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Emerging Magneto-Electric Properties in Orthorhombic $\text{Nd}_{1-x}\text{Y}_x\text{MnO}_3$ SVEN LANDSGESELL, KAREL PROKES, Helmholtz-Zentrum Berlin, Germany, BACHIR OULADDIAF, Institute Laue-Langevin, France, BASTIAN KLEMKE, DIMITRI ARGYRIOU, Helmholtz-Zentrum Berlin, Germany — We have synthesized single crystals of the solid solution $\text{Nd}_{1-x}\text{Y}_x\text{MnO}_3$ and we have investigated them using dielectric constant, ferroelectric polarization and single crystal neutron diffraction. We find that with increasing x the A-type magnetic ordering of Mn^{3+} ions is suppressed and for $x > 0.45$ a cycloidal magnetic order is found. For these compositions we find an emergent ferroelectric polarization along the c -axis. In the region of $0.35 < x < 0.45$ we find a complex co-existence of collinear A-type and incommensurate magnetism. This suggests that the transition from collinear to cycloidal (multiferroic) ground state with x is first order like.

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