

Electronic supplementary information (ESI) in the manuscript

High-Pressure Synthesis and Properties of Solid Solutions Between BiMnO₃ and BiScO₃

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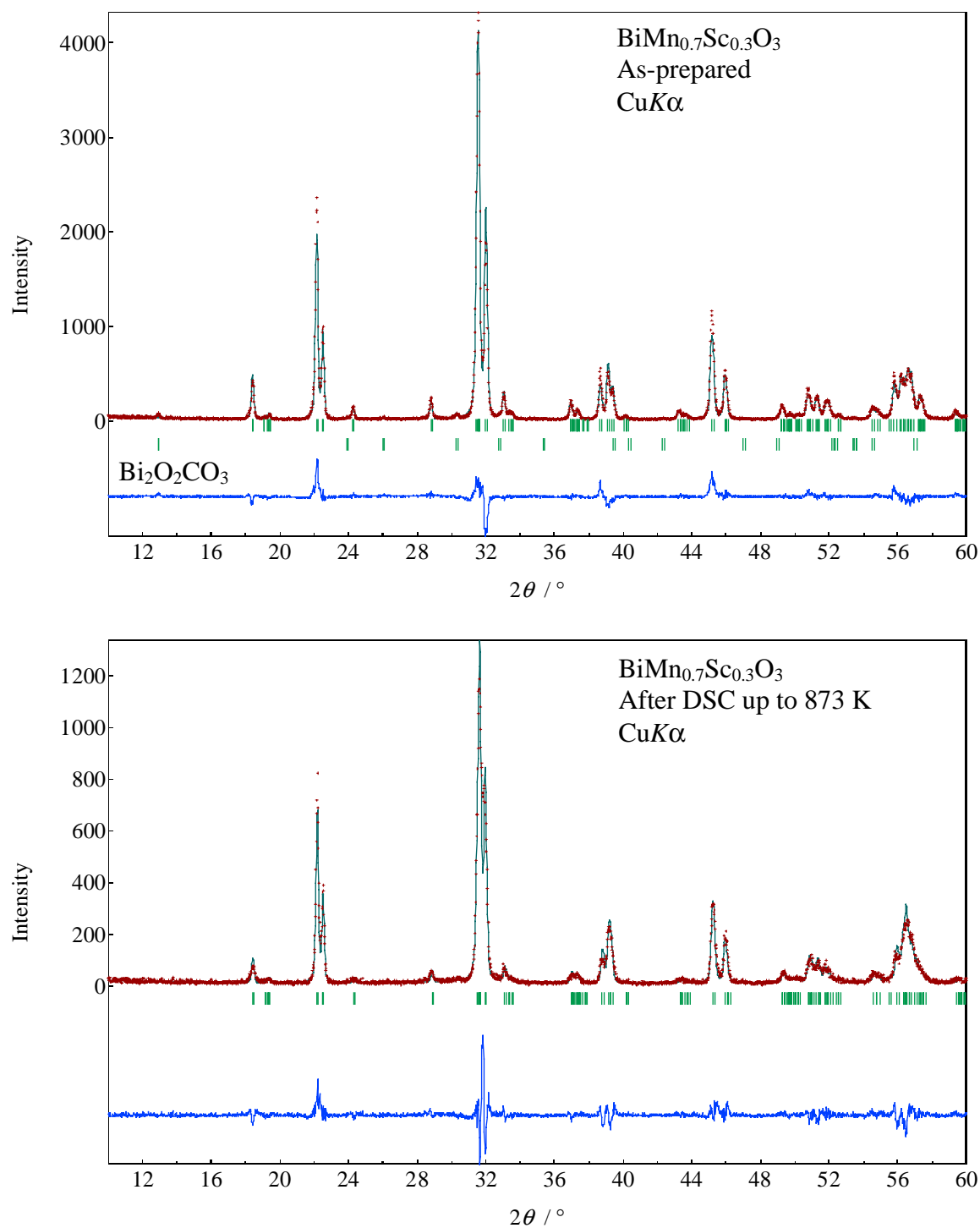


Fig. S1a. XRD patterns of the as-prepared $\text{BiMn}_{0.7}\text{Sc}_{0.3}\text{O}_3$ and after the DSC experiment up to 873 K.

