



Proton NMR study of molecular dynamics and phase transitions in $[\text{NH}_2(\text{CH}_3)_2]_3\text{Sb}_2\text{Cl}_9$.

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Tris(dimethylammonium) nonachlorodiantimonate (III), $[\text{NH}_2(\text{CH}_3)_2]_3\text{Sb}_2\text{Cl}_9$ (DMACA) crystallizes at room temperature in the monoclinic system, space group $P2_1/a$. From dielectric and pyroelectric studies it was found that Dh4ACA undergoes a ferroelectric phase transition at 242 K, and below T_c a polar symmetry m is expected. Dielectric dispersion studies in the microwave frequency region revealed that DMACA is a simple example of a ferroelectric crystal with an "order-disorder" mechanism for the phase transition of second order type, where polarization is due to the 180° reorientation of the dimethylammonium cations. In order to examine the dynamical properties of the dimethylammonium cation in this material we measured the spin-lattice relaxation times T_1 and $T_{1\rho}$ of protons over a wide range of temperatures. The relation between NMR correlation times, obtained from an analysis of measured NMR relaxation times $T_{1\rho}$ and the microscopic relaxation time obtained from dielectric dispersion studies, is discussed.

Adres publiczny

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