³⁺ ions in the glass-ceramic samples. The gradual thermal annealing of these glasses induces rearranging of GeO ₄ tetrahedra around Bi ³⁺ ions and transforms the red colored glasses in transparent glass-ceramic samples. The red color comes from the light scattering on GeO ₄ clusters and, after rearranging in Bi ₄ Ge ₃ O ₁₂ nanoparticles, convert the glass-ceramic samples in transparent materials. One of the most essential information is given by the phonon side bands investigations which, coupled with the Raman spectra allows the identification of Bi ₄ Ge ₃ O ₁₂ lattice vibration but also those of residual GeO ₄ tetrahedra. The measurements of	Romanian National Authority for Scientific Research Core Programme CNCS-UEFISCDI [PN19-03, 21 N/08.02.2019]	Polosana, S	2.961	0.421	10.1016/j.jlumin.2019.05.031	Q2

			the luminance and CIE circle have shown a significant increase of the light emission for the glass-ceramic samples, while the Magnetic Circular Dichroism indicate lower symmetry coordination around the Eu ³⁺ ions in the glass sample compared with the glass-ceramic and also a change in the coordination number to the higher values.						
118.	Carbon-based sprayed electrodes for pyroelectric applications	<i>PLOS ONE</i> , 14 ,e0221108 (2019)	A carbon-based layer was deposited by spraying on top of a ferroelectric layer grown by sol-gel on Si (001) substrate and its properties as electrode and absorber for pyroelectric detection were tested. It was found that the electric properties of the ferroelectric capacitor with top carbon-based sprayed electrode (CBSE) are comparable with those of the capacitors with standard top SrRuO ₃ (SRO)/Au electrode. Pyroelectric measurements show that the pyroelectric signal recorded on	Romanian Ministry of Education Executive Unit for Funding High Education, Research, Development and Innovation (MEN-UEFISCDI) [PN18110101]; IFA-CEA [C503/2016]	Chirila, C; Botea, M; Iuga, A; Tomulescu, AG; Balescu, L; Galca, AC; Boni, AG; Leont, L; Pintilie, I; Pintilie, L	2.776	0.978	10.1371/journal.pone.0221108	Q2

			ferroelectric capacitors with top CBSE electrode is 2.5 times greater than for top SRO/Au electrode for low frequency range. The value of the pyroelectric coefficient was estimated to $9.73 \cdot 10^{-4} \text{ C/m}^2\text{K}$ for CBSE electrodes and $3.36 \cdot 10^{-4} \text{ C/m}^2\text{K}$ for SRO/Au respectively. The fabrication process of CBSE is of low cost, easy to implement and with high throughput making it attractive for manufacturing various devices like pyroelectric detector, thermal imaging, solar cells, etc.						
119.	Generalized Master Equation Approach to Time-Dependent Many-Body Transport	<i>ENTROPY</i> , 21 , 731 (2019)	We recall theoretical studies on transient transport through interacting mesoscopic systems. It is shown that a generalized master equation (GME) written and solved in terms of many-body states provides the suitable formal framework to capture both the effects of the Coulomb interaction and electron-photon coupling due to a	Research Fund of the University of Iceland; Istanbul University; Icelandic Research Fund [163082-051]; Icelandic Instruments Fund; Reykjavik	Moldoveanu, V; Manolescu, A; Gudmundsson, V	2.419	0.516	10.3390/e21080731	Q2

			<p>surrounding single-mode cavity. We outline the derivation of this equation within the Nakajima-Zwanzig formalism and point out technical problems related to its numerical implementation for more realistic systems which can neither be described by non-interacting two-level models nor by a steady-state Markov-Lindblad equation. We first solve the GME for a lattice model and discuss the dynamics of many-body states in a two-dimensional nanowire, the dynamical onset of the current-current correlations in electrostatically coupled parallel quantum dots and transient thermoelectric properties. Secondly, we rely on a continuous model to get the Rabi oscillations of the photocurrent through a double-dot etched in a nanowire and embedded in a quantum cavity. A many-body Markovian version of the GME for</p>	<p>k Universit y [815051] ; CNCS- UEFISC DI [PN- III-P4- ID-PCE- 2016- 0084]; Romania n Core Program [PN19- 03, 21 N/08.02. 2019]</p>					
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			cavity-coupled systems is also presented.						
120.	Rapid thermal annealing for high-quality ITO thin films deposited by radio-frequency magnetron sputtering	<i>BEILSTEIN JOURNAL OF NANOTECHNOLOGY</i> , 10 , pp.1511-1522 (2019)	In this work, rapid thermal annealing (RTA) was applied to indium tin oxide (ITO) films in ambient atmosphere, resulting in significant improvements of the quality of the ITO films that are commonly used as conductive transparent electrodes for photovoltaic structures. Starting from a single sintered target (purity 99.95%), ITO thin films of predefined thickness (230 nm, 300 nm and 370 nm) were deposited at room temperature by radio-frequency magnetron sputtering (rfMS). After deposition, the films were subjected to a RTA process at 575 degrees C (heating rate 20 degrees C/s), maintained at this temperature for 10 minutes, then cooled down to room temperature at a rate of 20 degrees C/s. The film structure was modified by changing the	STAR program me [178/2017]; ELI [17/2017]; Program NUCLE U-LAPLAS VI [16N/2019]; [MIFID ID P_39_36 6/2017]	Prepelita, P; Stavarache, I; Craciun, D; Garoi, F; Negrila, C; Sbarcea, BG; Craciun, V	2.269	0.633	10.3762/bjnano.10.149	Q2

			<p>deposition thickness or the RTA process. X-ray diffraction investigations revealed a cubic nanocrystalline structure for the as-deposited ITO films. After RTA, polycrystalline compounds with a textured (222) plane were observed. X-ray photon spectroscopy was used to confirm the beneficial effect of the RTA treatment on the ITO chemical composition. Using a Tauc plot, values of the optical band gap ranging from 3.17 to 3.67 eV were estimated. These values depend on the heat treatment and the thickness of the sample. Highly conductive indium tin oxide thin films ($\rho = 7.4 \times 10^{-5}$ Ω cm) were obtained after RTA treatment in an open atmosphere. Such films could be used to manufacture transparent contact electrodes for solar cells.</p>						
121.	Structural, electric and pyroele	<i>CURRENT APPLIED PHYSICS</i> , 19 , pp.804-810 (2019)	Multi-layered structures, composed of thin films from materials with different	POC-G project MAT2IT (Intermediary	Botea, M; Hrib, L; Pasuk,	2.01	0.374	10.1016/j.cap.2019.04.010	Q2

<p>ctric properties of up and down graded PZT multilayers</p>		<p>compositions or physical properties, represents a way to obtain enhanced properties or even new functionalities. In this work, lead zirconate titanate $PbZr_xTi_{1-x}O_3$ (PZT; $x = 0.20, 0.52, 0.80$) multilayers were grown by pulsed laser deposition (PLD) on a single crystal strontium titanate ($SrTiO_3$, STO) substrate, using a strontium ruthenate ($SrRuO_3$, SRO) film as buffer layer for epitaxial growth, and also as back electrode. Up and down multilayers were grown and their physical and structural properties were compared, up being the structure in which Zr concentration was varied from 20% near the STO substrate to 80% at the surface, while down is for the structure in which the Zr concentration starts with 80% near the substrate and ends with 20% at the surface. It was found that the electric and pyroelectric properties of the two</p>	<p>Body-Romania n Ministry of Research and Innovation) [54/2016, 105726]</p>	<p>I; Iuga, A; Trupina, L; Negrea, R; Becherescu, N; Pintilie, L</p>				
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			<p>graded structures are significantly different. The up structure presents electric properties that are comparable with those of single composition PZT films while the properties of the down structure are deteriorated, especially in terms of the leakage current magnitude. Pyroelectric signal could be measured only for the up structure. These differences were attributed to larger density of structural defects in the down structure compared to the up one. This is due to the different growth sequence: Lop structure starts with tetragonal PZT on cubic substrate (lower lattice mismatch, 1.1%) while down structure starts with rhombohedral PZT on cubic substrate (larger lattice mismatch, almost 5%).</p>						
122.	Effect of dilute doping and non-equilib	<i>MATERIALS RESEARCH BULLETIN</i> , 11 5, pp.37-48 (2019)	We report on the influence of dilute doping combined with the processing conditions on the morphological, structural, chemical	Romania n Ministry of Research and Innovatio	Mihalache, V; Negril a, C; Bercu, V;	3.355	0.412	10.1016/j.materresbull.2019.03.001	Q2

<p>ium synthesi s on the structur al, lumines cent and magneti c properti es of nanocry stalline Zn1- xNixO (x=0.00 25- 0.03)</p>		<p>states, photoluminescence and magnetic properties of Zn1- xNixO nanopowders. Ni doping changes the ZnO powder morphology from randomly-aggregated nanocrystals to densely-packed nanocrystals arranged in columnar particles, modifies the high-energy- component of O1 s spectrum and increases the modified Auger parameter in XPS, enhances the blue photoluminescence (PL) emission, suppresses the green PL emission and the intensity of the g = 1.997 EPR signal. Ni-ZnO nanostructures show room-temperature ferro-magnetism (implying they can serve as dilute magnetic semiconductors). The saturation magnetization, crystallite size and microstrain increase with the doping level; the c-axis constant and unit cell volume decrease, however, being unexpectedly higher with respect to a</p>	<p>n [CCDI- UEFISC DI PN- III-P1- 1.2- PCCDI- 2017- 0871, 47PCCD I/2018, PN18- 110101]</p>	<p>Secu, M; Vasile , E; Stan, GE</p>				
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			(reference) ZnO powder with a relaxed lattice. We demonstrate that the investigated properties were controlled by both (dilute) doping level and donor native defects produced by non-equilibrium (oxygen-deficiency and high rate of) ZnO formation.						
123.	Gd ³⁺ co-doping influence on the morphological, up-conversion luminescence and magnetic properties of LiYF ₄ :Yb ³⁺ /Er ³⁺ nanocrystals	<i>JOURNAL OF PHYSICS AND CHEMISTRY OF SOLIDS</i> , 130 , pp.236-241 (2019)	The influence of the Gd ³⁺ co-dopant on the structure, morphology and up-conversion luminescence/magnetic properties of the LiYF ₄ :Gd ³⁺ /Yb ³⁺ /Er ³⁺ nanocrystals was investigated and compared to those of Gd-free samples. Electron microscopy has indicated an inhibiting effect of the agglomeration and collapsing process of the nanocrystals compared to the Gd-free powder samples. The surface analysis of nanocrystals have not shown oxygen-metal bonds related to the metal oxidation within the surface nanometric layer. The paramagnetic properties are related to the magnetic	Romanian Ministry of Research and Innovation [PN18-110201]; POC (European Regional Development Fund, Operational Fund Competitiveness) [54/05.09.2016, 28/01.09.2016]	Secu, C; Bartha, C; Matei, E; Negrila, C; Crisan, A; Secu, M	2.752	0.385	10.1016/j.jpcs.2019.03.003	Q2

			moment of the Gd ³⁺ ions. The up-conversion luminescence of the LiYF ₄ :Gd ³⁺ /Yb ³⁺ /Er ³⁺ nanocrystals is about six times stronger than in LiYF ₄ :Yb ³⁺ /Er ³⁺ nanocrystals; the enhancement effect is most probably due to the lattice distortion induced by the Gd co-doping.						
124.	On the relaxation time of interacting superparamagnetic nanoparticles and implications for magnetic fluid hyperthermia	<i>BEILSTEIN JOURNAL OF NANOTECHNOLOGY</i> , 10 , pp.1280-1289 (2019)	A critical discussion on the presently available models for the relaxation time of magnetic nanoparticles approaching the superparamagnetic regime in the presence of interparticle dipolar interactions is considered. The direct implications of such interactions for magnetic fluid hyperthermia therapy through susceptibility loss mechanisms give rise to an indirect method for their study via specific absorption rate measurements performed on ferrofluids of different volume fractions. The theoretical support for the specific evolution of the	Core Program [PN18-110101/2018]; Romanian Ministry of Research and Innovation, CCCDI-UEFISCDI [PN-III-P1.2-PCCDI-2017-0871/2018, POC P_37_697 REBMA T]	Kuncser, A; Iacob, N; Kuncser, VE	2.269	0.633	10.3762/bjnano.10.127	Q2

			relaxation time constant and the anisotropy energy barrier versus the interparticle interactions in a perturbation approach of the simple Neel expression for the relaxation time is provided via static and time-dependent micromagnetic simulations.						
125.	Structural Change in Ni-Fe-Ga Magnetic Shape Memory Alloys after Severe Plastic Deformation	<i>MATERIALS</i> , 12 , 1939 (2019)	Severe plastic deformation (SPD) is widely considered to be the most efficient process in obtaining ultrafine-grained bulk materials. The aim of this study is to examine the effects of the SPD process on Ni-Fe-Ga ferromagnetic shape memory alloys (FSMA). High-speed high-pressure torsion (HSHT) was applied in the as-cast state. The exerted key parameters of deformation are described. Microstructural changes, including morphology that were the result of processing, were investigated by optical and scanning electron microscopy. Energy-dispersive X-ray spectroscopy was	Romanian Ministry of Research and Innovation [47PCC DI/2018, PN18-11]	Gurau, G; Gurau, C; Tolea, F; Sampath, V	2.972	0.608	10.3390/ma12121939	Q2

