

Ionic Dynamics in the Ionic Plastic Crystal NH_4NO_2

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Using ^1H NMR T_1 and $T_{1\rho}$ measurements self-diffusion of NH_4^+ with an activation energy of $(80 \pm 10) \text{ kJ mol}^{-1}$ was detected in the highest-temperature phase of NH_4NO_2 crystals. Narrow ^{15}N NMR spectra of $^{15}\text{NH}_4\text{NO}_2$ and $\text{NH}_4^{15}\text{NO}_2$ revealed that the isotropic reorientation rates of NH_4^+ and NO_2^- ions are rapid in the high-temperature solid phase. These results suggest that the high-temperature phase of NH_4NO_2 crystals forms an ionic plastic phase.

Key words: Plastic Crystal; ^1H NMR; ^{15}N NMR.