

Abstract Submitted
for the TSF07 Meeting of
The American Physical Society

Effects of Energetic Ion Particles on Friction of Diamond-Like Carbon¹ KE WANG, Department of Physics Texas A&M University, HONG LIANG, Texas A&M University, JEAN MICHEL MARTIN, THIERRY LE MOGNE, ECOLE CENTRALE DE LYON LTDS COLLABORATION — We demonstrate that energetic argon ions introduce phase transformation of a diamond-like-carbon film. Inside an ultrahigh vacuum chamber, energetic Ar ions of 5KeV were generated using an X-ray photon spectroscopy. After ion bombardment, the XPS and friction tests were conducted in situ. The ex situ surface morphological analysis using an atomic force microscope and the multiple-peaks deconvolution of the C 1s XPS peak indicate that the changing ratio of sp² and sp³ hybridization of carbon dominates the film's friction. We conclude that the friction of the DLC film against itself depends on the carbon phase, not the film's surface roughness.

¹This research is sponsored by NSF(0535578).

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Date submitted: 05 Oct 2007

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