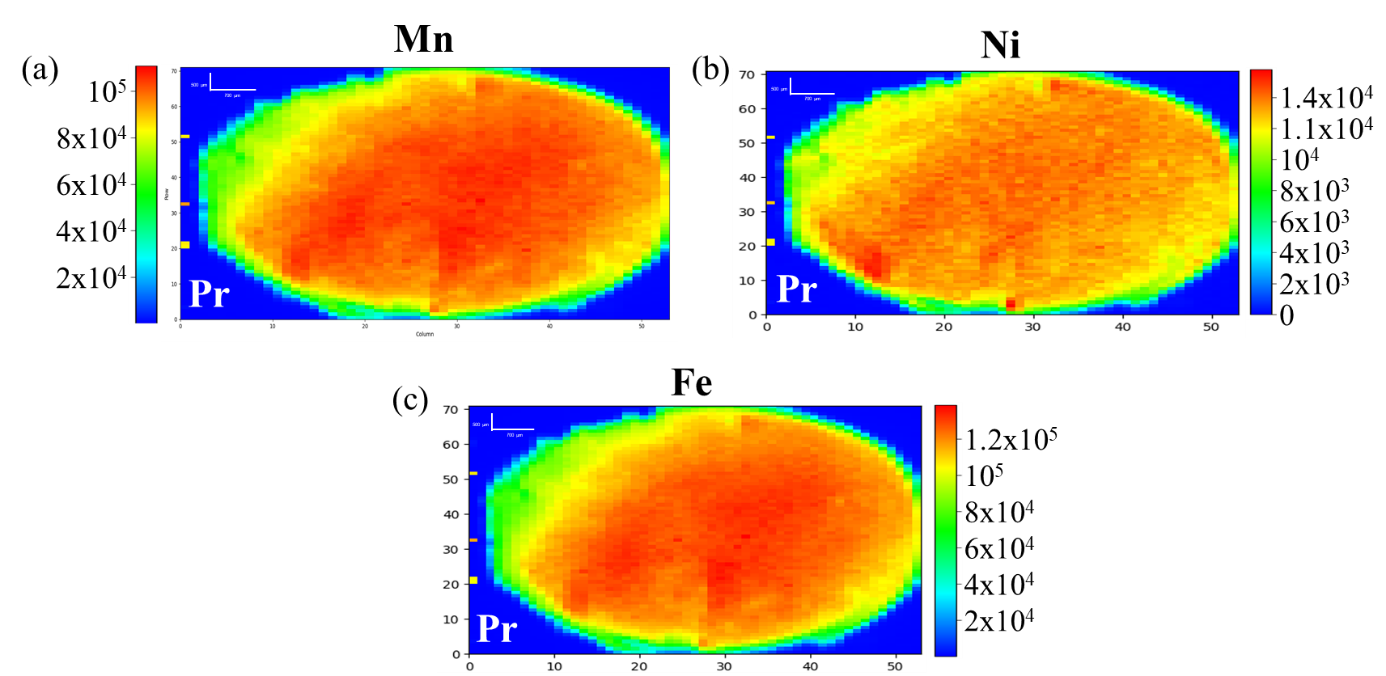
**Supplementary information**

**Aging Mechanism of Mn-based Prussian Blue Cathode Materi-al by Synchrotron 2D X-ray Fluorescence**

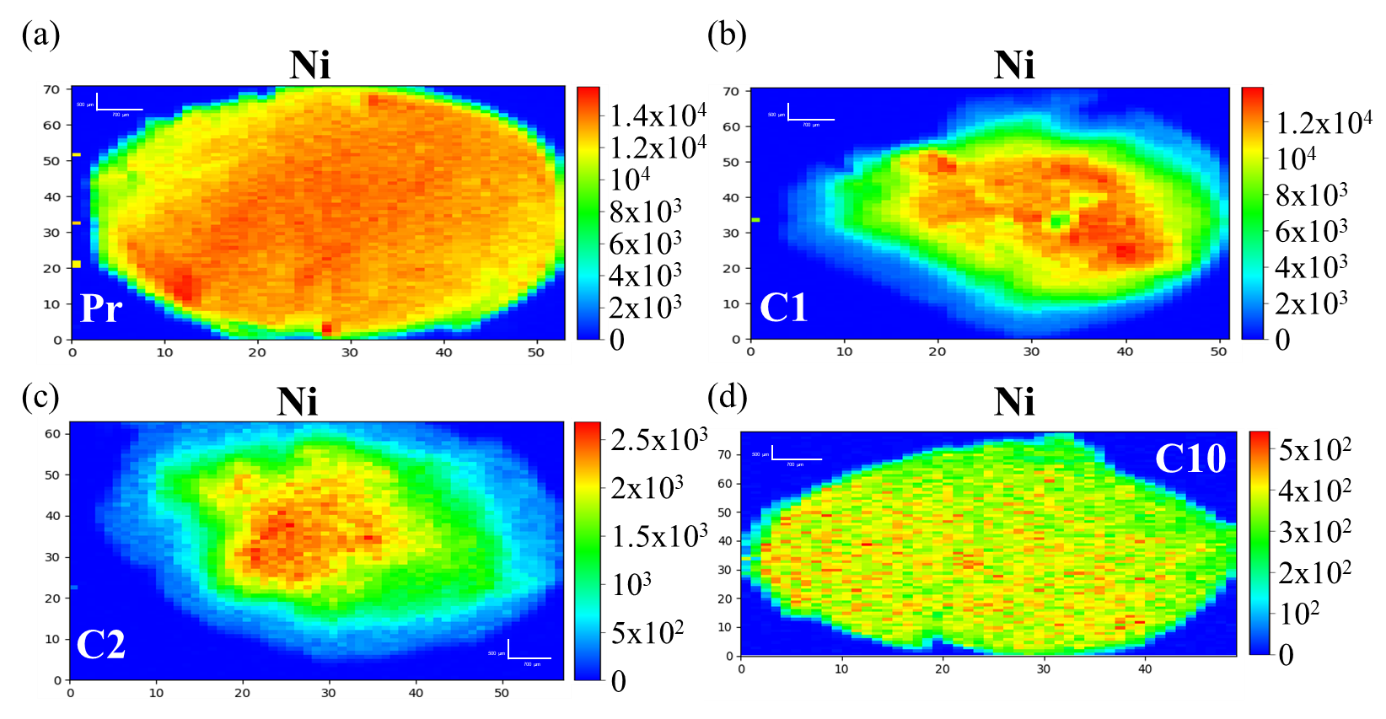
Mariam Maisuradze 1, Min Li 1, Ilaria Carlomagno 2, Mattia Gaboardi 2, Giuliana Aquilanti 2, Jasper Rikkert Plaisier 2 and Marco Giorgetti 1,\*

**Table S1.** The list of samples analyzed with PXRD technique.

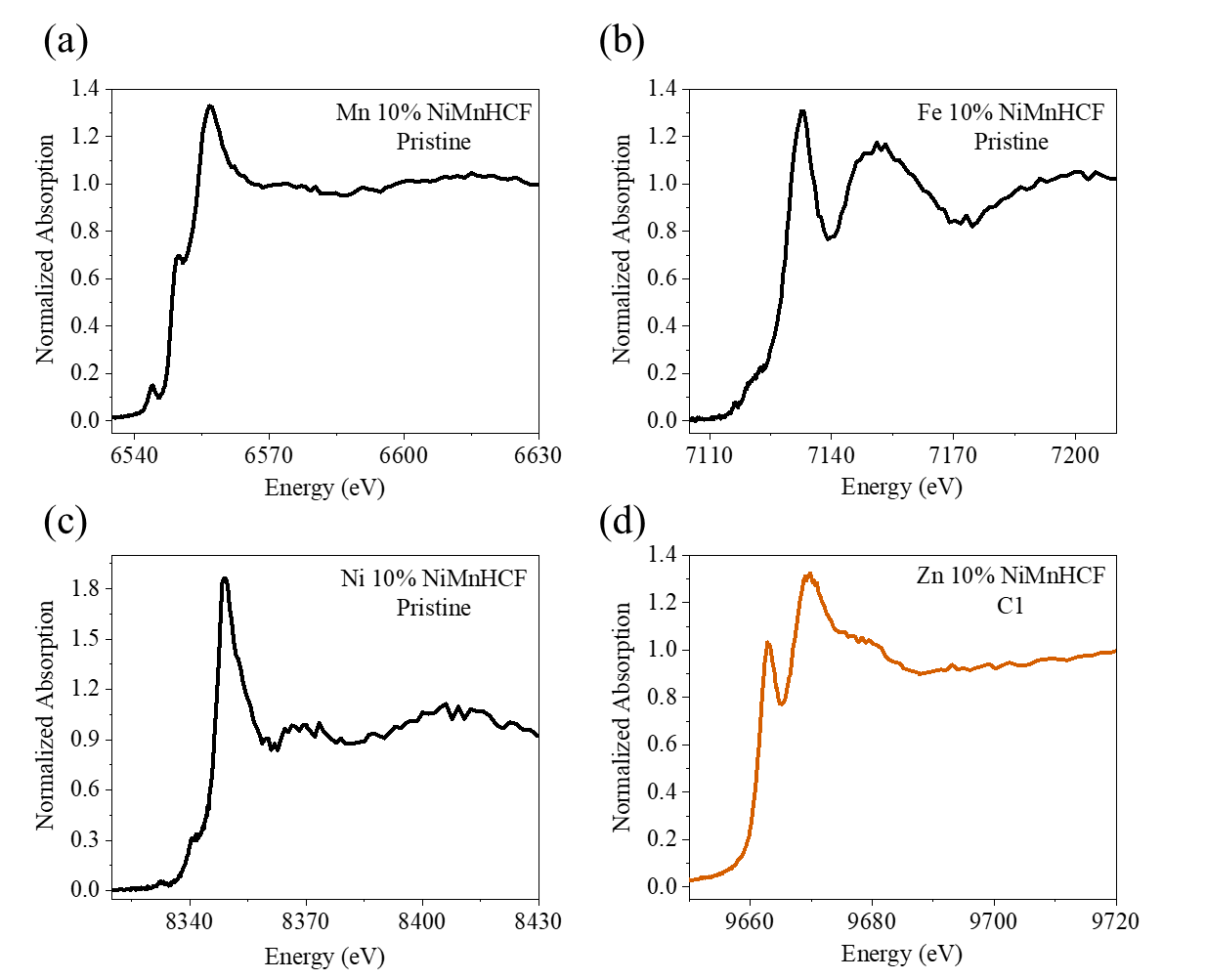
|  |  |
| --- | --- |
| 30%NiMnHCF Samples | Description |
| Pristine | Fresh electrode |
| C1 | Charged after 1st cycle |
| D1 | Discharged after 1st cycle |
| C2 | Charged after 2nd cycle |
| D2 | Discharged after 2nd cycle |
| C10 | Charged after 10th cycle |
| D10 | Discharged after 10th cycle |
| C50 | Charged after 50th cycle |
| D50 | Discharged after 50th cycle |
| C100 | Charged after 100th cycle |
| D100 | Discharged after 100th cycle |

