

Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Lattice gas transition of xenon on a fullerite surface¹ SILVINA GATICA, Department of Physics, Howard University, MILTON COLE, Department of Physics, Pennsylvania State University — We study a lattice-gas transition of xenon atoms on a honeycomb geometry. It is found from experiments and Monte Carlo simulations that this configuration occurs for xenon adsorbed on a substrate consisting on an array of C60 molecules on Ag(111). At very low coverage the atoms occupy strong-binding 3-fold hollow sites between C60 molecules. In this way, they form a commensurate lattice with nearest neighbor distance 0.58 nm. Using a Lennard Jones model for the Xe-Xe potential, the nearest neighbor interaction strength is $U=96.7$ K. Using the Ising model we estimate the transition critical temperature to be $T_c = 36$ K. We compare with our results from Monte Carlo simulations based on more realistic interactions.

¹Research supported by NSF. This research used resources of the National Energy Research Scientific Computing Center, which is supported by the Office of Science of the U.S. Department of Energy under Contract No. DE-AC02-05CH11231

Silvina Gatica
Department of Physics, Howard University

Date submitted: 19 Dec 2007

Electronic form version 1.4