

## Interaction of clay minerals with saline solutions and organic molecules Progress Report- Stanislav Jelavic

The idea is to model natural systems in which the interface between clay minerals and organic/inorganic solutions is crucial for understanding the ruling mechanism(s) of interaction on macroscopic scale. That approach requires obtaining surface data from natural clay minerals, and obtaining pure synthetic analogues with desired chemical and physical properties. In the first 6 months work has been focused on optimising the procedure for clay mineral synthesis, investigating possibilities of depositing clay mineral monolayer on quartz wafers, and studying standard kaolinite sample (KGa-1b) with cryo-XPS technique which allows investigation of real solid-solution interface in UHV conditions.

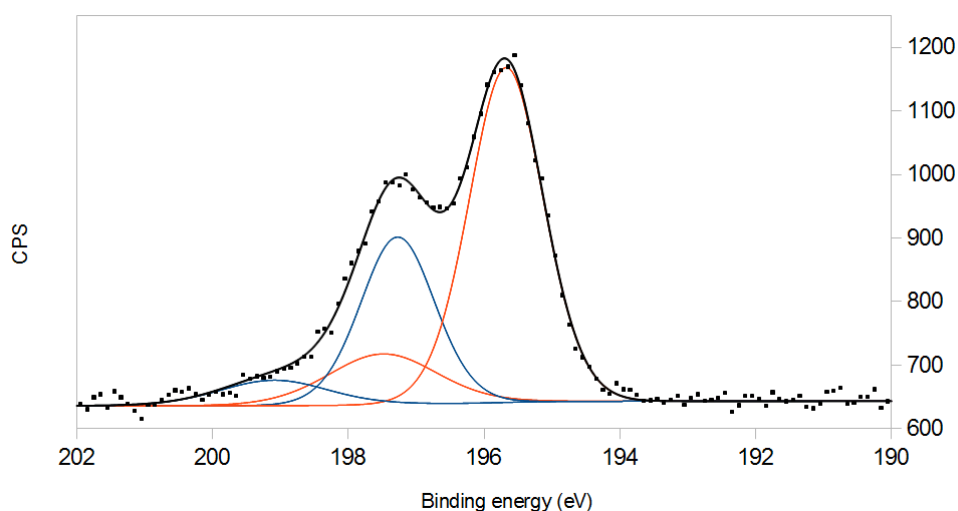


Illustration 1: Cl 2p spectra of fast frozen paste (-170 °C) of standard kaolinite Kga1-b in 50mM MgCl<sub>2</sub> solution. The dots indicate the original data and the black continuous line indicates resultant fit of the Gaussians used to fit the Cl 2p band. Two doublets (red and blue lines) represent two chemical environments of chlorine.

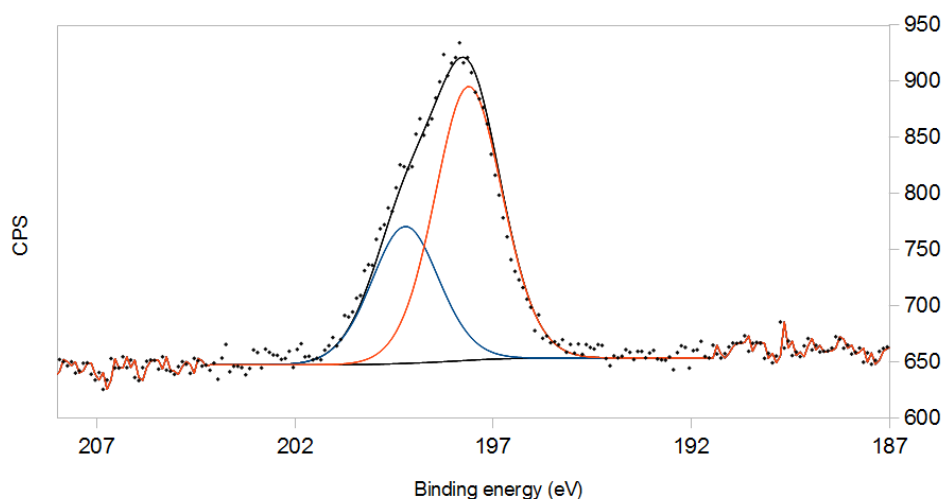


Illustration 2: Cl 2p spectra of dry kaolinite, Kga1-b, powder at room temperature. The dots indicate the original data and the black continuous line indicates resultant fit of the Gaussians used to fit the Cl 2p band. The doublet (red and blue line) represent just one chemical environment of chlorine.