

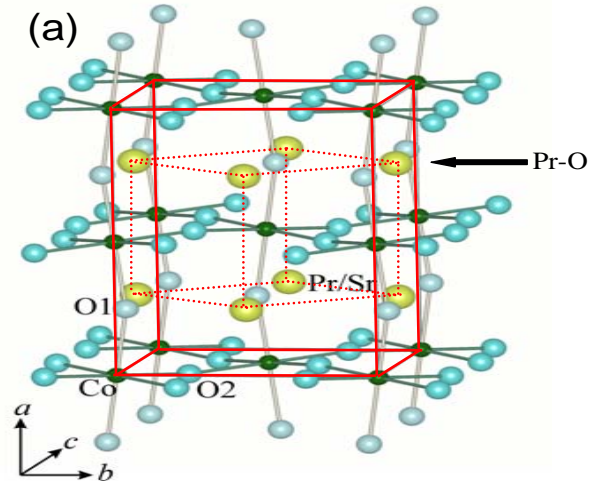
Magneto-Electronic Phase Separation in Perovskite Oxides

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NNIN Facility utilized: Characterization Facility

- We are seeking a fundamental understanding of the phenomenology, consequences, and origin of *magneto-electronic phase separation*
 - ◆ Heterogeneous magnetic & electronic properties in homogeneous systems
 - ◆ Ubiquitous in the complex oxides. Important for colossal magnetoresistance and high temperature superconductivity
 - ◆ Use doped cobaltites (e.g. $\text{La}_{1-x}\text{Sr}_x\text{CoO}_3$, $\text{Pr}_{1-x}\text{Sr}_x\text{CoO}_3$ (see figure) as model systems)



- Publications (2008)
 - ◆ "Low temperature Schottky anomalies in the specific heat of LaCoO_3 : Defect-stabilized finite spin-states", C. He, H. Zheng, J.F. Mitchell, M.L. Foo, R.J. Cava and C. Leighton, Appl. Phys. Lett., in press (2009).
 - ◆ "Dielectric response to the magnetic defect structure and the spin state transition from a low spin to higher spin state in polycrystalline LaCoO_3 ", R. Schmidt, J. Wu, C. Leighton and I. Terry, in press, Phys. Rev. B. (2009).
 - ◆ "Spin polarons in $\text{La}_{1-x}\text{Sr}_x\text{CoO}_3$ single crystals", R.X. Smith, M.J.R. Hoch, P.L. Kuhns, W.G. Moulton, A.P. Reyes, G.S. Boebinger, J. Mitchell, and C. Leighton, Phys. Rev. B **78** 092201 (2008).

