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A plasma diagnostic method by applying square voltages to a floating probe for deposition plasmas MOO-YOUNG LEE, CHIN-WOOK CHUNG, Hanyang University — To measure electron temperatures and ion densities in an environment where a dielectric film can be deposited, the transient voltage of a capacitor connected in series to a floating probe is analyzed. When two square voltages with different amplitudes are applied to the probe tip, the current from plasma flows and charges the capacitor. To obtain plasma parameters, a circuit model is suggested. Electron temperatures and ion densities are obtained from the ratio of transient capacitor voltages. Because deposited film can be represented as a capacitor, the applied square voltage is divided into the dielectric film and the connected capacitor. From the ratio of divided voltages, the capacitance of dielectric film can be obtained. The measured electron temperatures and ion densities are compared with those from electron energy distribution functions. This method can be applied for processing plasma monitoring.

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