****

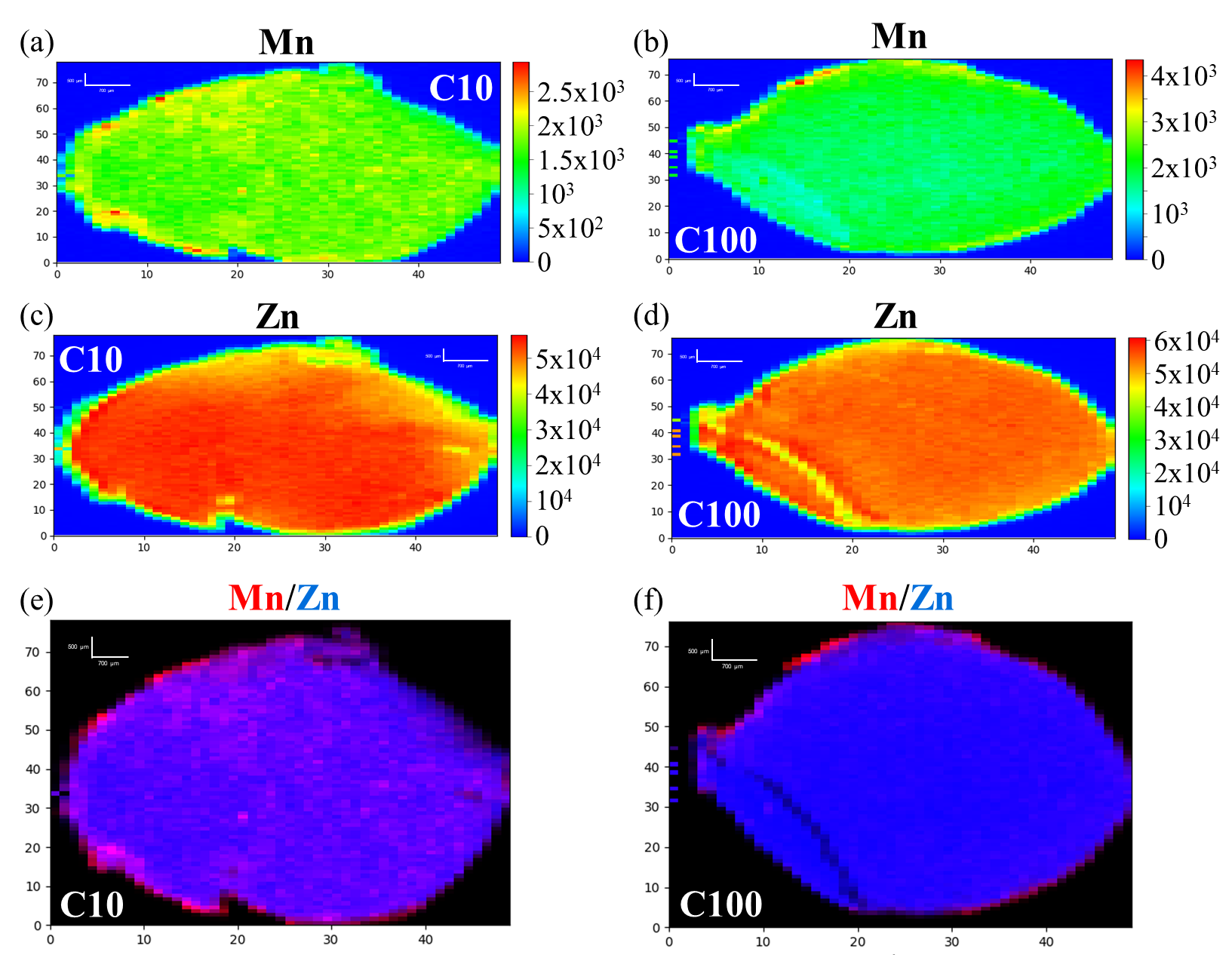
**Figure S1.** 2D-XRF maps of Pristine sample of 10%NiMnHCF: (a) Mn, (b) Ni and (c) Fe.



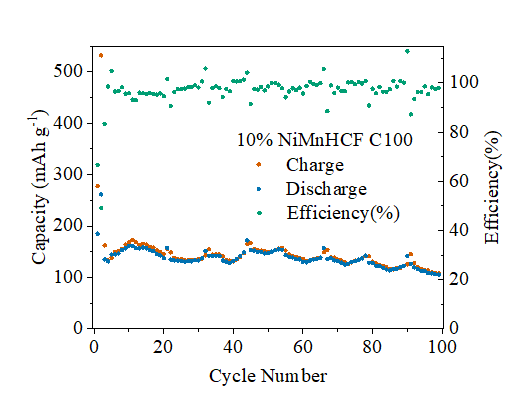
**Figure S2.** 2D-XRF maps of Ni contribution of 10%NiMnHCF samples: (a) Pristine, (b), C1, (c) C2 and (d) C10.



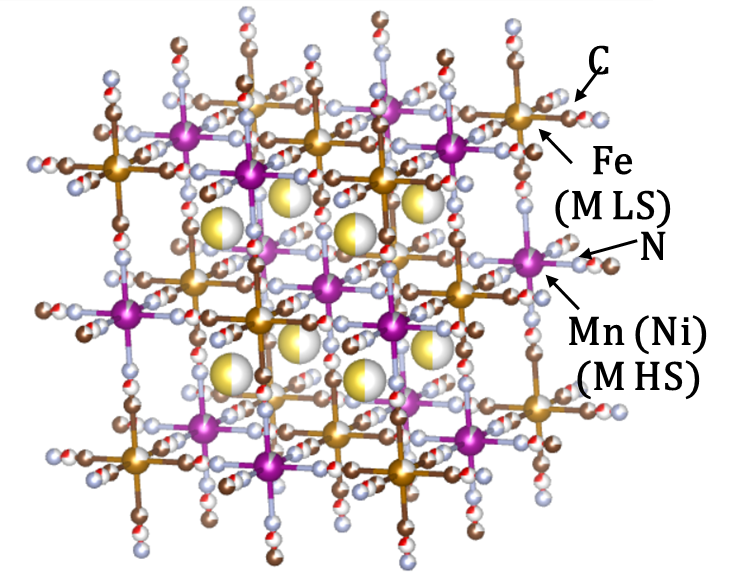
**Figure S3.** XANES of 10%NiMnHCF samples: (a) Mn K-edge of Pristine, (b), Fe K-edge of Pristine, (c) Ni K-edge of Pristine and (d) Zn K-edge of C1.



