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Magneto-electric coupling in hexagonal RMnO3 THOMAS PALSTRA, AGUNG NUGROHO, GWILHERM NENERT, UMUT ADEM, Rijksuniversiteit Groningen, YANG REN, Argonne National Laboratory, SOLID STATE CHEMISTRY LABORATORY, MATERIALS SCIENCE CENTER COLLABORATION, BESSRC CAT COLLABORATION — The hexagonal RMnO3 exhibit much higher magnetic and ferroelectric ordering temperatures, T(N) = 75 K and T(FE) = 930 K than the orthorhombic RMnO3 with an incommensurate antiferromagnetic ordering below 40K. However, the coupling between the magnetic and electric order is very weak. We have investigated the origin of the electric order by high temperature x-ray diffraction using high energy synchrotron radiation. We discuss the change in symmetry at the ferro-electric ordering temperature, which is a few hundred degrees below the tripling of the unit cell. Additionally, we have used magneto-capacitance measurements to study the coupling between magnetic and electric order. We report results on hexagonal RMnO3 and also substitutions on the rare earth- and the Mn-site.

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