## Abstract Submitted for the MAR07 Meeting of The American Physical Society

Interfacial interactions of alkane and ether molecules tethered to mesoporous MCM-41 using quasielastic neutron scattering EDWARD KINTZEL, KENNETH HERWIG, MICHELLE KIDDER, PHILLIP BRITT, A.C. BUCHANAN, III, Oak Ridge National Laboratory, ALAN CHAF-FEE, Monash University — The motion of 1,3-diphenylpropane (DPP,  $\equiv$ Si-O-C<sub>6</sub>H<sub>4</sub>(CH<sub>2</sub>)<sub>3</sub>C<sub>6</sub>H<sub>5</sub>) and phenethyl phenyl ether (PPE,  $\equiv$ Si-O-C<sub>6</sub>H<sub>4</sub>(CH<sub>2</sub>)<sub>2</sub>OC<sub>6</sub>H<sub>5</sub>) and  $\equiv$ Si-O-C<sub>6</sub>H<sub>4</sub>O(CH<sub>2</sub>)<sub>2</sub>C<sub>6</sub>H<sub>5</sub>) tethered to the interior pore surface of MCM-41 silica was investigated using quasielastic neutron scattering. Measurements of the elastic intensity were carried out in the temperature range 50-380 K to probe the changes in dynamics between DPP and PPE as well as investigate the role of ether oxygen location in the PPE isomers. Full quasielastic scans over an energy range of  $\pm$  17 µeV were performed at temperatures of 240 K, 280 K, and 320 K. Analysis of the quasielastic data elicits the role that temperature has on the motion of these molecules tethered within the pores. The two PPE isomers exhibit much different dynamics illustrating the importance of hydrogen bonding to the silica surface.

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