

Poster 14

Effect of A-site substitution on the magnetic properties of a high entropy oxide

Subhrangsu Sarkar,¹ Roxana Capu,² Christian Bernhard,¹ Stefan Schuppler,³ Ryan Thompson,¹ Marco Bonura,⁴ Stefano Gariglio,⁴ Marli R. Cantarino,⁵ and N.B. Brookes⁵

¹ Department of Physics, University of Fribourg, Switzerland

² Department of Physics, West University of Timisoara, Timisoara, Romania

³ IQMT, Karlsruhe Institute of Technology, Karlsruhe, Germany

⁴ University of Geneva, Department of Quantum Matter Physics (DQMP), CH-1211 Geneva, Switzerland

⁵ European Synchrotron Radiation Facility, 71 Avenue des Martyrs, CS40220, F-38043 Grenoble Cedex 9, France

Here we report the growth, characterization and magnetic properties of $\text{Nd}(\text{Fe}_{0.2}\text{Mn}_{0.2}\text{Co}_{0.2}\text{Cr}_{0.2}\text{Ni}_{0.2})\text{O}_3$ (HEO-1). Using synchrotron-based x-ray absorption spectroscopy, employing x-ray magnetic circular dichroism (XMCD), we performed an element-sensitive study of an epitaxial thin film of HEO-1 grown on LaAlO_3 (001) substrate to understand the specific contributions of the ions in the total magnetism. We have further analyzed the change in these properties after doping the A-site (Nd) with Ca, which shows a significant difference in the total XMCD as well as the lineshape of the spectra.