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**Generation and Control of Atmospheric-pressure Glow Microdischarges along Miniature Water Flow** MAKOTO KANEMARU, NAO TATSUMURA, SHINJI IBUKA, SHOZO ISHII, Tokyo Institute of Technology — To increase the effective area for surface interaction between liquid and plasma, we developed a radio-frequency glow microdischarge along a miniature water flow that was surrounded by a coaxial helium gas flow in a quartz tube under atmospheric pressure. The de-ionized water was supplied through a nozzle electrode that had a counter needle electrode. The discharge developed at the edge of nozzle electrode, the triple point including gas, water, and metal. The stable microdischarges were obtained without the formation of water droplets. Glow to spark transition appeared at high input rf power. Thanks to the quartz tube, the discharges were not affected by ambient air including nitrogen and oxygen molecules. Optical emission spectroscopy was conducted to examine the effect of water flow on the discharges. OH and HeI lines with significant intensities were observed. The microplasma structure enhances the surface interaction between the glow discharge and the water flow, which assists physical and chemical reactions. This was verified by observing the emission of intense OH lines.

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