

Supplemental Information

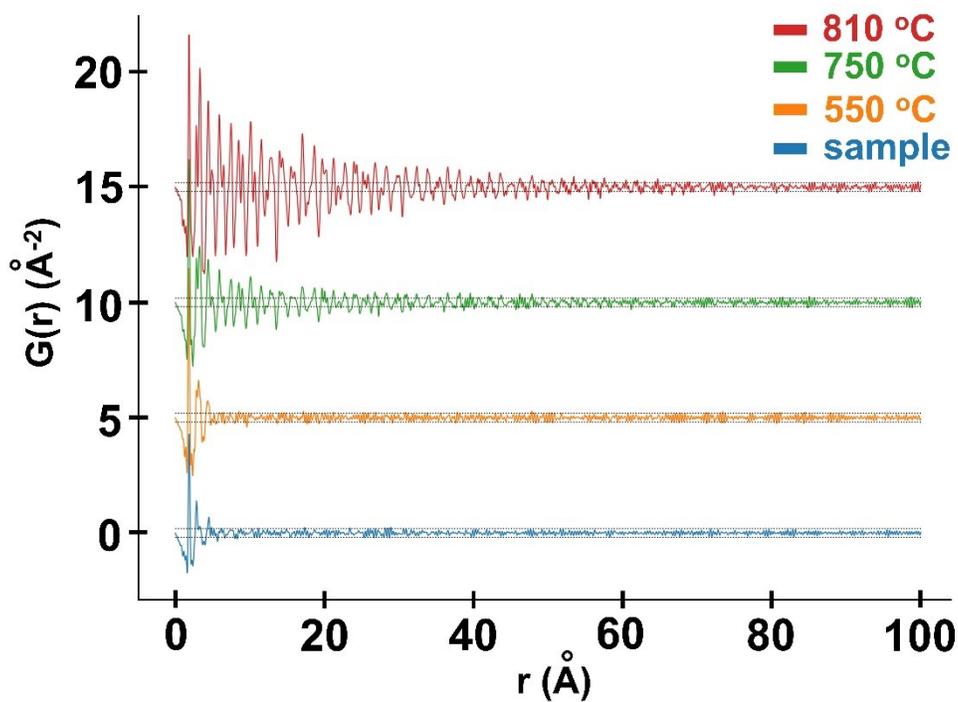


Figure S1. Long range order PDF comparison for each transition step showing a highly disordered initial material with almost no long range order evolving into a medium range order material after 810°C transition step.

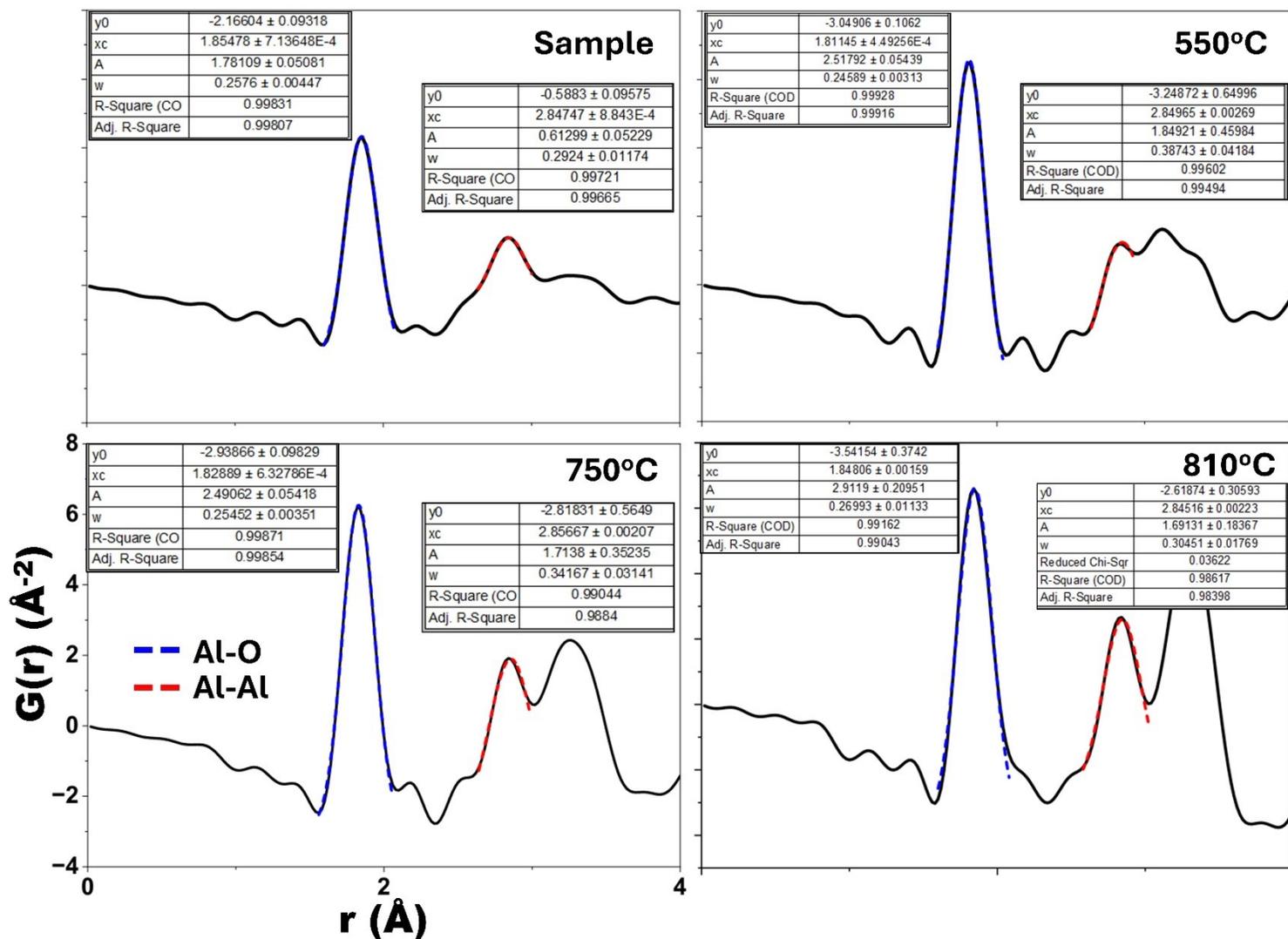


Figure S2. Gaussian fits for the first nearest neighbor peaks used in Al/O ratio calculations. The Xc or center point for each Al-O peak shifts between 1.81 to 1.85Å as the material undergoes transformation while the Al-Al remains ~2.85 to 2.86Å. Comparing ratio of the area beneath the first Al-O and Al-Al peaks approximates the material's Al/O ratio.