

Abstract Submitted
for the GEC06 Meeting of
The American Physical Society

Sorting Category: 2.7 (E)

Plasma properties in microcathode sustained discharges in oxygen containing mixtures – comparisons of experiments and models G. BAUVILLE, J.F. LAGRANGE, L. MAGNE, V. PUECH, LPGP, Orsay, France, E. MUNOZ-SERRANO, L.C. PITCHFORD, CPAT, Toulouse, N. SADEGHI, LSP, Grenoble, M. TOUZEAU, LTM, Grenoble — In this communication, we will summarize results of a joint experimental/modeling project whose purpose is to evaluate the feasibility of generating high yields of singlet delta (1D) metastable oxygen molecules in a microcathode sustained discharge (MCSD), a discharge configuration in which a microhollow cathode discharge is used as a plasma cathode with a third electrode being placed 0.5-1 cm away. From electrical and optical measurements and from modeling (presented in more detail in companion posters at this conference), we deduce the gas temperature, the [O] density profile, the spatial distribution of O₂(singlet sigma), the spatial distribution of the O₃, and the yield of O₂(1D) as determined from IR emission at points downstream from the discharge. These quantities are compared with results from a 2D quasi-neutral model. The baseline conditions are 10% O₂ in Ar at a total pressure of 50 torr, discharge currents on the order of 1 mA, and for a 200 micron microhollow cathode discharge diameter. This communication will focus on the intercomparison of results from the different diagnostics and from the model.

Prefer Oral Session
 Prefer Poster Session

L.C. Pitchford
pitchford@cpat.ups-tlse.fr
CNRS, France

Date submitted: 16 Jun 2006

Electronic form version 1.4