Contribution ID: **639** Type: **Invited talk**

The combined soft and hard x-ray beamlines in SSRF and applications in the energy chemistry

Wednesday 28 August 2024 11:00 (20 minutes)

With the increasing demands of in-situ/operando spectroscopy investigations of energy mateirals with the high energy resolution, it is substantially vital to setup a beamline in SSRF with the wide energy range and high energy resolution. Consequently, the Energy Material beamline (E-line), spanning soft and hard x-ray with the photon energy from 130 eV to more than 18 keV, has been succussfully constructed in SSRF. Focus on the surface/interface/bulk physics and chemistry in catalysis, energy conversion and energy storage, E-line holds rich spectroscopy techniques: Resonant Elastic scattering Spectroscopy(REXS), Resonant Inelastic X-ray scattering (RIXS), (resonant)X-ray emission spectroscopy(R/XES), X-ray Raman scattering spectroscopy, Ambient pressure X-ray photoemission spectroscopy (AP-XPS), and Hard X-ray photoemission spectroscopy (HAXPES). Key issues of interfacial/bulk atomic fine structures and electronic structures/evolution are unfolded during reactions, including occupied, valence band and unoccupied states. With the layer-by-layer detection abiltiy via varying photon energies, it is expected more sciences of energy materials can be discovered in E-line in the future.

I plan to submit also conference proceedings

No

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Session Classification: Mikrosymposium 2/3: Beamline Innovations

Track Classification: 2. Beamline Innovations