

1 Supporting Information to 'Experimental investigation
2 and thermodynamic modelling assessment of the
3 $\text{AECl}_2\text{-NdCl}_3$ (AE = Sr, Ba) systems'

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7 **1. Quenched samples profile refinements**

8 In this section, the refinements of the solid solution XRD measurements are
9 presented.

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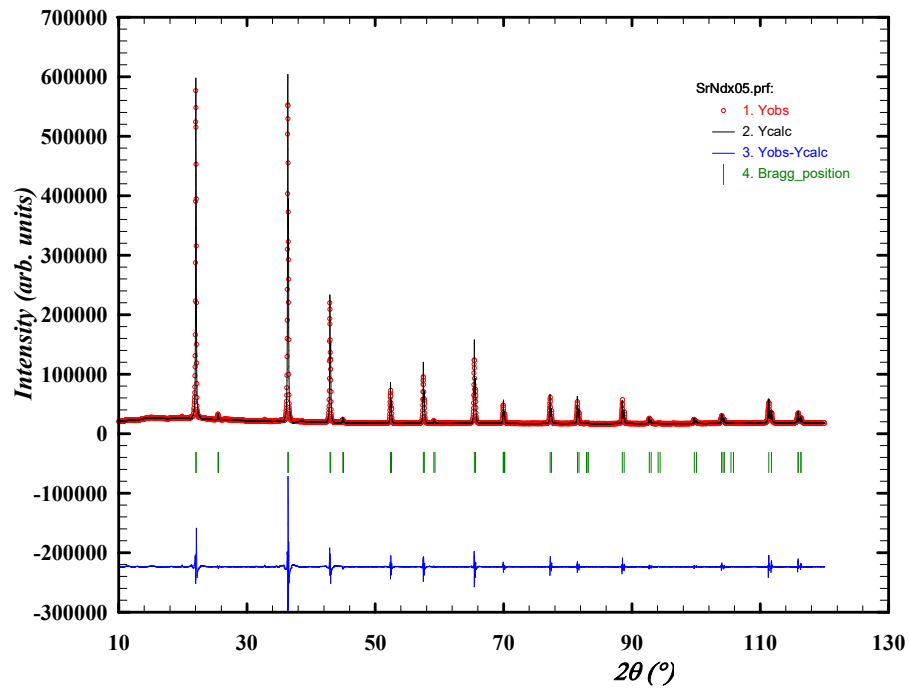


Figure 1: Profile refinement of the Sr-Nd-Cl system at $x_{\text{NdCl}_3} = 0.05$ after quenching the sample from $T = 925$ K. The observed intensity (Yobs, red) is plotted along with the calculated intensity from the refinement (Ycalc, black), and the difference between the two is shown (Yobs-Ycalc, blue). The angles at which reflections occur are shown as well (Bragg positions, vertical lines). Measurement at $\lambda = \text{Cu-K}\alpha$.

