Abstract Submitted
for the GEC08 Meeting of
The American Physical Society

GEC Student Award for Excellence Finalist: Creation of Stable Plasma-Liquid Interfaced Reactive Field using Ionic Liquids KAZUHIKO BABA, TOSHIRO KANEKO, RIKIZO HATAKEYAMA, Department of Electronic Engineering, Tohoku University — The gas-liquid interfacial region which is the boundary between plasmas and liquids, activating physical and chemical reactions, has attracted much attention as novel reactive field in nano-bio material creation. Due to the unique properties of ionic liquids such as their extremely low vapor pressure and high heat capacity, we succeeded in creating the reactive gas (plasmas)-liquid (ionic liquids) interfacial field under a low gas pressure condition, where the plasma ion behavior can be controlled. The effects of plasma ion irradiation on the liquid medium are for the first time quantitatively revealed. In connection with the plasma ion irradiation, the potential structure and optical emission properties of the gas-liquid interfacial plasma are investigated by changing a polarity of the ionic liquid electrode in order to evaluate the ionic liquid-plasma interactions. These results would contribute to systematizing the field of gas-liquid interfacial plasma physics for its applications.

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Date submitted: 08 Jul 2008 Electronic form version 1.4