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Electrical and optical characterization of plasma jet driven by kilohertz frequency ac voltage at atmospheric pressure JUNG-WOO OK, DONG-HYUN KIM, HAE JUNE LEE, HO-JUN LEE, CHUNG-HOO PARK, Pusan National University, Korea — At atmospheric pressure, plasma jet source driven by low frequency continuous wave of several tens kHz ac voltage was characterized. The plasma jet source consists of stainless-steel tube (inner electrode) through which helium flow in the middle of glass tube and a ground electrode (outer electrode) roundly surrounds in the vicinity of glass tube end. The electrical and optical properties of the plasma jet source, such as lissajous of current-voltage, optical emission spectrum, and rotational temperature were investigated. With various applied voltage, gas flow rate ($1 \sim 5$ liter per min), and driven frequency ($60 \sim 90$ kHz) parameters changed, plasma jet showed different discharge characteristics. Through an analysis of lissajous of voltage-current, plasma jet source has various glow discharge modes. The plume of plasma jet is up to 4 cm and rotational temperature of plasma jet is within $450 \sim 800$ K.

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