

Integrating synchrotron x-ray fluorescence mapping with complementary imaging techniques to obtain multi-modal datasets for the earth and environmental sciences at SSRL

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X-ray fluorescence (XRF) imaging has emerged as a pivotal tool in earth and environmental sciences for mapping elemental distributions across various length scales. Nevertheless, to understand complex environmental systems, it is highly desirable to combine XRF mapping with other complementary imaging techniques (*e.g.* optical light microscopy, FTIR microscopy, Nano-SIMS) to expand information content and improve data interpretation. However, integrating imaging modalities from different sources poses challenges, particularly when comparing data sets with different spatial resolutions that have no fiducial or registration point for image alignment. This presentation will describe recent progress on the implementation of a multi-modal data collection and analysis approach at the Stanford Synchrotron Radiation Lightsource (SSRL) for earth and environmental sciences.