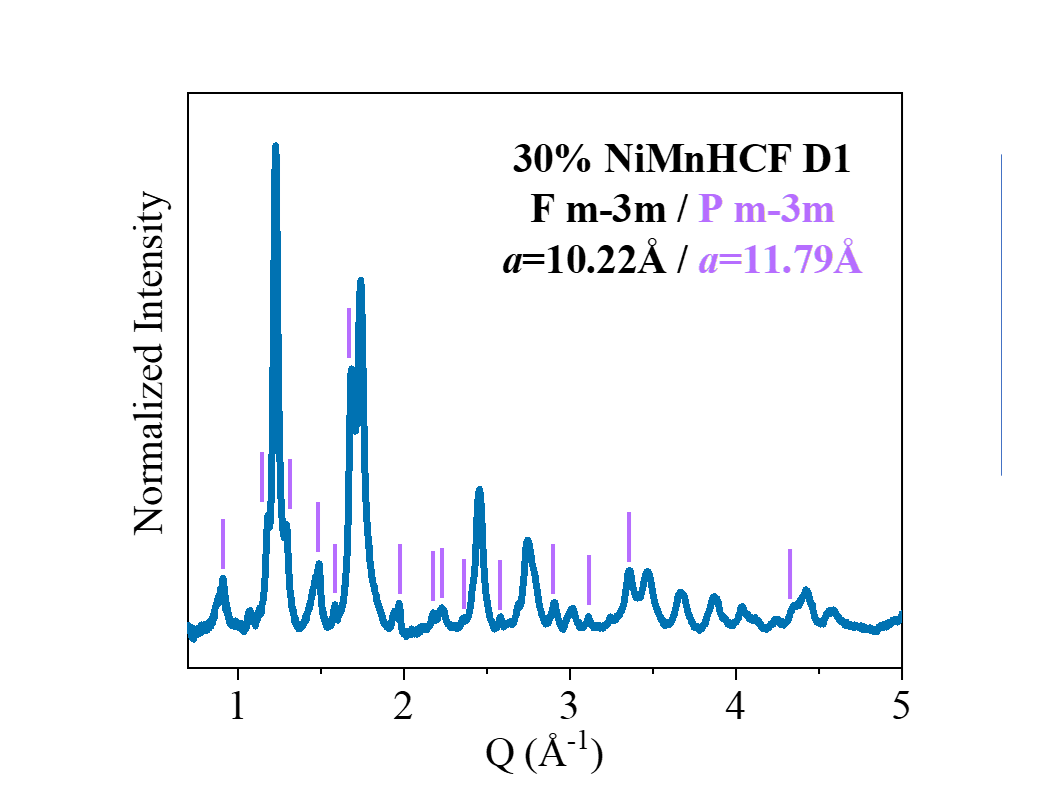
**Figure S4.** 2D-XRF maps of 10%NiMnHCF samples: (a) C10 Mn, (b), C100 Mn, (c) C10 Zn, (d) C100 Zn, (e) C10 Mn/Zn overlay and (f) C100 Mn/Zn overlay.



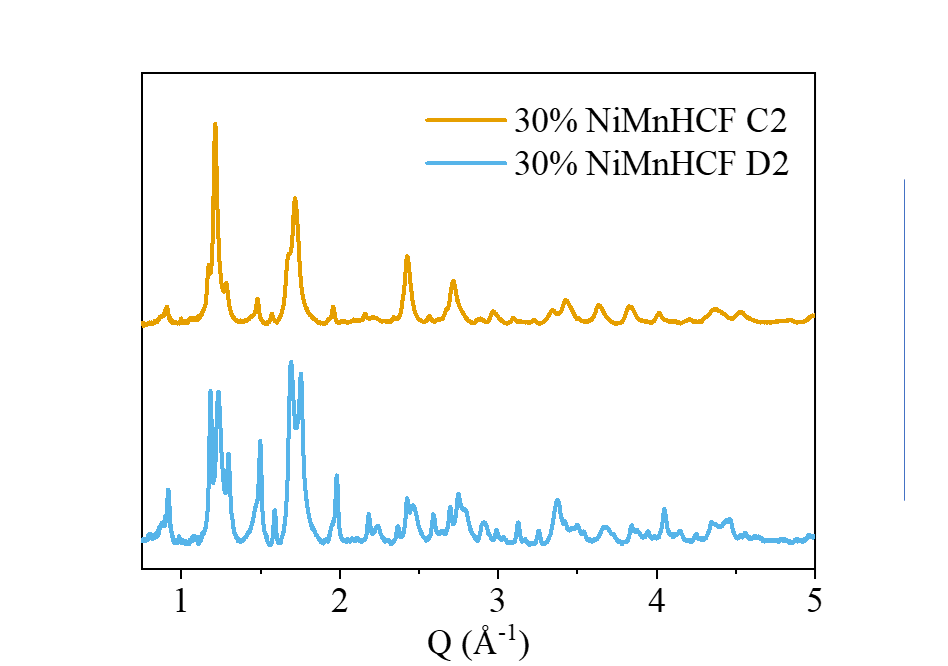
**Figure S5.** GCPL data of C100 of 10%NiMnHCF: stability and efficiency test.



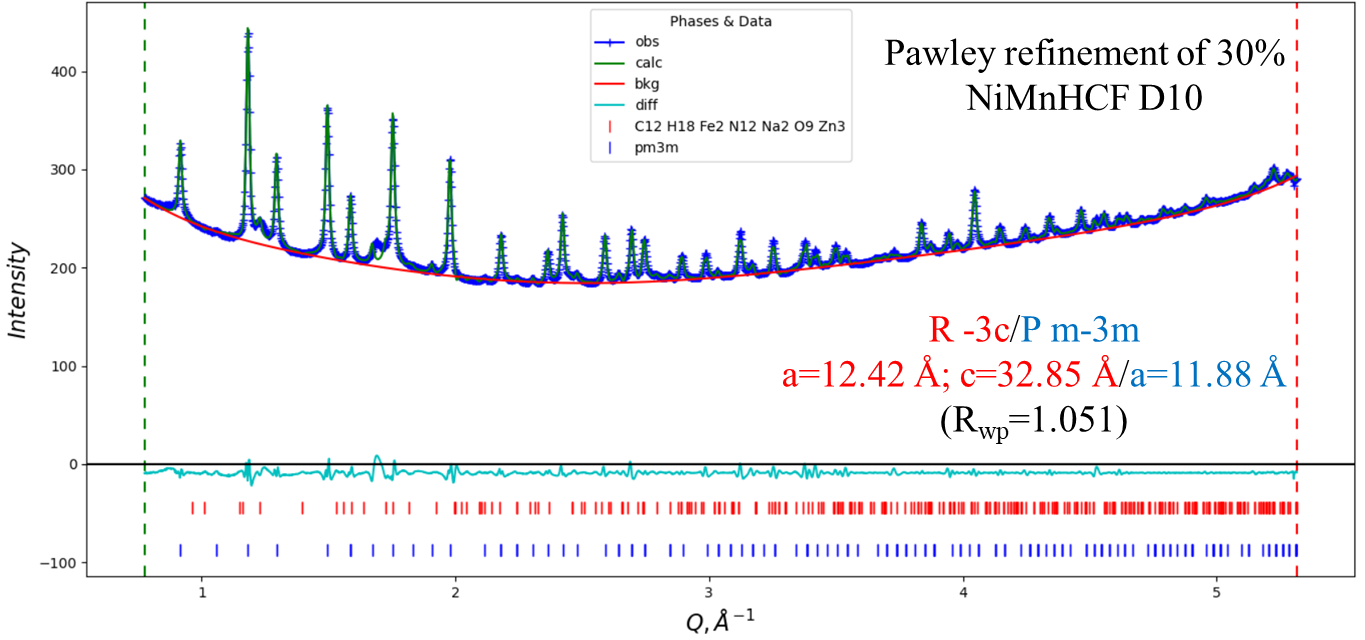
**Figure S6.** F m-3m structure of 30%NiMnHCF.



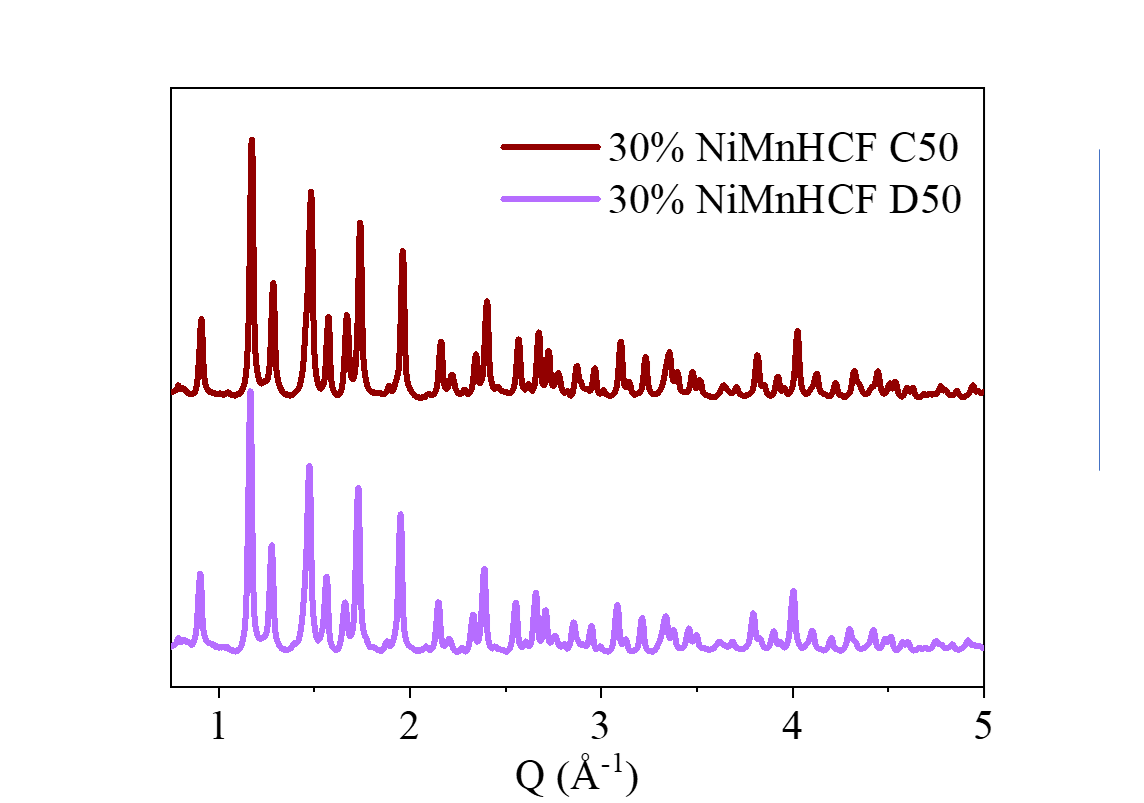
**Figure S7.** PXRD measurement result of D1 of 30%NiMnHCF.



