☐ **Talk** ☒ **Poster**

Quick X-ray Absorption and Scattering (QAS) beamline at NSLS-II

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The Quick X-ray Absorption and Scattering (QAS) beamline (7-BM) at the National Synchrotron Light Source II is optimized for rapid, high-throughput X-ray absorption spectroscopy (XAS) and complementary scattering techniques. Tailored for environmental and energy science applications, QAS provides a highly efficient platform for both *ex-situ* and *in-situ* experiments.

QAS utilizes a three-pole wiggler source to deliver X-rays in the energy range of 4.7 to 31 keV, covering the Ti K-edge to Sn K-edge, as well as selected L-edges (including I L-edge and above; Fig. 1). The optical system includes a collimating mirror with two stripes (Pt and Rh), a Si(111) channel-cut monochromator, and a Rh-coated toroidal focusing mirror, producing a focused beam of approximately 500 µm × 500 µm. Multiple detection modes are supported, including transmission and fluorescence (via a PIPS detector and a 4-element SDD array, soon to be upgraded to a 7-element array).

Recent upgrades have enhanced the beamline's multimodal capabilities, including the integration of a 900K Pilatus detector and a diffuse reflectance infrared Fourier transform spectroscopy (DRIFTS-IR) setup. These improvements enable dynamic studies of redox transformations, catalytic mechanisms, and contaminant interactions by coupling XAS with XRD and IR spectroscopy [1].

QAS has supported a wide range of research in soil and water remediation, battery degradation, and biogeochemical cycling. This poster will highlight the beamline's technical capabilities, representative user science, and recent developments such as integration with advanced data pipelines. We welcome collaboration with the environmental science community to further leverage synchrotron-based elemental and structural analysis.

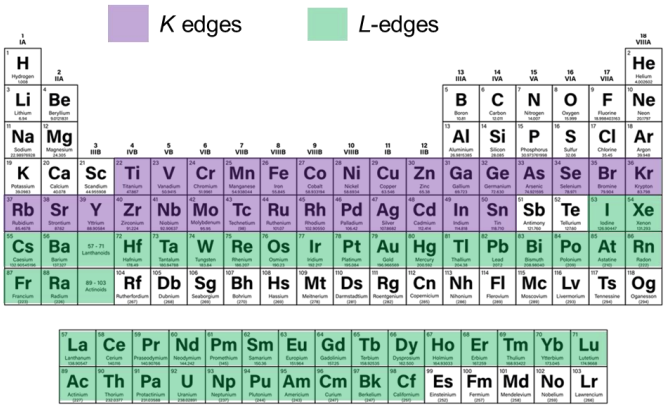

Fig. 1 Elements QAS beamline can measure

References

[1] Marinkovic, N.S.; Wang, Q.; & Frenkel, A.I. In situ diffuse reflectance IR spectroscopy and X-ray absorption spectroscopy for fast catalytic processes. *Journal of Synchrotron Radiation* **2011**, *18,* 447–455.