

Abstract Submitted
for the NWS14 Meeting of
The American Physical Society

Toward a Rebirth of Laboratory-Based XANES¹ GERALD SEIDLER, NEIL BALL, DEVON MORTENSEN, JOSEPH PACOLD, University of Washington — As a consequence of the necessary scarcity of synchrotron beamtime, advanced x-ray spectroscopies are nearly unique in having both high scientific and technical importance but also extremely low user access. This dilemma excludes the use of such methods in a wide variety of industrial applications and also negatively impacts fundamental and applied research in energy sciences. Building upon recent results with an inexpensive, prototype system [G.T. Seidler, et al., submitted Rev. Sci. Instrum. 2014] we are designing and constructing a laboratory-based user facility for the measurement of x-ray absorption near edge structure (XANES) for the K-edges of the 3d transition metals. This system will maintain 1-eV energy resolution from 5 keV to 10 keV with flux as high as 10M/sec. As such, it will be substantially comparable to the performance at synchrotron x-ray beamlines for transmission-mode XANES studies in electrical energy storage and catalysis. We will discuss the technical details behind this instrument and the plans for its operation under the auspices of the new shared user facility being developed by the UW Clean Energy Institute (CEI). First light for the CEI-XANES facility is scheduled to occur late in the summer of 2014.

¹This effort was supported by the UW Clean Energy Institute and by the US Department of Energy, Basic Energy Sciences under Grant No. DE-FG02-09ER16106.

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Date submitted: 19 Mar 2014

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