			<p>used to study the two-phase microstructure of the alloys. The influence of deformation on microstructural features, such as martensitic plates, intragranular gamma phase precipitates, and grain boundaries' dependence of the extent of deformation is disclosed by transmission electron microscopy. Moreover, the work brings to light the influence of deformation on the characteristics of martensitic transformation (MT). Vickers hardness measurements were carried out on disks obtained by SPD so as to correlate the hardness with the microstructure. The method represents a feasible alternative to obtain ultrafine-grained bulk Ni-Fe-Ga alloys.</p>						
126.	Bulk Versus Surface Modification of Alumina with Mn and Ce Based	<i>MATERIALS</i> , 12 , 1771 (2019)	This study presents the synthesis and characterization of lanthanum-modified alumina supported cerium-manganese mixed oxides, which were prepared by three different methods	POC-G project MAT2IT [54/2016, 105726]; Core Program PN19-03 [21	Neatu, S; Trandafir, MM; Stanoiu, A; Florea, OG; Simio	2.972	0.608	10.3390/ma12111771	Q2

	<p>Oxides for CH₄ Catalytic Combustion</p>		<p>(coprecipitation, impregnation and citrate-based sol-gel method) followed by calcination at 500 degrees C. The physicochemical properties of the synthesized materials were investigated by various characterization techniques, namely: nitrogen adsorption-desorption isotherms, X-ray diffraction (XRD), X-ray photoelectron spectroscopy (XPS), scanning electron microscopy (SEM) and H₂-temperature programmed reduction (TPR). This experimental study demonstrated that the role of the catalytic surface is much more important than the bulk one. Indeed, the incipient impregnation of CeO₂-MnO_x catalyst, supported on an optimized amount of 4 wt.% La₂O₃-Al₂O₃, provided the best results of the catalytic combustion of methane on our catalytic micro-convertors. This is mainly due to: (i) the highest pore size</p>	<p>N/08.02.2019]</p>	<p>n, CE; Leona t, LN; Cobia nu, C; Gheorgh e, M; Florea , M; Neatu, F</p>				
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			<p>dimensions according to the Brunauer-Emmett-Teller (BET) investigations, (ii) the highest amount of Mn⁴⁺ or/and Ce⁴⁺ on the surface as revealed by XPS, (iii) the presence of a mixed phase (Ce₂MnO₆) as shown by X-ray diffraction; and (iv) a higher reducibility of Mn⁴⁺ or/and Ce⁴⁺ species as displayed by H₂-TPR and therefore more reactive oxygen species.</p>						
127.	Peppermint Essential Oil-Doped Hydroxyapatite Nanoparticles with Antimicrobial Properties	<i>MOLECULES</i> , 24 ,2169 (2019)	<p>This study aimed at developing an antimicrobial material based on hydroxyapatite (HAp) and peppermint essential oil (P-EO) in order to stimulate the antimicrobial activity of hydroxyapatite. The molecular spectral features and morphology of the P-EO, HAp and hydroxyapatite coated with peppermint essential oil (HAp-P) were analyzed using Fourier-transform infrared (FTIR) spectroscopy and scanning electron microscopy (SEM).</p>	Romania Ministry of Research and Innovation [PN-III-P1-1.2-PCCDI-2017-0629, 43PCCDI/2018]	Badea, ML; Iconaru, SL; Groza, A; Chifiruc, MC; Beuran, M; Predoi, D	3.06	0.62	10.3390/molecules24112169	Q2

			<p>The coating of the HAp with the P-EO did not affect the ellipsoidal shape of the nanoparticles. The overlapping of IR bands of P-EO and HAp in the HAp-P spectrum determined the formation of the broad molecular bands that were observed in the spectral regions of 400-1000 cm(-1) and 1000-1200 cm(-1). The antibacterial activity of the P-EO, HAp and HAp-P were also tested against different Gram-positive bacteria (methicillin-resistant Staphylococcus aureus (MRSA) 388, S. aureus ATCC 25923, S. aureus ATCC 6538, E. faecium DSM 13590), Gram-negative bacteria (Escherichia coli ATCC 25922, E. coli C5, P. aeruginosa ATCC 27853, P. aeruginosa ATCC 9027) and a fungal strain of Candida parapsilosis. The results of the present study revealed that the antimicrobial activity of HAp-P increased</p>						
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			significantly over that of HAp.						
128.	The Influence of Heteroatom Dopants Nitrogen, Boron, Sulfur, and Phosphorus on Carbon Electrocatalysts for the Oxygen Reduction Reaction	<i>CHEMPLUSC HEM</i> , 84 , pp.457-464 (2019)	A hard templating method, using SBA-15 in combination with glucose solution and different heteroatom precursors, has been employed to investigate the influence of the different heteroatom dopants nitrogen, boron, sulfur, and phosphorus on carbon electrocatalysts for the oxygen reduction reaction. Samples were synthesized under the same conditions and resulted in a similar morphology and surface areas around 1000 m ² /g. Incorporating nitrogen into the carbon matrix was found to be easier than for boron or phosphorus, while sulfur doping proved problematic and only yielded 2 at% of sulfur or less. Different dopant concentrations as well as a combination of dopants suggested that nitrogen was the only heteroatom exerting an actual influence on the	Materials Research Institute of Queen Mary, University of London	Preuss, K; Siwoniku, AM; Bucur, CI; Titirici, MM	3.441	0.575	10.1002/cplu.201900083	Q2

			<p>catalytic activity, resulting in higher electron transfer numbers. The other dopants exhibited a similar performance regardless of the dopant content, though slightly improved when compared to an undoped control sample. These findings indicate that incorporated nitrogen can act as catalytic sites, while boron, sulfur and phosphorus can enhance the catalytic activity by possibly creating defects in the carbon matrix.</p>						
129.	<p>Phase Control in Hafnia: New Synthesis Approach and Convergence of Average and Local Structure Properties</p>	<p>ACS <i>OMEGA</i>, 4, pp.8881-8891 (2019)</p>	<p>Technologically relevant tetragonal/cubic phases of HfO₂ can be stabilized at room temperature by doping with trivalent rare earths using various approaches denoted generically as bulk coprecipitation. Using in situ/ex situ X-ray diffraction (XRD), Raman spectroscopy, high-resolution transmission electron microscopy, and in situ/ex situ site-selective, time-gated luminescence spectroscopy, we</p>	<p>CNCS-UEFISCDI [PN-III-P4-ID-PCE-2016-0305, PCE 67/2017]; Romania Ministry of Research and Innovation through the Core Program [PN19-03]; Swedish</p>	<p>Cojocaru, B; Avram, D; Negrea, R; Ghica, C; Kessler, VG; Seisenbaeva, GA; Parvulescu, VI; Tiseanu, C</p>	2.584	0.533	<p>10.1021/acsomega.9b00580</p>	Q2

			<p>show that wet impregnation of hafnia nanoparticles with 10% Eu oxide followed by mild calcination in air at 500 degrees C produces an efficient stabilization of the cubic phase, comparable to that obtained by bulk precipitation. The physical reasons behind the apparently conflictual data concerning the actual crystallographic phase and the local symmetry around the Eu stabilizer and how these can be mediated by luminescence analysis are also discussed. Apparently, the cubic crystal structure symmetry determined by XRD results in a pseudocubic/tetragonal local structure around Eu determined by luminescence. Considering the recent findings on wet impregnated CeO₂ and ZrO₂, it is concluded that CeO₂, ZrO₂, and HfO₂ represent a unique case of a family of oxides that</p>	<p>Research Council (VR)Swedish Research Council [201403938]</p>					
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			is extremely tolerant to heavy doping by wet impregnation. In this way, the same batch of preformed nanoparticles can be doped with different lanthanide concentrations or with various lanthanides at a fixed concentration, allowing a systematic and reliable investigation of the effect of doping, lanthanide type, and lanthanide concentration on the various functionalities of these technologically relevant oxides.						
130.	Sub-lattice polarization states in anti-ferroelectrics and their relaxation process	<i>CURRENT APPLIED PHYSICS</i> , 19 , pp.651-656 (2019)	We report studies of quasi-remanent polarization states in $\text{Pb}_{0.99}\text{Nb}_{0.02}[(\text{Zr}_{0.57}\text{Sn}_{0.43})(0.94)\text{Ti}_{0.06}](0.98)\text{O}_{-3}$ (PNZST) anti-ferroelectric ceramics and investigation of their relaxation effects using unique in-situ electrically activated time-resolved Synchrotron X-ray powder diffraction (SXPd) and Sn-119 Mossbauer Spectroscopy (MS). The SXPd patterns are consistent with a phase transition from quasi-tetragonal	EPSRCE engineering & Physical Sciences Research Council (EPSRC) [EP/R028656/1]; DLS [EE18495]	Vopson, MM; Tan, X; Namvar, E; Belusky, M; Thompson, SP; Kuncser, V; Plazola, F; Unzueta, I; Tang, CC	2.01	0.374	10.1016/j.cap.2019.03.009	Q2

			<p>perovskite in 0 V relaxed anti-ferroelectric state to rhombohedral distortion in ferroelectric state under saturating applied voltages of +/- 2 kV. The observed quasi-remanent polarization relaxation processes are due to the fact that tetragonal to rhombohedral distortion does not occur at the applied voltage required to access the quasiremanent polarization states, and the tetragonal symmetry restored after the removal of the applied electric field is preserved. Since these quasi-remanent polarization states were seen as possibly suitable for memory applications, the implications of this study are that anti-ferroelectrics are more feasible for multi-state dynamic random access memories (DRAM), while their application to non-volatile memories requires development of more</p>					
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			sophisticated "read-out" protocols, possibly involving dc electrical biasing.						
131.	Enhancement in magnetic and dielectric properties of the ruthenium-doped copper ferrite (Ru - CuFe ₂ O ₄) nanoparticles	<i>JOURNAL OF MAGNETISM AND MAGNETIC MATERIALS</i> , 476 , pp.18-23 (2019)	<p>Ruthenium-doped copper ferrite (Ru - CuFe₂O₄) nanoparticles (NPs) have been synthesized using a simple and cost-effective wet chemical co-precipitation deposition method. The crystallographic scanning electron microscopy images confirm cubic crystal structure and agglomerated-type surface appearance. The crystallite sizes are 6-24 nm in the range. Dielectric measurement analysis estimates the dielectric constant and loss of Ru - CuFe₂O₄ NPs. In this connection, dielectric constant and loss are reduced virtue of air annealing for various temperatures. Also, the dielectric loss confirms the relaxation peak. From magnetic measurement results, the coercivity decreases whereas saturation and remanence magnetization are</p>	Manikandan, V; Kuncser, V; Vasile, B; Kavita, S; Vignselvan, S; Mane, RS	2.683	0.433	10.1016/j.jmmm.2018.12.050	Q2	

			increased. These features have approved the soft magnetic nature in the Ru - CuFe ₂ O ₄ NPs.						
132.	Epitaxial Non-c-Axis Twin-Free Bi ₂ Sr ₂ CaCu ₂ O ₈ + Thin Films for Future THz Devices	<i>MATERIALS</i> , 12 , 1124 (2019)	Thin films of (117) Bi ₂ Sr ₂ Ca ₂ CuO ₈ + (Bi-2212) were grown by Molecular Organic Chemical Vapor Deposition (MOCVD) on (110) SrTiO ₃ and (110) LaAlO ₃ substrates. Substrates were vicinal with off angles up to 20 degrees. Films are 3D epitaxial and X-ray diffraction phiscans demonstrate that, while the films grown on a flat substrate are composed of twinned grains, the films on vicinal substrate are twin-free. A higher quality is obtained if growth is performed at two temperatures: Growth starts at 550-600 degrees C and continues at 700-750 degrees C. The twin-free film grown by the two-temperature method shows a zero-resistance critical temperature of 37 and 32 K when the measuring current is applied in-plane parallel and perpendicular to	JSPS Kakenhi, Japan Ministry of Education, Culture, Sports, Science and Technology, Japan (MEXT) Japan Society for the Promotion of Science Grants-in-Aid for Scientific Research (KAKENHI) [15K05997, 15K06449]; MEN-UEFISCDI, POC 37_697 [28/01.09.2016]; Core Program, Romania	Endo, K; Arisawa, S; Badica, P	2.972	0.608	10.3390/ma12071124	Q2