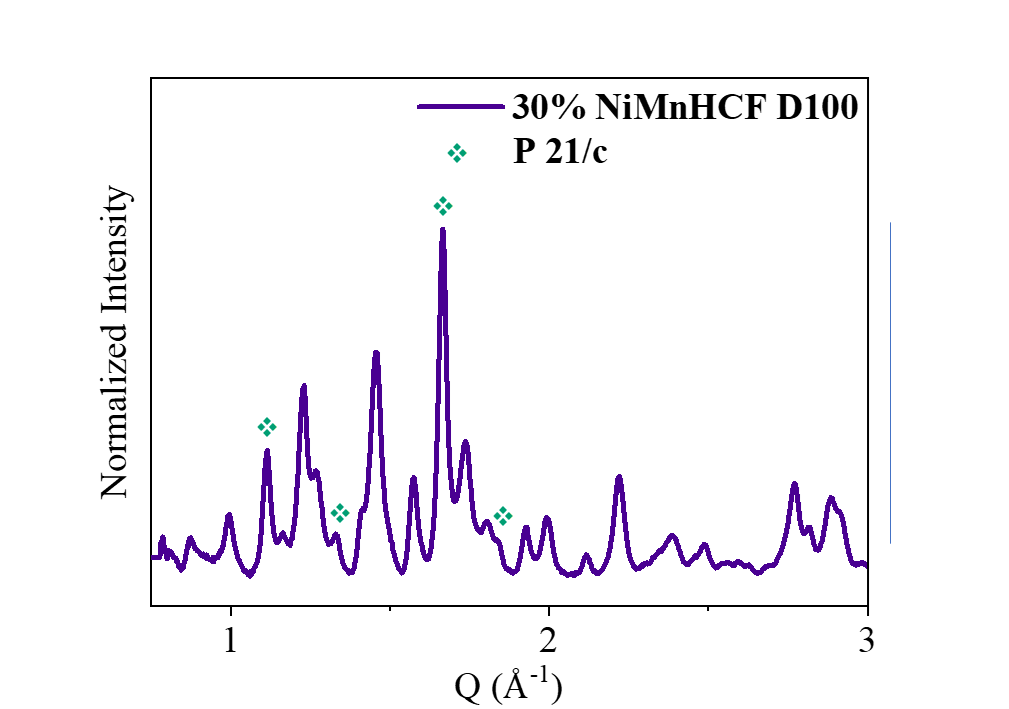
**Figure S8.** PXRD measurement results of C2 and D2 of 30%NiMnHCF.



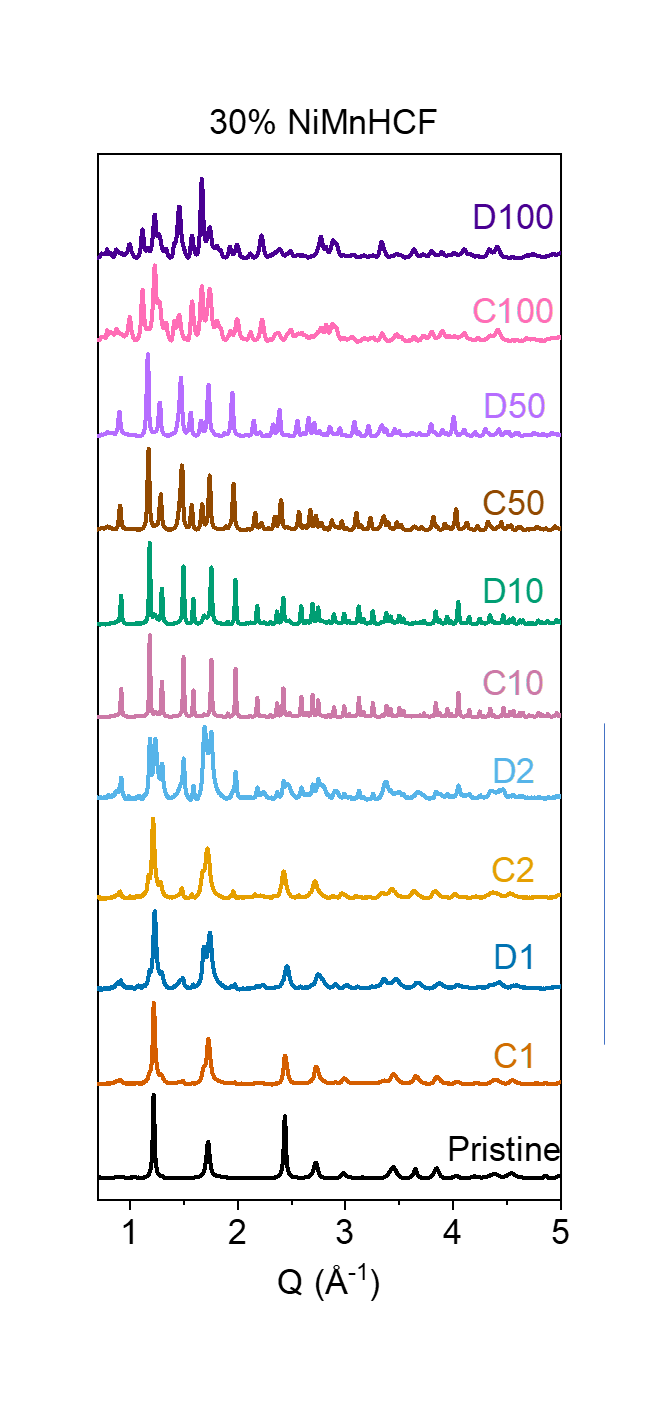
**Figure S9**. Pawley refinement of D10 of 30%NiMnHCF.



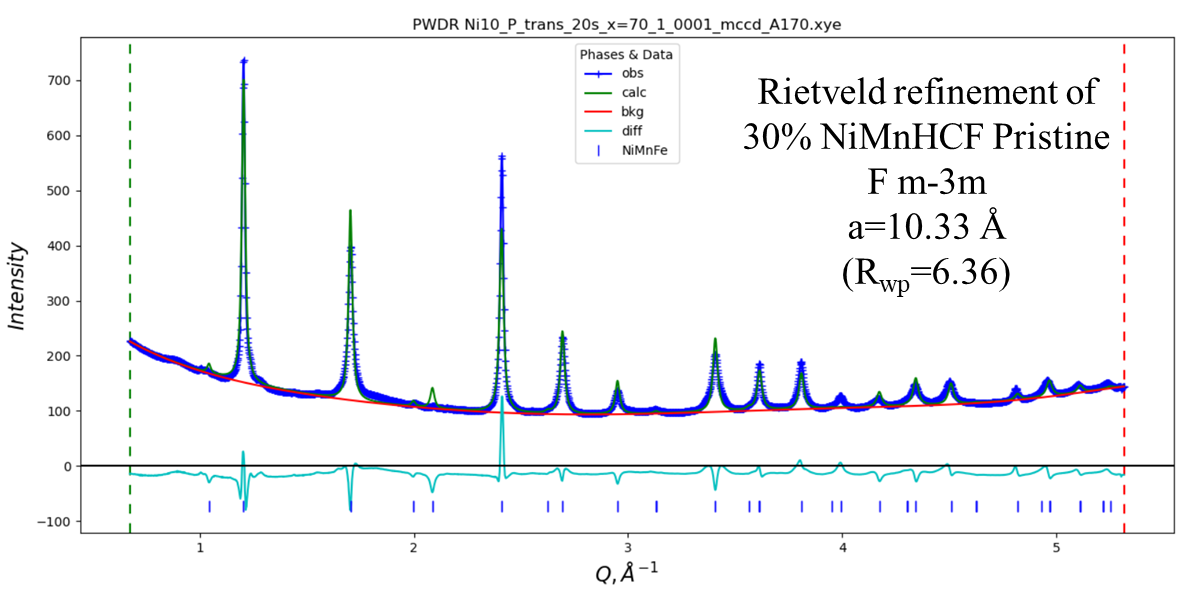
**Figure S10.** PXRD measurement results of C50 and D50 of 30%NiMnHCF.



