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## Perturbed Angular Correlations Investigations on Magneto-Electric Manganites

The perturbed angular correlation (PAC) technique was applied to study the rare-earth (R) local environment in a series of rare-earth manganites ( $\text{RMnO}_3$ , R=Nd, Sm, Eu, Gd, Ho, Y, Er, Yb, and Lu). By measuring the electric field gradients (EFG) at the rare-earth site, the charge distribution of the R neighborhood was fully characterized. The EFG were studied as a function of the rare earth ionic radius (RI) and the results were interpreted with the help of ab-initio calculations using the density functional full potential augmented plane wave (FLAPW) method. The experimental and simulated results show two different EFG distributions for all compounds. Different local environments were observed depending in the crystalline structure (orthorhombic or hexagonal) being only one directly attributed to the rare-earth crystalline site. The existence of intrinsic nanoscale electronic inhomogeneities scenario associated to subtle distortions around the R-O polyhedra is discussed.

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yes

**Please specify whether you would prefer an oral or poster contribution.**

oral

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**Track Classification:** Magnetism and Magnetic materials - Bulk and thin layers