Abstract Submitted
for the GEC09 Meeting of
The American Physical Society

Improved measurement system for surface loss rate of ozone HARUO ITOH, SUSUMU SUZUKI, Chiba Institute of Technology, ILKO MITOKOV RUSINOV, Sofia University — In this paper, we report on application of a technique for long-term monitoring of ozone density in a cylindrical vessel, filled with ozone-containing gas mixtures, by using ultraviolet photo-absorption. An experimental system has been used in order to monitor the temporal decrease of ozone concentration in a cylindrical cell based on the HgI 254 nm photo-absorption method [1-3]. It is applied to study the dependence of effective lifetimes of ozone on the wall material at various gas pressures. Instabilities in the mercury lamp intensity, however, often cause distortion of the measured decay curves. We have attempted to build a simple setup that eliminates the effect of long-term intensity drifts. It is based on light source intensity monitoring by a separate photo-detector and data correction in software. The obtained equivalent diffusion coefficient that describes the loss rate of ozone at the inner surface of the cell is 2.0×10^{-4} cm^2/s at 1 Torr. Further experiments are planned to measure the coefficient and clarify the mechanism of ozone effective lifetime. [1] H.Itoh, I.M.Rusinov, T.Suzuki, S.Suzuki: Ozone Science & Engineering, Vol.26 (2004) 487-497. [2] H.Itoh, M.Rusinov, S.Suzuki,T.Suzuki: Plasma Processes and Polymers, No.2, (2005) 227-231. [3] K.Ban, S.Isegame, S.Suzuki, I.M.Rusinov and H.Itoh: Proc. 13th Asian Conference on Electrical Discharge (Hokkaido University, Sapporo, Japan) P-2-41 (2006).

Haruo Itoh
Chiba Institute of Technology

Date submitted: 12 Jun 2009 Electronic form version 1.4