Abstract Submitted
for the GEC10 Meeting of
The American Physical Society

Micro Hollow Cathode Discharge Arrays in silicon devices[1] REMI DUSSART, MUKESH KULSRESHATH, GREMI, LAWRENCE OVERZET, UTD, LAURENT SCHWAEDERLE, THOMAS TILLOCHER, JULIEN LADROUE, OLIVIER AUBRY, PHILIPPE LEFAUCHEUX, GREMI, MATTHEW GOECKNER, UTD, PIERRE RANSON, GREMI, GREMI TEAM, UTD TEAM — Micro-hollow cathode discharge (MHCD) arrays are of interest for many applications including plasma processing at atmospheric pressure. Silicon was the selected material to form the reactors because it is convenient for microfabrication and it offers good mechanical and thermal properties. Our objective is to fabricate and study MHCD arrays in DC to investigate their limits and characteristics for their potential applications. We fabricated cathode boundary layer (CBL)-type reactors consisting of a silicon cathode separated from a Nickel anode by an SiO_2 layer. Different geometries of cathode were investigated. Arrays containing up to 1024 holes of different diameter (25-150 μm) were ignited at different pressures (100–1000 Torr) in He and Ar. Imaging, electrical and spectroscopic measurements were carried out to characterize the arrays. Paschen curves have been plotted to study the breakdown mechanisms. We will present results to ignite microdischarges of the whole array versus pressure and current.

[1]This work is supported by ANR (SIMPAS ANR-09-JCJC-0007-01)

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Date submitted: 11 Jun 2010 Electronic form version 1.4