

Abstract Submitted  
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**XAFS Spectroscopy of Structurally Tunable Charge Density Wave Systems**<sup>1</sup> NATHAN TURNER, SARAH KIM, Washington State University, MATTHEW MARCUS, SIRINE FAKRA, Lawrence Berkeley National Laboratory, JAMES BROZIK, SUSAN DEXHEIMER, Washington State University — Mixed-valence halide-bridged transition metal linear chain (MX) complexes have proven to be excellent model systems for investigating a range of phenomena inherent to correlated electron systems owing to their structural tunability. In these materials, the nature of the ground electronic state is determined by competing electron-phonon and electron-electron interactions, which can be systematically tuned by varying the metal ion (M) and the halide ion (X) that comprise the linear chain structure. Platinum-halide materials exhibit a Peierls distortion, with alternating Pt-halide bond lengths, and fractional charge states on alternating Pt ions in the chain, giving rise to a charge density wave ground state. Varying the halide controls the strength of the charge density wave and the Peierls distortion. We present oriented Pt LIII EXAFS spectra and FEFF9 modeling of a series of PtX materials with X = Cl, Br, and I. We find distinct photoelectron threshold values for the two inequivalent Pt ions in each of the mixed-valence chains, and find that the difference in threshold values varies with the amplitude of the charge density wave.

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