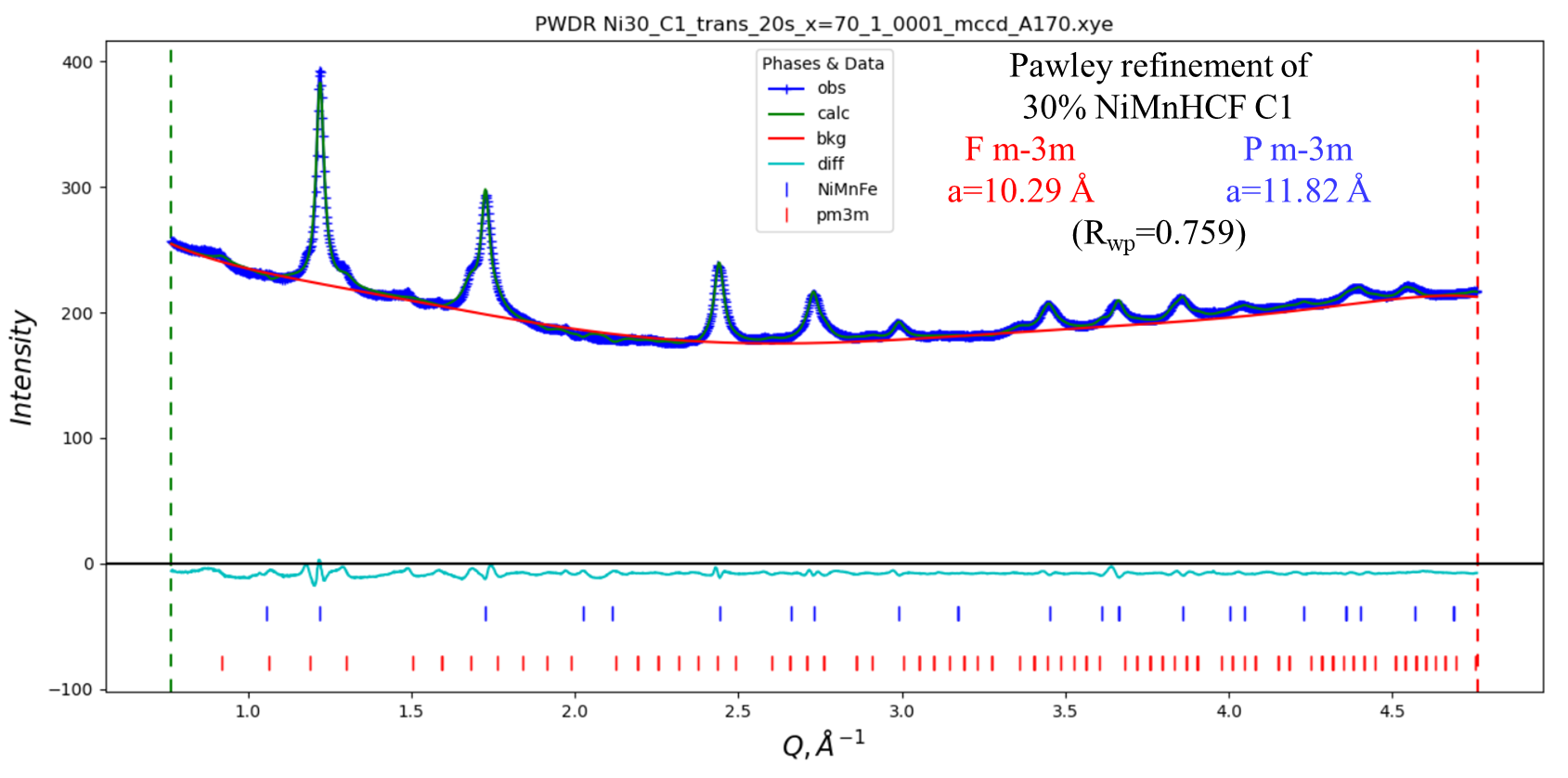
**Figure S11.** PXRD measurement result of D100 of 30%NiMnHCF.



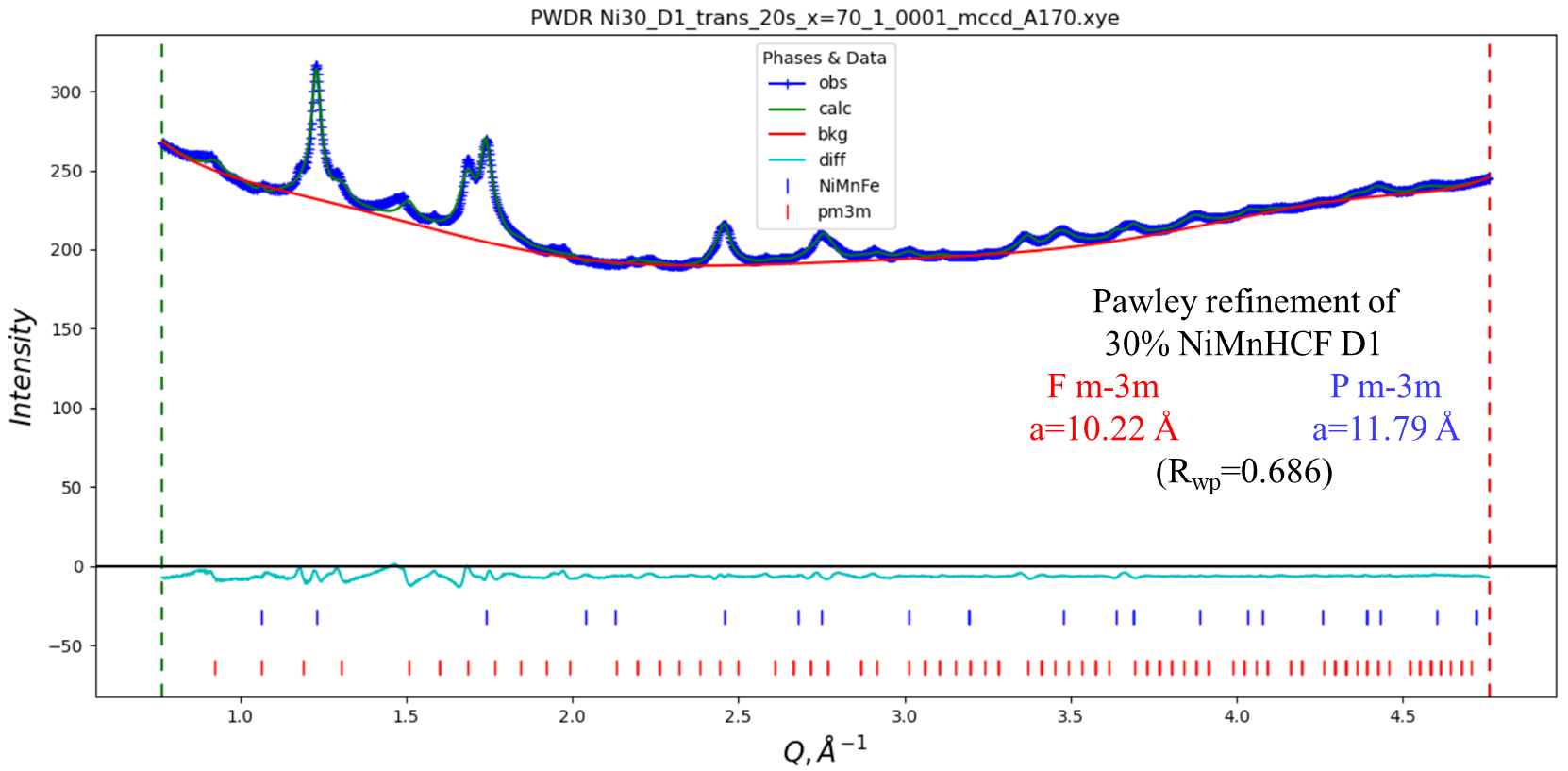
**Figure S12.** PXRD measurement result of D100 of 30%NiMnHCF.



