

Abstract Submitted
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Modeling of self organization in Xe micro hollow cathode discharges HARUAKI AKASHI, National Defense Academy — Recently, self organization discharges in Xe micro hollow cathode discharges(MHCDS) have been obtained. The discharge is sustainable in DC, not like dielectric barrier discharge(DBD). Stollenwerk et al[1] reported the self organized pattern in DBD is related to the accumulated charge on the dielectric. In DBD, self organized patterns are significantly affected by dielectric, however, it is not known yet in MHCD. To clarify the mechanism, the simulation has been started. Cylindrical symmetric two dimensional fluid model is taken. The fluid model is adapted from the ref.[2]. The electrodes configuration is similar to ref.[3]. Negative voltage is applied to cathode. In this condition, the self organization pattern is not shown, but the discharge becomes glow like discharge as written in ref.[3]. The peak of electron density is obtained slightly above the hole, but the excimer and ions density peaks are obtained in the hole.

[1] L.Stollenwerk et al. Phys.Rev.Lett.,96,255001(2006)

[2] H.Akashi et al, IEEE Trans.Plasma Sci.,33,2,308(2005)

[3] W.Zhu et al, J.Phys.D: Appl.Phys.,40,3896(2007)

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