			[001] direction of the substrate. Twin-free non c-axis thin films are promising for fabrication of novel planar THz devices.						
133.	Presence and distribution of impurity defects in crystalline cubic boron nitride. A spectroscopic study	<i>RADIATION MEASUREMENTS</i> , 123 , pp.21-25 (2019)	The results of the present Q-band electron spin resonance (ESR) investigation on amber colored cubic boron nitride (cBN) crystalline superabrasive powder (BORAZON CBN400) offer further support to the hypothesis that impurity ions with high natural abundant zero nuclear spin isotopes, distributed non-uniformly, are involved in the structure of the observed paramagnetic centers. One could thus explain the absence of any hyperfine structure in the multifrequency electron spin resonance spectra of both presently and previously investigated cBN crystalline powders and single crystals. The scanning electron microscopy, cathodoluminescence and photoluminescence	Romanian Ministry of Research and Innovation (project PN-III-P4-ID-PCE-2016) [152/2017]	Nistor, SV; Nistor, LC; Joita, AC; Vlaicu, AM	1.435	0.384	10.1016/j.radmeas.2019.02.003	Q2

			<p>studies performed on single crystallites selected from the same cBN400 batch further confirm the presence of electro- and photo-luminescent active impurity related centers, non-uniformly distributed in the cBN crystallite host lattice. The observation of an intense and reproducible thermoluminescence spectrum, up to high radiation doses, attributed to several trapping centers involving impurities, is also reported here.</p>						
134.	<p>Structure of defects in semiconductor crystalline cubic boron nitride. A microstructural and microanalytical investigation</p>	<p><i>RADIATION MEASUREMENTS</i>, 123, pp.78-82 (2019)</p>	<p>Previous electron spin resonance investigations correlated with data from cathodoluminescence and photoluminescence measurements have shown that impurities consisting mainly of isotopes with zero nuclear moments are involved in the structure of the observed paramagnetic point defects. In the present microstructural and compositional investigation we</p>	<p>Romanian Ministry of Research and Innovation [152/2017]</p>	<p>Nistor, LC; Vlaicu, AM; Nistor, SV</p>	1.435	0.384	<p>10.1016/j.radmeas.2019.02.019</p>	Q2

			<p>demonstrate that oxygen, carbon and silicon impurity atoms exhibiting low natural content of isotopes with non-zero nuclear spin are indeed present in cBN crystallites selected from amber coloured BORAZON CBN400 and CBN 500 super abrasive powders, as well as in the black coloured BORAZON CBN1000 and CBN Type 1. It is also shown that aggregates of impurity atoms are present next to the extended cBN lattice defects, which could explain the non-uniform distribution of the electro- and opto-active impurities reported in a spectroscopy investigation.</p>						
135.	<p>Prototype Orthopedic Bone Plates 3D Printed by Laser Melting Deposition</p>	<p><i>MATERIALS</i>, 12, 906 (2019)</p>	<p>Laser melting deposition is a 3D printing method usually studied for the manufacturing of machine parts in the industry. However, for the medical sector, although feasible, applications and actual products taking advantage of this technique are only scarcely reported. Therefore,</p>	<p>National Core Program [16N/2019, 21N/2019]; CNCS-UEFISC DI [PN-III-P2-2.1-PED-2016-1309 (PED241</p>	<p>Chioi basu, D; Achim, A; Popescu, C; Stan, GE; Pasuk, I; Enculescu, M; Iosub,</p>	2.972	0.608	10.3390/ma12060906	Q2

		<p>in this study, Ti6Al4V orthopedic implants in the form of plates were 3D printed by laser melting deposition. Tuning of the laser power, scanning speed and powder feed rate was conducted, in order to obtain a continuous deposition after a single laser pass and to diminish unwanted blown powder, stuck in the vicinity of the printed elements. The fabrication of bone plates is presented in detail, putting emphasis on the scanning direction, which had a decisive role in the 3D printing resolution. The printed material was investigated by optical microscopy and was found to be dense, with no visible pores or cracks. The metallographic investigations and X-ray diffraction data exposed an unusual biphasic alpha+beta structure. The energy dispersive X-ray spectroscopy revealed a composition very</p>	<p>/2017), PN-III-P1-1.1-TE-2016-2015 (TE136/2018), PN-III-P1-1.1-PD-2016-1568 (PD 6/2018)]</p>	<p>S; Duta, L; Popescu, A</p>				
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			similar to the one of the starting powder material. The mapping of the surface showed a uniform distribution of elements, with no segregations or areas with deficient elemental distribution. The in vitro tests performed on the 3D printed Ti6Al4V samples in osteoblast-like cell cultures up to 7 days showed that the material deposited by laser melting is cytocompatible.						
136.	Fabrication and characterization of Ru-doped LiCuFe ₂ O ₄ nanoparticles and their capacitive and resistive humidity sensor applications	<i>JOURNAL OF MAGNETISM AND MAGNETIC MATERIALS</i> , 474 , pp.563-569 (2019)	Polycrystalline ruthenium-doped lithium-copper-ferrite (Ru - LiCuFe ₂ O ₄) nanoparticles (NPs) are synthesized using a simple and cost-effective chemical co-precipitation method and annealed at different temperatures for increasing the crystallinity. The transmission and scanning electron microscopy images have confirmed the presence of soft agglomerations and cuboids for the samples annealed at 1100 degrees C. X-ray photoelectron results along with	Manikandan, V; Tudorache, F; Petrila, J; Mane, RS; Kuncser, V; Vasile, B; Morgan, D; Vignesevan, S; Mirzaei, A	2.683	0.433	10.1016/j.jmmm.2018.11.072	Q2	

			<p>Raman spectra have collectively demonstrated the presence of Ru in the structure of Ru - LiCuFe₂O₄ NPs. The dielectric properties of as-synthesized Ru - LiCuFe₂O₄ NPs are investigated using LCR meter where the smaller NPs demonstrates a higher dielectric constant. Also, the results of magnetic measurements of annealed Ru - LiCuFe₂O₄ NPs have corroborated a soft magnetic nature due to the pinning sites that endow lower coercivity, remanence and saturation magnetization than that of the pristine one. The variation of permittivity and electrical resistivity with respect to frequency under humidity conditions suggested that this material has a potential to use as capacitive and resistive humidity sensor. The results of this study open the doors for utilization of metal-doped magnetic ferrites for</p>						
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			humidity sensing applications.						
137.	Behavior of Molybdenum-Vanadium Mixed Oxides in Selective Oxidation and Disproportionation of Toluene	<i>MATERIALS</i> , 12, 748 (2019)	This study deals with the behavior of molybdenum-vanadium (Mo/V) mixed oxides catalysts in both disproportionation and selective oxidation of toluene. Samples containing different Mo/V ratios were prepared by a modified method using tetradecyltrimethylammonium bromide and acetic acid. The catalysts were characterized using several techniques: nitrogen adsorption-desorption isotherms, X-Ray diffraction (XRD), ammonia temperature-programmed desorption (TPD-NH ₃), temperature-programmed reduction by hydrogen (H ₂ -TPR), X-ray photoelectron spectroscopy (XPS), Raman spectroscopy, Fourier-transform infrared-spectroscopy (FTIR) and ultraviolet-visible spectroscopies (UV-VIS). The XRD results evidenced the presence of	Ministry of Research and Innovation, CNCS-UEFISCDI [PN-III-P1.1-TE-2016-2116, PN-III-P4-ID-PCE 2016-0692]; Romania Ministry of Research and Innovation through the Core Program [PN19-030101]	Mitrana, G; Neatu, F; Pavel, OD; Trandafir, MM; Florea, M	2.972	0.608	10.3390/ma12050748	Q2

			<p>orthorhombic - MoO₃ and V₂O₅ phases, as well as monoclinic -MoO₃ and V₂MoO₈ phases, their abundance depending on the Mo to V ratio, while the TPD-NH₃ emphasized that, the total amount of the acid sites diminished with the increase of the Mo loading. The TPR investigations indicated that the samples with higher Mo/V ratio possess a higher reducibility. The main findings of this study led to the conclusion that the presence of strong acid sites afforded a high conversion in toluene disproportionation (Mo/V = 1), while a higher reducibility is a prerequisite to accomplishing high conversion in toluene oxidation (Mo/V = 2). The catalyst with Mo/V = 1 acquires the best yield to xylenes from the toluene disproportionation reaction, while the catalyst with Mo/V = 0.33 presents the highest yield to benzaldehyde.</p>					
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138.	Coexisting spin and Rabi oscillations at intermediate time regimes in electron transport through a photon cavity	<i>BEILSTEIN JOURNAL OF NANOTECHNOLOGY</i> , 10 , pp.606-616 (2019)	In this work, we theoretically model the time-dependent transport through an asymmetric double quantum dot etched in a two-dimensional wire embedded in a far-infrared (FIR) photon cavity. For the transient and the intermediate time regimes, the current and the average photon number are calculated by solving a Markovian master equation in the dressed-states picture, with the Coulomb interaction also taken into account. We predict that in the presence of a transverse magnetic field the interdot Rabi oscillations appearing in the intermediate and transient regime coexist with slower non-equilibrium fluctuations in the occupation of states for opposite spin orientation. The interdot Rabi oscillation induces charge oscillations across the system and a phase difference between the transient source and drain currents. We point out a	Research Fund of the University of Iceland; Istanbul University; Icelandic Research Fund [163082-051]; Icelandic Infrastructure Fund; Ministry of Science and Technology of Taiwan; Ministry of Science and Technology, Taiwan [106-2112-M-239-001-MY3]; CNCS-UEFISCDI Grant [PN-III-P4-ID-PCE-2016-0084]	Gudmundsson, V; Gestsson, H; Abdullah, NR; Tang, CS; Manolescu, A; Moldoveanu, V	2.269	0.633	10.3762/bjnano.10.61	Q2
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			difference between the steady-state correlation functions in the Coulomb blocking and the photon-assisted transport regimes.						
139.	Passive magnetic shielding by machinable MgB2 bulks: measurements and numerical simulations	<i>SUPERCONDUCTOR SCIENCE & TECHNOLOGY</i> , 32, 034004 (2019)	We report on a combined experimental and modelling approach towards the design and fabrication of efficient bulk shields for low-frequency magnetic fields. To this aim, MgB2 is a promising material when its growing technique allows the fabrication of suitably shaped products and a realistic numerical modelling can be exploited to guide the shield design. Here, we report the shielding properties of an MgB2 tube grown by a novel technique that produces fully machinable bulks, which can match specific shape requirements. Despite a height/radius aspect ratio of only 1.75, shielding factors higher than 175 and 55 were measured at temperature $T = 20$ K and in axially-applied magnetic	MCI-UEFISCDI [POC 37_697, 28/01.09.2016 REBMA T]; project 'Departments of Excellence' - Italian Ministry of Education, University and Research (MIUR) [L. 232/2016]	Gozzelino, L; Gerbaldo, R; Ghigo, G; Lavianno, F; Torsello, D; Bonino, V; Truccato, M; Batalu, D; Grigoscuta, MA; Burdusel, M; Aldica, GV; Badica, P	2.489	0.746	10.1088/1361-6668/aaf99e	Q2

			<p>fields $\mu H_0(\text{appl}) = 0.1$ and 1.0 T, respectively, by means of cryogenic Hall probes placed on the tube's axis. The magnetic behaviour of the superconductor was then modelled as follows: first we used a two-step procedure to reconstruct the macroscopic critical current density dependence on magnetic field, $J(c)(B)$, at different temperatures from the local magnetic induction cycles measured by the Hall probes. Next, using these $J(c)(B)$ characteristics, by means of finite-element calculations we reproduced the experimental cycles remarkably well at all the investigated temperatures and positions along the tube's axis. Finally, this validated model was exploited to study the influence both of the tube's wall thickness and of a cap addition on the shield performance. In the latter case, assuming the working temperature of 25 K, shielding</p>						
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			factors of 10(5) and 10(4) are predicted in axial applied fields it mu H-0(appl) = 0.1 and 1.0 T, respectively.						
140.	Laser-induced synthesis and photocatalytic properties of hybrid organic-inorganic composite layers	<i>JOURNAL OF MATERIALS SCIENCE</i> , 54 , pp.3927-3941 (2019)	A laser-based method was developed for the synthesis and simultaneous deposition of multicomponent hybrid thin layers consisting of nanoentities, graphene oxide (GO) platelets, transition metal oxide nanoparticles, urea, and graphitic carbon nitride (g-C3N4) for environmental applications. The photocatalytic properties of the layers were tested through the degradation of methyl orange organic dye probing molecule. It was further demonstrated that the synthesized hybrid compounds are suitable for the photodegradation of chloramphenicol, a widely used broad-spectrum antibiotic, active against Gram-positive and Gram-negative bacteria. However, released in aquatic media represents a serious	Executive Unit for Financing Higher Education, Research, Development and Innovation of the Romanian Ministry of Education and Scientific Research [PNIII-P2-2.1-PED-2016-1043]; Spanish Ministry of Economy, Industry and Competitiveness [ENE2017-89210-C2-1-R]; Spanish Ministry of	Ivan, R; Popescu, C; del Pino, AP; Yousef, I; Logofatu, C; Gyorgy, E	3.442	0.558	10.1007/s10853-018-3144-0	Q2

