Contribution ID: **6** Type: **Invited Oral**

Charge and lattice dynamics in hybrid materials probed by time resolved soft X-ray spectroscopies at Elettra synchrotron.

Monday, December 2, 2024 3:00 PM (30 minutes)

In the fields of optoelectronics and photochemistry, there is growing interest in studying the response to optical excitation of hybrid heterojunctions involving organic molecules. These systems are critical for developing the next generation of environmentally sustainable optoelectronic devices and catalysts. To investigate charge and lattice dynamics in hybrid heterojunctions at the sub-nanosecond timescale, we have developed a setup at the ALOISA beamline of the Elettra synchrotron which takes advantage from the chemical selectivity of X-ray absorption spectroscopy (XAS) and X-ray photoemission spectroscopy (XPS) in an optical pump/X-ray probe experiment.

In this talk, I will present our recent findings on tracking charge dynamics in perylene thin films within hybrid heterojunction systems. We will explore how film morphology affects these dynamics by comparing the behavior of perylene molecules with varying terminations at their interfaces. Finally, I will demonstrate how our setup can monitor structural transitions in several examples of 2D materials, providing deeper insights into the behavior of hybrid heterojunctions under optical excitation.

Primary author: Dr DELL'ANGELA, Martina (CNR-IOM)

Presenter: Dr DELL'ANGELA, Martina (CNR-IOM)

Session Classification: Session 2