

Abstract Submitted
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Phase Diagram of Floating Zone grown Multiferroic SmMnO_3 and Mn site substitutions.¹ SOMADITYA SEN, LARRY BUROKER, YING ZOU, SHISHIR RAY, MARK WILIAMSEN, PRASENJIT GUPTASARMA², Physics Dept., Univ. of Wisconsin, 1900 E Kenwood Blvd., Milwaukee, WI 53211, USA — SmMnO_3 , a member of a Rare Earth manganite series of current interest due to the observation of multiferroic magnetoelectricity, anisotropy in magnetic properties and an unconventional “compensation temperature” $\sim 8\text{K}$ possibly arising from antiparallel Sm–Mn exchange interactions. Of particular interest here is charge disproportionation of Mn, competing magnetic and orbital order, and the proximity to a metal-insulator transition [1]. We report detailed studies of a high-quality single crystal of SmMnO_3 grown from a floating zone, and the result of Mn-site substitution by elements with multiple valence states and octahedral coordination. We discuss magnetization, crystal structure refinement, and dielectric spectroscopy in $0.3 < T < 300$ Kelvin and $0 < H < 9$ Tesla. [1] Kurbakov, et.al., A, Physics of the Solid State, 46 -9 (2004) 1704

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