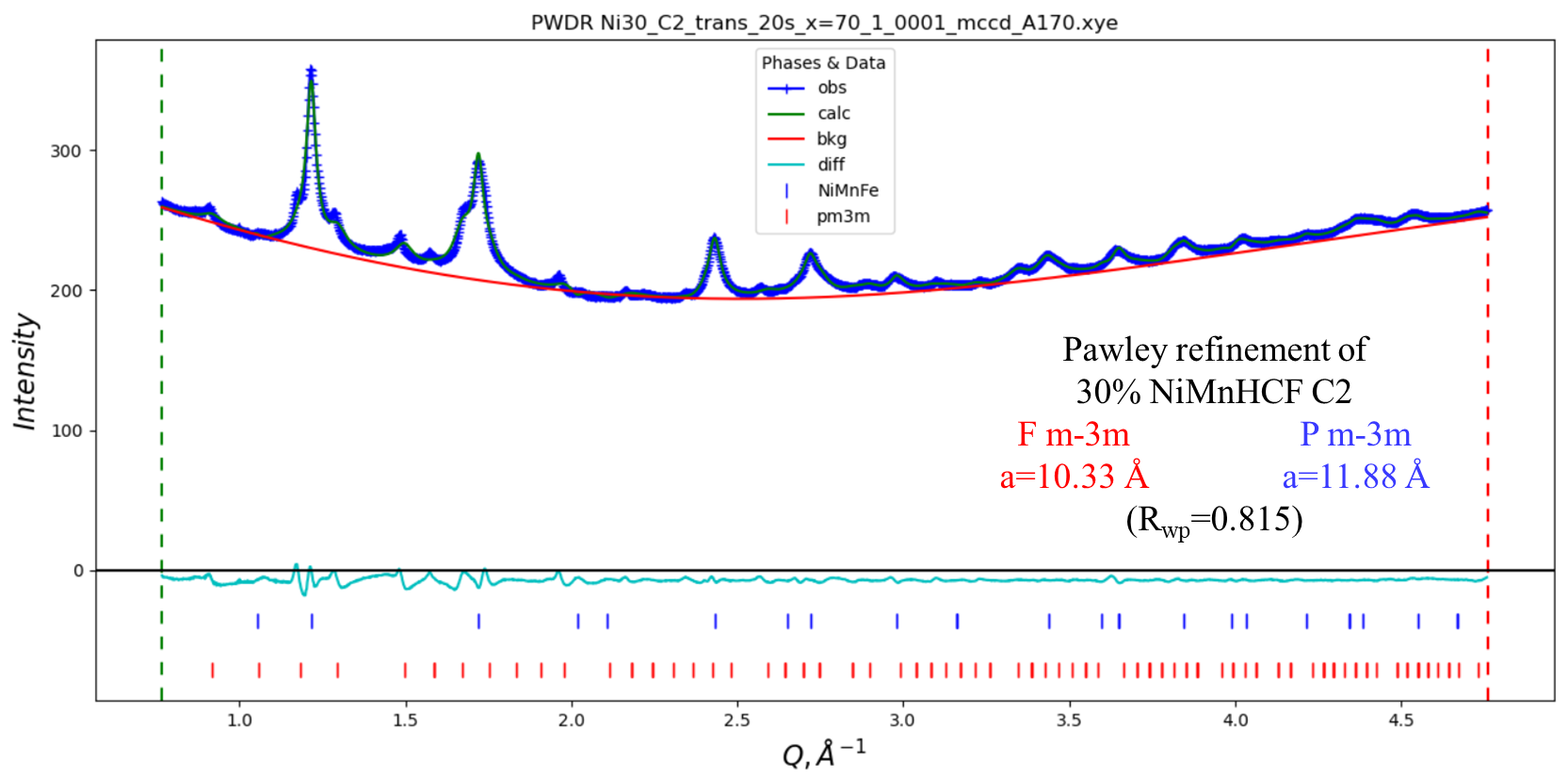
**Figure S13**. Rietveld refinement of Pristine of 30%NiMnHCF.



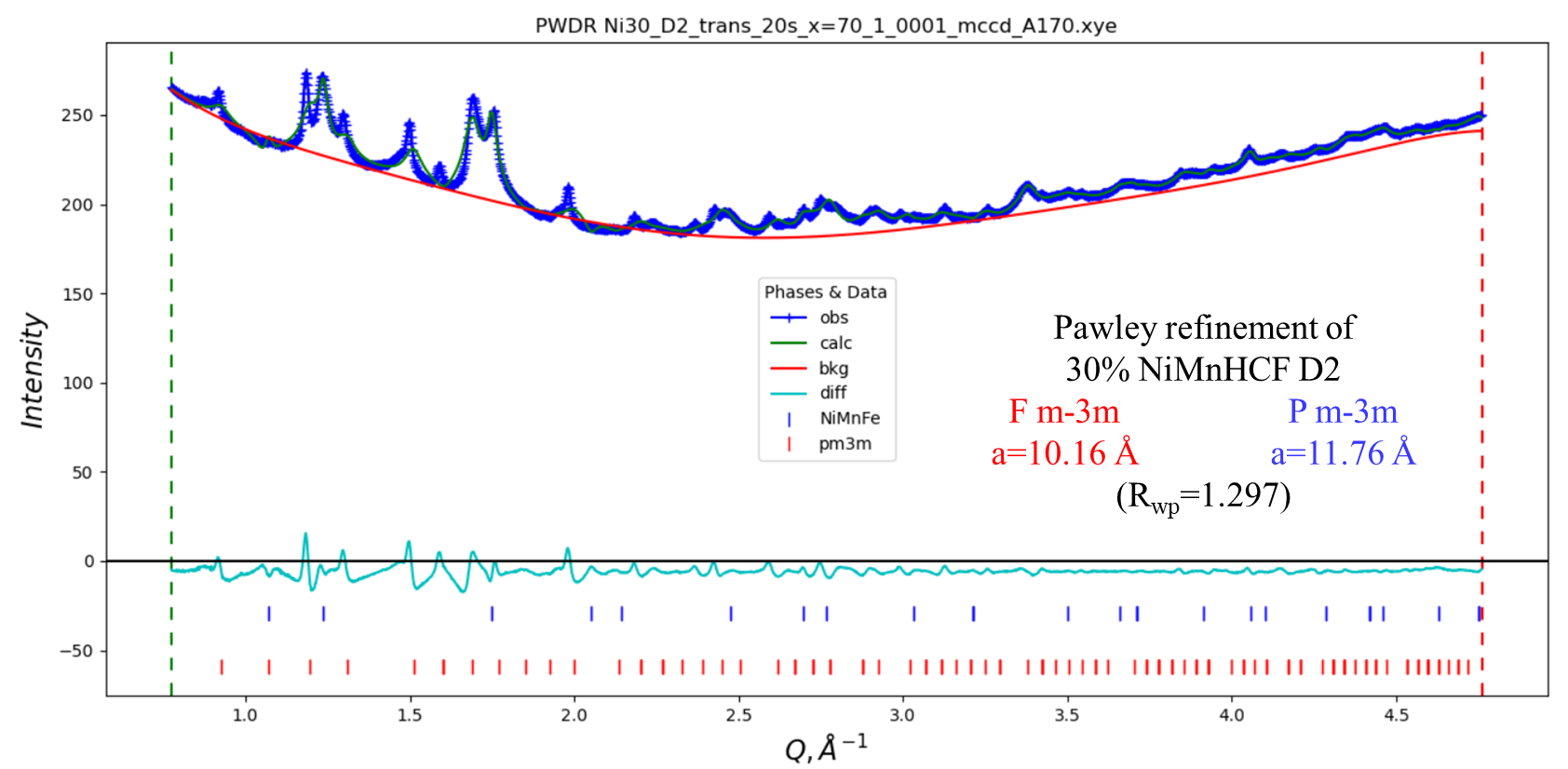
**Figure S14**. Pawley refinement of C1 of 30%NiMnHCF.



