

Abstract Submitted
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Characterization of CaMn_2O_4 By X-Ray Magnetic Linear Dichroism¹ JOHNATHON HOLROYD, HARSHAWARDHAN BHATKAR, Department of Physics, Montana State University, ELKE ARENHOLZ, Advanced Light Source, Lawrence Berkeley National Laboratory, BEN WHITE, JOHN NEUMEIER, YVES IDZERDA, Department of Physics, Montana State University — Perovskite manganite such as $\text{La}_x\text{Ca}_{(1-x)}\text{MnO}_3$ (LCMO) have recently drawn attention for their useful electronic and magnetic properties such as Colossal Magnetoresistance. It has been shown that under stress, LCMO thin films show changes in La and Ca concentrations near the interface. One potential impurity under La depleted conditions is antiferromagnetic CaMn_2O_4 . In order to better understand the range of properties available within LCMO systems, it is important to be able to identify and characterize CaMn_2O_4 within LCMO thin films. X-ray absorption spectroscopy (XAS) and X-ray magnetic linear dichroism (XMLD) are well suited to this task due to their element specificity, sensitivity, and ability to characterize the measure the magnetic properties of antiferromagnetic systems. XAS and XMLD were measured on high quality single crystals of CaMn_2O_4 . These spectra are distinguished from CaMnO_3 and demonstrate antiferromagnetic structure.

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