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Development of plasma apparatus for plasma irradiation to living cell model[1] YOSHIYUKI SUDA, RYO KATO, HIDETO TANOUE, HIROFUMI TAKIKAWA, Dept. of Electrical and Electronic Information Eng., Toyohashi Univ. of Technol., RYUGO TERO, EIIRIS, Toyohashi Univ. of Technol. — Atmospheric pressure plasma has been studied for the industrial applications of biotechnology and medical care. For the development of these fields, understanding the influence of atmospheric pressure plasma on living cell and the mechanism of cell death is necessary. We focus on a basic structure of cell membrane, called lipid bilayer. Lipid bilayer is composed of lipid molecules with an amphipathic property and can be formed on hydrophilic substrates. In this paper, we report the development of the plasma apparatus for the treatment of lipid bilayer. The plasma apparatus uses a typical dielectric barrier discharge (DBD) system and employs parallel plate electrodes with a gap distance of 1 mm [1]. Each electrode is covered with a quartz plate and the substrate temperature is kept constant by cooling medium. The lower quartz electrode has a dimple, in which the substrate coated with a lipid bilayer and buffer fluid are mounted.

[1] Y. Sugioka, et al, IEEE Trans. Plasma Sci., in press

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