

Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Surface Structural Phases of $\text{Ca}_{2-x}\text{Sr}_x\text{RuO}_4$ ¹ R. G. MOORE, V. B. NASCIMENTO, Univ. of Tennessee, Knoxville, TN 37996, JIANDI ZHANG, Florida International Univ., Miami, FL 33199, ISMAIL NLS, R. JIN, D. MANDRUS, E. W. PLUMMER, Oak Ridge National Lab, Oak Ridge, TN 37831 and Univ. of Tennessee, Knoxville, TN 37996 — Surface structural phases of $\text{Ca}_{2-x}\text{Sr}_x\text{RuO}_4$ (CSRO) are investigated using Low Energy Electron Diffraction (LEED-IV). The surface structure and phases are compared to the bulk in this layered perovskite material. Bulk phases are generated from rotational and tilt distortions of the RuO_6 octahedral. While the surface emphasizes the system's instability against the rotational distortion, the tilt distortion is stabilized. Surface relaxation interferes with the RuO_6 tilt resulting in a lower metal-to-insulator transition (MIT) temperature ($x = 0.1$) and a lower tetragonal-to-orthorhombic phase transition temperature ($0.2 < x < 0.5$). In addition, structural transitions accompanying the bulk MIT are nonexistent on the surface for $x = 0.1$ and superstructure reflections are evident for $x = 0.5$ indicating a shift in the quantum critical point at the surface.

¹Work supported jointly by NSF and DOE (DMS) NSF -DMR-0451163, NSF DMR-0346826, U.S. DOE DE-FG02-04ER46125 and by U.S. DOE under Contract No. DE-AC05-00OR22725 with UT-Battelle.

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Date submitted: 07 Dec 2006

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