Electronic Supplementary Material (ESI) for Dalton Transactions.

Carbonate: an alternative dopant to stabilize new perovskite phases; Synthesis and structure of $Ba_3Yb_2O_5CO_3$ and related isostructural phases $Ba_3Ln_2O_5CO_3$ (Ln=Y, Dy, Ho, Er, Tm and Lu).

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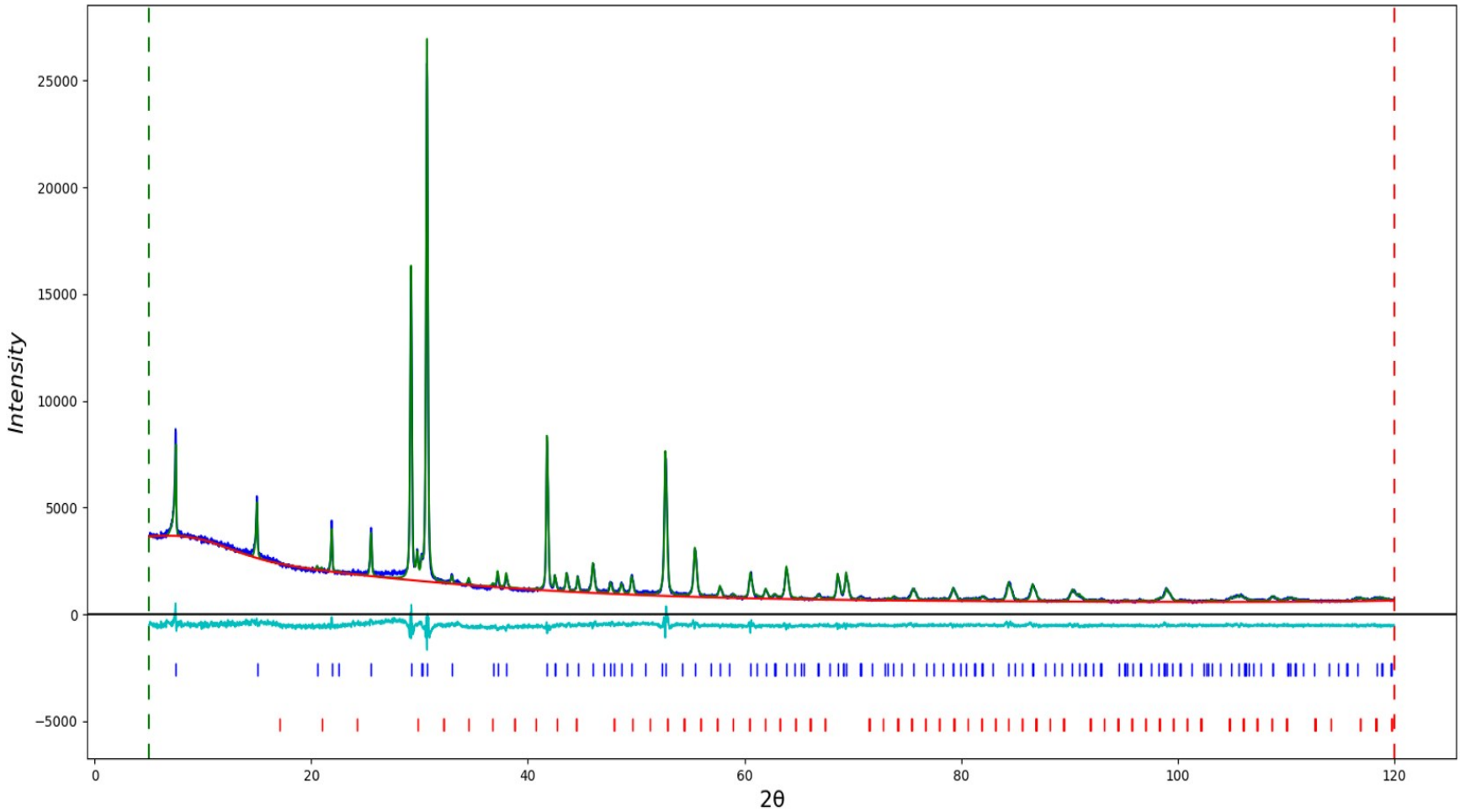
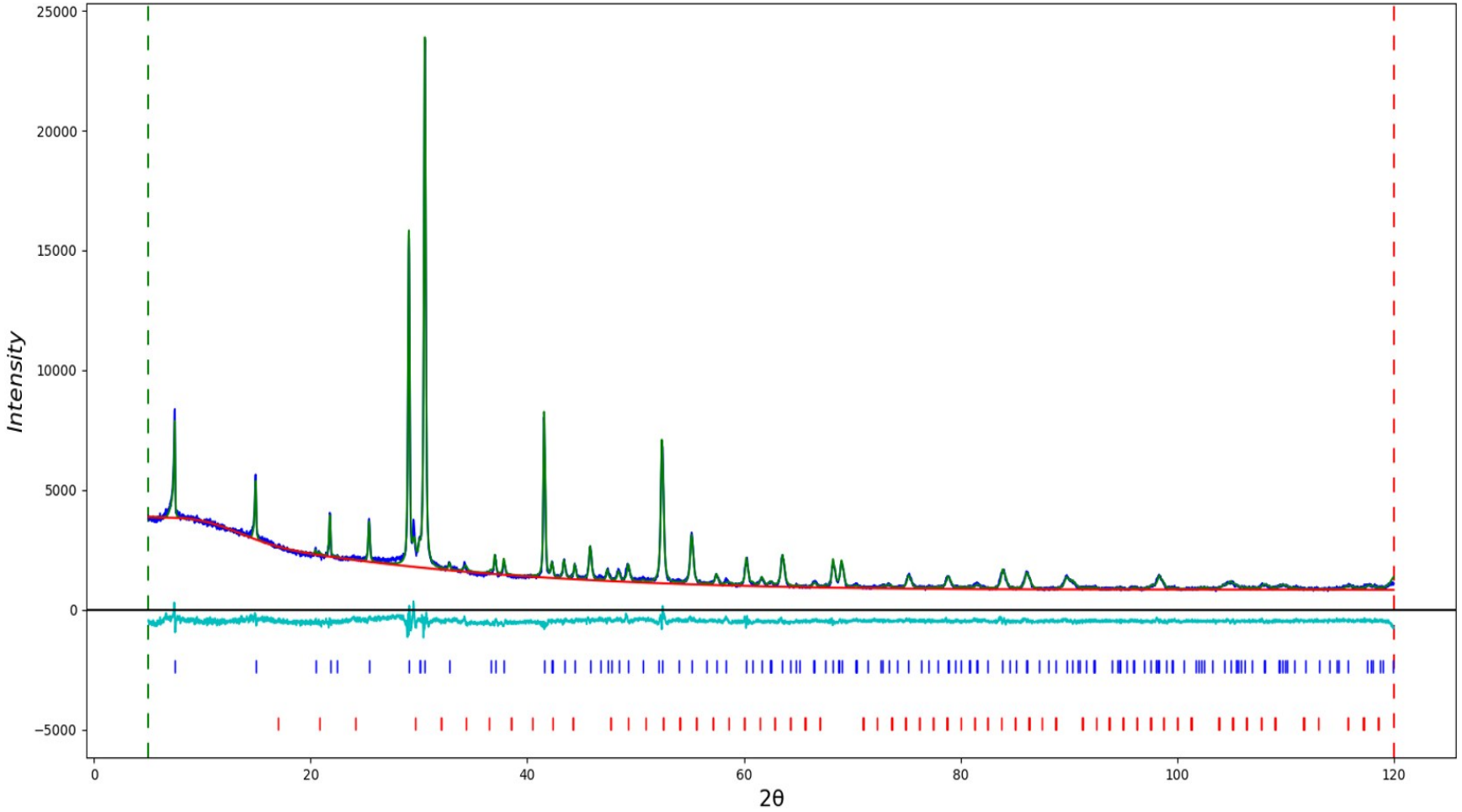
Supplementary Information

