# NMR Studies on Dynamics of Water Intercalated in Clay Minerals

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The dynamics of water molecules intercalated in $D_2O$ saturated synthetic and natural smectites, and a synthetic Na-fluormica were studied by measurements of solid state $^2H$ NMR spectra and spin-lattice relaxation times at 150 – 370 K. The obtained results could be explained by the 2-site flip, the $C_2$ rotation and the isotropic rotation of the $D_2O$ molecules in smectites. In fluormica, the isotropic motion was undetectable, but the axial rotation of the hydration sphere as a whole was observed. The activation energies and correlation times of the $C_2$ rotation were almost independent of the interlayer cations but depended on the character of clay-layers.

*Key words:* Clay Minerals; NMR; Intercalated Water; $T_1$.