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Mapping chemical/structural order in double perovskite Sr2-xGdxMnTiO6 by atomic resolution electron microscopy[1] INMACULADA ALVAREZ, NEVEN BISKUP[2], MARIA LOPEZ, U. Complutense Madrid, Spain, MAR GARCIA-HERNANDEZ, ICMM, CSIC, Spain, LUISA VEIGA, U. Complutense Madrid, Spain, MARIA VARELA[3], Oak Ridge National Laboratory, UCM COLLABORATION, ORNL COLLABORATION, CSIC COLLABORATION — We report on visualizing the chemical and structural order of double perovskite Sr2-xGdxMnTiO6. The antisite disorder of Mn and Ti is detected even at atomic scale at all x, resulting in Mn-rich and Ti-rich regions. For x ?0.75, the majority of manganese ions are in Mn3+ state and are centered in Jahn-Teller distorted MnO6octahedra. The Fourier transformation of atomic resolution images along the [110] zone axis reveals a superstructure that corresponds to the tilting of oxygen octahedra and that doubles the unit cell along [001]c. This superstructure is spatially inhomogeneous and coincides with the regions where B-site ion (Mn/Ti) is displaced along the [110] direction. We discuss these findings in the frame of possible local ferroelectricity and in the light of strong electroresistance observed in Sr1.25Gd0.75MnTiO6.

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