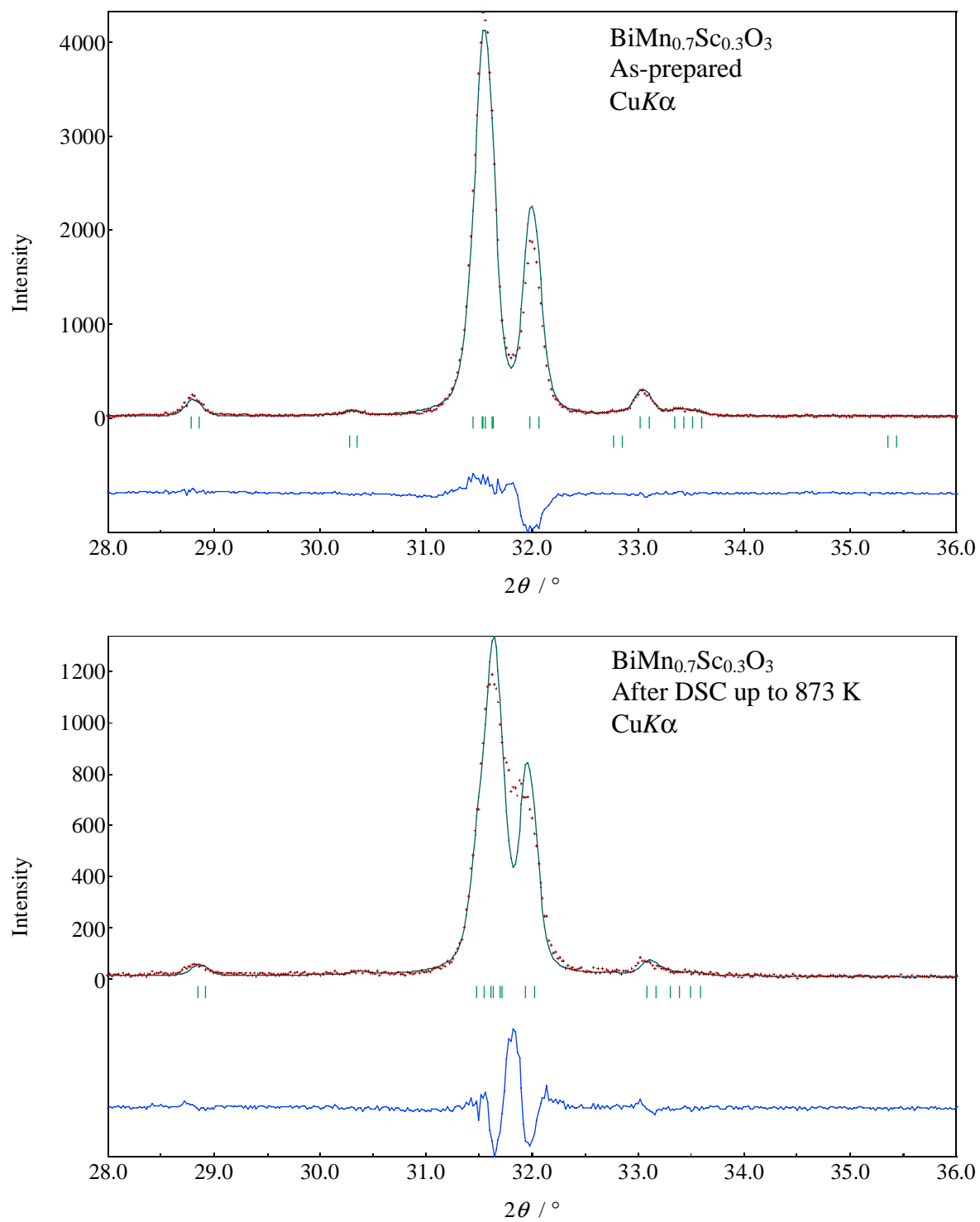


Fig. S1b. Fragments of the XRD patterns of the as-prepared $\text{BiMn}_{0.7}\text{Sc}_{0.3}\text{O}_3$ and after the DSC experiment up to 873 K.

