

Abstract Submitted  
for the GEC11 Meeting of  
The American Physical Society

**Infrared optical actinometry for determining the densities of N- and H-atoms in N<sub>2</sub>-H<sub>2</sub> microwave discharge** MARYAM MAVADAT, STEPHANE TURGEON, Surface Engineering Laboratory, Laval University, Quebec, Canada, ANDRE RICARD, LAPLACE, Paul Sabatier University, Toulouse, France, GAETAN LAROCHE, Surface Engineering Laboratory, Laval University, Quebec, Canada — N<sub>2</sub>+H<sub>2</sub> plasmas are commonly used to introduce amino groups on the surface of polymers. Optical emission spectroscopy techniques, combined with the use of surface characterization methods may be applied to better control the reactions in the discharge and optimize surface modifications. We have already demonstrated that optical emission spectroscopy in the infrared region can be used to provide additional useful information as compared to the UV-visible region. In connection with this idea, optical IR actinometry may be used to determine N and H atomic density with clear advantages as compared to classical UV-Visible actinometry. In the present study, N<sub>2</sub>+H<sub>2</sub> microwave plasmas with different H<sub>2</sub> proportion have been characterized using infrared actinometry. The results allowed monitoring the trend for H and N relative densities as a function of H<sub>2</sub>/N<sub>2</sub> ratio and plasma pressure in the discharge.

Maryam Mavadat  
Surface Engineering Laboratory, Laval University, Quebec, Canada

Date submitted: 05 Aug 2011

Electronic form version 1.4