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Factors of Local Plasma Heating near a Target during Pulse Rise Time JAE-MYUNG CHOE, GON-HO KIM, Seoul National University — Factors to heat plasmas during a rise time of pulse on the electrode covered by plasmas are explained. When pulse applies to the target, electrons with energy of several tens eV are detected at an early time. Different from secondary electrons, they can be measured only while sheath expands by a pulse rise and ionized locally near the target. They cause increase of bulk plasma before secondary electrons do and the amount of generated plasmas is larger than the latter, which critically enhances ion flux to the target and blocks sheath expansion at the very beginning of pulse rise. From the measured energy and generation time, gained energy is proportional to a sheath speed expanding from the target and the mechanism can be explained by a Stochastic heating. Experiments are performed in Ar plasma with a pulse voltage of several kV and time-transient and spatial electron energy distributions processed by Wavelet transform algorithm are analyzed for the explanation.

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