Stable crystalline 2-chlorothiophene has two glass transitions at 164 and 186 K. $^{35}$Cl NQR measurements were carried out between 77 and 200 K. Two NQR signals with full widths of about 100 kHz at half maximum were observed in this temperature range. The spin-lattice relaxation times $T_1$ were measured at the two peak frequencies. The activation energy $\Delta_{ai}$ obtained from the results of the $T_1$ measurements showed a fairly good agreement with those estimated from calorimetric measurements.

Key words: NQR; 2-chlorothiophene; Glassy Crystal; Glass Transition.