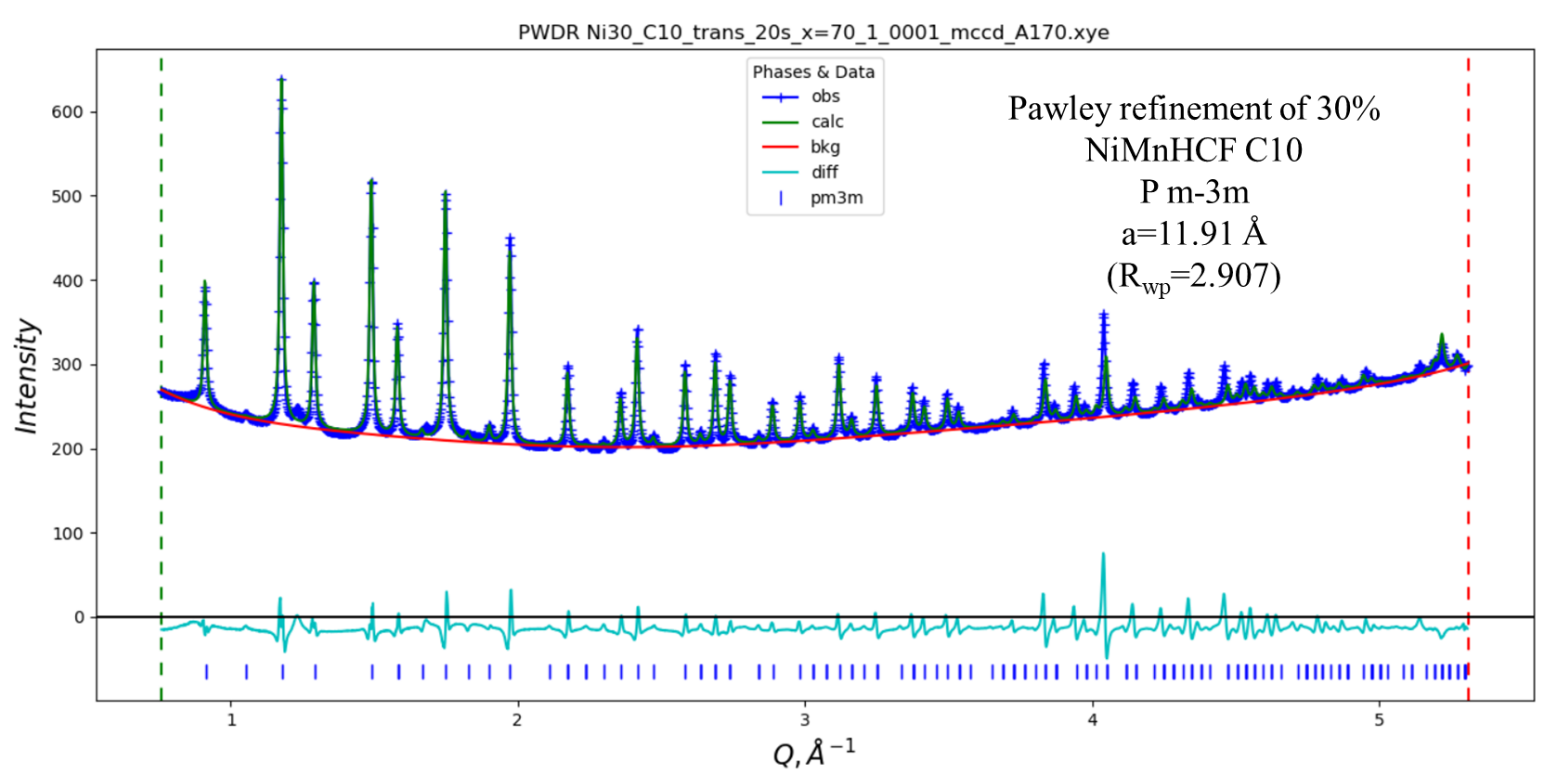
**Figure S15**. Pawley refinement of D1 of 30%NiMnHCF.



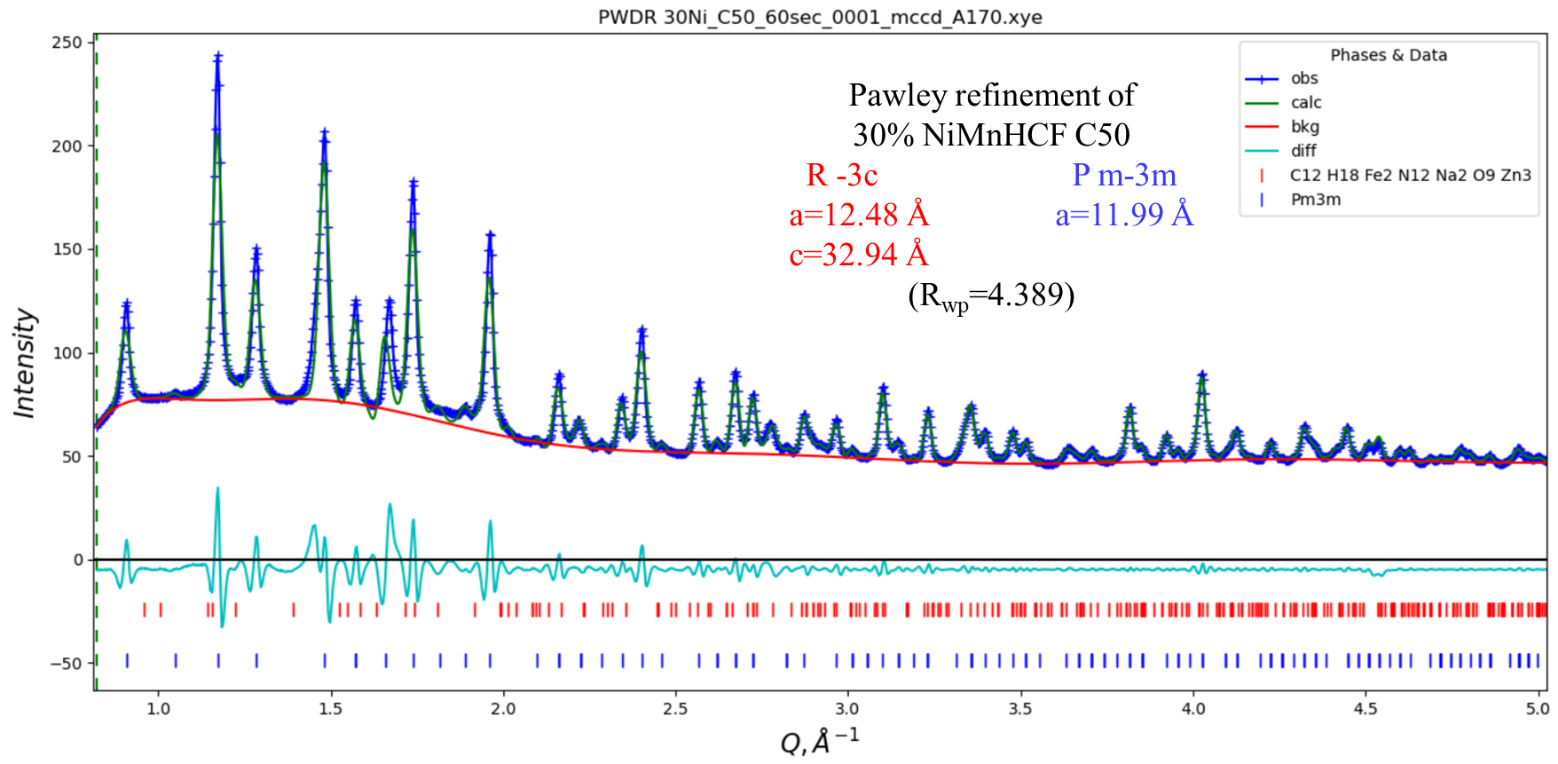
**Figure S16**. Pawley refinement of C2 of 30%NiMnHCF.



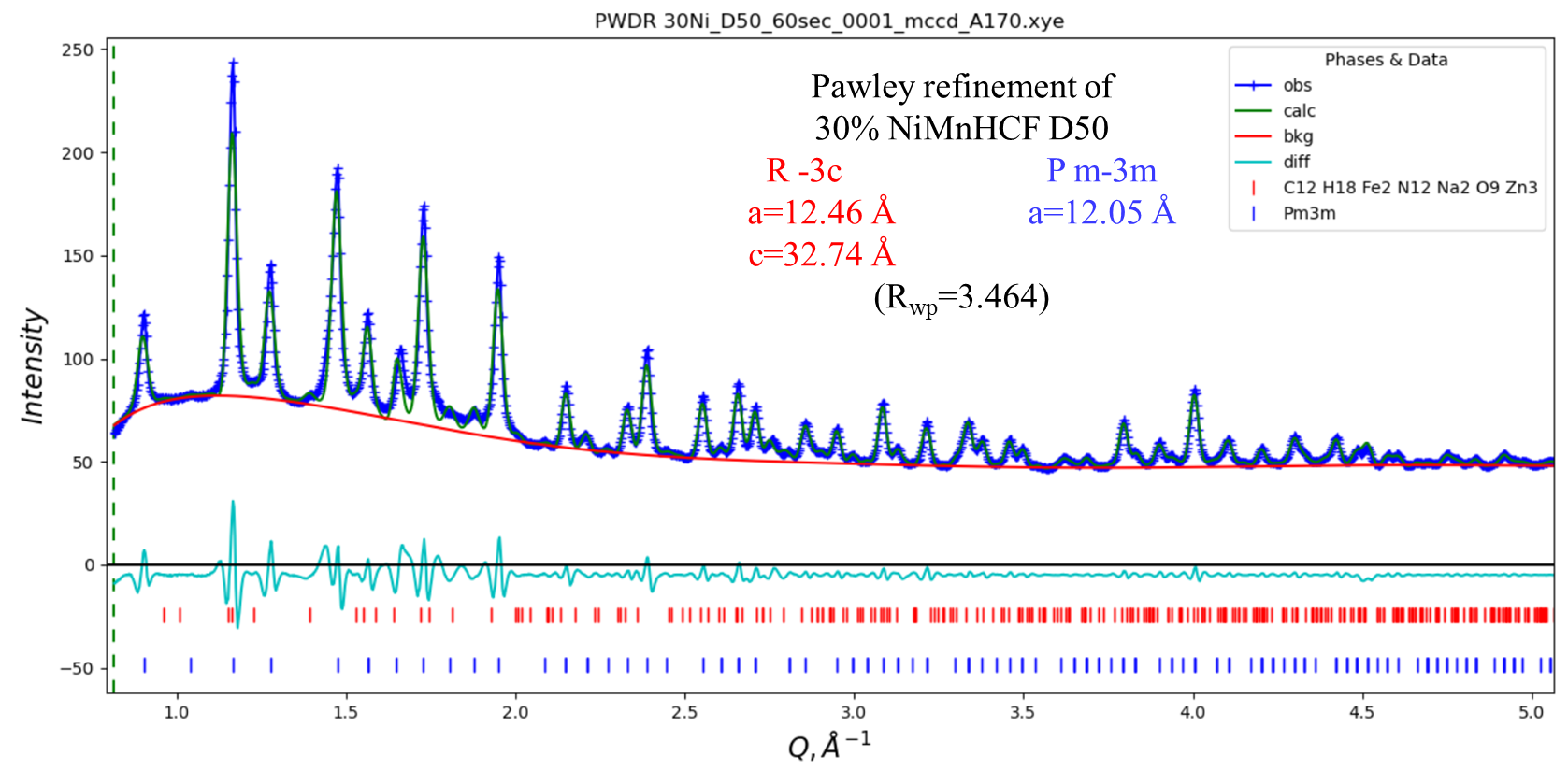
**Figure S17**. Pawley refinement of D2 of 30%NiMnHCF.



