Expert registry

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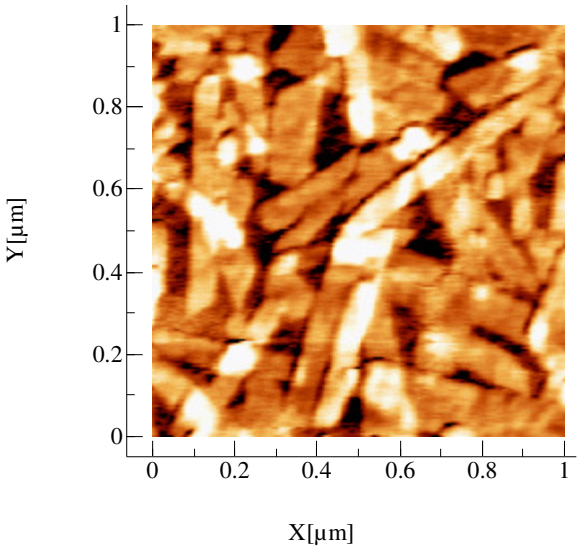
My Research Interest:

At present the main research interest of our group lies on the fabrication and characterization nano-dimensional organo-clay hybrid films. Langmuir-Blodgett (LB), Layer-by-Layer Self Assembled techniques are mainly used to prepared such films.

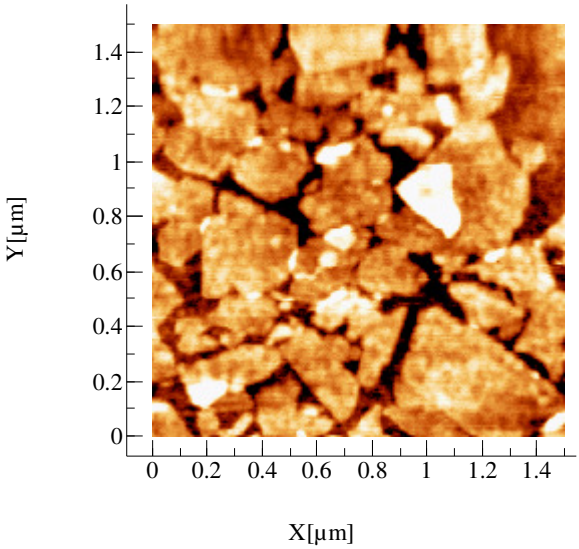
Ultrathin ordered organic / clay films with a thickness of few nanometers show considerable technological potential as a novel class of materials. Organo-clay composites are now being extensively investigated in material science. Thin films of clay minerals have been studied in application to modified electrodes, sensors, photochromic devices, nonlinear optical devices, and so on. One of the outstanding properties of the clay is the simultaneous incorporation of polar or ionic molecules into the interlamellar spaces (intercalation) resulting in hybrid materials. The property of intercalation makes it easy to prepare the composite materials. If the orientation of the incorporated molecules can be controlled, the clay composite materials would be applicable to devices for current rectifying, nonlinear optics, and one-way energy transfer etc.

Controlling the structure of materials at the nanometer scale is of fundamental importance for tailoring the materials' properties. Due to their tailor- made electrical and optical properties they are promising candidates for a large number of technological applications including optical and micro-electronical devices, sensors and surface modifications etc.

Keywords:
Nano-dimensional Clay platelets, Organo-clay hybrid films, Langmuir-Blodgett films, Layer-by-Layer Self Assembled films.



Atomic Force Microscopy image of nanodimensional Hectrite onto Langmuir-Blodgett Films prepared in our Laboratory.



Atomic Force Microscopy image of nanodimensional Wyoming onto Langmuir-Blodgett Films prepared in our Laboratory.

* For more about our present research activities please visit our websites.