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**Analysis of the harmonic currents in floating probes with dielectric films** KYUNG-HYUN KIM, Department of Electrical Engineering, Hanyang University, DONG-HWAN KIM, Department of Nanoscale Semiconductor Engineering, Hanyang University, JIN-YONG KIM, YU-SIN KIM, CHIN-WOOK CHUNG, Department of Electrical Engineering, Hanyang University — Plasma diagnostics using harmonic currents was firstly used to obtain the electron temperatures and ion densities. In this method, the electron temperature is proportional to the ratio of the harmonic currents due to the sheath non-linearity. Harmonic currents are affected by input voltage, thus calculation of exact voltage across the sheath is important; the voltage is calculated using phase analysis of the probe current. However, in the case of the dielectric deposited probe, rapid decrease of the second harmonic current than expected is observed. To explain this effect, circuit analysis including non-linear elements is adopted, and the calculations using this analysis are compared with experimental results.

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