The information provided in this section is to be used in conjunction with the associated article. Within this section is the set of data showing the observed, calculated and difference profiles for the $Ba_3Ln_2O_5CO_3$ (Ln = Lu, Tm, Er, Y, Ho and Dy) systems (**Supplementary Figures 1 – 6.**).



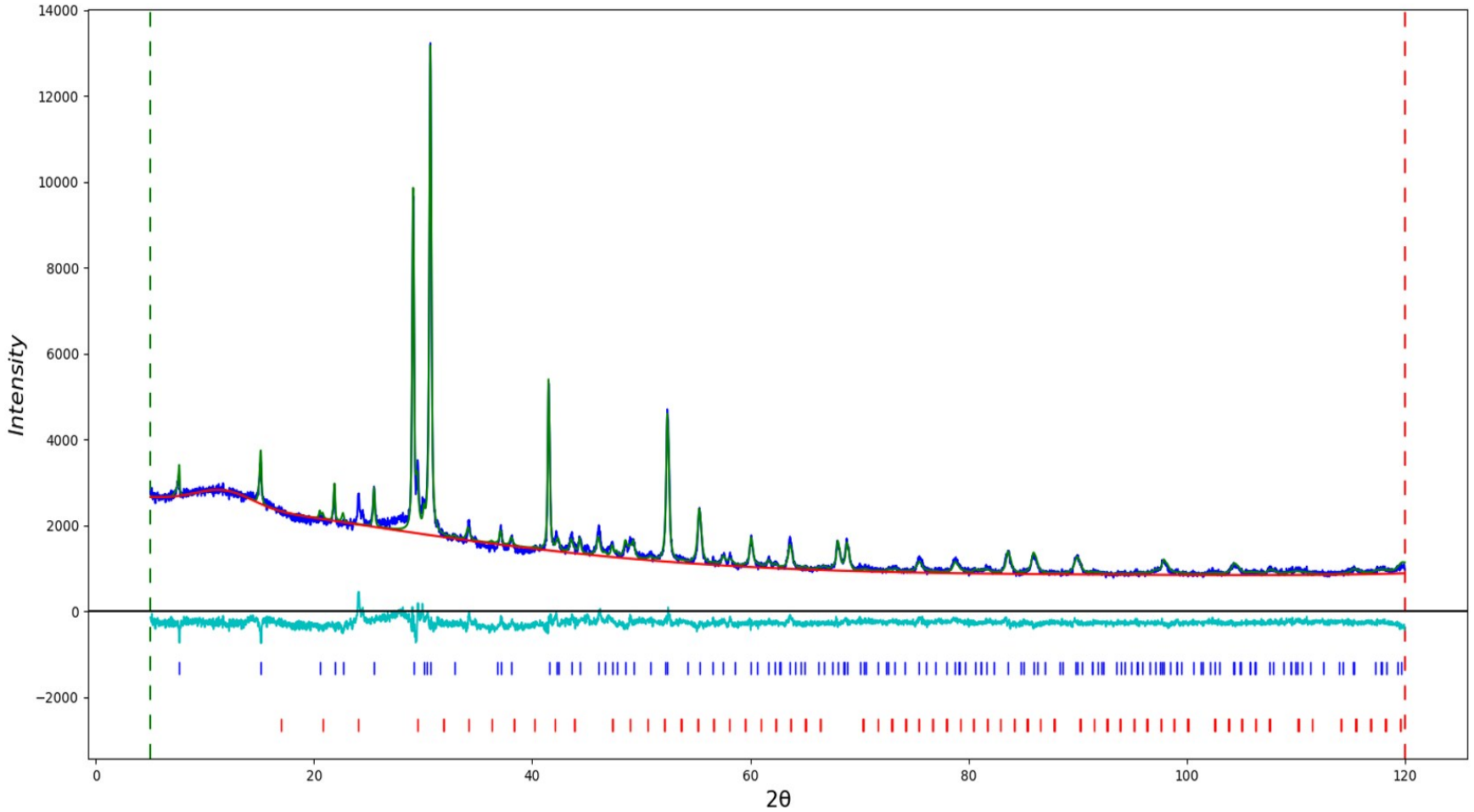
Supplementary Figure 1: Observed, calculated and difference x-ray diffraction profiles for $Ba_3Lu_2O_5CO_3$.

