Contribution ID: **13** Type: **Contributed Talk (≈20 minutes)**

Investigating the Origins of Non-Aromatic Fluorescence with Vibrational and X-ray Absorption Spectroscopies

Non-aromatic fluorescence in biomolecules represents a fascinating photophysical phenomenon that challenges conventional understanding of fluorescent mechanisms.. This presentation outlines our ongoing investigation using a combined approach of time-resolved X-ray absorption spectroscopy (TrXAS) and multiple vibrational spectroscopic techniques to explore the fundamental processes governing this phenomenon.

Our research examines L-glutamine (L-glu) and its derivative L-pyroglutamine ammonium (L-pyro-amm), where we hypothesize that hydrogen bonding networks may influence conical intersections (CoIns) and thus modulate nonradiative decay pathways. The complementary techniques of FTIR, far-IR, and Raman spectroscopy are being employed to characterize structural dynamics, while TrXAS measurements at the carbon K-edge at the EIS-TIMEX FEL beamline are anticipated to provide insights into excited-state evolution.

This presentation will discuss our methodological approach, preliminary observations, and the theoretical framework guiding our investigation. We will consider how this integrated spectroscopic strategy may contribute to elucidating the structural and electronic factors that enable non-aromatic fluorescence, with potential implications for the future development of novel fluorescent biomaterials and optical probes.

Scholarship elegibility

no

Primary author: EBRAHIMPOUR, Zeinab (Istituto Nazionale di Fisica Nucleare)

Co-author: Dr PRINCIPI, Emiliano (Elettra-Sincrotrone Trieste, Area Science Park Basovizza, 34149, Trieste, Italy)

Presenter: EBRAHIMPOUR, Zeinab (Istituto Nazionale di Fisica Nucleare)