

Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Size Dependant Nucleation of Confined 2-Decanol

SAMUEL AMANUEL, HILLARY BAUER, ALEXANDREA SAFIQ, JARGALSAIKHAN DULMAA, AMER KHRAISAT, Department of Physics and Astronomy, Union College, Schenectady, NY 12308, DEPARTMENT OF PHYSICS AND ASTRONOMY, UNION COLLEGE, SCHENECTADY, NY 12308 TEAM — We have studied freezing and melting of physically confined 2-decanol in nano porous silica using a Differential Scanning Calorimeter (DSC). Both melting and freezing temperatures are suppressed for physically confined 2-decanol. In the presence of bulk, freezing of the confined system is triggered by freezing of the bulk where nucleation is heterogeneous. There is, however, a cut-off size between 100 nm and 300 nm where phase transition is no longer initiated through heterogeneous nucleation. Below the cutoff size, nucleation is homogeneous where the confined system has to be supercooled further before any phase transition can occur. Melting of the confined system, on the other hand, is not influenced by the presence or absence of the bulk.

Samuel Amanuel
Department of Physics and Astronomy, Union College

Date submitted: 28 Nov 2011

Electronic form version 1.4