(Lower tick marks – Lu_2O_3, upper tick marks $Ba_3Lu_2O_5CO_3$)



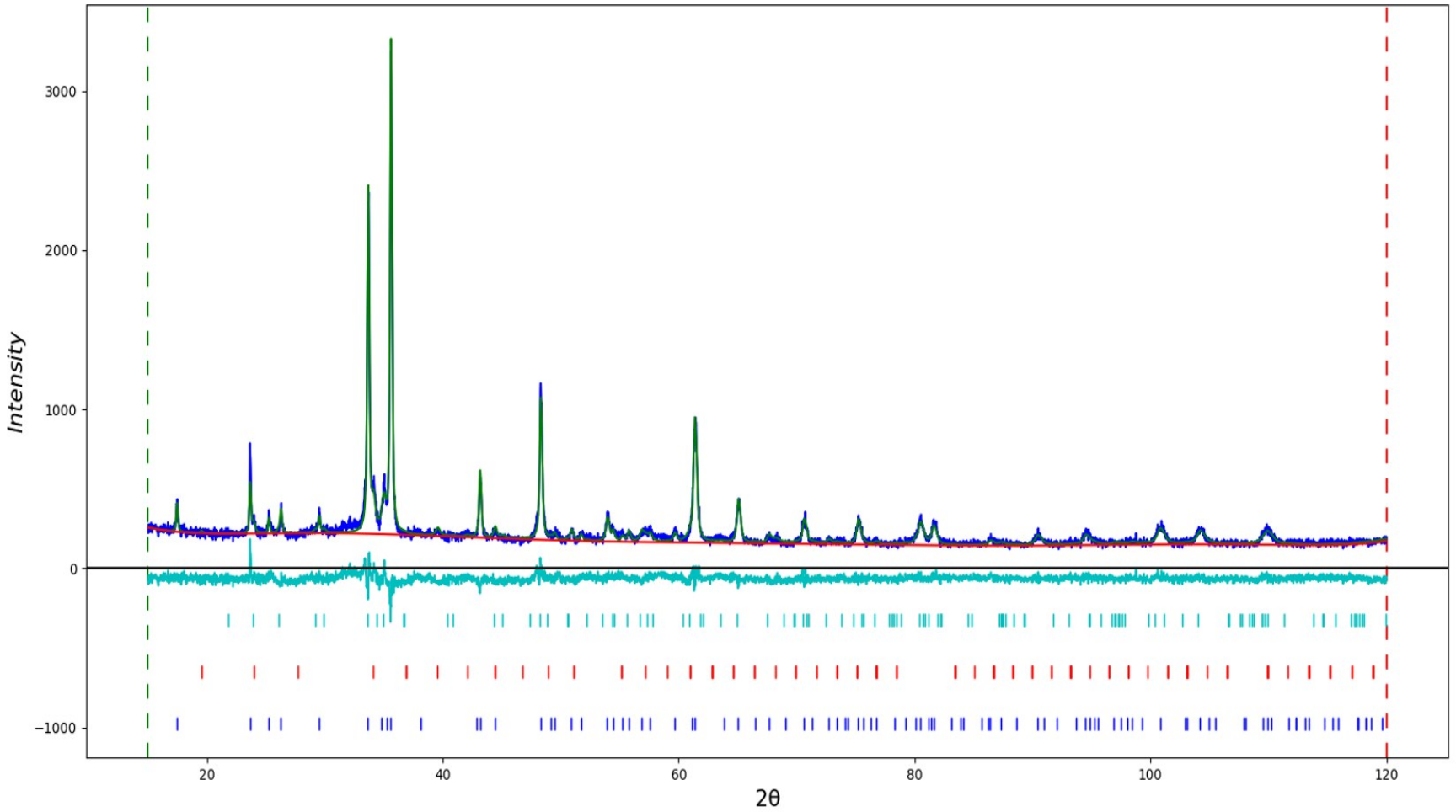
Supplementary Figure 2: Observed, calculated and difference x-ray diffraction profiles for $Ba_3Tm_2O_5CO_3$.