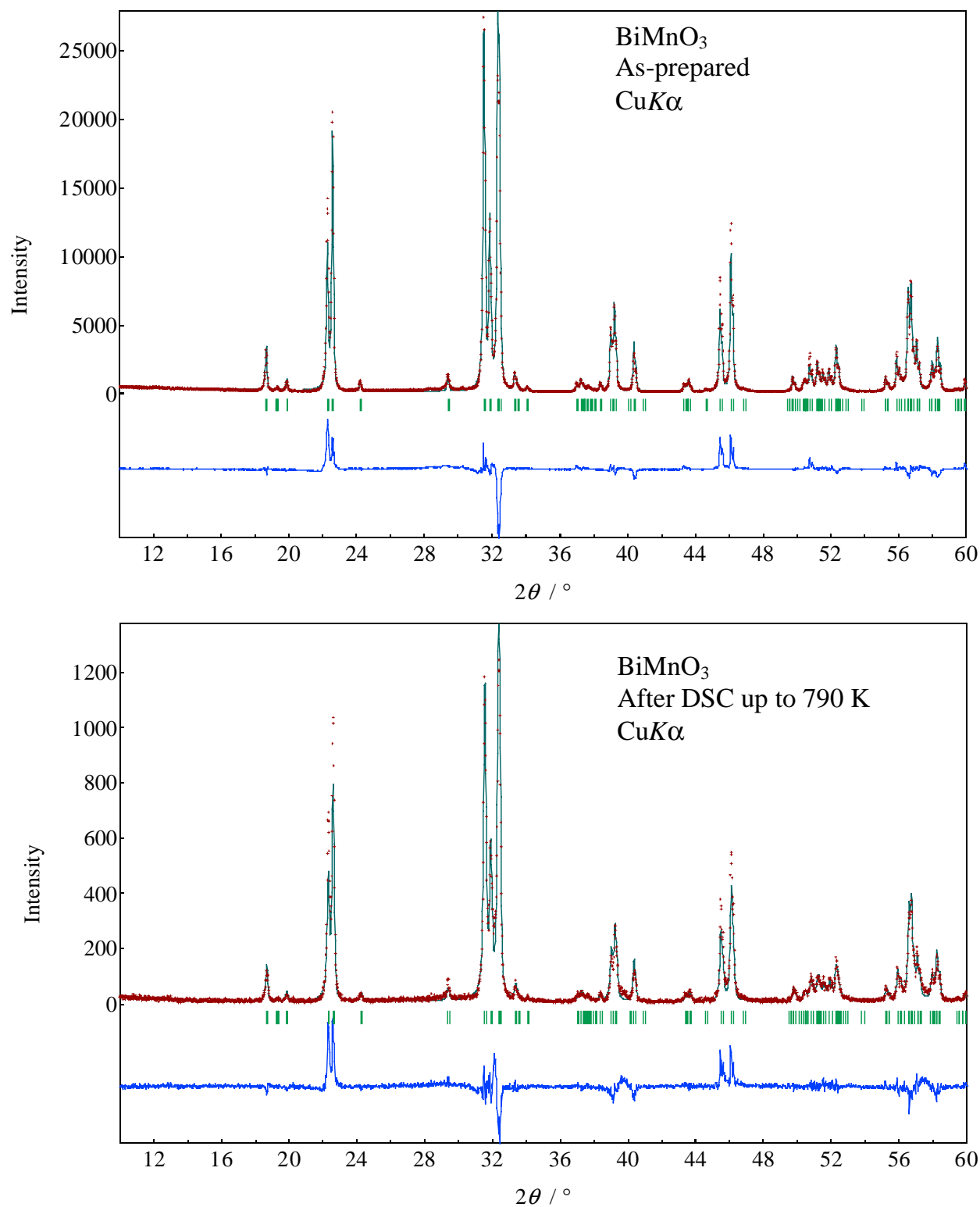


Fig. S1c. Fragments of the XRD patterns of the as-prepared BiMnO_3 and after the DSC experiment up to 790 K.

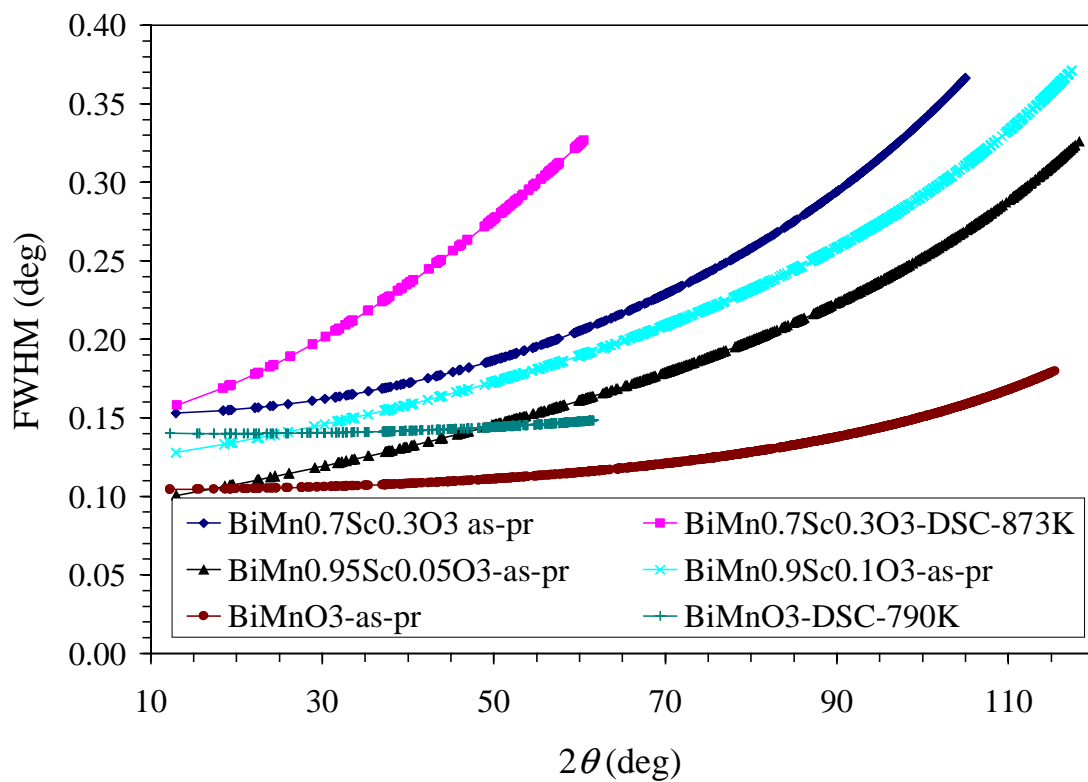


Fig. S1d. Full-width at half maximum vs 2θ in the as-prepared (as-pr) BiMnO₃, BiMn_{0.95}Sc_{0.05}O₃, BiMn_{0.9}Sc_{0.1}O₃, and BiMn_{0.7}Sc_{0.3}O₃, BiMnO₃ after DSC up to 790 K, and BiMn_{0.7}Sc_{0.3}O₃ after DSC up to 873 K.