			<p>environmental hazard, especially owing to the formation of antibiotic-resistant bacteria. The obtained results revealed that organic, urea molecules can become an alternative to noble metals co-catalysts, promoting the separation and transfer of photoinduced charge carriers in catalytic composite systems. Laser radiation induces the reduction of GO platelets and the formation of graphene-like material. During the same synthesis process, g-C₃N₄ was produced, by laser pyrolysis of urea molecules, without any additional heat treatment. The layers exhibit high photocatalytic activity, being a promising material for photodegradation of organic pollutants in wastewater.</p>	Economy and Competitiveness, through the "Severo Ochoa" Programme for Centres of Excellence in RD [SEV-2015-0496]					
141.	Zinc Doped Hydroxapatite Thin Films Prepare	<i>COATINGS</i> , 9 , 156 (2019)	In this study, ZnHAP layers deposited on a Si substrate were obtained by a sol-gel spin-coating procedure. The ZnHAP solutions	Romanian Ministry of Research and Innovation	Predoi, D; Iconaru, SL; Predoi, MV; Buton,	2.33	0.369	10.3390/coatings9 030156	Q2

	<p>d by Sol-Gel Spin Coating Procedure</p>		<p>used to obtain the ZnHAp coatings were investigated by dynamic light scattering (DLS) analysis, zeta-potential, ultrasound measurements, and flame atomic absorption spectrometry (AAS). The average measured hydrodynamic diameter from the DLS analysis, zeta-potential, and ultrasound measurements were analyzed so as to characterize and estimate the stability of the ZnHAp nanoparticles. The AAS results confirmed the presence of zinc in the gels used in the preparation of the ZnHAp layers. The layers were investigated by X-ray diffraction (XRD) and scanning electron microscopy (SEM). The XRD results revealed the diffraction peaks of the hexagonal hydroxyapatite in all of the investigated samples. The morphology of the ZnHAp coatings annealed at 500 degrees C (ZnHAp-</p>	<p>n PCCDI-UEFISCDI [PN-III-P1-1.2-PCCDI-2017-0629, 43PCCDI/2018]; Romanian Ministry of Research and Innovation [21N/2019]</p>	<p>N; Motelica-Heino, M</p>				
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			<p>500) and 700 degrees C (ZnHAp-700), which evidenced that no fissures or cracks formed on the surface of the coatings. The biocompatibility assays indicated that the ZnHAp coatings did not present any toxicity towards the HeLa cells. Furthermore, the study regarding the cytotoxicity of the ZnHAp layers against microorganisms emphasized that ZnHAp coatings exhibited an inhibitory effect towards <i>S. aureus</i> bacterial cells and also towards <i>C. albicans</i> fungal cells.</p>						
142.	<p>N-Doped Defective Graphene from Biomass as Catalyst for CO₂ Hydrogenation to Methane</p>	<p><i>CHEMCATCH EM</i>, 11, pp.985-990 (2019)</p>	<p>N-doped, defective graphene obtained by pyrolysis of chitosan at 900 degrees C under Ar exhibits catalytic activity for the Sabatier hydrogenation of CO₂ to CH₄ at temperatures about 500 degrees C with estimated turnover frequencies and activation energy values of 73.17s⁻¹ and 24.3 kcal x mol⁻¹, respectively. It has been found that this enhanced</p>	<p>Spanish Ministry of Economy and Competitiveness [CTQ2015-69153-CO2-R1]; Generalitat at Valencia naGeneralitat Valencia [Promete</p>	<p>Jurca, B; Bucur, C; Primo, A; Concepcion, P; Parvulescu, VI; Garcia, H</p>	4.495	0.991	10.1002/cctc.201801984	Q2

			<p>catalytic activity compared to other related doped defective graphenes derives from the presence of pyridinic N atoms that adsorbs CO₂ forming carbamate-type adsorbates.</p>	<p>o 2017-083]; UEFISC DI [PN-III-P4-ID-PCE-2016-0146, 121/2017, PN-III-P4-ID-PCCF-2016-0088, PN-III-P1-1.2-PCCDI-2017-0541]; IFTM; Spanish Ministry of Economy and Competitiveness</p>					
143.	<p>Physical properties investigation of samarium doped calcium sulfate thin films under high gamma irradiations for space</p>	<p><i>SUPERLATTICES AND MICROSTRUCTURES</i>, 126, pp.103-119 (2019)</p>	<p>This research work is dedicated to study structural, morphological, optical and photoluminescence properties of samarium doped calcium sulfate (CaSO₄) thin films after exposure to high gamma radiations. Polycrystalline doped CaSO₄ thin films have been grown on glass substrates by spray pyrolysis technique</p>	<p>Souli, M; Reghima, M; Secu, M; Bartha, C; Enculescu, M; Mejri, A; Kamo un-Turki, N;</p>	2.385	0.342	10.1016/j.spmi.2018.12.021	Q2	

	<p>photovoltaic and dosimetric applications</p>		<p>and irradiated at different high gamma doses 3, 7, 15 and 40 kGy. Physical characterization of irradiated thin films has been made by X-ray diffraction, Spectrophotometer, Scanning Electron Microscope, Energy Dispersive Spectroscopy, Fluorescence Spectrometer and Thermoluminescence . The most remarkable result, as shown by structural analysis, is the increase of grain size from 52 to a maximum value of 93 nm for 15 kGy gamma dose which indicates a clear enhancement in crystal structure by gamma irradiation. Moreover, the preferred orientation has been immediately changed from (102) plan to (100) just after the first 3 kGy gamma dose. SEM micrographs of irradiated thin layers show deep modifications in surface morphology. Optical transmission spectra have shown a sharp and intense</p>		<p>Badić a, P</p>				
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			<p>peak at 350 nm wavelength. Band gap energy has been slightly decreased from 3.9 eV before irradiation to 3.6 eV for 40 kGy. A new and strong energy level noted E_r, has been emerged and created due to high gamma irradiations in addition to the principal one relative to band gap energy. Other parameters like absorption and extinction coefficients and refractive index have been determined. Thermoluminescence data show a high sensibility to gamma radiations doses which offer opportunities for dosimetry applications. These experimental results suggest the use of irradiated samarium doped calcium sulfate as optical window for space photovoltaic devices where gamma rays are abundant. These results are also helpful for researchers using CaSO_4 thin films near nuclear apparatus (nuclear reactors and particle accelerators) or those</p>					
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			interested in studying interaction between radiations and condensed matter.						
144.	Naturally-Derived Biphasic Calcium Phosphates through Increased Phosphorus-Based Reagent Amounts for Biomedical Applications	<i>MATERIALS</i> , 12 , 381 (2019)	Calcium carbonate from marble and seashells is an eco-friendly, sustainable, and largely available bioresource for producing natural bone-like calcium phosphates (CaPs). Based on three main objectives, this research targeted the: (i) adaptation of an indirect synthesis route by modulating the amount of phosphorus used in the chemical reaction, (ii) comprehensive structural, morphological, and surface characterization, and (iii) biocompatibility assessment of the synthesized powdered samples. The morphological characterization was performed on digitally processed scanning electron microscopy (SEM) images. The complementary 3D image augmentation of SEM results also allowed the quantification of roughness parameters. The	Romanian Ministry of Research and Innovation, CCCDI-UEFISCDI [PN-III-P1-1.2-PCCDI-2017-0062, 58, 2]	Mocanu, AC; Stan, GE; Maidaniuc, A; Miculescu, M; Antoniac, IV; Ciocoiu, RC; Voicu, SI; Mitran, V; Cimpean, A; Miculescu, F	2.972	0.608	10.3390/ma12030381	Q2

			<p>results revealed that both morphology and roughness were modulated through the induced variation of the synthesis parameters. Structural investigation of the samples was performed by Fourier transform infrared spectroscopy and X-ray diffraction. Depending on the phosphorus amount from the chemical reaction, the structural studies revealed the formation of biphasic CaPs based on hydroxyapatite/brushite or brushite/monetite. The in vitro assessment of the powdered samples demonstrated their capacity to support MC3T3-E1 pre-osteoblast viability and proliferation at comparable levels to the negative cytotoxicity control and the reference material (commercial hydroxyapatite). Therefore, these samples hold great promise for biomedical applications.</p>					
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145.	Spirobifluorene-based Porous Organic Polymers as Efficient Supports for Pd and Pt for Selective Hydrogenation	<i>CHEMCATCH EM</i> , 11 , pp.538-549 (2019)	Spirobifluorene-based porous organic polymers (POP) were synthesized following two different protocols; the acetylenic coupling reaction conditions and the Sonogashira cross-coupling reaction. These were utilized as support for the hydrogenation of a series of species containing unsaturated C=C and C=O bonds (4-nitrostyrene, 4-bromobenzophenone, acetophenone, 7-nitro-1-tetralone and 1,2-naphthoquinone confirmed their efficiency). POP1 prepared via a copper-catalysis protocol was completely inactive, while POP2-4 containing residual Pd exhibited different activities in accordance to the accessibility of the substrates to the metal. Further deposition of 0.5wt% Pd led to active and stable catalysts. They were easily separated by filtration, and after re-dispersion, afforded the same performances for ten successive cycles.	CNCS/C CCDI-UEFISCDI [PN-III-P2-2.1-PED-2016-0349]	Trandafir, MM; Pop, L; Hadade, ND; Hristea, I; Teodorescu, CM; Krumreich, F; van Bokhoven, JA; Grosu, I; Parvulescu, VI	4.495	0.991	10.1002/cctc.201801247	Q2
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			<p>This study also evidenced the specific role of the support in these reactions by comparing the behavior of Pd/POP with that of a Pd/C catalyst with the same loading of palladium. The deposition of Pt on these supports led to sub-nanometric particles and, in accordance, to a different catalytic behavior reflected merely by differences in the selectivity.</p>						
146.	Structural characterisation and thermal stability of SnSe(GaSb) stacked films	<p><i>PHILOSOPHICAL MAGAZINE</i>, 99, pp.55-72 (2019)</p>	<p>We have investigated the effect of thermal annealing on the structure of single and stacked phase change memory films based on SnSe and GaSb. Samples were prepared by pulsed laser deposition and investigated by X-ray absorption spectroscopy (XAS) and X-ray diffraction (XRD) methods. Electrical resistance versus temperature investigations showed crystallisation temperatures of 292 degrees C and 198 degrees C for SnSe and GaSb single</p>	<p>Unitatea Executivă pentru Finanțarea a Invatamintului Superior, a Cercetării, Dezvoltării și Inovării [PN-II-RU-TE-2014-4-0498]</p>	<p>Sava, F; Borca, CN; Galca, AC; Socol, G; Groliund, D; Mihai, C; Velea, A</p>	1.855	0.515	10.1080/14786435.2018.1529442	Q2

			<p>films, respectively. Above the transition temperature, GaSb crystallises into a face-centered cubic structure, whereas SnSe has an orthorhombic arrangement. Annealing at three temperatures (160 degrees C, 250 degrees C and 350 degrees C) of the SnSe/GaSb stacked films promotes bond breaking, atom diffusion between the two layers and formation of new phases. At 160 degrees C, GaSb films crystallise partially and no effect is observed on the crystallinity of SnSe films. After 250 degrees C, rhombohedral SnSb emerges in addition to GaSb complete crystallisation. A major, completely new, body-centered orthorhombic unindexed quaternary Ga-Sn-Sb-Se phase formation was observed in the samples annealed at 350 degrees C. The GaSb crystallites are fully dissolved and we have observed the formation of a</p>					
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			<p>minor hexagonal SnSe₂ phase. The analysis of EXAFS data, measured at Se and Ga K-edges, revealed changes in the local atomic environment as a function of the annealing temperature. A tetrahedral configuration is obtained for the Ga atoms in both as-deposited and annealed samples, whereas Se is mostly bivalent in the amorphous samples and has an octahedral arrangement in crystalline SnSe. Our results show that inter-layer diffusion should always be considered and evaluated when designing memory cells composed of stacked phase change chalcogenide films.</p>						
147.	<p>TAILORING SP²/SP³ RATIO IN DIAMOND-LIKE CARBON FILMS VIA</p>	<p><i>ROMANIAN REPORTS IN PHYSICS</i>, 71, 414 (2019)</p>	<p>Tailoring sp⁽²⁾/sp⁽³⁾ ratio in diamond-like carbon thin films offers new surface engineering solutions for the continuously increasing devices requirements in various fields. We report here the control of sp⁽²⁾/sp⁽³⁾ carbon content using the high voltage</p>	<p>Romanian National Authority for Scientific Research and Innovation, CNCS-UEFISCDI</p>	<p>Badulescu, M; Anghelescu, A; Surdu-Bob, CC; Logofatu, C; Luculescu, C</p>	1.94	0.296		Q2

