DIAMONDLIKE CARBON THIN FILM DEPOSITION
USING A RF PLANAR COIL
INDUCTIVELY COUPLED PLASMA SYSTEM

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Abstract

A RF planar coil inductively coupled plasma system (ICPs) is setup for this project. The system is powered by a 13.56MHz, 550W, 50Ω RF generator. The RF power is transferred to the plasma via a planar induction coil. The impedance matching circuit consists of an air-core step-down transformer and a tunable vacuum capacitor. The typical E-H mode transition which is distinctive to the ICP has been observed in argon plasma, hydrogen plasma and hydrogen-methane admixture plasma. The studies carried out include the observation of intensity of light emission from the plasma, the power transferred at different pressures, the concentration of plasma with glass funnel, the effect of methane present in hydrogen plasma and the induction heating effect. These studies are important for the application of the system for plasma enhanced chemical vapour deposition (PECVD) of diamondlike carbon (DLC) films deposited on silicon substrate. The effect of the percentage of methane, the influence of the pretreatment using diamond paste on the substrate and the induction heating effect on the DLC coating are reported.
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Abstrak

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