

Microsymposium

MS14.O05

A Rebirth of Laboratory XANES and XES

G. Seidler¹, D. Mortensen¹, J. Pacold¹, O. Hoidn¹

¹*University of Washington, Department of Physics, Seattle, USA*

We have recently launched a reinvestigation of laboratory-based measurement of x-ray absorption near edge structure (XANES) and high-resolution x-ray emission spectroscopy (XES). Driven by the roughly one-hundred-fold improvement in the efficiency of high resolution x-ray optics compared to the 1970's, we have demonstrated that surprisingly impressive performance is now possible with laboratory XES instruments and that quite useful performance is possible for laboratory XANES. For applications in the 5 keV- 10 keV energy range, i.e., appropriate for 3d transition metal K edges and lanthanide L edges, we find XES performance that is intermediate between what can be achieved at bending-magnet and insertion-device beamlines at third generation synchrotron light sources. In the same energy range, we find that high quality XANES measurements can be performed in transmission mode on concentrated samples with the present instrument and should be possible, in many cases, in fluorescence mode after a planned upgrade brings the monochromatic beam flux up to approximately 10M/sec.

Keywords: XANES, XES, Table-top