	DEPOSITION PARAMETERS IN A HIGH VOLTAGE ANODIC VACUUM PLASMA		anodic plasma in vacuum. Correlation of data obtained by visible Raman Spectroscopy and XPS spectra of our DLC films with deposition parameters showed an increase in sp(3) bonding of about 10% when decreasing the discharge voltage from 600 V to 200 V or increasing the anode-substrate distance from 15 cm to 36 cm.	[16N/8.0 2.2019]					
148.	PHOTO-ELECTRICAL PROPERTIES OF THIN FILMS WITH GE NANOPARTICLES EMBEDDED IN TiO2 MATRIX	<i>ROMANIAN REPORTS IN PHYSICS</i> , 71,5 04 (2019)	We present photo-electrical properties of thin films formed of Ge nanoparticles in TiO2 correlated with structure and morphology. The films co-deposited on Si using magnetron sputtering were annealed in conventional oven at 550 degrees C. We performed structure investigations by X-ray diffraction, transmission electron microscopy and measured current-voltage characteristics in dark and under illumination at different temperatures. We show that the films are formed of cubic	Ministry of Research and Innovation through NIMP Core Program [33/2016, PCE 122/2017]	Stavarache, I; Maraloiu, VA	1.94	0.296		Q2

			Ge nanoparticles in nanostructured anatase TiO ₂ matrix. Also, (TiGe)O ₂ with rutile structure was observed. The films have high photosensitivity under white light as the ratio between photo- and dark currents (-1 V) is of similar to 10 ⁽²⁾ .						
149.	Composite BNT-BT0.08/CoFe ₂ O ₄ with core-shell nanostructure for piezoelectric and ferromagnetic applications	<i>MATERIALS SCIENCE AND ENGINEERING B-ADVANCED FUNCTIONAL SOLID-STATE MATERIALS</i> , 240 , pp.7-15 (2019)	In this work, we report on the synthesis and characterization of BNT-BT0.08/CoFe ₂ O ₄ biphasic composite with core-shell structure. This artificial core (BNT-BT0.08/shell (CoFe ₂ O ₄) heterostructure was prepared by sol-gel method and the resulting composite was characterized in term of microstructure, dielectric, piezoelectric and magnetic properties. BNT-BT0.08/CoFe ₂ O ₄ sintered ceramic shows high permittivity (epsilon' >= 30) and high dielectric losses (tan delta >= 10) in the low frequency range (nu <= 10 ⁽⁴⁾ Hz), remnant polarization	Romanian Ministry of Research [PN18-110101]	Cernea, M; Vasile, BS; Ciuchi, IV; Surdu, VA; Bartha, C; Iuga, A; Galizia, P; Galassi, C	3.507	0.495	10.1016/j.mseb.2019.01.001	Q2

			<p>(Pr) of similar to 7.7 $\mu\text{C}/\text{cm}^2$ and, remanent magnetization (Mr) of 24 emu/g at 5 K and of 14 emu/g, at room temperature. The present study reveals that the ferroelectric, piezoelectric and magnetic properties of this new architected composite depend on the amount of each component and, can be tailored by adjusting their synthesis conditions. BNT-BT0.08/CoFe₂O₄ core-shell material investigated in this work provides a novel way to exploit new applications for the multifunctional composite, such as piezoelectric sensor, magnetoelectronic sensors and data storage devices.</p>						
150.	Pulsed Laser Deposition of Indium Tin Oxide Thin Films on Nanopatterned Glass	<i>COATINGS</i> , 9, 19 (2019)	Indium tin oxide (ITO) thin films were grown on nanopatterned glass substrates by the pulsed laser deposition (PLD) technique. The deposition was carried out at 1.2 J/cm ² laser fluence, low oxygen pressure (1.5 Pa) and	Romanian Ministry of Research and Innovation through National Core Program [PN18-110101];	Socol, M; Preda, N; Rasoga, O; Costas, A; Stanculescu, A; Breazu, C;	2.33	0.369	10.3390/coatings9010019	Q2

	Substrates		<p>on unheated substrate. Arrays of periodic pillars with widths of similar to 350 nm, heights of similar to 250 nm, and separation pitches of similar to 1100 nm were fabricated on glass substrates using UV nanoimprint lithography (UV-NIL), a simple, cost-effective, and high throughput technique used to fabricate nanopatterns on large areas. In order to emphasize the influence of the periodic patterns on the properties of the nanostructured ITO films, this transparent conductive oxide (TCO) was also grown on flat glass substrates. Therefore, the structural, compositional, morphological, optical, and electrical properties of both non-patterned and patterned ITO films were investigated in a comparative manner. The energy dispersive X-ray analysis (EDX) confirms that the ITO films preserve the In₂O₃:SnO₂</p>	<p>Romanian Ministry of Research and Innovation through National Core Program from LAPLAS V contract [3N/2018]; Romanian Ministry of Research and Innovation through National Core Program from ROSA STAR contract [179/2017]</p>	Gherendi, F; Socol, G				
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			weight ratio from the solid ITO target. The SEM and atomic force microscopy (AFM) images prove that the deposited ITO films retain the pattern of the glass substrates. The optical investigations reveal that patterned ITO films present a good optical transmittance. The electrical measurements show that both the non-patterned and patterned ITO films are characterized by a low electrical resistivity ($<2.8 \times 10^{-4}$). However, an improvement in the Hall mobility was achieved in the case of the nanopatterned ITO films, evidencing the potential applications of such nanopatterned TCO films obtained by PLD in photovoltaic and light emitting devices.						
151.	Room temperature ferromagnetism and its correlation to ferroelectricity	<i>THIN SOLID FILMS</i> , 669 , pp.440-449 (2019)	Manganese is deposited at high temperature on (001) oriented ferroelectric lead zirconate-titanate prepared in two different ways: sputter-annealed or just simply annealed in ultrahigh vacuum.	Romanian Ministry for Research and Innovation through the NIMP	Bucuresti, IC; Apostol, NG; Abramoiu, LE; Tanase, LC;	1.888	0.324	10.1016/j.tsf.2018.11.018	Q2

<p>of manganese embedded in lead zirconate</p>		<p>Room temperature ferromagnetism (FM) is obtained for Mn deposited on sputter-annealed substrates, while for the other sample preparation a paramagnetic behaviour is obtained. Also, for the first case a clear inwards component of the polarization $P(-)$ is observed by X-ray photoelectron spectroscopy and piezoresponse force microscopy. Composition analysis evidenced formation of Pb vacancies in the case of FM - $P(-)$ sample, consistent with hole formation near the surface, needed both to stabilize the inwards polarization state and to intermediate ferromagnetism between Mn^{2+} ions. The indirect exchange ferromagnetism mediated by holes is stronger, most probably because the interaction energy is proportional with the carrier effective mass. Also, whereas in the case of unsputtered substrate a stable surface Mn</p>	<p>[PN18-11/2018] ; UEFISC DI Agency [PN-III-P1-1.1-PD-2016-1322, PN-III-P1-1.2-PCCDI-2017-0152, 75PCCDI/2018]</p>	<p>Tache, CA; Lungu, GA; Costescu, RM; Chirila, CF; Trupina, L; Pintilie, L; Teodorescu, CM</p>				
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			oxide is formed, defect formation by sputtering seems to favor Mn migration inside the sample. This also induces the formation of a thin film where ferromagnetism and the orientation of ferroelectric polarization might have the same origin, i. e. holes accumulated near the outer surface.						
152.	Antireflective coatings with high damage threshold prepared by laser ablation	<i>APPLIED PHYSICS A-MATERIALS SCIENCE & PROCESSING</i> , 125 ,815 (2019)	Latest developments in the field of high power ultra-short pulse lasers have led to intensive studies dedicated to the fabrication possibility of new antireflective coatings which exhibit high damage threshold. Therefore, this study is focused on the deposition and characterization of metal oxide heterostructures followed by laser-induced damage threshold tests which evidence their application in high power laser optics. Al ₂ O ₃ , SiO ₂ , and HfO ₂ layers are combined to obtain different heterostructures, i.e. HfO ₂ /Al ₂ O ₃ /HfO ₂ /Al ₂ O ₃ /HfO ₂ and	Romanian National Nucleus Program-contract [16 N/2019]; Romanian National Authority for Scientific Research ; CNCS-UEFISCDI [PN-II-PT-PCCA-2013-4-1870, PN-III-P1-1.2-PCCDI-2017-0637, PN-III-P11.2-PCCDI-	Filipescu, M; Pallapalu, A; Bercea, A; Rusen, L; Cernai, MO; Ion, V; Calugar, A; Nistor, LC; Dinescu, M	1.784	0.308	10.1007/s00339-019-3110-y	Q3

		<p>HfO₂/SiO₂/HfO₂/SiO₂/HfO₂. The metal oxide heterostructures are deposited in a controllable oxygen atmosphere, either at room temperature or high temperatures (600 degrees C) by pulsed laser deposition (PLD). The morphological, structural and optical properties of the as-deposited heterostructures are first investigated. Atomic force microscopy and spectroscopic ellipsometry investigations reveal a lower roughness of the heterostructures based on HfO₂/Al₂O₃ layers grown at 600 degrees C as compared to those grown at room temperature. Furthermore, following the laser-induced damage threshold (LIDT) tests carried out with a Ti-Sapphire laser, higher LIDT values are obtained for the HfO₂/Al₂O₃-based heterostructures than for the HfO₂/SiO₂-based heterostructures. The ability to control the morphological and</p>	<p>2017-0172]; Extreme Light Infrastructure Nuclear Physics (ELI-NP) Phase II; Romanian Government; European Union through the European Regional Development Fund European Union (EU) [1/07.07.2016, 1334]; European Union through Competitiveness Operational Programme [1/07.07.2016, 1334]</p>					
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			structural properties of the antireflective coatings by modifying the deposition parameters of the metal oxide heterostructures demonstrates that PLD is a suitable technique for the manufacturing of antireflective coatings for high power ultra-short laser systems.						
153.	Charge Transfer from Alq(3)-5Cl to Graphene Oxide in Donor-Acceptor Heterostructures	<i>JOURNAL OF ELECTRONIC MATERIALS</i> , 48 , pp.- (2019)	This paper describes an alternative active layer for the solar cells based on the organometallic compounds in two configurations: bulk heterojunction and donor/acceptor junction between the organometallic compounds as the electron donor and carbon-based layer as the electron acceptor. Both configurations depend on the band alignment which ensures optimal charge transport towards electrodes in the sandwich structures of these active layers, but the optimization also depends by the exciton diffusion length which limits the thicknesses of the	Romanian National Authority for Scientific Research, CNCS-UEFISCDI Core Program [PN19-03, 21 N/08.02.2019]	Polosanu, S; Ciobotaru, CC; Ciobotaru, IC	1.676	0.273	10.1007/s11664-019-07531-w	Q3

			<p>active layer. In the bulk heterojunctions, the exciton diffusion length could be extended to 100 nm which allows a better efficiency than bilayer structures. The photoconductive behaviors of these two configurations have shown the superiority of the bulk heterojunctions, increasing the intensity of the measured photocurrent. The redshift of the photoluminescence of Alq3-5Cl in the bulk heterojunctions reveals a better charge transfer towards the acceptor layer, in this case, formed from graphene oxide. The alternative of organometallic compounds as donor materials ensures a better thermal and chemical stability compared with other organic materials like perovskites.</p>						
154.	EXPERIMENTAL STUDY OF TERAHERTZ RESPONSE	<i>PROCEEDINGS OF THE ROMANIAN ACADEMY SERIES A-MATHEMATICS PHYSICS TECHNICAL SCIENCES</i>	Barium strontium titanate (BST) ferroelectric layers were deposited on high resistivity Si substrates by Pulsed Laser Deposition and Radio Frequency sputtering. The	Romanian National Authority for Scientific Research and Innovation	Banciu, MG; Nedelcu, L; Furuy, T; Hrib, L;	1.402	0.24		Q3

	FROM SOME FERROELECTRIC AND DIELECTRIC MATERIALS	<i>INFORMATION SCIENCE</i> , 20 , pp.353-360 (2019)	stoichiometry was measured by using the Rutherford Backscattering technique at 3.041 MeV. For sub-THz measurements of Si samples, a new resonant method placing the sample between two flanged waveguides is proposed. In the THz range, the Time Domain Spectroscopy proved to be a reliable method. Both methods show effects due to the dielectric losses of BST in that frequency range.	n, Programme for Space Technology and Advanced Research - STAR [630 / 2016 MCOAT ANT, 134/2018]; Romanian National Authority for Scientific Research and Innovation, CCCDI - UEFISCDI within PNCDI III [61/2016]	Geambasu, DC; Trupina, L; Pantelica, D; Mihai, MD; Tani, M				
155.	k-resolved electronic structure of buried heterostructure and impurity	<i>JOURNAL OF ELECTRON SPECTROSCOPY AND RELATED PHENOMENA</i> , 236 , pp.1-8 (2019)	Angle-resolved photoelectron spectroscopy (ARPES) is the main experimental tool to explore electronic structure of solids resolved in the electron momentum k. Soft-X-ray ARPES (SX-ARPES), operating in a photon energy	Swiss Excellence Scholarship grant ESKAS [2015.0257]; Swiss National Science Foundation	Stroconv, VN; Lev, LL; Kobayashi, M; Cancellieri, C; Husanu,	1.343	0.544	10.1016/j.elspec.2019.06.009	Q3

