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Novel Oxide Glass-Based Nanocomposites: Development and Structural Characterization KRISTINA LIPINSKA-KALITA, Department of Chemistry, University of Nevada Las Vegas, Las Vegas, NV, USA, CARLO SEGRE, Physics Division, BCPS Department, Illinois Institute of Technology, Chicago, IL, USA, PATRICIA KALITA, Department of Physics, University of Nevada Las Vegas, Las Vegas, NV, USA, OLIVER HEMMERS, Department of Chemistry, University of Nevada Las Vegas, Las Vegas, NV, USA, YOSHIMICHI OHKI, Department of Electrical Engineering and Bioscience, Waseda University, Tokyo, Japan, J. CECIL, M. CHAVARHA, Physics Division, BCPS Department, Illinois Institute of Technology, Chicago, IL, USA — Glasses can gain new functionalities when specific crystalline phases of nanometer dimensions are nucleated in them. We have developed a series of optically transparent glass-based composites, containing nanometer-sized crystals dispersed within the isotropic host matrix. The composites were characterized using conventional and synchrotron x-ray diffraction as well as synchrotron x-ray absorption spectroscopy. EXAFS studies of Er-doped, gallium-silica glasses and composites will be presented. As the glasses are treated at elevated temperatures, long-range beta-Ga_2O_3 is observed to evolve from the initially amorphous local structure. However, the same samples show no significant change in the Er local structure, possibly indicating clustering or preferential of Er in proximity to Ga atoms.

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