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Time dependence measurement of electron density and temperature of a 60 Hz nonequilibrium atmospheric pressure plasma by laser Thomson scattering FENGDONG JIA, Plasma Nanotechnology Research center, Nagoya University, Furo-cho, Chikusa-ku, Nagoya 464-8603, Japan, NAOYA SUMI, Department of Electrical Engineering and Computer Science, Graduate School of Engineering, Nagoya University, Furo-cho, Chikusa-ku, Nagoya 464-8603, KENJI ISHIKAWA, Plasma Nanotechnology Research center, Nagoya University, Furo-cho, Chikusa-ku, Nagoya 464-8603, Japan, HIROYUKI KANO, NU Eco-Engineering Co., Ltd., 1237-87 Umazutsumi, Kurozasa-cho, Miyoshi-shi, Aichi 470-0201, Japan, HIROTOSHI INUI, KEIGO TAKEDA, HIROKI KONDO, MAKOTO SEKINE, MASARU HORI, Department of Electrical Engineering and Computer Science, Graduate School of Engineering, Nagoya University, Furo-cho, Chikusa-ku, Nagoya 464-8603 — A nonequilibrium atmospheric pressure plasma excited by 60 Hz ac power was diagnosed by laser Thomson scattering. We studied the electron temperature (T_e) and density (n_e) in one ac cycle. The results showed that the plasma generated in a frequency of 120Hz, and occupied half of every half ac cycle with about 1ms delay shift compared with ac voltage waveform. During the discharge periods the T_e was almost same about 1.5eV, and n_e reached its maximum around peak value of ac voltage, after that decreased with the decreasing of ac voltage, which changes from about $5.0\times10^{14}\text{cm}^{-3}$ to $2.0\times10^{14}\text{cm}^{-3}$.

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