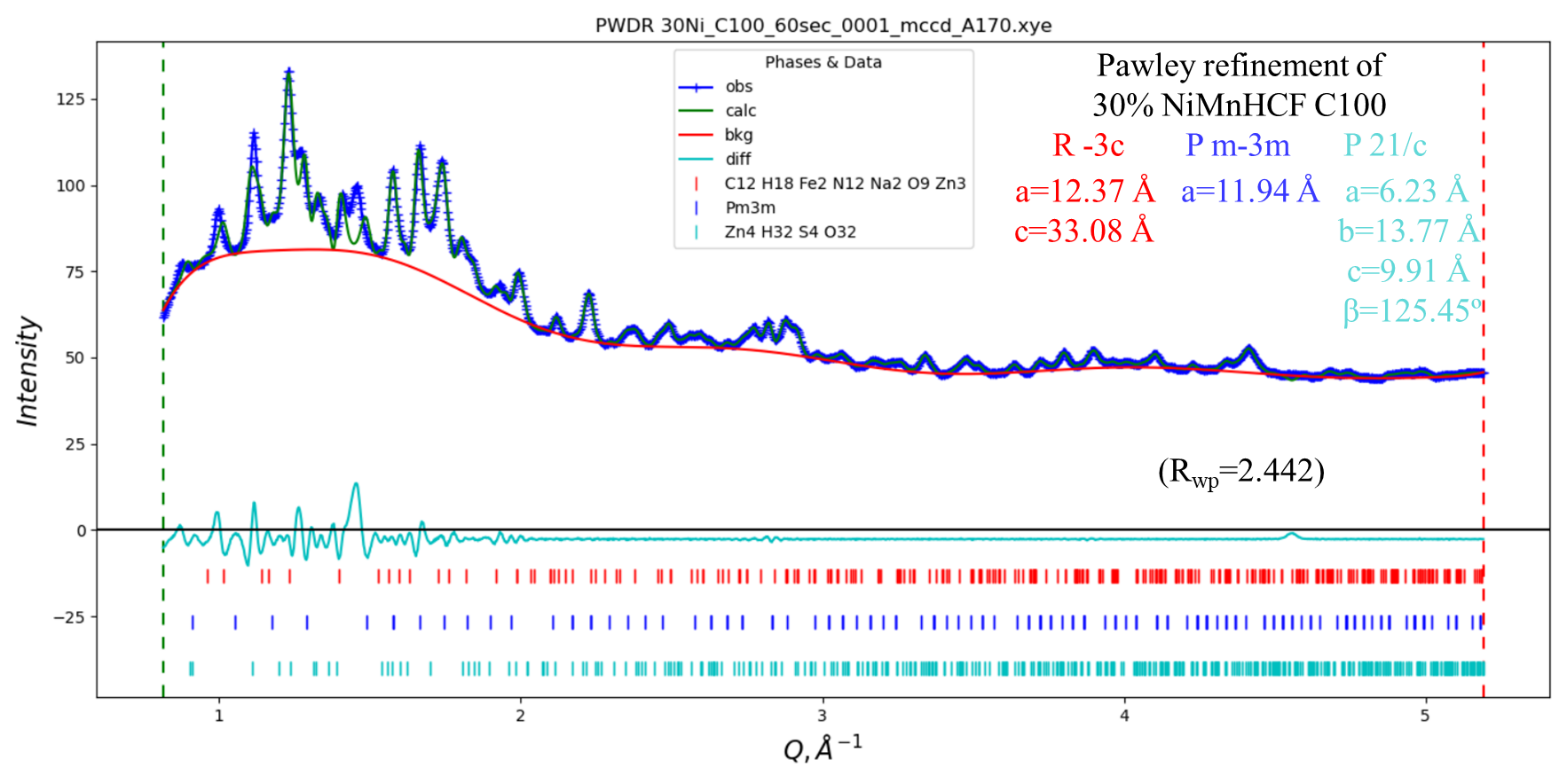
**Figure S18**. Pawley refinement of C10 of 30%NiMnHCF.



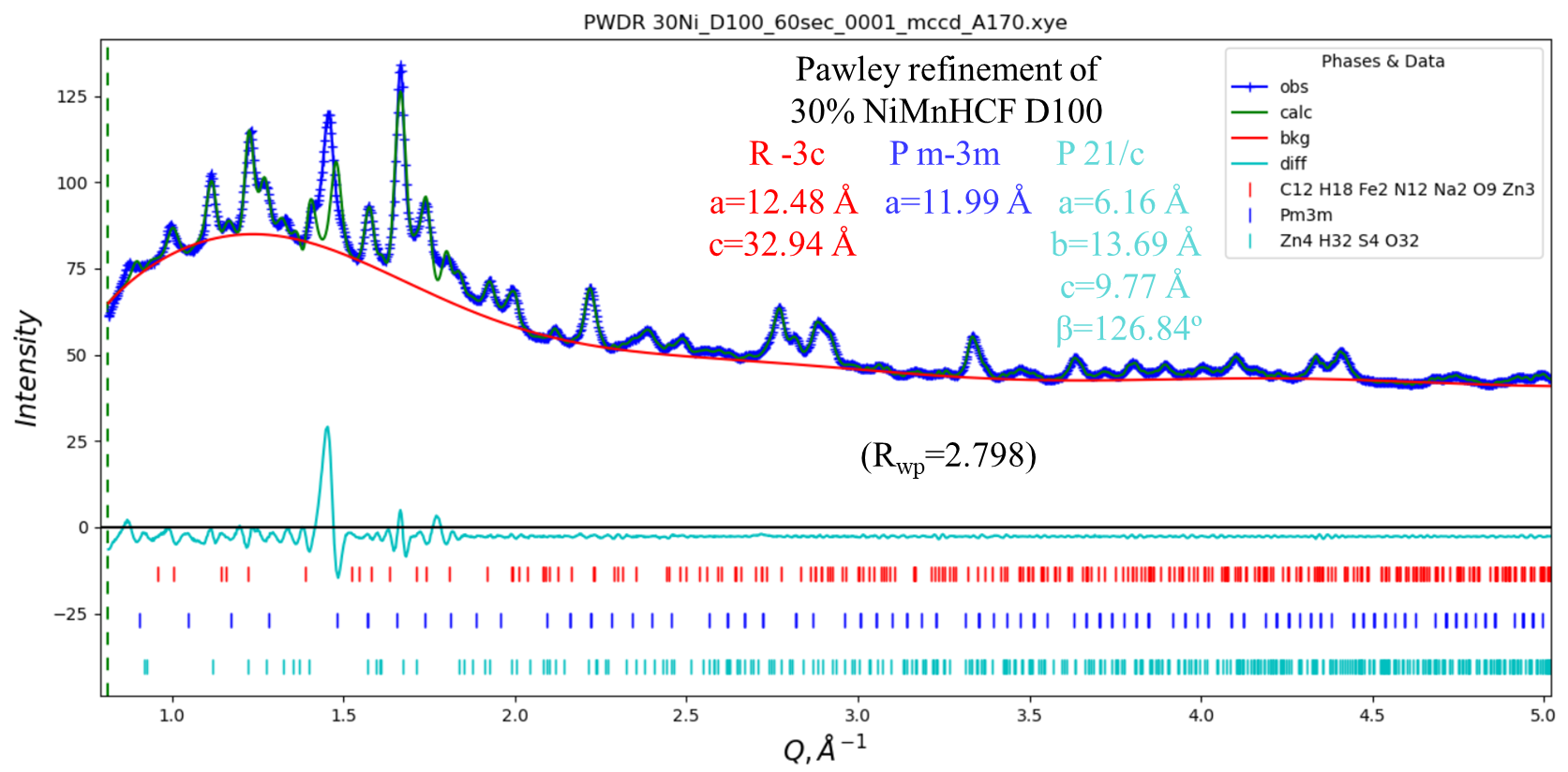
**Figure S19**. Pawley refinement of C50 of 30%NiMnHCF.



**Figure S20**. Pawley refinement of D50 of 30%NiMnHCF.



**Figure S21**. Pawley refinement of C100 of 30%NiMnHCF.



**Figure S22**. Pawley refinement of D100 of 30%NiMnHCF.