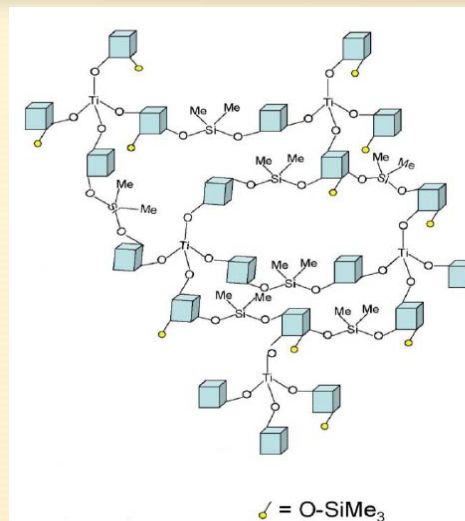


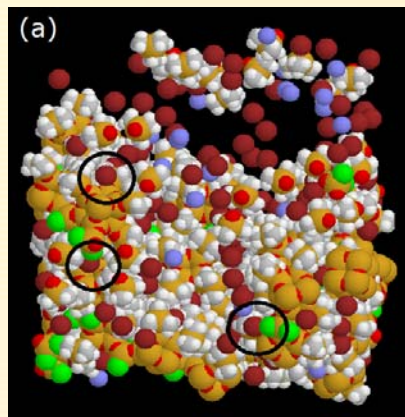
Silsequioxane Matrices

Hierarchical Structure

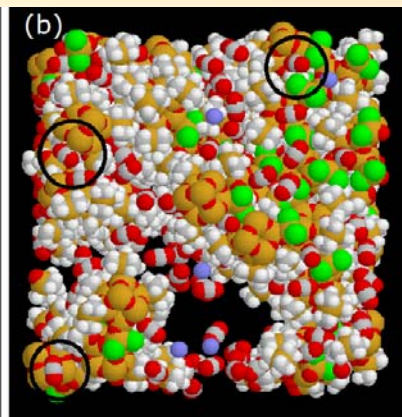
- Mesoscale
 - Amorphous
 - Microporous/mesoporous pore network
- Nanoscale
 - Targeted Single Type of Catalytic Site
 - Atomically Isolated Metal Centers



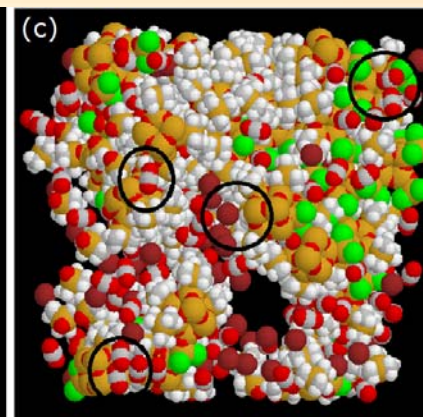
CH_4/H_2



CO_2/H_2



CO_2/CH_4



Snap shots for gas mixture adsorption (adsorbed CH_4 molecules-maroon, adsorbed H_2 molecules-blue, Cl-green, Ti-dark grey, Si-yellow/orange, O-red, C-light gray, H- white)