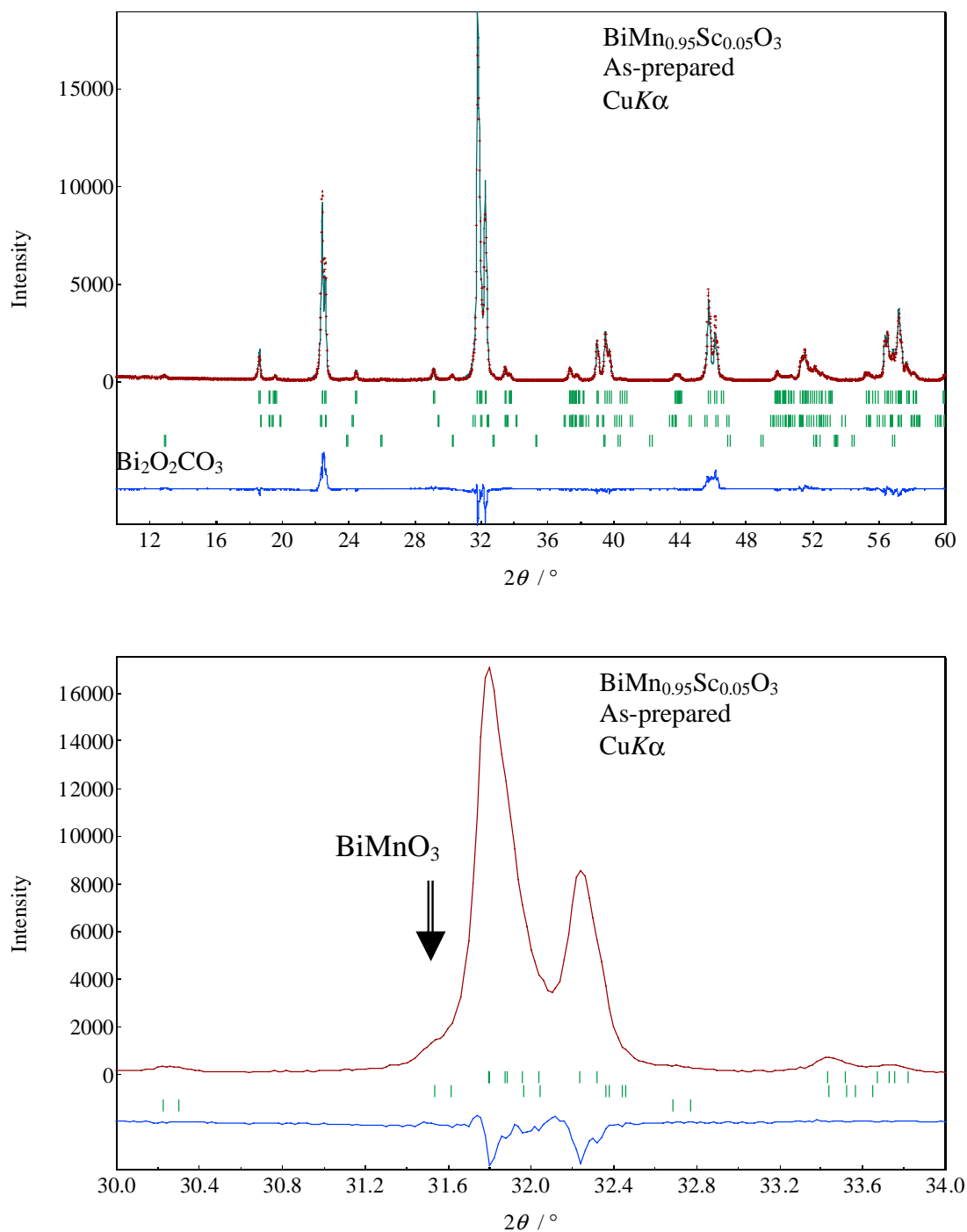


Fig. S2a. Fragments of the XRD patterns of the as-prepared $\text{BiMn}_{0.95}\text{Sc}_{0.05}\text{O}_3$. The brown lines and dots show the experimental curves, the green lines are the calculated curves, and the blue lines are the difference curves. The green tick marks show the positions of possible Bragg reflections.

