Author(s): Tritt-Goc, J; Pislewski, N; Pawlowski, A; Goc, R
Title: Molecular motions in solid (CH3)(2)NH2H2PO4 studied by proton nuclear magnetic resonance
Abstract: The second moments of the proton magnetic resonance lines and relaxation times in the laboratory frame $T^{-1}$, in polycrystalline (CH3)(2)NH2H2PO4 were measured over the temperature range 88-360 K. The proton spin-lattice relaxation measurements reveal two minima due to the C-3 reorientations of the methyl groups of (CH3)(2)NH2 cations. Analysis of the relaxation data yields the activation energy barriers of 13.4 kJ mol(-1) and 7.6 kJ mol(-1) respectively. The relative large difference in the activation energies is assumed to be attributed to the different hydrogen bonding between the two types of (CH3)(2)NH2 cations and the surrounding nearest neighbour oxygens. Good agreement was obtained between calculated and measured second moment. NMR data confirm the phase transition at $T_c = 259$ K known from different studies. (C) 1998 Elsevier Science Ltd. All rights reserved.
Addresses: Polish Acad Sci, Inst Mol Phys, Poznan, Poland.
Reprint Address: Tritt-Goc, J, Polish Acad Sci, Inst Mol Phys, Poznan, Poland
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