

Operando XAFS measurements at the BM08-XAFS/XRF beamline

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BM08-XAFS/XRF beamline at SESAME, Jordan is a dedicated synchrotron radiation facility offering advanced XAFS and X-ray Fluorescence (XRF) capabilities. X-ray Absorption Fine Structure (XAFS) spectroscopy is a powerful technique for probing the local electronic and structural environment of materials.

This presentation explores the use of operando and/or in situ XAFS spectroscopy at the BM08-XAFS/XRF beamline. An overview of the beamline and its capabilities for monitoring the structural and electronic changes of materials under real-time operational conditions, such as during catalytic reactions, electrochemical processes, and energy storage cycles. Through a series of operando XAFS measurements, we have gained insights into critical phenomena like phase transitions, oxidation state variations, and local structural evolution, which are vital for understanding the mechanisms driving material performance.

Additionally, will be highlighted key experimental results, demonstrating how operando XAFS at the BM08-XAFS/XRF beamline facilitates a deeper understanding of material dynamics and supports the development of advanced functional materials for applications in energy, catalysis, and beyond.

Keywords: XAFS, Synchrotron, Operando, in-situ, local structure