

## HIGHER HARMONIC FREQUENCIES OF DISCHARGE VOLTAGE AND CURRENT IN CAPACITIVELY COUPLED DISCHARGES

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**Abstract.** The current-voltage characteristics of capacitively coupled discharges has nonlinear character, which is caused by sheaths and which leads to generation of higher harmonic frequencies of discharge current and voltage. Higher harmonics are strong especially at low pressure, as demonstrated by an example of plasma potential waveform shown in the figure 1. Higher harmonics influence the behaviour of the plasma and, at the same time, they sensitively react on number of discharge parameters, which enables to use them for monitoring of various deposition and etching processes. The presentation summarizes several topics related to higher harmonic frequencies, namely the problematics of probe measurement of the high-frequency components of plasma potential, presence of higher harmonics at atmospheric-pressure discharges, modeling of generation of higher harmonics and analysis why higher harmonics react so sensitively on the presence of a thin film during deposition/etching processes.

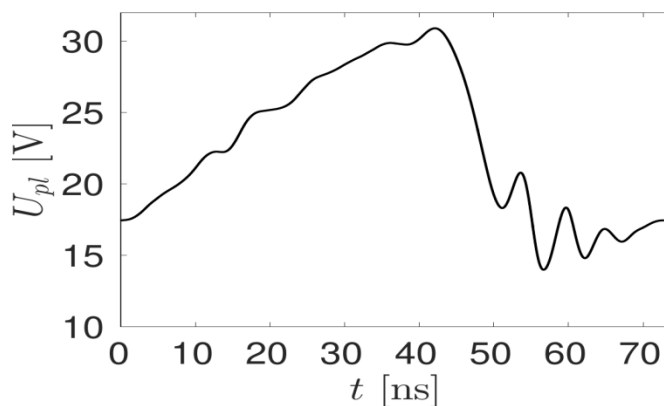


Figure 1: Plasma potential of an asymmetric low-pressure (6 Pa) capacitively coupled discharge ignited in Ar.