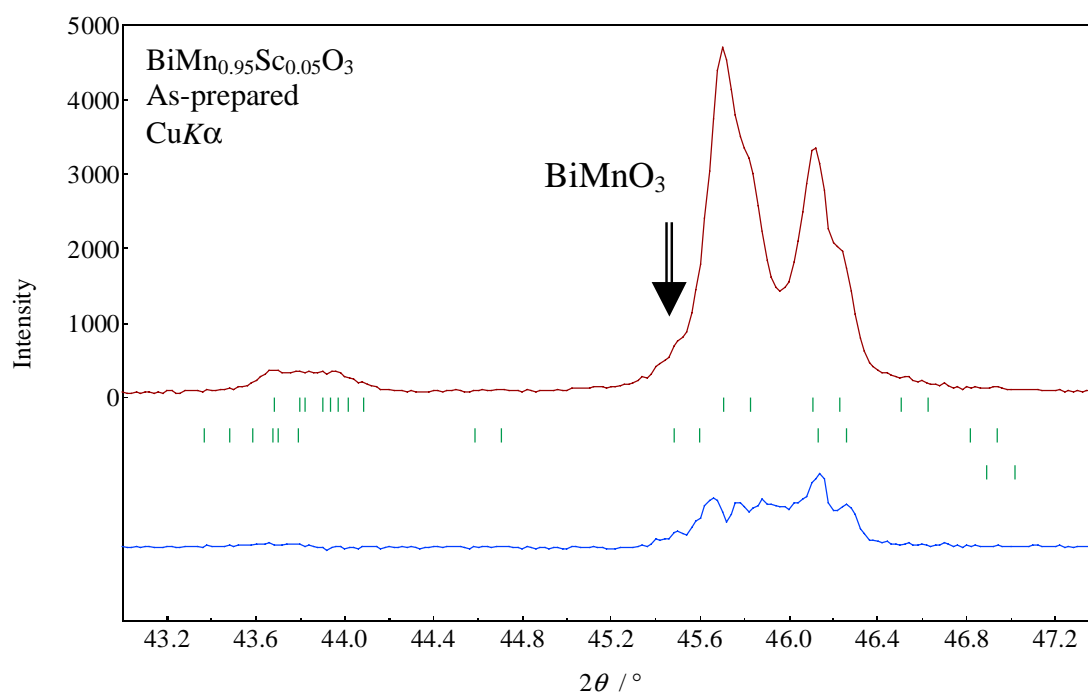


Fig. S2b. Fragments of the XRD patterns of the as-prepared $\text{BiMn}_{0.95}\text{Sc}_{0.05}\text{O}_3$. The brown line shows the experimental curve, the green line is the calculated curve, and the blue line is the difference curve. The green tick marks show the positions of possible Bragg reflections.

