7th edition of the
INTERNATIONAL WORKSHOP OF MATERIALS PHYSICS

31st of August-2nd of September 2022

Recent Trends in Magnetism and Superconductivity

Program

Wednesday 31.08.2022

1. Official opening (9.00-9.20): General Director: Presentation of NIMP and Research directions in Magnetism and Superconductivity.

M1 Nanoscale magnetism and Spintronics (9.20-11.20); Chairman: Lucian Pintilie (also at 1)

I1. Daniel E. Bürgler, **Peter Grünberg Institut, Germany**: Spin-dependent hybridization and spin polarization effects at metal-organic interfaces:Ferrocene- and pyrene-based cyclophane chemisorbed on Co(111) nanoislands (9.20 – 9.50)

I2. Florin Radu, **Helmholtz-Zentrum, Berlin, Germany**: Exploring nanoscale magnetism in ferrimagnetic spintronic materials with soft X-ray spectroscopy, scattering, and imaging techniques (9.50 - 10.20)

I3. Sumit Ghosh, **Peter Grünberg Institut** (PGI-1): Ultrafast optical generation of magnetic texture in antiferromagnets (10.20 – 10.50)

I4. Bogdana Borca, **NIMP, Romania**: Memristive effects in multiferroic metal-organic heterostructures (10.50-11.20)

11.20-11.40 Coffee Break

M2 Nanoscale magnetism and Spintronics (11.40-13.10); Chairman: Lucian Pintilie, NIMP, Romania

I5. Herman Suderow, **Universidad Autonoma de Madrid, Spain**: Scanning tunneling spectroscopy of quantum critical and topological magnets: The link between electronic band structure and magnetism (on-line) (11.40 - 12.10)

I6. Marius V. Costache **University of Barcelona, Spain**: Trends and opportunities in two-dimensional (2D) materials spintronics (12.10 - 12.40)

I7. Evangelos Papaioannou **Institute of Physics, Martin Luther University, Germany**: Novel broadband and efficient THz radiation sources based on spintronic Structures(on-line) (12.40 - 13.10)

13.10-14.20 Lunch

A1 Superconductivity (14.20-16.20); Chairman: Petre Badica, NIMP, Romania

I8. Laura Gozzelino **Politehnico di Torino, Italy**: Superconducting and hybrid passive shields for magnetic field mitigation (14.20 - 14.50)

I9. Simon Bending **University of Bath, United Kingdom**: Twisted van der Waals Heterostructure SQUIDs Fabricated by Dry Transfer of 2D Superconductor Flakes (14.50 - 15.20)

I10. Massimiliano Polichetti **University of Salerno, Italy**: The correlation between the second magnetization peak and the magnetic relaxation rate in superconductors (15.20-15.50)

I11. Adrian Crisan **NIMP, Romania**: Pinning potential in superconductors from multi-harmonic AC susceptibility response (15.50-16.20)

16.20-16.40 Coffee Break

A2 Magnetic domains and related magneto-functionalities (16.40-18.10); Chairman: Ovidiu Crisan

I12. Felicia Tolea **NIMP, Romania**: Multifunctional Ferromagnetic Shape Memory Materials: Magnetocaloric, Magnetorezistive and Temperature Memory Effects (16.40 - 17.10)

I13: Fernando Plazaola **University of the Basque Country**: The role of mechanically induced defects on the magnetic coupling in metamagnetic shape memory alloys (17.10 - 17.40)

I14: Cristian Teodorescu **NIMP, Romania**: Revised Kittel Theory for ferromagnetic domains and further developments (17.40-18.10)

Thursday 01.09.2022

M3 Superconductors (9.00-11.00); Chairman: Adrian Crisan

I15. Michael Eisterer **TU Wien, Austria**: Influence of fast neutron irradiation on the properties of conventional and high temperature superconductors (9.00-9.30)

I16. Traian Petrișor **Technical University of Cluj-Napoca, Romania:** Superconducting transport properties in epitaxial YBa2Cu3O7 thin films (9.30-10.00)

I17. Petre Badica **NIMP, Romania**: Recent developments of MgB2 superconductor at National Institute of Materials Physics (10.00 - 10.30)

Y1. Alina Ionescu **NIMP, Romania**: Vortex dynamics in type II superconductors: long time scales relaxation measurements: (10.30-10.45)

Y2. Ion Ivan **NIMP, Romania**: New superconductor/ferromagnet heterostructure formed by YBa2Cu3O7-x and CaRuO3 (10.45-11.00)

