

Abstract Submitted
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X-ray absorption spectroscopic studies of the coordination environment of rare earth ions in novel rare earth phosphate glasses HANITHA GANEGODA, KANISHKA MARASINGHE, University of North Dakota, NATHANIEL WYCKOFF, RICHARD BROW, CARLO SEGRE, Illinois Institute of Technology, MALI BALASUBRAMANIAN, Argonne National Laboratory — Rare earth (RE) phosphate glasses ($\text{RE}_2\text{O}_3\text{-P}_2\text{O}_5$) have exciting magnetic and optical properties with numerous potential applications. These properties depend heavily on the atomic structure, especially the rare earth coordination environment. A series of rare earth (namely neodymium, praseodymium, gadolinium, and erbium) phosphate glasses having low rare earth ion concentrations have been studied with rare earth L_{III} edge X-ray absorption spectroscopy (XAS). Rare earth coordination environment appears to undergo an abrupt change when the RE_2O_3 concentration exceeds approximately 15 mol%. Implications of this structural change will be discussed and results from XAS technique will be compared with those obtained with X-ray and neutron diffraction techniques.

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