

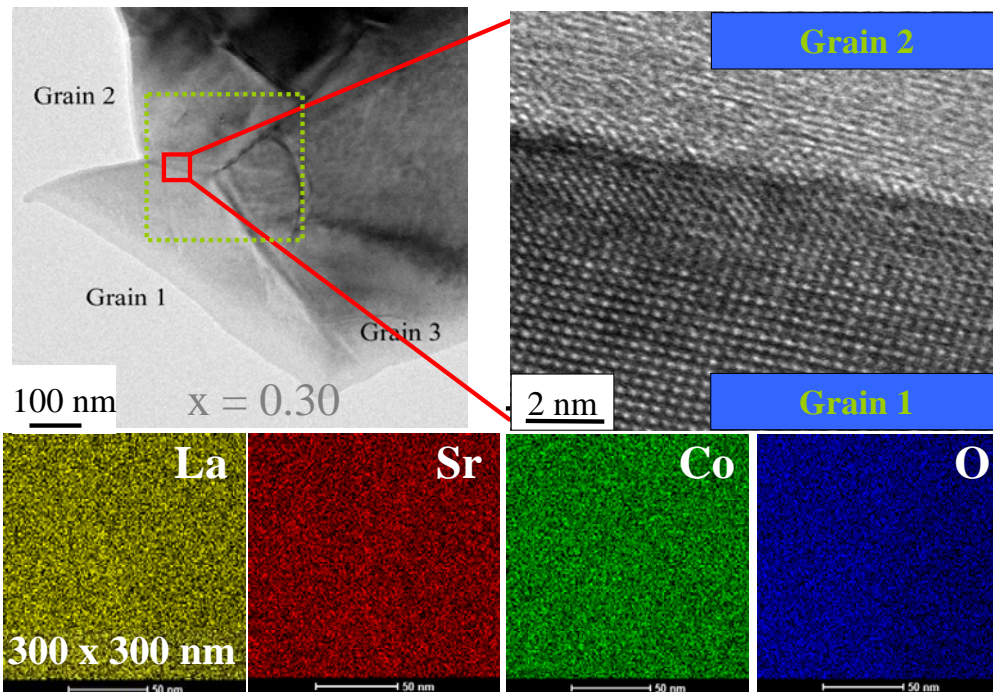
# Magnetic Phase separation in Perovskite Cobaltites

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NNIN Facility utilized: Characterization Facility

- A fundamental understanding of the phenomenology, consequences and origin of magnetic phase separation
  - ◆ Heterogeneous magnetic, electronic properties in chemically homogeneous systems
  - ◆ Ubiquitous in the complex oxides (e.g.  $\text{La}_{1-x}\text{Sr}_x\text{CoO}_3$ )
- Magnetic phase separation probed by Co NMR and small-angle neutron scattering
  - ◆ Chemical homogeneity proven by STEM/EDS
  - ◆ Consequences:
    - Giant anomalous Hall effect
    - Glassy behavior
    - Superparamagnetic blocking
    - Intergranular GMR



## ● Publications (2007)

- ◆ "Non-Griffiths-like clustered phase above the Curie temperature of the doped perovskite cobaltite  $\text{LaSrCoO}_3$ " C. He *et al*, Phys. Rev. B. 76 014401 (2007).
- ◆ "Direct measurement of the low temperature spin-state transition in  $\text{LaCoO}_3$ ", R.F. Klie *et al*, Phys. Rev. Lett. 99 047203 (2007).
- ◆ "Disorder and double exchange spin dynamics in  $\text{La}_{0.7}\text{Sr}_{0.3}\text{MnO}_3$  and  $\text{La}_{0.7}\text{Sr}_{0.3}\text{CoO}_3$  via NMR hyperfine couplings", M.J.R. Hoch *et al*, Phys. Rev. B. 75 104421 (2007).