Spin-state transition in LaCoO$_3$:

Z-contrast images of LaCoO$_3$ [001] at 85.75 K

TEM at 10K

EELS spectra at different temperatures

• No structural changes occur at T $\sim$ 80K.
• Changes in the O K-edge pre-peak indicate that the spin state of the Co$^{3+}$ ions can be measured directly by EELS.
• Co$^{3+}$ spin-state in LaCoO$_3$ at 300K is $S=1$ (intermediate spin state)