11.00-11.20 Coffee Break

M4 Nanoscale magnetism and Spintronics (11.20-12.20); Chairman: Victor Kuncser

I18. Ko Mibu, **Nagoia Instite of Technology, Japan**: Tunneling spin-filtering effect through perpendicularly magnetized Co-ferrite films (on-line) (11.20 - 11.50)

I19. Wolfgang Kuch, **Freie Universität Berlin, Department of Physics, Institute of Experimental Physics, Germany**: Ultrafast spin transfer in layered magneto heterostructures (11.50 - 12.20)

12.20-13.20 Visit at NIMP

13.20-14.20 Lunch

A3 Molecular magnetism and low dimensional systems (14.20-16.20); Chairman: Ionut Enculescu/Andrei Galatanu

I20. Stefano Sanvito **School of Physics, Trinity College Dublin, Ireland**: Machine-learning design of magnets: from molecules to solids(on-line) (14.20 - 14.50)

I21.Rodolfo Miranda: **Universidad Autonoma de Madrid and IMDEA Nanociencia, Spain** Exploring the Zoo of Layered Quantum Materials (on-line) (14.50 - 15.20)

I22. Ladislau Vekas **Filiala Academiei Romane- Timisoara:** Ferrofluids and bio-ferrofluids: synthesis, structure, properties and some applications (15.20-15.50)

I23. Ana Espinosa, **IMDEA Nanociencia, Madrid, Spain**: Magnetic-based particles for biomedical applications(on-line) (15.50-16.20)

16.20-16.40 Coffee Break

A4 Molecular magnetism and magnetism of low dimensional systems (16.40-18.10); Chairman: Bogdana Borca, NIMP, Romania

I.24 Thomas Jung, **Paul Scherrer Institute, Switzerland**: The magnetism of surface supported sheets and chains: Emergence of unprecedented properties by supramolecular control(online) (16.40 - 17.10)

I25: Kuncser Victor **NIMP, Romania**: Tuning dimensionality and type of magnetic order by auto-organization of Fe clusters in Fe-Au thin films and related spintronic effects (17.10 - 17.40)

Y3. Marius Husanu **NIMP, Romania**: Spin asymmetry in the 2D electron gas at $SrTiO_3$(001) surfaces (17.40 - 17.55)

Posters presentations:

Roxana Capu Gaina, **UVT Timisoara, Romania:** Long-ranged Cu-based order at cuprate/manganite interface

Claudiu Locovei **NIMP, Romania**: Magneto-functionities in Fe-Gd ferrimagnetic thin films close to the compensation point (9.45-10.00)

Anda Stanciu, **NIMP, Romania**: Electrical-Magneto-chiral effect in ferromagnetic micro-coils

Anda Stanciu, **NIMP, Romania**: Magneto-resistance effect in a ferromagnet/ insulator/ superconductor heterojunction

Mihaela Sofronie, **NIMP, Romania**: Magnetic-field-induced strain in NiMnGa Heusler-based ferromagnetic shape memory ribbons

Andrei Alexandru Dinu, **NIMP, Romania:** Rare earth garnet of Gd3Fe5O12 type for future generation of electronic devices

Friday 02.09.2022

M5 Intermetallics, nanocomposites and nanomaterials 5 (9.00-10.00); Chairman: Cristian Teodorescu, NIMP, Romania

I26 Alberto Bollero, **IMDEA Nanociencia, Madrid, Spain**: Nanomagnetism applied to the development of sustainable permanent magnets for energy and transport applications (9.00 – 9.30)

Y5. Ester M. Palmero, **IMDEA Nanociencia, Madrid, Spain:** Developing Rare Earth-free and hybrid permanent magnets: from the syntheses of customized composites to additive manufacturing (9.30-9.45)

I27. Nicoleta Lupu, **National Institute of R&D for Technical Physics, Iasi, Romania**: Nanocomposite permanent magnets based on Mn-Bi alloys. The role of LTP phase content on the structural and magnetic behavior. (9.45-10.15)

I28. Ovidiu Crisan, **NIMP, Romania** Additive-induced phase stabilization in RE-free nanocomposite magnets (10.15 - 10.45)

Lucian Pintilie, Final Remarks (10.45-10.50)

10.50-11.10 Coffee Break

11.10-12.00: Discussions on possible collaborations

12.00-13.00 Lunch and Departure