Abstract Submitted
for the GEC12 Meeting of
The American Physical Society

Non-intrusive measurements of ion fluxes and densities in pulsed RF plasmas containing nanoparticles[1] I. STEFANOVIC, Exp. Phys. II, Ruhr-Universitaet Bochum, Germany, B. SIKIMIC, Exp. Phys. II, Ruhr Universitaet, I. DENYSENKO, Kharkiv National University Ukraine, J. WINTER, Exp. Phys. II, Ruhr Universitaet, EXPERIMENTAL PHYSICS II BOCHUM TEAM, I. DENYSENKO, KHARKIV NATIONAL UNIVERSITY COLLABORATION — Electrical probe measurements are widely spread for diagnostics of low-pressure plasmas. However, the probe measurements in plasmas for thin film deposition and nanoparticle formation are difficult. Thin film on the probe surface changes the probe characteristics and thus obscures the results. The probe tip disturbs locally the dust particle density and consequently the ion and electron flux to the probe. Braithwaite *et al* developed the electrostatic probe method that proved as tolerant for thin film deposition, although the disturbance caused by the inserted probe should be taken into account. Following the ideas of Braithwaite *et al* we developed the diagnostics for measuring the ion-current and ion density in pulsed RF plasmas with and without nanoparticles. The technique bases on measurement of electrode self-bias voltage thus avoiding plasma perturbation. The rate of voltage change can be attributed to the ion current to the electrode in the afterglow. Assuming the Bohm velocity of ions in the afterglow the ion density can be calculated. We compare and discuss the ion densities obtained like described with the independently measured electron densities for dust free and dusty argon plasma. N. St. Braithwaite *et al Plasma Sources Sci. Technol.* **5** (1996) 677

[1]Humbodt Foundation

Ilija Stefanovic
Exp. Phys. II, Ruhr Universitaet Bochum

Date submitted: 26 Jul 2012 Electronic form version 1.4