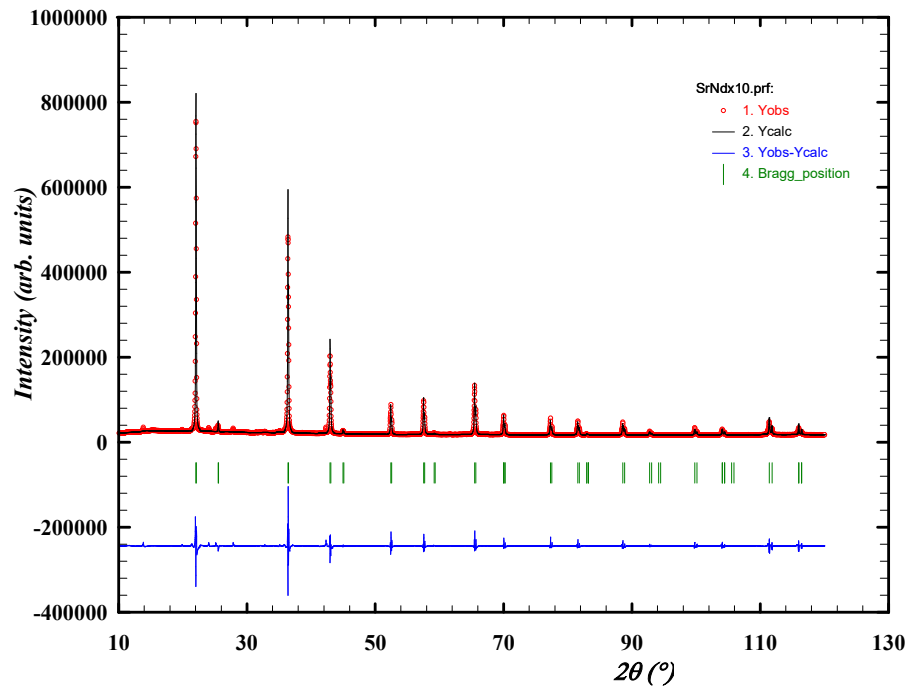


Figure 2: Profile refinement of the Sr-Nd-Cl system at $x_{\text{NdCl}_3} = 0.10$ after quenching the sample from $T = 925$ K. The observed intensity (Yobs, red) is plotted along with the calculated intensity from the refinement (Ycalc, black), and the difference between the two is shown (Yobs-Ycalc, blue). The angles at which reflections occur are shown as well (Bragg positions, vertical lines). Measurement at $\lambda = \text{Cu-K}\alpha$.

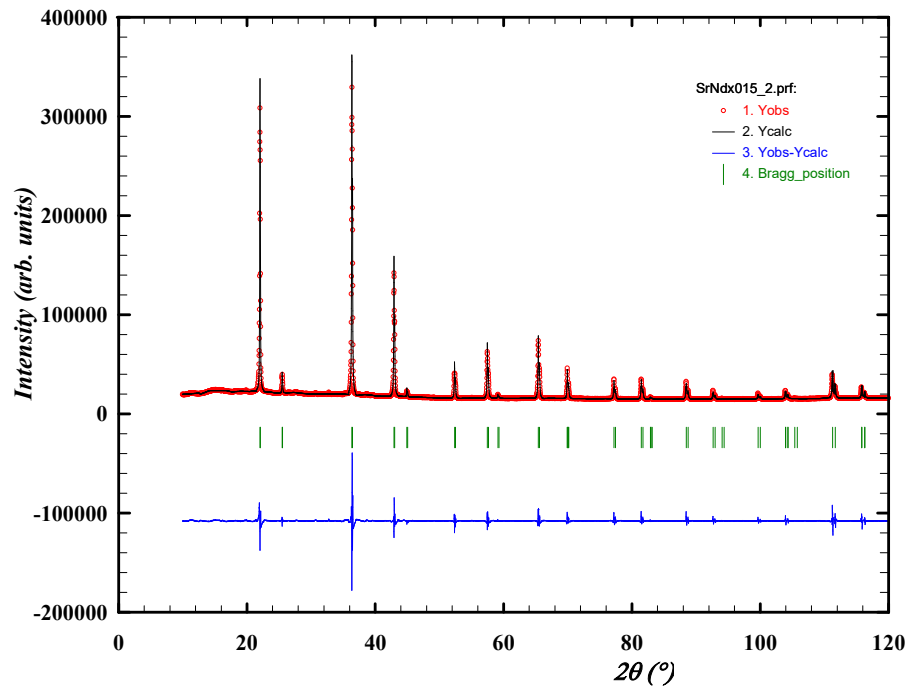


Figure 3: Profile refinement of the Sr-Nd-Cl system at $x_{\text{NdCl}_3} = 0.15$ after quenching the sample from $T = 900$ K. The observed intensity (Yobs, red) is plotted along with the calculated intensity from the refinement (Ycalc, black), and the difference between the two is shown (Yobs-Ycalc, blue). The angles at which reflections occur are shown as well (Bragg positions, vertical lines). Measurement at $\lambda = \text{Cu-K}\alpha$.

