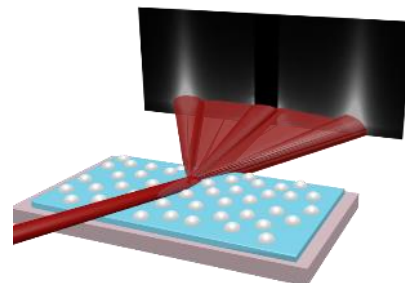


Nanoscale characterization of nanoparticle assemblies at liquid surfaces: forces, thermodynamics and kinetics

The presentation will focus on the in-situ structural characterization of nanoparticle (NP) assemblies at the air/water interface with synchrotron grazing incidence small angle X-ray scattering (GISAXS) and on the experimental approaches developed to extract quantitative physico-chemical information.

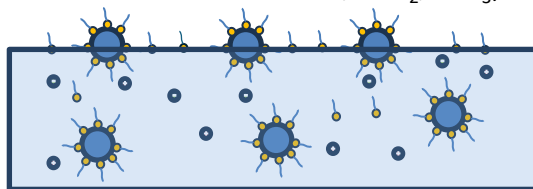
In particular, it will be demonstrated how repulsions acting among nanoparticle at the air/water interface can be measured by structurally characterizing the NP monolayers under compression. Then, a novel methodology to follow in real time the NP adsorption will be presented and the quantitative determination of both thermodynamic and kinetic parameters will be demonstrated. Finally, recent results demonstrating how to reconfigure the monolayer structure will be discussed.



Giovanni Li Destri is associate professor of Physical Chemistry at the University of Catania. His research interests focus on the interfacial assembly and dynamics of soft and nanomaterials at solid and liquid interfaces which he mainly characterizes with real-space (microscopy) and reciprocal space (X-ray and neutron scattering) techniques.

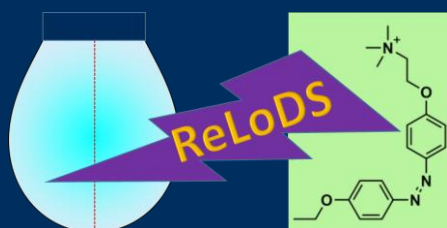
Reconfigurable Low-Dimensional Nano-Structures at Liquid Interfaces

Alkyl-trimethylammonium bromide (CTAB) is a cationic surfactant that interacts with silica nanoparticles, forming hydrophobic complexes that can assemble at liquid-vapor interface. Those complexes play a key role in emulsion and foam stabilization. The research work is aimed at relating the interfacial dilational rheology and the surface tension CTAB/Silica nanodispersions (measured by Profile Analysis Tensiometer) to the ionic strength of the medium (in presence of 3 different salts: KCl, CaCl₂, LaCl₃).



The interfacial rheology and surface tension study will also be performed with another cationic surfactant (2-(4-(4-butylphenyl)diazenylphenoxy)-ethyltrimethylammonium iodide, known as Azo-TAI). By irradiation of UV-vis light, it can change its geometrical conformation, tuning the interfacial properties of the nanodispersions.

Carlo Carbone is a research fellow at the National Research Council (CNR), at the Institute of Condensed Matter Chemistry and Technologies for Energy (ICMATE) of Genova. His current research interests are focused on the interfacial properties of nanosuspensions and surfactants.



Webinar series "MATERIALS MATTER!"

Project: **Reconfigurable Low-dimensional Nano-Structures at Liquid Interfaces – ReLods**
Giovanni Li Destri, University of Catania
Carlo Carbone, ICMATE Genova

9 July 2025 3.00-4.00 pm

[Participation link](#)