Abstract Submitted
for the GEC13 Meeting of
The American Physical Society

Modeling of capacitively and inductively coupled plasma for molecular decontamination[1] DIANA MIHAILOVA, GERJAN HAGELAAR, PHILIPPE BELENGUER, Université de Toulouse & CNRS, CHRISTOPHER LAURENT, JUSLAN LO, BRUNO CAILLIER, LAURENT THERESE, PHILIPPE GUILLOT, Centre Universitaire J.F. Champollion, Albi — This project aims to study and to develop new technology bricks for next generation of molecular decontamination systems, including plasma solution, for various applications. The contamination control in the processing stages is a major issue for the industrial performance as well as for the development of new technologies in the surface treatment area. The main task is to create uniform low temperature plasma inside a reactor containing the object to be treated. Different plasma sources are modeled with the aim of finding the most efficient one for surface decontamination: inductively coupled plasma, capacitively coupled plasma and combination of both. The model used for testing the various plasma sources is a time dependent two-dimensional multi-fluid model. The model is applied to a simplified cylindrically symmetric geometry in pure argon gas. The modeling results are validated by comparison with experimental results and observations based on optical and physical diagnostic tools. The influence of various parameters (power, pressure, flow) is studied and the corresponding results are presented, compared and discussed.

[1]This work has been performed in the frame of the collaborative program PAUD (Plasma Airborne molecular contamination Ultra Desorption) funded by the French agency OSEO and certified by French global competitive clusters Minalogic and Trimatec.

Diana Mihailova
Université de Toulouse & CNRS

Date submitted: 14 Jun 2013 Electronic form version 1.4