
Incoherent laser Thomson scattering diagnostic for pulsed streamer discharge

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Pulsed streamer discharge plasma, a type of non-thermal plasma, is known to generate various chemically active species and is applied to many fields such as water treatment and ozone generation. However, the detailed physical properties of pulsed streamer discharge remain still unclear. Therefore, the basic research on pulsed streamer discharge is necessary. This study investigates the characteristics of pulsed streamer discharge by observing the propagation process of streamer head in needle-conic electrode using a high speed gated ICCD camera. In the case, the positive pulse voltage was applied to needle electrode and the conic electrode was grounded. In addition, the electron temperature and the electron density of the streamer head during its propagation were delivered by the laser Thomson scattering measurement method. In the work, the laser Thomson scattering measurement method is firstly utilized to the streamer head in the pulsed streamer discharge.