Abstract Submitted
for the GEC10 Meeting of
The American Physical Society

Caxial Microwave Discharge Lamp of Aluminum Coated Quartz Glass Tube[1] TAIKI SAKAI, AKIMITSU HATTA, Kochi University of Technology
— Caxial microwave discharge (CMD) lamp has been developed for UV light source. To extend the length of microwave plasma in the discharge lamp, a novel structure of microwave discharge lamp has been developed. The microwave plasma was produced in a thick quartz tube by traveling wave along a coaxial line consisting of a central plasma rod as the inner conductor itself and the Al coating on the tube surface as the outer conductor. A thin slit was opened on the outer conductor of Al coating along the tube to extract the emitted light. The microwave plasma length was extended more than 75cm at 150 W of microwave power. Peak emission intensities showed gradual decay with the traveling distance of the microwave from the end while the white band emission originated from recombination showed rapid decay from the excited end. Emission profile along the lamp was almost uniform when the microwave was supplied from both sides alternately.

[1]This work was supported by the Science and Technology Incubation Program in Advanced Regions "Mercury-free UV light source of MW discharge" of JST Satellite Kochi. Some experiments were carried out in Center for Nanoscience and Nanotechnology, KUT.

Taiki Sakai
Kochi University of Technology

Date submitted: 12 Jun 2010 Electronic form version 1.4