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Conductive Characterization of DLC Thin Films Fabricated by Radio-Frequency Magnetron Sputtering

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In this study Diamond-like carbon (DLC) films were deposited on p-type Si substrates using a Radio-Frequency magnetron Sputtering system. The DLC film was deposited by bombarding graphite target with a N₂/Ar plasma mixture with various conditions: substrate, pressure, deposition time, temperature of substrate, power and ratio of gas mixture. The effect on the conduction and hardness of DLC thin films were investigated.

The conduction of DLC films were measured by I-V measurement. In addition, Raman analysis was performed to study the chemical bonding structure. The hardness was measured by Nano indentation. Atomic Force Microscopy was used for determined surface morphology of DLC film.

Keywords: DLC (Diamond-like carbon), RF magnetron Sputtering system, Conductivity