<p>systems by soft-X-ray ARPES</p>			<p>range around 1 keV, benefits from enhanced probing depth compared to the conventional VUV-range ARPES, and elemental/chemical state specificity achieved with resonant photoemission. These advantages make SX-ARPES ideally suited for buried heterostructure and impurity systems, which are at the heart of current and future electronics. These applications are illustrated here with a few pioneering results, including buried quantum-well states in semiconductor and oxide heterostructures, their bosonic coupling critically affecting electron transport, magnetic impurities in diluted magnetic semiconductors and topological materials, etc. High photon flux and detection efficiency are crucial for pushing the SX-ARPES experiment to these most photon-hungry cases.</p>	<p>National Science Foundation (SNSF) [200021_165529, 200021_165910]; Japan Society for the Promotion of Science Ministry of Education, Culture, Sports, Science and Technology, Japan (MEXT) Japan Society for the Promotion of Science</p>	<p>MA; Chikina, A; Schrotter, NBM; Wang, X; Krieger, JA; Salman, Z</p>				
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156.	Effect of slow charged 90 keV Ne8+ ions on zinc ferrite nanoparticles	<i>MATERIALS RESEARCH EXPRESS</i> ,6,095077 (2019)	The present work reports on the effect of slow charged ions irradiation on the structural and magnetic properties of zinc ferrite nanoparticles obtained by coprecipitation method. Results from both the x-ray and Fourier Transform Infrared Spectroscopies confirm the formation of the spinel phase. The structural investigation using x-rays reveals no significant impurity peak and a crystallite size of 9 nm. Particle size of pristine sample is determined to be around 9 nm. Crystallinity and magnetic properties of ferrite sample investigated before and after irradiation process show that electronic excitations inside the material alter the magnetic parameters. Mossbauer Spectroscopy measurements indicate that a fluence of 3×10^{14} ions cm^{-2} Ne8+ ions of 90 keV are sufficient to induce cation redistribution	Romanian Space Agency (ROSA) within Space Technology and Advanced Research (STAR program) [169/20.07.2017]	Trandafir, EV; Caltun, OF; Ciocari, R; Pui, A; Hempelman, R; Diamandescu, L; Cervera, S; Trassinelli, M; Vernhet, D	1.449	0.236	10.1088/2053-1591/ab3174	Q3
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			into zinc ferrite nanoparticles.						
157.	Structural and electronic properties of the alpha-GeSe surface	<i>SURFACE SCIENCE</i> , 686 , pp.17-21 (2019)	<p>We have investigated the structural and electronic properties of the alpha-GeSe surface using atomic force microscopy, scanning tunneling microscopy and density functional theory calculations. GeSe belongs to the group-VI transition metal monochalcogenides and occurs in two polymorphs, alpha-GeSe and beta-GeSe. The most redundant polymorph, alpha-GeSe, has a structure that is very similar to black phosphorene. The alpha-GeSe surface has a centered rectangular unit cell with dimensions $a = 3.8$ angstrom and $b = 4.4$ angstrom, respectively. In scanning tunneling microscopy images only the Se atoms are resolved owing to the substantial transfer of electrons from the Ge to the Se surface atoms. This experimental finding is fully in line with density functional theory calculations. Scanning tunneling spectroscopy reveals</p>	China Scholarship Council China Scholarship Council; Nederlandse organisatie voor Wetenschappelijk Onderzoek (NWO) Netherlands Organisation for Scientific Research (NWO) [FOM FV15714TWD007]	Jiao, Z; Yao, QR; Balescu, LM; Liu, QJ; Bin, T; Zandvliet, HJW	1.849	0.46	10.1016/j.susc.2019.03.007	Q3

			that the alpha-GeSe surface is a p-type semiconductor with a band gap of 1.0 eV. The GeSe surface is stable at ambient conditions, which makes this material very appealing for technological applications.						
158.	Formation of a Bistable Interstitial Complex in Irradiated p-Type Silicon	<i>PHYSICA STATUS SOLIDI A-APPLICATIONS AND MATERIALS SCIENCE</i> , 216 , 1900354 (2019)	The influence of the injection of minority charge carriers on the formation of a divalent bistable defect (DBH) having two energy levels of $E_v + 0.44$ eV and $E_v + 0.53$ eV in its metastable configuration is investigated. Using forward current injection, the formation temperature of this defect in p-type silicon can be lowered by about 50 degrees C. The production of such bistable defect is enhanced in materials with a high ratio of boron to carbon concentrations. This allows one to conclude that the boron atom is one of the constituents of the defect under study. There is also a correlation between the behavior of the	State Research Program of the Republic of Belarus "Physical material science, new materials and technologies"; European Union (EU) [654168]; National Ministry of Research and Innovation [PN19-03]; IFA-CERN-11 Project	Makarenko, LF; Lastovski, SB; Yakushevich, HS; Gaubas, E; Pavlov, J; Kozlovski, VV; Moll, M; Pintilie, I	1.606	0.371	10.1002/pssa.201900354	Q3

			bistable hole traps and a metastable electron trap observed earlier. It is concluded that these traps are related to metastable and stable configurations of the DBH defect, which has inverse occupancy level ordering in its stable configuration.						
159.	Tryptophan/Dextran70 Based-Fluorescent Silver Nanoparticles: Synthesis and Physicochemical Properties	<i>JOURNAL OF FLUORESCENCE</i> , 29 , pp.981-992 (2019)	Nano-size and shape of fluorescent silver nanostructures are important for a wide range of bio-applications, especially as drug delivery systems, imaging and sensing. The aim of the work is to develop a fluorescent silver nano-structured system, synthesized by chemical reduction of aqueous AgNO3 solution by Tryptophan using Dextran 70 as stabilizing agent (SNPs(FL)). The formed fluorescent nano-system was analyzed by UV-Vis absorption, DLS, SEM, TEM, AFM, steady-state and time resolved fluorescence spectroscopy. TEM analysis showed multi-twined nanoparticle, with	Voice scu, M; Ionescu, S; Calderon-Moreno, JM; Teodorescu, VS; Anastasescu, M; Culita, DC	1.913	0.269	10.1007/s10895-019-02411-2	Q3	

			<p>the size within 15-40 nm. SNPs(FL) shows the fluorescence emission at 346 nm, the fluorescence quantum yield, $\phi = 0.034$ and the integrated fluorescence lifetime, $\tau = 1.82$ ns. Riboflavin fluorescence behaviour in the RF/SNPs(FL) system, has been also studied. The results have relevance in using SNPs(FL) as a potential marker/emissive system to solve various biological barriers in humans, like drug release and protein structure.</p>						
160.	<p>A Dyson Equation for Non-Equilibrium Green's Functions in the Partition-Free Setting</p>	<p><i>PHYSICA STATUS SOLIDI B-BASIC SOLID STATE PHYSICS</i>, 256, 1800447 (2019)</p>	<p>Here a small interacting sample, coupled to several non-interacting leads is considered. Initially, the system is at thermal equilibrium. At some instant $t(0)$ the system is set into the so-called partition-free transport scenario by turning on a bias on the leads. Using the theory of Volterra operators we rigorously formulate a Dyson equation for the retarded Green's function and we</p>	<p>CNCS-UEFISCDI Grant [PN-III-P4-ID-PCE-2016-0084]; Romania Core Research Programme [PN16-480101]; Danish Council for Independent Research</p>	<p>Cornean, HD; Moldoveanu, V; Pillet, CA</p>	1.454	0.413	10.1002/pssb.201800447	Q3

			establish a closed formula for the associated proper interaction self-energy.	\ Natural Sciences Det Frie Forsknin gsrad (DFF) [4181-00042]; ANR, Grant NONST OPSFren ch National Research Agency (ANR) [ANR-17-CE40-0006]					
161.	Photoco nductiv e Behavi or of the PPV/R GO Compo sites: Insights of Charge Transfe r Process	<i>PHYSICA STATUS SOLIDI B-BASIC SOLID STATE PHYSICS</i> , 256 , 1800392 (2019)	The paper deals with a study of composites based on poly(p-phenylenevinylene) (PPV) and reduced graphene oxide (RGO) in terms of photoconductivity and photocurrent (PC) dynamics in charge-discharge cyclic processes. The explanation for the photoconductive behavior is built with the support of DeVore and Onsager theories. Scanning samples in both directions involves charge transport, to and from, available energy states called defect centers. The	Romania n National Authorit y for Scientific Research by Core Program me [PN18-110101]	Ilie, M; Drago man, D; Baibar ac, M	1.454	0.413	10.1002/pssb.201800392	Q3

			<p>existence of these centers is confirmed by a decrease in the composite bandgap caused by the RGO localized states which are situated slightly above the first HOMO level in the PPV bandgap. The contribution of RGO to the photoconductive properties of PPV is revealed through a photocurrent value with two orders of magnitude higher than for PPV.</p>						
162.	Annealing of preexisting defects in silicon single crystals by ion irradiation	<p><i>NUCLEAR INSTRUMENTS & METHODS IN PHYSICS RESEARCH SECTION B-BEAM INTERACTIONS WITH MATERIALS AND ATOMS</i>, 450, pp.85-89 (2019)</p>	<p>The annealing of crystalline defects in Si single crystals created by ion implantation at room temperature was investigated. Silicon single crystals were firstly implanted at room temperature with 1.345 MeV Au¹⁺ ions at fluences from 1 x 10¹³ to 1 x 10¹⁴ at/cm² to induce damage. A second implantation at room temperature was afterwards performed with 10 MeV Co³⁺ ions at a fluence of 3 x 10¹⁴ at/cm². All samples were analyzed afterwards by Rutherford backscattering in</p>		Mihai, MD; Ionescu, P; Pantelica, D; Petrascu, H; Craciun, D; Craciun, V; Vasiliu, F; Vasile, BS; Mercioniu, I	1.21	0.362	10.1016/j.nimb.2018.09.005	Q3

			random and channeling geometry to assess the crystalline damage present in the surface region. The results showed a significant reduction of the degree of damage or a reduction of the size of damaged region. The morphology and local atomic structure, studied using high - resolution electron microscopy, selected area electron diffraction and high resolution X-ray diffraction confirmed the reduction of damage degree and volume caused by Au implantation after Co implantation.						
163.	Structural and optical properties of ZnO thin films grown by rapid atmospheric mist chemical vapor technique	<i>OPTICAL AND QUANTUM ELECTRONIC S,51,210 (2019)</i>	In this work, the effect of deposition time on the structural and optical properties of ZnO films deposited by Ultrasonic Spray Mist-CVD was studied aiming the application in perovskite solar cells, as holes blocking layer. Crystallinity, surface morphology and optical properties of the ZnO films were investigated by X-ray Diffraction	Moroccan Ministry of Higher Education and Research ; CNRST, Project [PPR/37/2015]; Romania Ministry of Research and Innovation	Derbali, S; Nouneh, K; Galca, AC; Touhami, ME; Secu, M; Matei, E; Leont, LN; Pintilie, L; El Harfa	1.547	0.21	10.1007/s11082-019-1937-2	Q3

			(XRD), Scanning Electron Microscopy (SEM), Atomic Force Microscopy (AFM), conventional and Photoluminescence (PL) spectroscopies, respectively. The XRD measurement proves the existence of the hexagonal wurtzite phase and a high degree of crystallinity with [001] preferential orientation. The SEM study shows that the films possess a compact structure. Smooth and homogenous surface was confirmed also by AFM. The obtained results indicate that ZnO films deposited by a simple, safe and cost-effective method present a great potential for application in perovskite solar cells.	n [PN18-110101]	oui, N; Fahoume, M				
164.	Interaction and Size Effects in Open Nano-Electromechanical Systems	<i>PHYSICA STATUS SOLIDI B-BASIC SOLID STATE PHYSICS</i> , 256 , 1800443 (2019)	The time-dependent transport of a 2D quantum wire (QW) connected to source/drain leads and electrostatically coupled to a singly-clamped InAs cantilever is investigated. The latter is placed above the nanowire and	CNCS-UEFISC DI Grant [PN-III-P4-ID-PCE-2016-0084]; TUBITAK Turkey Bilimsel	Tanatar, B; Moldoveanu, V; Dragomir, R; Stanciu, S	1.454	0.413	10.1002/pssb.201800443	Q3

			acts as a nanoresonator (NR) in the quantum regime. The vibron dynamics and the transport properties of this nano-electromechanical system (NEMS) are described within a generalized master equation approach which is exact with respect to the electron-vibron coupling. A detailed description of the electron-vibron coupling by taking into account its dependence on the wavefunctions of the quantum nanowire is introduced. It is shown that the tunneling processes in the QW trigger periodic oscillations of the average vibron number even in the absence of a bias. The time-dependent filling of the vibronic states changes as the nanoresonator is swept along the quantum wire.	ve Teknolojik Arastirma Kurumu (TUBITAK) [117F125]					
165.	Polarization branches and optimization calculation strategy	<i>MODELLING AND SIMULATION IN MATERIALS SCIENCE AND ENGINEERING</i>	Berry phase (BP) polarization calculations have been investigated for several ferroelectric materials from the point of view of practical calculations. It was	Romanian Ministry of Education Executive Unit for Filip, LD; Plugaru, N; Pintilie, L	1.826	0.672	10.1088/1361-651X/ab146e	Q3	

