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Elettra-Sincrotrone Trieste

Synchrotron-based UV Resonance Raman scattering for material science

Wednesday 06\textsuperscript{th} March - at 14:30
Ferrari 1 Building – aula n. A205

Abstract:

UV Resonance Raman (UVRR) scattering is a powerful technique for providing molecular information on the most forms of matter, including liquids, gels, polymers and bio-macromolecules, through the investigation of their vibrational dynamics. Utilizing a tunable deep UV Raman system allows for selective enhancement of different chromophores within the sample, determining the usefulness of UVRR spectroscopy in the physics of matter. In the past few years, there was a growing in the use of UVRR thanks to the advancements in laser technology and the development of high efficiency array detectors for the entire UV-visible region. However, the conventional laser sources suffer from the limitation of providing fixed wavelength energies, while tunable excitation radiation in the UV range allows to “map” the whole resonance landscape for matching with the best experimental conditions.

In this contribution, I will present the potentialities of the unique in the world UVRR facility working with the synchrotron radiation source available at Elettra Sincrotrone Trieste (www.elettra.eu). This synchrotron-based UVRR setup results in an innovative spectroscopy facility for approaching open issues in physics, chemistry, material and life sciences. Selected case studies will be discussed in order to show possible applications of UVRR method and the areas of interactions with other research interests, with particular attention to biophysical and biochemical systems.

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