(Lower tick marks – Tm_2O_3, upper tick marks $Ba_3Tm_2O_5CO_3$)



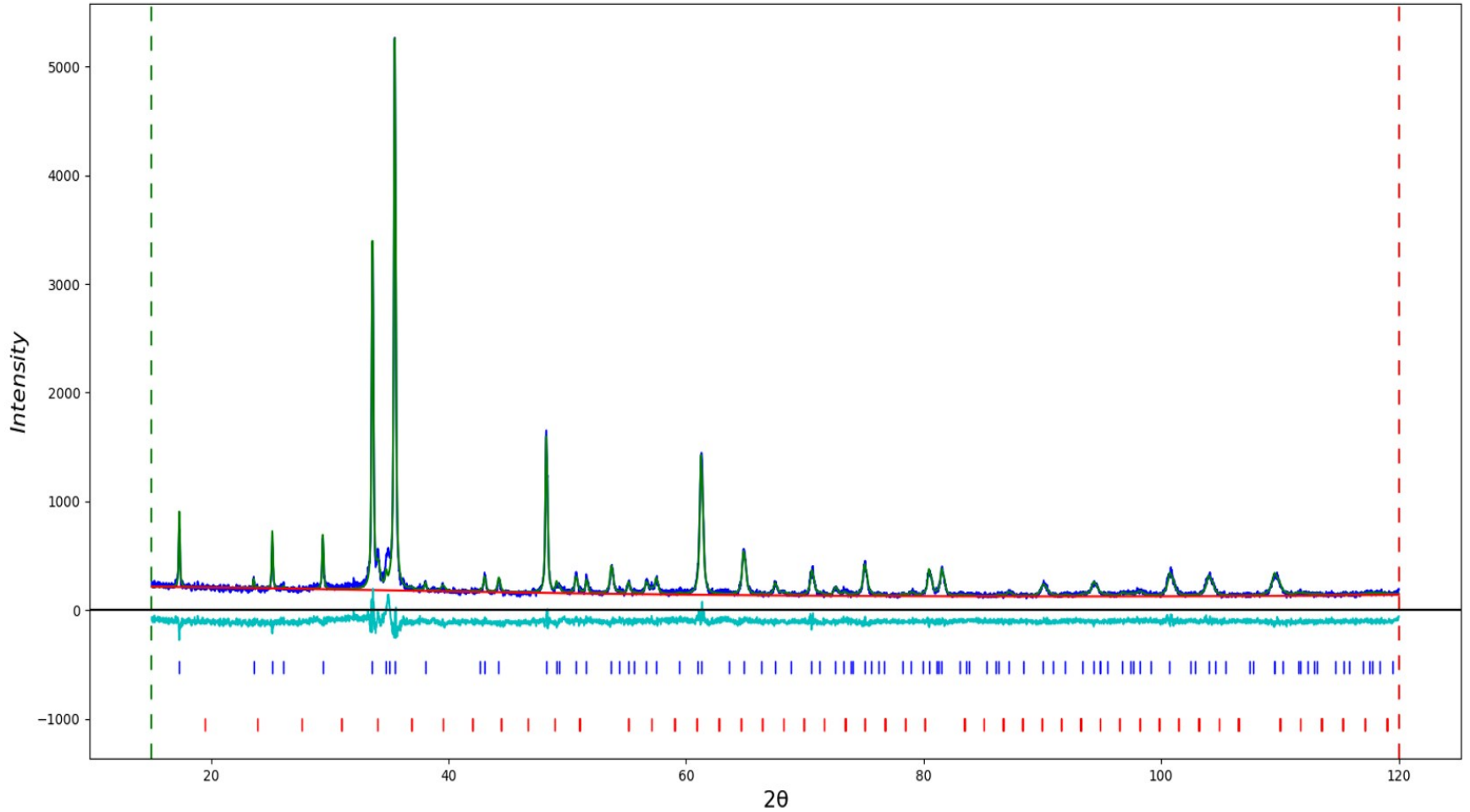
Supplementary Figure 3: Observed, calculated and difference x-ray diffraction profiles for $Ba_3Er_2O_5CO_3$.