	<p>applied to ABO(3) ferroelectrics</p>	<p>G,27,045008 (2019)</p>	<p>shown that interpretation of the results is particular to each case due to the multivalued aspect of polarization in the modern theory. Almost all of the studied examples show ambiguous polarization results which can be difficult to solve especially for super-cells containing large number of atoms. For this reason, a procedure has been proposed to minimize the number of calculations required to produce an unambiguous polarization result from BP polarization investigations.</p>	<p>Funding High Education, Research, Development and Innovation (MEN-UEFISCDI) through the Young Research Team Grant [PNII-RU-TE-2012-3-0320, 11]; NIMP Core Program [PN18-110101]; PCCF project [PN-III-P4-ID-PCCF-2016-0047]; Ministry of Research and Innovation through UEFISCDI executive unit. 6</p>					
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166.	Vibrational and photoluminescence properties of polydiphenylamine doped with silicotungstic acid heteropolyanions and their composites with reduced graphene oxide	<i>JOURNAL OF MOLECULAR STRUCTURE</i> , 1184 , pp.25-35 (2019)	In this work, the influence of silicotungstic acid concentration on the diphenylamine (DPA) electro-polymerization in the absence and the presence of reduced graphene oxide (RGO) is studied. The optical properties of the composites based on polydiphenylamine (PDPA) doped with the H ₄ SiW ₁₂ O ₄₀ heteropolyanions and RGO are investigated by Raman scattering, IR absorption spectroscopy and photoluminescence (PL). The presence of RGO induces an up-shift of the oxidation maximum of the DPA, as a result of a covalent functionalization process of graphene sheets with the polymer in the doped state. The deposition of PDPA onto RGO sheets surface is confirmed by the Raman scattering studies. Regardless of the H ₄ SiW ₁₂ O ₄₀ concentration, an up-shift of the IR bands from 910 to 1014 cm ⁻¹ to similar to 920 and 1022 cm ⁻¹	European Regional Development Fund under the Competitiveness Operational Program [58/05.09.2016]; National Institute of Materials Physics [58/05.09.2016, 2570/29.11.2017]; National Authority for Scientific Research and Innovation [58/05.09.2016]; Pro-Vitam Ltd. [2570/29.11.2017]	Baibarac, M; Stroe, M; Fejer, SN	2.12	0.244	10.1016/j.molstruc.2019.02.014	Q3
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			<p>is reported as a consequence of the compensation of positive charges of PDPA macromolecular chains with of the H₄SiW₁₂O₄₀ heteropolyanions. An enhancement in the absorbance of the IR bands situated in the spectral range 750-1050 cm⁽⁻¹⁾ accompanied of a decrease in the relative intensity of the PL bands of PDPA and their composites with RGO, as increasing the H₄SiW₁₂O₄₀ concentration, is reported. In the presence of RGO, a change in the PDPA PL spectra profile is also highlighted. (C) 2019 The Authors. Published by Elsevier B.V.</p>						
167.	Efficiency enhancement of iridium-based organometallic light emitting diodes	<i>MATERIALS RESEARCH EXPRESS</i> , 6, 05104 (2019)	<p>The efficiency of the Organic Light Emitting Diode (OLED) is given either by the internal quantum efficiency of the organometallic compound or by the charge transport across OLED. IrQ(ppy)(2) is a new organometallic compound which gives green and red electroluminescence.</p>	grant of the Romanian National Authority for Scientific Research CNCSU EFISCDI [PN-II-ID-PCE-2011-3-0620];	Polosani, S	1.449	0.236	10.1088/2053-1591/ab0625	Q3

			<p>This dual emitter compound exhibits a lower internal quantum efficiency compared with classical Ir(ppy)(3) green emitter because of a weak coupling between Ir³⁺ and oxygen ions which significantly reduces the charge transfer towards quinoline ligand. This lower internal quantum efficiency is compensated by the higher electron donor character of the quinoline ligand which induces better charge transport in OLED structures. In the case of Ir(ppy)(3) green emitter, the efficiency can be improved by adding magnetic or metallic nanoparticles which significantly change the charge transport for the Ir(ppy)(3) based OLED structures. The metallic or magnetic nanoparticles embedded in the transparent and conductive polymer, reduce the electron injection, acting as filling traps, which directly increases the electroluminescence and the current at the same voltage.</p>	<p>Core Program of NIMP 21 N</p>					
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168.	Coordination polymers and a dinuclear complex constructed from zinc(II) ions and fluorescein: iodine adsorption and optical properties	<i>JOURNAL OF COORDINATION CHEMISTRY</i> , 7 , pp.1222-1237 (2019)	1-D coordination polymers, (1)(infinity)[Zn(fl)(2)]center dot 2EtOH and (1)(infinity)[Zn(fl)(2)]center dot 2MeOH, and a dinuclear complex, [{Zn(fl)(2)}(2)(dienpip)]center dot 4H(2)O center dot 4EtOH (dienpip= N,N'-bis(2-aminoethyl)piperazine), were obtained using Zn(II) ions and fluorescein anions (fl). Thermal analysis shows stability of the polymers after solvent removal up to more than 400 degrees C. Crystallization solvent molecules were removed under reduced pressure with the preservation of the polymeric structure, (1)(infinity)[Zn(fl)(2)]. Desolvated crystals were exposed to I-2 vapors and the crystal structure determination by X-ray diffraction confirmed the presence of I-2 molecules in the channels generated in crystals by the metal-organic	UEFISCDI [PN-III-P4-ID-PCE-2016-0442, 89/2017]	Raduca, M; Ene, CD; Ionescu, S; Florea, M; Madalan, AM	1.685	0.166	10.1080/00958972.2019.1605442	Q3
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			framework. The iodine content, evaluated by X-ray diffraction, corresponds to the overall formula $(1)(\infty)[Zn(fl)(2)] \cdot 0.3I(2)$. The optical properties of the coordination polymers and the dinuclear complex have been investigated. [GRAPHICS] .						
169.	Novel anhydrous solid-state form of Azathioprine: The assessing of crystal structure by powder X-Ray diffraction, Infrared Absorption Spectroscopy and Raman scattering	<i>JOURNAL OF MOLECULAR STRUCTURE</i> , 1178 , pp.702-710 (2019)	Azathioprine (Imuran), one of the oldest immunosuppressants, having been used in transplantation since the early 1960's, is known to have only two crystal forms: an anhydrous form and a dihydrate phase. We report the crystal structure of a new anhydrous solid-state form of Azathioprine, determined directly from powder X-Ray diffraction data, employing the direct-space genetic algorithm technique for structure solution, followed by Rietveld refinement. The new anhydrous polymorph is accessible only by a solid-state dehydration process	European Regional Development Fund European Union (EU); National Institute of Physics [58/05.09.2016, 4529/29.11.2017]; National Authority for Scientific Research and Innovation as an Intermediate Body, on behalf of the	Covaci, OI; Samohvalov, D; Manta, CM; Buhaleanu, L; Barbatu, A; Baibarac, M; Daescu, M; Matea, A; Gherca, D	2.12	0.244	10.1016/j.molstruc.2018.10.065	Q3

			of the readily obtained monohydrate form of Azathioprine, the form for which a crystal structure has not previously been reported. The IR and Raman spectra confirmed the results obtained from X-Ray diffraction indicating the presence of all functional groups involved in intermolecular hydrogen bonding which dictates different arrangement of molecules in the structural packing. (C) 2018 Elsevier B.V. All rights reserved.	Ministry of European Funds as Managing Authority for Operational Program Competitiveness (POC); SC Sara Pharm Solution SRL					
170.	Multiferroic (Nd,Fe)-doped PbTiO ₃ thin films obtained by pulsed laser deposition	<i>APPLIED PHYSICS A-MATERIALS SCIENCE & PROCESSING</i> , 125 ,113 (2019)	We report the successful growth of multiferroic (Nd,Fe)-doped PbTiO ₃ thin films with the composition (Pb _{0.88} Nd _{0.08})(Ti _{0.93} Fe _{0.05} Mn _{0.02})O ₃ (PNFT) using pulsed laser deposition. The deposited films have been investigated by XRD, SEM, energy-dispersive X-ray spectroscopy (EDS), secondary-ion mass spectroscopy (SIMS), atomic force microscopy, magnetic force	Joint Project CNR, Romania Academy "Study and Development of Single-Phase Multiferric Perovskite Ceramic and Thin Films for Multifun	Dumitru-Grivei, M; Ion, V; Birjega, R; Moldovan, A; Craciun, F; Cernea, M; Galassi, C; Dinescu, M	1.784	0.308	10.1007/s00339-019-2403-5	Q3

			<p>microscopy, piezoforce microscopy, spectroscopic ellipsometry (SE) and dielectric spectroscopy measurements. PNFT films deposited on different substrates (MgO, SrTiO₃ and Nb:SrTiO₃) are (001) oriented, preserving the orientation of the single-crystal substrates. EDS mapping and SIMS across the film thickness probed the uniform distribution of all the elements. The refractive index and extinction coefficient have been obtained with the SE software package and refined with an optical-graded model. Magnetic domains and ferroelectric domains have been evidenced at microscopic scale. Good dielectric properties and low loss, comparable to those of bulk materials, have been obtained.</p>	ctional Devices"					
171.	Comparison between dielectri	<i>PROCESSING AND APPLICATION OF CERAMICS,13</i>	Ba _{0.75} Sr _{0.25} TiO ₃ (BST) and PbZr _{0.68} Fe _{0.14} Nb _{0.14} Ti _{0.04} O ₃ (PZFNT) ceramic	POC-G projectM AT2IT (Romani an	Stancu, V; Amarande, L;	0.976	0.19	10.2298/PAC1903269S	Q3

	c and pyroelectric properties of PZFNT and BST type ceramics	, pp.269-276 (2019)	pellets were obtained by ceramic technology and their structural, ferroelectric and pyroelectric properties were investigated. The relative density of BST and PZFNT is about 93% and 90%, respectively, with an average grain size of 102 μm and 6.45 μm . Both materials have similar room temperature dielectric constants (similar to 2000), but PZFNT shows higher remnant polarization (similar to 15 $\mu\text{C}/\text{cm}^2$) and better pyroelectric properties (similar to $1.69 \cdot 10^{-4} \text{C}/\text{m}^2\text{K}$), which recommend it for pyroelectric detectors, infrared radiation- and laser pulse energy-meters.	Ministry of Research and Innovation) [54/2016, 105726]; Core Program PN19-03 [21 N/08.02. 2019]	Botea, M; Iuga, A; Leonard, LN; Tomulescu, AG; Cioanagher, M; Balescu, LM; Pintilie, L				
172.	Ferroelectric Field Effect Transistors Based on PZT and IGZO	<i>IEEE JOURNAL OF THE ELECTRON DEVICES SOCIETY</i> ,7, pp.268-275 (2019)	Ferroelectric field effect transistors (FeFETs) based on lead zirconate titanate (PZT) ferroelectric material and amorphous-indium-gallium-zinc oxide (a-IGZO) were developed and characterized. The PZT material was processed by a sol-	Romanian Ministry of Research and Innovation; Executive Unit for Financing Higher	Beslea, C; Radu, R; Balescu, LM; Stancu, V; Costas, A; Dumitru, V;	2	0.764	10.1109/JEDS.2019.2895367	Q3

			<p>gel method and then used as ferroelectric gate. The a-IGZO thin films, having the role of channel semiconductor, were deposited by radio-frequency magnetron sputtering, at a temperature of similar to 50 degrees C. Characteristics of a typical field effect transistor with SiO₂ gate insulator, grown on highly doped silicon, and of the PZT-based FeFET were compared. It was proven that the FeFETs had promising performances in terms of I-on/I-off ratio (i.e., 10(6)) and IDS retention behavior.</p>	<p>Education and Innovation, National Council of Scientific Research (CNCS-UEFISCDI) [PN-II-RU-TE-2014-4-1122, PN-III-P1-1.1-PD-2016-1546]</p>	<p>Stan, G; Pintilie, L</p>				
173.	<p>INVESTIGATION OF THE PHOTOELECTROCHEMICAL BEHAVIOR OF NANOCARBON/MESOPOROUS</p>	<p><i>DIGEST JOURNAL OF NANOMATERIALS AND BIOSTRUCTURES</i>,14, pp.935-941 (2019)</p>	<p>In this work, we report the influence of nanocarbon deposited on mesoporous TiO₂ by spray method on photoelectrochemical performance of the formed photoanodes. Scanning electron microscopy and transmission electron microscopy images confirmed presence of carbon nanoparticles on the surface of anatase TiO₂ films. Nanocarbon</p>	<p>Romanian Ministry of Education and Research (Core Program) [PN19-03, 21 N/08.02. 2019]</p>	<p>Sima, M; Vasile, E; Sima, A</p>	0.638	0.105		Q4

