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The influence of the pulse duration and the duty ratio on the discharge characteristics of helium and argon atmospheric pressure plasma jets. TIANYU TANG, HYUNYOUNG LEE, Pusan National University, GUANGHOON KIM, BYUNGHAK LEE, Korea Electrotechnology Research Institute, HAE JUNE LEE, Pusan National University — Atmospheric pressure plasma jets (APPJs) have been widely used for biomedical applications for the last couple of decades. Most of APPJs are operated with the sinusoidal driving voltage at a frequency range of tens of kHz to MHz. In this study, we present the properties of monopolar pulse-driven APPJs which show different performances from those with sinusoidal driving voltages. The pulse duration has been varied from hundred nanoseconds to hundreds of microseconds, and the duty ratio is also varied. Experimental investigation of APPJ includes optical emission spectrometry (OES) and the current-voltage characteristics. In this presentation, a global simulation model was used to compare electron temperature, electron density and electron energy density of helium and argon gas plasma jet. In the experiment, the relationship between the plasma parameters and the breakdown voltage was investigated. Also, OES was used to investigate the radical components and to calculate the electron temperature.

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