(Lower tick marks – Er_2O_3, upper tick marks $Ba_3Er_2O_5CO_3$)



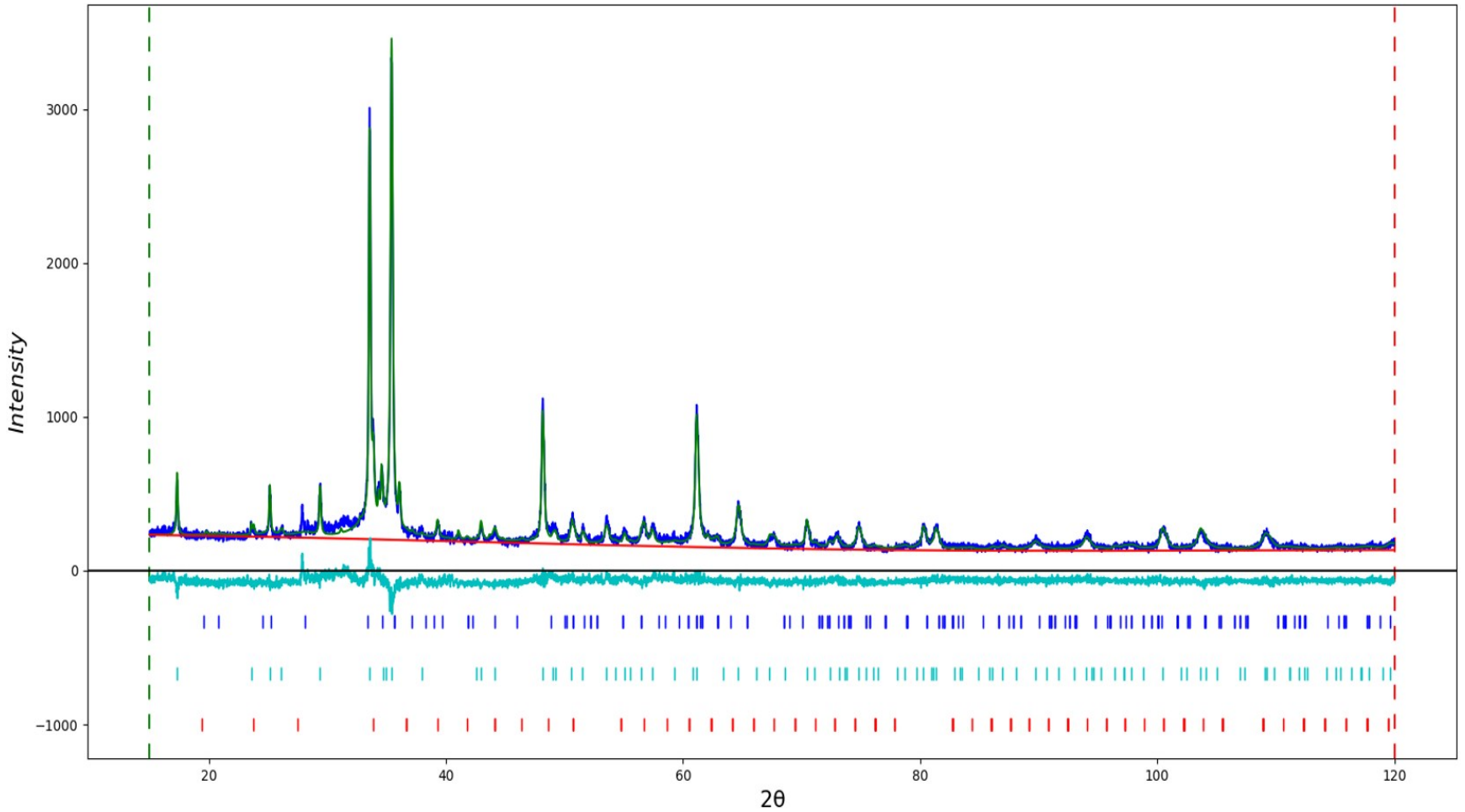
Supplementary Figure 4: Observed, calculated and difference x-ray diffraction profiles for $Ba_3Y_2O_5CO_3$.

(Lower tick marks – Y_2O_3, middle tick marks – $Ba_3Y_4O_9$, upper tick marks - $Ba_3Y_2O_5CO_3$)



Supplementary Figure 5: Observed, calculated and difference x-ray diffraction profiles for $Ba_3Ho_2O_5CO_3$.

(Lower tick marks – Ho_2O_3, upper tick marks $Ba_3Ho_2O_5CO_3$)



Supplementary Figure 6: Observed, calculated and difference x-ray diffraction profiles for $Ba_3Dy_2O_5CO_3$.

(Lower tick marks – Dy_2O_3, middle tick marks – $Ba_3Dy_4O_9$, upper tick marks $Ba_3Dy_2O_5CO_3$)