

Abstract Submitted
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Local Spin State Measurements in Critically Doped $La_{0.83}Sr_{0.17}CO_3$ ¹ AHMET GULEC, ROBERT F. KLIE, University of Illinois At Chicago — Strontium doped $LaCO_3$ has fascinating magnetic phases which are believed to be directly related to Co spin states. Critically doped $La_{0.83}Sr_{0.17}CO_3$ undergoes a simultaneous Insulator to Metal Transition (IMT) and ferromagnetic (FM) order transition. In this work, we will utilize atomic-resolution Z-contrast imaging, annular bright field (ABF) imaging and electron energy-loss spectroscopy in the aberration-corrected JEOL JEM-ARM200CF in combination with cooling experiments to examine the local magnetic and spin-state transitions in critically doped $La_{0.83}Sr_{0.17}CO_3$ between 80 K and 300 K. Our energy-loss magnetic circular dichroism (EMCD) experiments confirm the non-localized increase in the dichromatic signal at low temperature, associated with a change in the co-ion spin state. On the other hand, by using the ABF imaging, a distortion of the CO_6 octahedral and the changes in the Co-O bond lengths within the same unit cell are observed.

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Ahmet Gulec
University of Illinois At Chicago

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