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Synthesis of novel materials via useful hard x-ray photochemistry.
MICHAEL PRAVICA, DANIEL SNEED, High Pressure Science and Engineering Center (HiPSEC) and Department of Physics and Astronomy, University of Nevada, Las Vegas (UNLV), EUNJA KIM, Department of Physics and Astronomy, University of Nevada, Las Vegas (UNLV), CHANYONG PARK, HP-CAT, Geophysical Laboratory, Carnegie Institution of Washington — h $-abstract-$\pard We discuss an effort to synthesize higher oxidation forms of cesium fluoride by pressurizing cesium fluoride in a fluorine rich environment created via the x-ray decomposition of potassium tetrafluoroborate. This was done in order to confirm recent theoretical predictions of higher oxidation forms of CsFn (n>1) under extreme conditions. We discusses the development of a technique to produce molecular fluorine in situ via useful hard x-ray photochemistry, and the attempt to utilize this technique to form higher oxidation states of cesium fluoride. In order to verify the formation of the novel stoichiometric species of CsFn, we used X-ray Absorption Near Edge Spectroscopy (XANES) centered on the cesium K-edge to probe the formal oxidation state of cesium as well as the local molecular coordination. We present evidence of the formation of CsF3.\-/abstract-\

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