Abstract Submitted
for the GEC14 Meeting of
The American Physical Society

Comparison of temporal variation in emission intensity of OH(A) in after-glow period of Ar/H_2O and He/H_2O gas-mixture plasmas in water[1] TATSURU SHIRAFUJI, Osaka City University — Previously, we have reported quite long duration (approx. 500 ns) of optical emission intensity of OH(A) in an after glow period of Ar plasma in water.[2] Numerical simulation has revealed that this phenomenon can be explained in terms of production of OH(A) through the reaction of H_3O^+ and low temperature electrons. We can perform similar plasma processing using He plasma in water with almost the same process performance in the case of decomposition of methylene blue molecules in aqueous solution. Thus, we have expected that the long duration of OH(A) optical emission can be observed also in He plasma in water. However, such long duration of OH(A) optical emission has not been observed in the case of He plasma in water. To understand this difference, we have performed numerical simulation of Ar/H_2O and He/H_2O plasmas, and discuss differences in major reaction pathways to produce OH(A) in Ar/H_2O and He/H_2O plasmas.

[1]This work has been partly supported by the Grant-in-Aid for Scientific Research on Priority Area "Frontier science of interactions between plasmas and nano-interfaces" from MEXT, Japan, and a Grant-in-Aid for Scientific Research (C) from JSPS.
[2]T. Shirafuji, Y. Oguda and Y. Himeno: Jpn. J. Appl. Phys. **53**, 010211 (2014).

Tatsuru Shirafuji
Osaka City University

Date submitted: 13 Jun 2014 Electronic form version 1.4