

Specialized iNANO lecture

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Title: Hierarchical construction of self-assembled two-dimensional molecular architectures observed by using STM

Time: Friday, 29 August 2008, 12.15 p.m.

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Abstract: The progress can be observed in constructing functional low dimensional molecular nanostructures through self-assembling processes of a series hierarchical building units, from basic building units to multicomponent molecular units, focusing especially on the driving mechanisms and designing principles. This practice requires fine-tuning of the thermodynamic equilibrium of the molecular assemblies, with various types of weak interactions. In order to gain knowledge on controlling the assembling characteristics, various approaches have been explored, including molecular structural designs, solvent induced polymorphism, and substrate effects, etc. The assembled structures could lead to the possibility of artificially designing of molecular nanostructures, possessing rich physical and chemical functions. Notable examples of the assembled low dimensional structures include two dimensional nanoporous networks for guest molecule inclusions, electric and optical sensitive molecular aggregates etc. We will present a series of molecular nanostructures starting from simple structured building units to hybrid molecular structures in which the distribution of heterogeneous molecular species could be controlled at the level of single molecules. Composite molecular assemblies based on hybrid building units could bring new and rich insight on utilizing weak intermolecular interactions for novel material properties and molecular devices.

