



Electric Dipole Model for Montmorillonite Clay Intercalation

By Lalla Btissam Drissi

LAP Lambert Acad. Publ. Jul 2011, 2011. Taschenbuch. Condition: Neu. Neuware - This book is devoted to studying the intercalation phase of Montmorillonite nano clay modification and the ions interacting dynamics within the interlayer gallery space of lamellar minerals. This goal is reached in two main steps, firstly we explore qualitatively the nano world of ions and their interactions by combining ideas and results from the three following fields: ionic and molecular chemistry, non relativistic quantum mechanics at nano scale, and classical electromagnetism. Then we construct a toy model using electric dipoles to make some rough theoretical predictions and numerical estimations which may be used to approach empiric results obtained by experimental methods such as X rays diffraction, scanning and tunneling microscopies. The determination of the explicit expression of the hamiltonian leads to compute the exact quantum spectrum of the interacting molecules at the leading order of perturbation. We show that the Van der Waals molecular potential is quantized as $(-n-1)+O(\epsilon)$ with $\epsilon = (r/r_0)$, the pulsation of the IR molecules vibration and r the intermolecule distance. 72 pp. English.



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