	TiO2 FILMS		decorated TiO2 photoanodes were characterized by electrochemical impedance spectroscopy and Mott-Schottky analysis. Charge recombination process was evaluated by measurement of open-circuit voltage decay after interruption the illumination Only a small enhancement of photoelectrochemical performance of these photoanodes was observed. It was attributed to increasing of charge carrier density as a result of nanocarbon deposition on TiO2 film.						
174.	STRUCTURAL EVOLUTION OF THE NiTi/NiFeGa SMAR T HYBRID MATERIAL DURING SEVER	<i>DIGEST JOURNAL OF NANOMATERIALS AND BIOSTRUCTURES</i> , 14 , pp.539-546 (2019)	High speed high pressure torsion (HSHT) a patented new approach is proposed to fabricate nanocomposites. The goal of this work is to investigate the NiTi/NiFeGa bilayer hybrid material with nano- and submicrocrystalline structure under the influence of HSHPT. Apart from the grain refinement, the effectiveness of the joint are revealed	[47PCC DI/2018]	Gurau , C; Gurau , G; Tolea, F; Sampath, V	0.638	0.105		Q4

	E PLAST IC DEFOR MATIO N		scanning electron microscopy (SEM) and transmission electron microscopy (TEM). The mechanical properties of the composite layers in bulk and after severe plastic deformation are investigated. Bi-layered composite disks consisting of NiTi shape memory alloy and NiFeGa - Heusler type alloy, exhibit thermoelastic structural martensitic transformation. Submicrocrystalline structure is formed in the both layers of the hybrid material. It is also ascertained significant hardening of each layer of the hybrid as a result of HSHPT. The results highlight market differences between the bulk and the hybrid and the role of severe plastic deformation on martensitic transformation.						
175.	STRUC TURA L, DIELE CTRIC AND PYROE LECTR IC PROPE	<i>DIGEST JOURNAL OF NANOMATERI ALS AND BIOSTRUCTU RES,14, pp.225-230 (2019)</i>	Lead zirconate titanate doped with iron and niobium (PZFNT) was prepared by conventional processing technique, solid state synthesis method. The influence of	POC-G project MAT2IT [54/2016, 105726]	Stanc u, V; Amar ande, L; Botea, M; Cioan gher, M;	0.638	0.105		Q4

	RTIES OF Nb AND Fe DOPE D PZT CERAMICS		dopants on the microstructure, ferroelectric and pyroelectric properties was investigated. XRD data reveals a perovskite structure near to the lead zirconate phase. The relative density of PZFNT is approximate 90%, with average grains size of 6.45 μ m.		Tomulescu, A; Iuga, A; Pintilie, L				
176.	Raman investigations on gamma irradiated iPP-VGCNF nanocomposites: The polymer's tale	<i>SURFACES AND INTERFACES</i> , 17, UNSP 100351 (2019)	Raman investigations on nanocomposites obtained by loading various amounts of vapor grown carbon nanofibers within an isotactic polypropylene matrix, and gamma irradiated in air, at various integral doses ranging between 0 and 27 kGy, are reported. The analysis is focused on the polymer's answers as revealed by Raman spectroscopy and investigate in detail the effect of ionizing radiation on the position of the Raman line originating from the polymer. The as-obtained data are correlated to the elastic features of the nanocomposites. A	Department of Defense Grant "Raman Spectrometer for the Characterization of Advanced Materials and Nanomaterials" [W911NF-15-1-0063]; NSF National Science Foundation (NSF) [DMR-1523577]; IRASM Centre of Irradiation	Chipara, DM; Secu, C; Lozano, K; Secu, M; Chipara, M	not available	not available	10.1016/j.surfin.2019.100351	not available

			competition between gamma irradiation and loading by carbon nanofiber, resulting in the stretching of the polymeric matrix and revealed as a displacement of Raman lines towards smaller wavenumber is reported. It is concluded that side groups (CH3) are less affected by the loading with carbon nanofibers,	Technology, "Horia Hulubei" National Institute for Physics and Nuclear Engineering (NIPNE)					
177.	GeSn Nanocrystals in GeSnSiO2 by Magnetron Sputtering for Short-Wave Infrared Detection	<i>ACS APPLIED NANO MATERIALS</i> , 2, pp.3626-3635 (2019)	Detection in short-wave infrared (SWIR) has become a very stringent technology requirement for developing fields like hyperspectral imaging or climate changes. In a market dominated by III-V materials, GeSn, a Si compatible semiconductor, has the advantage of cost efficiency and inerrability by using the mature Si technology. Despite the recent progress in material growth, the easy fabrication of crystalline GeSn still remains a major challenge, and different methods are under investigation. We present the formation of GeSn	UEFISC DI project M-ERA.NET GESNA PHOTO Contract [58/2016]; UEFISC DI project PCE Contract [122/2017]; Romania Ministry of National Education through NIMP Core Program PN19-03	Slav, A; Palade, C; Logofatu, C; Dascalescu, I; Lepadat, AM; Stavarache, I; Comanescu, F; Iftime, S; Antoh, S; Lazanu, S; Teodorescu, VS; Bucu, D;	not available	not available	10.1021/acsanm.9b00571	not available

			<p>nanocrystals (NCs) embedded in oxide matrix and their SWIR characterization. The simple and cost-effective fabrication method is based on thermal treatment of amorphous $(\text{Ge}_{1-x}\text{Sn}_x)_y(\text{SiO}_2)_{(1-y)}$ layers deposited by magnetron sputtering. The nanocrystallization for $\text{Ge}_{1-x}\text{Sn}_x$ with 9-22 at. % Sn composition in SiO_2 matrix with 9% to 15% mole percent was studied under low thermal budget annealing in the 350-450 degrees C temperature range. While the Sn at.% content is the main parameter influencing the band-structure of the NCs, the SWIR sensitivity can be optimized by SiO_2 content and H_2 gas component in the deposition atmosphere. Their role is not only changing the crystallization parameters but also to reduce the carrier recombination by passivation of NCs defects. The experiments indicate a limited</p>	<p>[21N/2019]; Romania Ministry of National Education through INOE Core Project [33N/2018]</p>	<p>Ciurea, ML; Braic, M; Stoica, T</p>				
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			<p>composition dependent temperature range for GeSn NCs formation before beta-Sn phase segregation occurs. NCs with an average size of 6 nm are uniformly distributed in the film, except the surface region where larger GeSn NCs are formed. Spectral photovoltaic current measured on SiO₂ embedded GeSn NCs deposited on p-Si substrate shows extended SWIR sensitivity up to 2.4 μm for 15 at. % Sn in GeSn NCs. The large extension of the SWIR detection is a result of many factors related to the growth parameters and also to the in situ or ex situ annealing procedures that influence the uniformity and size distribution of NCs.</p>						
178.	<p>Particularities of trichloroethylene photocatalytic degradation over</p>	<p><i>JOURNAL OF ENVIRONMENTAL CHEMICAL ENGINEERING</i>, 7, UNSP 102789 (2019)</p>	<p>This is the first report on synthesis and photocatalytic activity for trichloroethylene (TCE) degradation under simulated solar light over RbLaTa₂O₇ layered perovskites with predominant</p>	<p>[PNII-PT-PCCA BICLEA NBIOS 46/2012] ; [46 PCCDI/2018 MALAS ENT]</p>	<p>Raciulet, M; Papa, F; Kawamoto, D; Munteanu, C;</p>	<p>not available</p>	<p>not available</p>	<p>10.1016/j.jece.2018.11.034</p>	<p>not available</p>

	<p>crystalline RbLaTa₂O₇ nanowire bundles grown by solid-state synthesis route</p>		<p>nanowire or platelet morphologies. SEM images witnessed that the one step thermal treatment at 1200 degrees C lead to formation of RbLaTa₂O₇ nanowires with diameter of 80-320 nm and several microns in length associated in bundles and sharp-edged, merged platelets (minor phase). The two-step annealing at 950 degrees C and 1200 degrees C resulted in decrease of wires bundle population and increase in that of platelets merged in faceted particles. The RbLaTa₂O₇ nanowires are made of by well-aligned atomic rows with preferred orientation toward the c-axis, relatively free of defect. High density of hydroxyl groups on the sample calcined in mild conditions (RbLaTa_01) favors the photo mineralization of TCE. In contrast, the activity of RbLaTa_02 annealed in harsh conditions (950 and 1200 degrees C), poor in</p>		<p>Culita, DC; Negrila, C; Atkins, I; Bratan, V; Pandele-Cusu, J; Balint, I</p>				
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			<p>surface hydroxyl groups, remained modest. The weak surface basicity directed the reaction mainly to generation of intermediate chlorinated compounds. Pd and Au were supported on RbLaTa₂O₇ perovskites as an alternative strategy to boost the removal of chlorinated pollutants by combining photocatalytic (mineralization) and catalytic (hydrodechlorination, HDC) processes. The mineralization of TCE to Cl⁻ was drastically hindered in presence of methanol due to quenching of -OH radicals by alcohol. The results suggested that the density of RbLaTa₂O₇ surface hydroxyl groups is essential for photo mineralization of TCE whereas the surface carbonate is beneficial for the formation of intermediate chlorinated product.</p>						
179.	Fe ₃ O ₄ /BaTiO ₃ COMPOSITE S	UNIVERSITY POLITEHNICA OF BUCHAREST SCIENTIFIC	This paper demonstrates the possibility of the preparation of Fe ₃ O ₄ /BaTiO ₃ core-	Project POSCCE [638/12.03.2014]	Tanasa, E; Andronescu, E;	not available	not available		not available

	WITH CORE-SHELL STRUCTURE	<i>BULLETIN SERIES B-CHEMISTRY AND MATERIALS SCIENCE</i> , 81 , pp.171-180 (2019)	shell composites. BaTiO ₃ -coated Fe ₃ O ₄ (Fe ₃ O ₄ /BaTiO ₃) with 5-15 nm Fe ₃ O ₄ nanoparticles as cores and 2.5-4 nm BaTiO ₃ shell thickness, was successfully prepared through coprecipitation method and sol-gel deposition technique. High-Resolution Transmission Electron Microscopy (HRTEM), Energy Dispersive X-ray Spectrometry (EDXS) and Selected-Area Electron Diffraction (SAED) showed the formation of the core-shell structure with face centered cubic Fe ₃ O ₄ and tetragonal BaTiO ₃ phases.		Cernea, M; Oprea, OC				
180.	Capatanii/Parang Mountains: Polovragi Cave-Oltetului Gorge Karst Area	<i>CAVE AND KARST SYSTEMS OF ROMANIA</i> ., pp.83-91 (2019)	The Polovragi Cave-Oltetului Gorge karst area is about 3 km ² in size and is traverse by the Oltet River through a spectacular narrow gorge, which represents the natural boundary between Parang Mountains to the west and Capatanii Mountains in the east. These mountains are part of the Southern Carpathian. Focul		Ponta, GML; Aldica, GV; Dumitru, R	not available	not available	10.1007/978-3-319-90747-5_12	not available

			<p>Viu Caving Club surveyed the Polovragi Cave between 1975 and 1985. In parallel with the survey activities in the main cave developed on the first level, several smaller caves were identified on both sides of the Oltetului Gorge. These caves are located on the second and third levels, which are interrelated with different peneplanation events that occurred in the Carpathians. In 2000, Focul Viu began working in the cave again, replacing gates, removing trash, digging to open new passages, and performing underwater explorations. By the end of 2011, new passages were found in the Hope Chamber and Costin Gallery, extending the total length of the cave to 10,793 and 92 m in vertical range. The Polovragi Cave along with two other smaller caves is presented in this chapter. The Polovragi Cave is the third longest cave in the Southern</p>						
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			<p>Carpathians and the eleventh in Romania. One of the smaller caves hosts an important bat colony, and the other one, with 800 m of passages, hosts <i>Ursus spelaeus</i> bones and deposits of saltpeter. The Bones Cave (Pestera cu Oase) located on the western side of the gorge (opposite side of Polovragi Cave) at a higher elevation is an old meander of the Oltet River.</p>						
181.	<p>Mehedinti Mountains: Martel and Lazului Caves</p>	<p><i>CAVE AND KARST SYSTEMS OF ROMANIA</i>, pp.157-163 (2019)</p>	<p>Martel and Lazului are active phreatic/epiphreatic caves with a superimposed vadose morphology. Martel is a branchwork cave developed parallel with the river as a left (north) side meander and is located at about 8 m below the thalweg. The water level in the cave rises and falls along the main gallery, where the lakes/streams at the lightest rain become sumps. The cave is relatively poor in speleothems, except the fossil gallery (CS FV Gallery of Memories) located at the upstream end of the cave, but</p>		<p>Ponta, GML; Aldica, GV; Tulucan, T</p>	<p>not available</p>	<p>not available</p>	<p>10.1007/978-3-319-90747-5_19</p>	<p>not available</p>

			<p>numerous erosion and corrosion features are present. Lazului is also a branchwork cave, forming a large meander on the right (south) side of the Motru Sec River, where at the lowest points of the cave, five streams are disappearing underground. Erosion and corrosion features are present, and speleothem is found occasionally in the upper level of the cave.</p>						
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