

Abstract Submitted  
for the GEC10 Meeting of  
The American Physical Society

**Simulation of a inductively coupled hydrogen plasma for sterilization processes** MAX ENGELHARDT, BENJAMIN DENIS, Ruhr University Bochum, Insitute for Plasma Technology, Germany, THOMAS MUSSENBROCK, Ruhr University Bochum, Insitute for Theoretical Electrical Engineering, Germany, PETER AWAKOWICZ, Ruhr University Bochum, Insitute for Plasma Technology, Germany — Usability of plasmas for sterilization of medical devices is numerously investigated [1]. On short timescales, the main sterilization agent in a gas discharge is the VUV/UV radiation [2]. In order to generate a broad VUV spectrum, a hydrogen discharge can be used. Aim of this work is to simulate a hydrogen discharge in a double inductively coupled plasma (DICP) reactor. The simulation is done with the Hybrid Plasma Equipment Model (HPEM) [3]. The results of the simulation are verified with experimental data of optical emission spectroscopy and mass spectroscopy. Additionally, a Langmuir probe is used to verify the spatially resolved electron density in the discharge.

- [1] H Halfmann et al., J. Phys. D: Appl. Phys. 40 (2007) 4145-4154
- [2] H Halfmann et al., J. Phys. D: Appl. Phys. 40 (2007) 5907-5911
- [3] M Kushner, J. Phys. D: Appl. Phys. 42 (2009) 194013

Max Engelhardt  
Ruhr University Bochum, Insitute for Plasma Technology, Germany

Date submitted: 12 Jun 2010

Electronic form version 1.4