

The 1st Workshop for Future Science in Next Generation Synchrotron



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Advancements in Spectroscopy Techniques at the APS-U Beamline S-25

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The new APS-U beamline S-25 is set to revolutionize advanced spectroscopies by utilizing the APS upgrade, which provides brighter beams with reduced divergence. This enhancement will significantly improve X-ray collection capabilities through our 100mm and 300mm KB mirror systems, facilitating advanced spectroscopy and imaging. In addition to conducting X-ray absorption measurements on dilute systems, the spectroscopy group has introduced two innovative spectrometers: one dedicated to high energy resolution fluorescence detection (HERFD) and another featuring a large crystal array for simultaneous multiple-edge X-ray emission spectroscopy. The development of a new X-ray Raman Scattering microscope is underway, designed to measure low energy edges such as C, O, and N using 10 KeV X-rays for in-situ and operando studies. Furthermore, the spectroscopy group is leading efforts to integrate Bluesky/Orphyd controls with EPICS, aiming to automate processes with a user-friendly interface. These advancements and their implications will be discussed.

Primary author: Dr KELLY, Shelly Diane (APS-U)

Presenter: Dr KELLY, Shelly Diane (APS-U)

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