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Sponsored Talk: Decentralization of Synchrotron X-ray Fluorescence Microscopy: Recent Advances in Lab Based μ XRF

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Synchrotrons accelerate and bend electron beams in order to create tangential, high flux photons across a wide energy range. While synchrotrons are quite difficult to access with very expensive beamtime, there are several powerful analytical modalities accessible through this approach including X-ray crystallography, infrared microscopy, powder diffraction, X-ray absorption spectroscopy, and others. Here we discuss X-ray fluorescence microscopy (XFM), another powerful application associated with Synchrotrons, and how recent advances in lab based μ XRF (micro X-ray fluorescence) spectroscopy can be used to inform proper synchrotron design of experiment and substitute for difficult to access synchrotron beamtime. Lab based μ XRF instruments now allow decentralized access to high spatial resolution elemental mapping of samples down to 5 μ m spot excitation diameter. Data will be presented comparing synchrotron-generated elemental maps to lab based μ XRF for several different sample types including cofactor migration tracking within biological tissue sections, element accumulation and distribution in plants, and mineralogy mapping.

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