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Dynamics of mist emitted from Taylor cone with atmospheric corona discharge[1] FUMIYOSHI TOCHIKUBO, KEISUKE NAGAO, YUSUKE NAKAGAWA, SATOSHI UCHIDA, Tokyo Metropolitan Univ — Plasma-liquid interaction is a hot topic in the application of atmospheric-pressure plasma. Use of mist will be the efficient method for plasma-liquid interaction because of its large specific surface area. There are many methods to generate plasma with mist. Atmospheric corona discharge using Taylor cone as a liquid electrode is interesting method for that purpose. We have reported the characteristics of atmospheric negative corona discharge using Taylor cone as a liquid cathode(1). In this work, we focus the mist emission from the Taylor cone synchronously with corona current. A micronozzle is filled with liquid, and a plate electrode is placed above the nozzle with 1cm gap. Sodium dodecyl sulfate is added in distilled water to control the surface tension. By applying a dc voltage between electrodes, a Taylor cone is formed on the micronozzle with Trichel pulse-like current. The vibration of tip of Taylor cone with roughly 20 kHz was observed by shadowgraph method with high speed camera. Synchronized with the vibration, droplets were emitted. Convection flow was observed in the Taylor cone. Mist dynamics were observed by Mie scattering. The velocity of charged droplet was approximately 10 m/s. (1) N. Shirai et al., Jpn. J. Appl. Phys. **53** (2014) 026001.

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