SRIS Colloquium

TOHOKU FORUM for CREATIVITY

- Junior Research Program 2026 Pre event -

The combined soft/hard X-ray beamline towards the rational design of energy materials in SSRF

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Abstract

The Energy Material Beamline (E-line) at the Shanghai Synchrotron Radiation Facility (SSRF) is one of the most representative beamlines in SSRF. It covers an ultra-wide photon energy ranging from 130 eV to bigger than 18 keV, spanning both soft and hard X-ray spectrum with unique design specifications and experimental methodologies. The E-line primarily addresses critical scientific questions in energy materials research, particularly focusing on the influence and regulation of electronic structures as well as atomic configurations at surface/interface and bulk towards the deep understanding of structure-performance relationships. Key research activities include the precise identification of reaction sites under in-situ conditions, real-time tracking of reaction processes, and mechanistic studies of energy conversion reactions, involving various interface systems such as solid-gas, solid-solid, and solid-liquid interfaces. Experimental techniques available at E-line are listed as followings: soft and hard X-ray absorption spectroscopy, emission spectroscopy, resonant emission spectroscopy (XAFS/XES/RXES/RIXS), hard X-ray Raman spectroscopy (XRS), near-ambient pressure X-ray photoelectron spectroscopy (APXPS, hν=130 eV-10 keV), and the hard X-ray photoelectron spectroscopy (HAXPES).

June 11th, 2025, 10:30 – 11:30

SRIS Building, Entrepreneur Hall

References: [1] Mei, B., et al, J. Am. Chem. Soc. 2025, 147, 5819; Mei B., et al, Nuclear Science and Techniques 2024, 35, 156. [2] Yue, K., et al, Science 2025, 388 (6745), 430; [3] Tang, B., et al, Nature Synthesis, 2024, 3, 878; [4] Hong, H., et al, Science 2025, 388, 497; [5]Xu, Z., et al, Nature 2025, https://doi.org/10.1038/s41586-025-09168-8