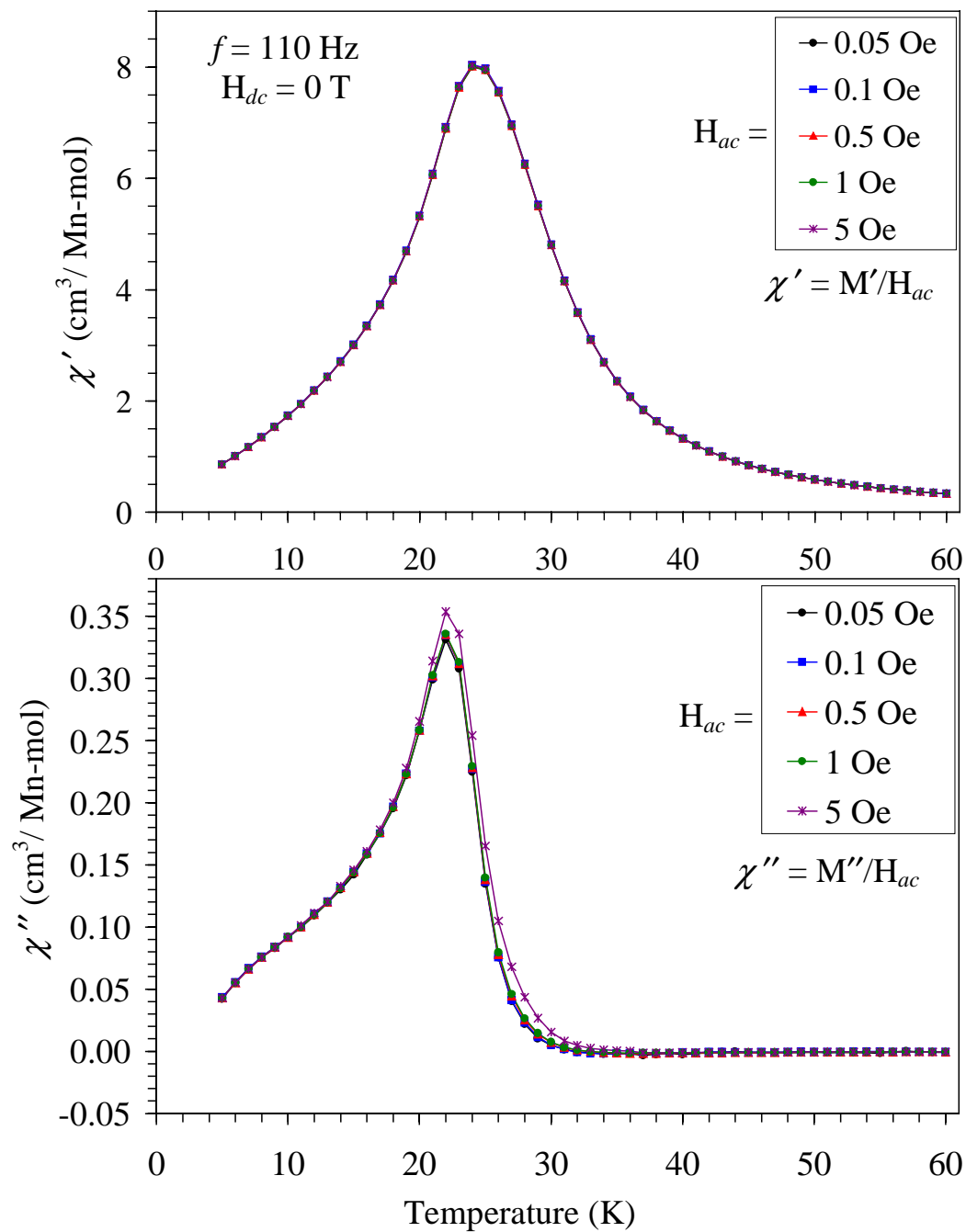


Fig. S3. The ac susceptibilities of BiMn_{0.6}Sc_{0.4}O₃ measured at zero static magnetic field, one frequency of 110 Hz, and different applied oscillating magnetic fields (H_{ac}) from 5 to 60 K (on heating).

