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NMR study of phase transition in new ferroelectric crystal—$(C_5H_5NH)_5Bi_2Br_{11}$.

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Streszczenie

A T_1 minimum at 216 K for Larmor frequency 90 MHz has been detected and for this minimum no analogous T_1 minimum according to the known quadratic dependence of the Larmor frequency 25 MHz is found. The analysis leads to the conclusion that this T_1 minimum is a result of the relaxation of protons via quadrupole nuclei. The Kimmich theoretical treatment of ^1H NMR experiments exhibiting the existence of this phenomenon in the case of relaxation of protons of piridinium cations in $(C_5H_5NH)_5Bi_2Br_{11}$ and the estimated averaged quadrupole frequency of interacting quadrupole nuclei has been estimated to be around 71 MHz. Below the phase transition at 118 K a wide symmetric spin-lattice relaxation minimum at 25 MHz is detected and a model of small angle libration of the pyridinium cation has been applied to explain the observed T_1 relaxation time minimum.

Słowa kluczowe

pyridinium cation, relaxation time, second moment of NMR line

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