

Pressure Dependence of the Chlorine NQR in Three Solid Chloro Anisoles

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The ^{35}Cl Nuclear Quadrupole Resonance (NQR) frequency (ν_Q) and spin lattice relaxation time (T_1) in the three anisoles 2,3,4-trichloroanisole, 2,3,6-trichloroanisole and 3,5-dichloroanisole have been measured as a function of pressure upto 5.1 kbar at 300 K, and the data have been analysed to estimate the temperature coefficients of the NQR frequency at constant volume. All the three compounds show a non linear variation of the NQR frequency with pressure, the rate of which is positive and decreases with increasing pressure. In case of 3,5-dichloroanisole the value becomes negative in the higher range of pressure studied. The spin lattice relaxation time T_1 in all the three compounds shows a weak dependence on pressure, indicating that the relaxation is mainly due to the torsional motions.

Key words: NQR; ^{35}Cl ; Frequency; Spin-lattice Relaxation Time; Torsional Motion; Pressure and Temperature Dependence; 3,5-dichloroanisole; 2,3,4-trichloroanisole; 2,3,6-trichloroanisole.