Consiglio Nazionale delle Ricerche | IPCF

DIPARTIMENTO DI SCIENZE MATEMATICHE E INFORMATICHE, SCIENZE FISICHE E SCIENZE DELLA TERRA
Dottorato di Ricerca in Fisica

Appunti di Fisica '26

30 Ottobre ore 15:00

Sala seminari, CNR-IPCF

Joint Seminars:

From 2D Materials to Functional Devices: Research and Innovations at the BioSense Institute

Jovana Stanojev (BioSense Institute, University of Novi Sad, Novi Sad, Serbia)

Among the emerging materials driving innovation in next-generation electronic and sensing technologies, two-dimensional (2D) materials have attracted significant attention due to their unique structural, electronic, and surface properties, offering exciting opportunities for the development of advanced functional devices. Our research focuses on titanium carbide MXenes ($Ti_3C_2T_x$) and molybdenum disulfide (MoS_2). During the peresentation, a special attention will be given to a modified Langmuir–Blodgett technique for the controlled assembly and deposition of MXene monolayers, offering a simple, scalable, and energy-efficient approach to thin-film fabrication. The influence of processing parameters on material morphology, surface coverage, and film uniformity will be discussed, together with the integration of MXene films into field-effect transistor (FET) devices and the investigation of their electrical properties. Additionally, ongoing research on the electrochemical exfoliation of MoS_2 will be introduced.

Chemistry at Interfaces

From Self-Assembled Systems to Chemistry at Interfaces

Nemanja Cvjetan (BioSense Institute, University of Novi Sad, Novi Sad, Serbia)

Interfaces influence how molecules and particles assemble and function in water. This seminar explores these relationships through studies of hemin catalysis in micellar and vesicular environments, membrane fusion in model protocells, and ongoing research on nanoplastics. The presentation connects the chemical composition of these systems to experimental observations of catalytic activity, vesicle mixing and particle aggregation. The final part introduces collaborative work with CNR-IPCF Messina investigating whether surfactants can produce controlled nanoplastic clusters suitable for optical trapping and Raman analysis. These examples provide a chemist's perspective on questions shared with physics: how interactions govern assembly, how structures change over time, and how those changes can be measured.