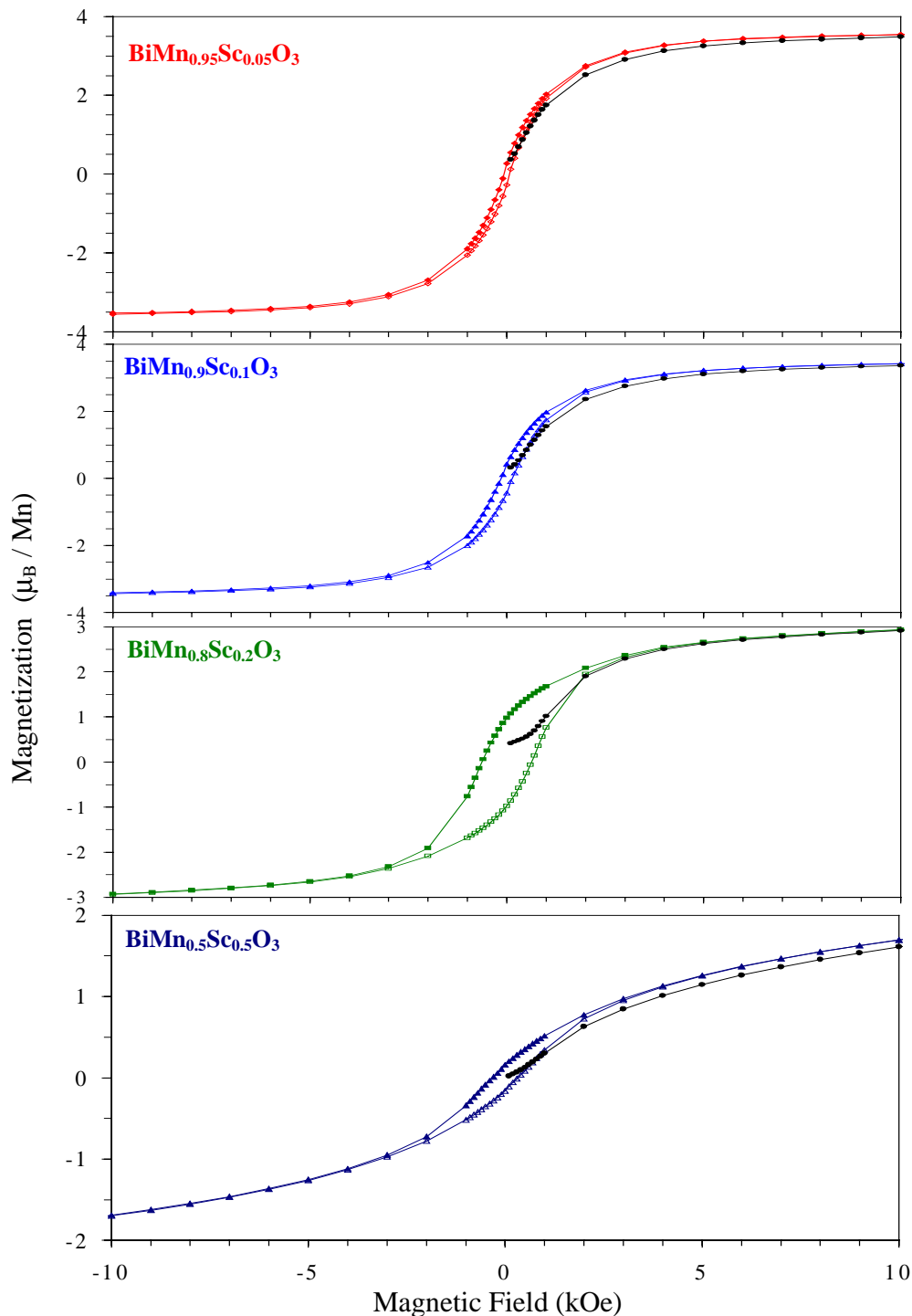


Fig. S4. The enlarged isothermal magnetization curves between -10 and 10 kOe at 5 K in $\text{BiMn}_{1-x}\text{Sc}_x\text{O}_3$. The first magnetization curves from 0 to 50 kOe are given by black circles, the curves from 50 to -50 kOe are given by filled symbols, and the curves from -50 to 50 kOe are given by empty symbols. Note that the first magnetization curve is different (outside of the hysteresis loops) than other curves. This behavior of magnetization curves was observed in other manganites exhibiting spin-glass-like features (Karmakar, S.; Taran, S.; Chaudhuri, B. K.; Sakata, H.; Sun, C. P.; Huang, C. L.; Yang, H. D. *Phys. Rev. B* **2006**, 74, 104407 and references therein).

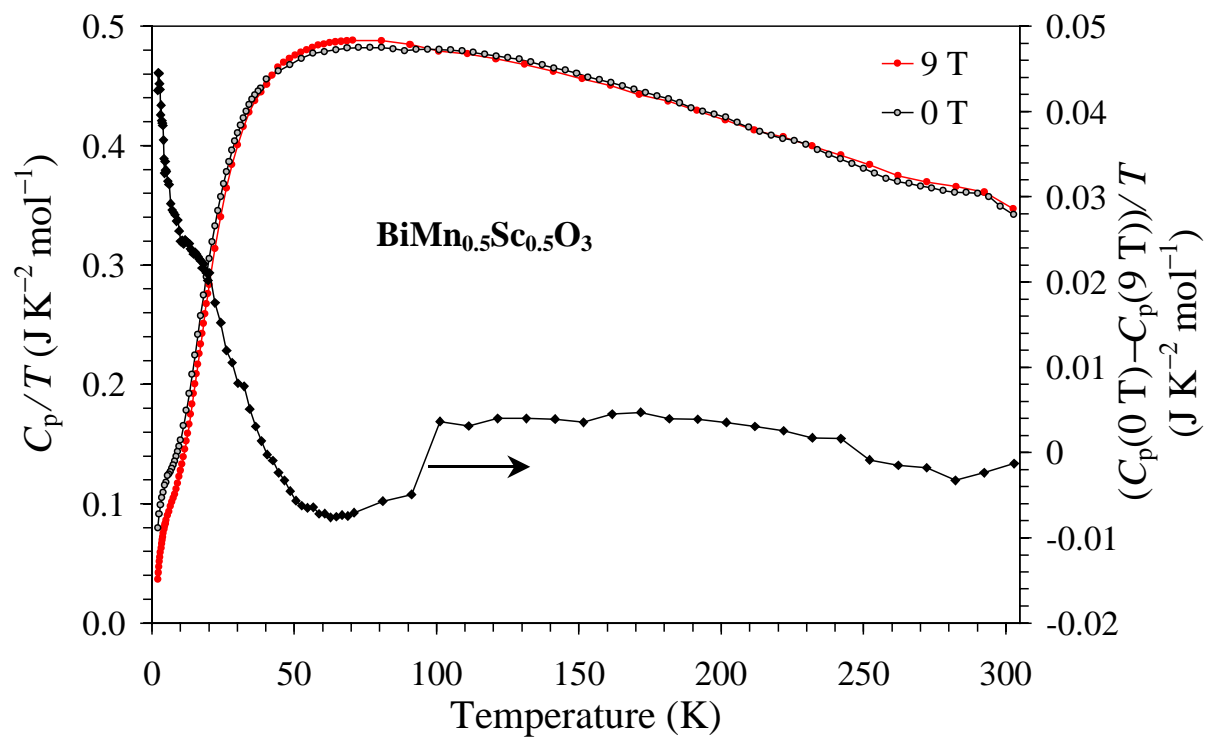


Fig. S5. The C_p/T vs T curves between 2 and 300 K for $\text{BiMn}_{0.5}\text{Sc}_{0.5}\text{O}_3$ at 0 and 9 T. The secondary axis gives the $(C_p(0 \text{ T}) - C_p(9 \text{ T}))/T$ vs T curve.