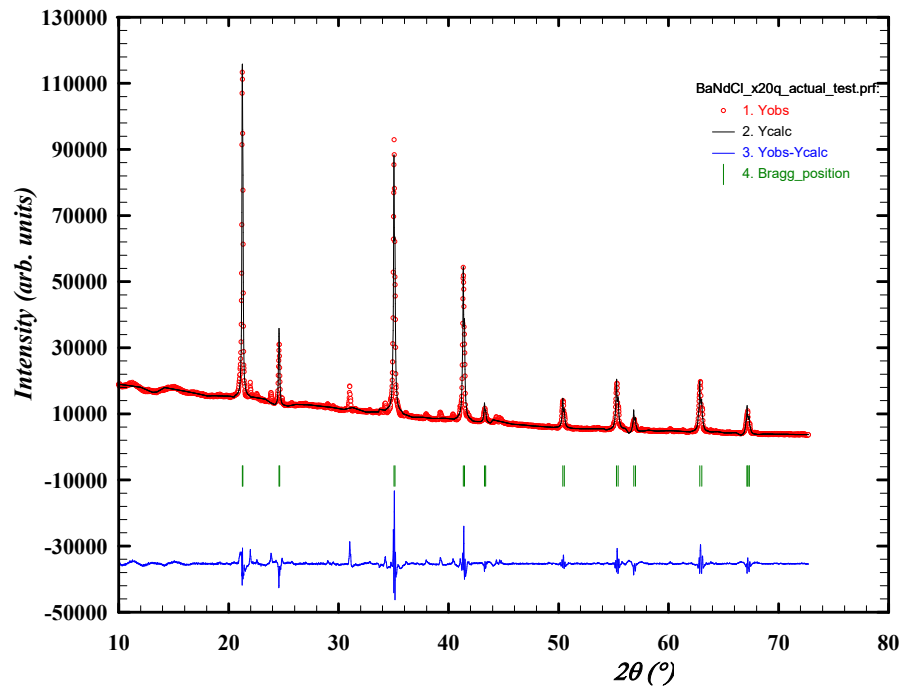


Figure 4: Profile refinement of the Ba-Nd-Cl system at $x_{\text{NdCl}_3} = 0.2$ after quenching the sample from $T = 975$ K. The observed intensity (Yobs, red) is plotted along with the calculated intensity from the refinement (Ycalc, black), and the difference between the two is shown (Yobs-Ycalc, blue). The angles at which reflections occur are shown as well (Bragg positions, vertical lines). Measurement at $\lambda = \text{Cu-K}\alpha$.

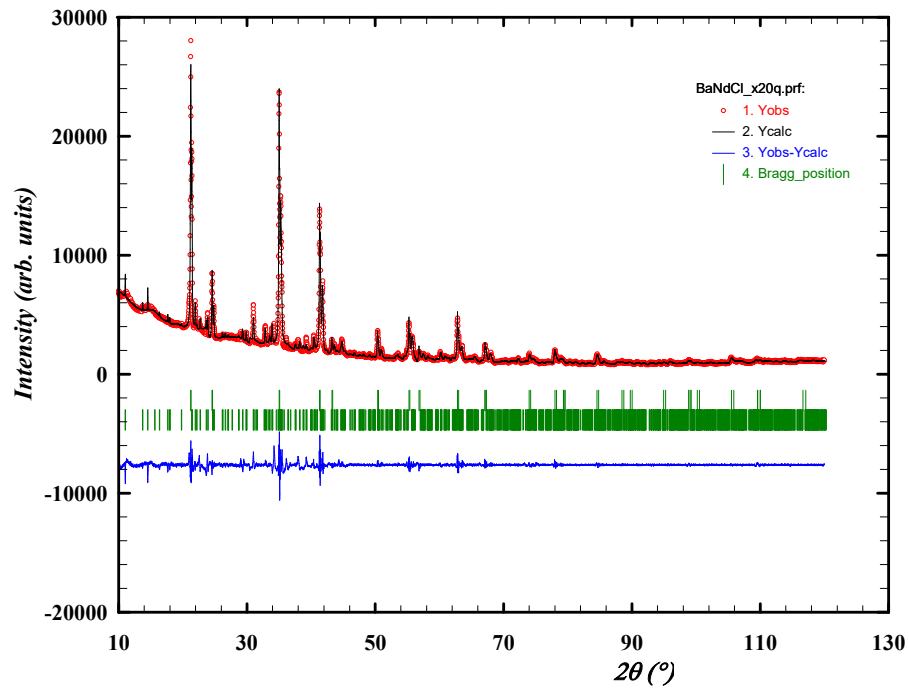


Figure 5: Profile refinement of the Ba-Nd-Cl system at $x_{\text{NdCl}_3} = 0.25$ after quenching the sample from $T = 975$ K. The observed intensity (Yobs, red) is plotted along with the calculated intensity from the refinement (Ycalc, black), and the difference between the two is shown (Yobs-Ycalc, blue). The angles at which reflections occur are shown as well (Bragg positions, vertical lines). Measurement at $\lambda = \text{Cu-K}\alpha$.