

## Surface Modification for Label-free Sensing

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This lecture intends to be an overview of the research activity developed by our group in the sensing field, especially the design of the interface between the physical transducer and the biological recognition elements. The immobilization of the active biological component on the transducer surface represents a critical stage in the biosensor's development, and its goal is the settlement of the bioactive part on the surface of the physical transducer. The chosen immobilization procedure has to keep the biological component in the native conformation. On the other hand, the physical transducers should have an adequate sensitivity toward the species to be detected.

Recently, the World Anti-Doping Agency introduced in the Prohibited List the class of compounds “*S2 - peptide hormones, growth factors, mimetics and related substances*” the growth hormone secretagogue receptor analogues, ghrelin mimetics, which have the role of stimulating the natural hormone production, increase the muscle mass and reducing the percentage of adipose tissue. Athletes began using ghrelin (GH) agonists in order to gain an advantage over their opponents, based on the anabolic effects of growth hormone, risking both their sports careers and especially their health. In the present context, there is a high demand for rapid, accurate, specific methods for the detection of GH mimetics and the development of miniaturized and portable point-of-care devices for fast testing laboratories.

The lecture will illustrate the practical applications of surface modification of electrochemical and SAW sensors, focusing on layer-by-layer assembly and thiol-driven self-assembly and sol-gel chemistry, grafting chemistries including click chemistry and practical applications from environmental and biomedical analysis areas [1–4].

### References

- [1] M. Puiu, V. Mirceski, C. Bala, *Curr. Opin. Electrochem.* **2021**, 27, 100726.
- [2] M. Puiu, L.G. Zamfir, G.M. Danila, et al., *Sensor. Actuat. B – Chem.* **2021**, 345, 130416.
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- [4] M. Puiu, O.-M. Istrate, V. Mirceski, et al., *Anal. Chem.* **2023**, 95, 16185.