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Formation of Carbon Nitride by Direct Low Energy Nitrogen Ion Implantation into Graphite AMIR H. SARI, D. DORRANIAN, A. SHOJAEE-FARD, Plasma Physics Research Center, Science and Research Campus, Islamic Azad University, Tehran, Iran — The formation of carbon nitride has been intensively investigated in the last two decades due to its exceptional mechanical and tribological properties. In this paper formation of carbon nitride by low energy nitrogen implantation into graphite is investigated. Nitrogen ions with 30 keV energy and various doses ranging from 5×10^{16} to 3×10^{17} ions/cm^2 were implanted into the graphite. Existence of C_3N_4 peaks was observed in XRD results for implanted graphite samples. Raman spectroscopy also confirmed creation of C-N bonding. Atomic force microscopy (AFM) was used to obtain surface roughness, creation of grains and their evolution during nitrogen ion dose variations. In addition, optical properties of implanted samples measured by an UV-Vis-NIR spectrophotometer. A dramatically changes observed in absorption spectra of implanted samples at the wavelengths between 200 to 800 nm.

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