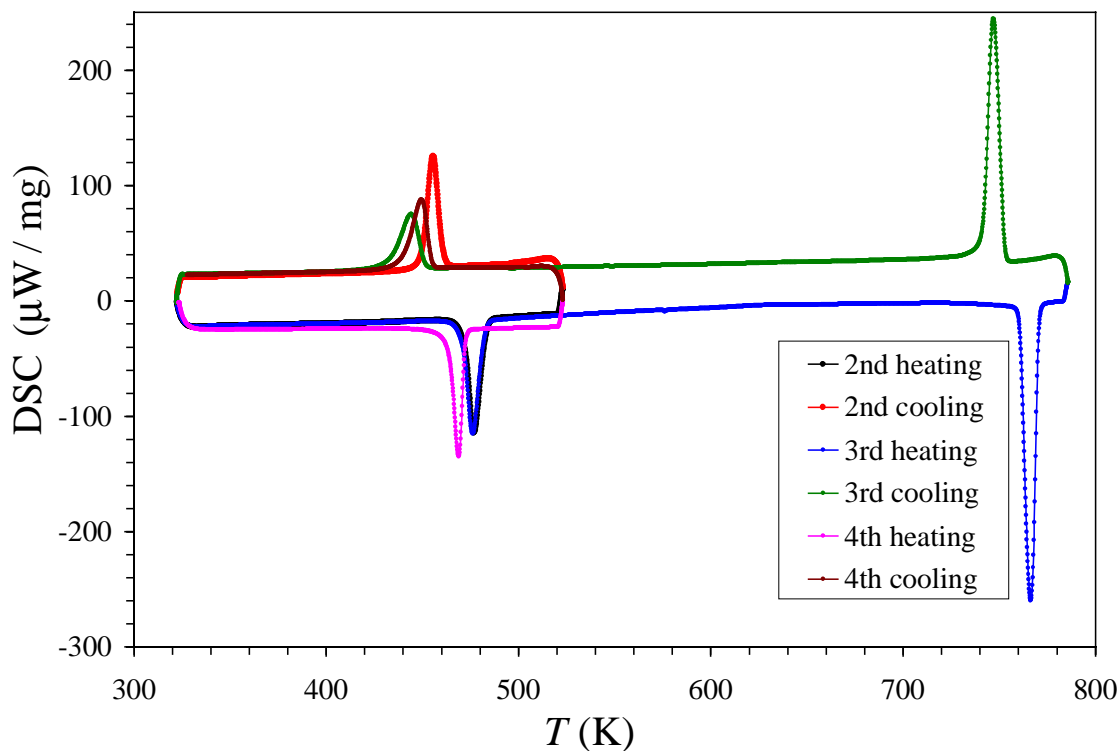


Fig. S6. Details of the DSC curves of BiMnO_3 . The first (not shown) and second cycles are between 300 and 520 K. During the third cycle, the BiMnO_3 sample was heated up to 785-790 K. The forth, fifth (not shown), and sixth (not shown) cycles are between 300 and 520 K. There was no difference between the 4th, 5th, and 6th cycles. However, note the difference between the 2nd and 4th cycles. The difference may be explained by the tiny oxygen stoichiometry changes during the heating up to 790 K in air.

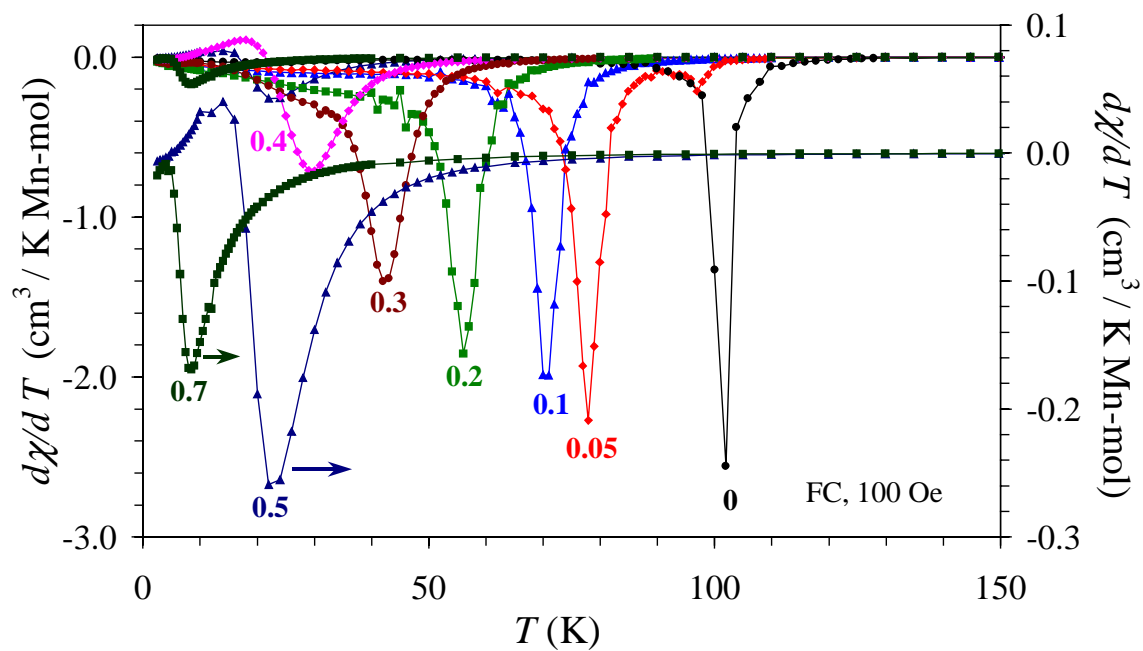


Fig. S7. The FC $d\chi/dT$ vs T curves of $\text{BiMn}_{1-x}\text{Sc}_x\text{O}_3$. The secondary axis gives the enlarged curves for $x = 0.5$ and 0.7 .