Abstract Submitted
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Dust particle size measurement by the multi-channel laser light scattering method[1] W. CHOE, C.R. SEON, K.B. CHAI, H.Y. PARK, Korea Advanced Institute of Science and Technology, Y.H. SHIN, K.H. CHUNG, Korea Research Institute of Standards and Science — The measurement of the spatial distribution of dust particle size was performed by the multi-channel laser light scattering method. To self-consistently determine the time evolution of the particle size, in-situ polarization-sensitive laser light scattering was used using a 30 mW He-Ne laser. Polarization light intensities (incident and scattered light intensities with the same polarization) were measured at 71 $^\circ$. Before applying the method to the dusty plasmas, the measurement accuracy was confirmed using a distilled water solution of the size-known particles. In addition, the size-known particles were injected into the argon plasma, and the particles trapped inside the plasma were used for the accurate measurement of the light scattering angle. The measured size of the dust particles in an argon diluted silane capacitively-coupled plasma at 160 mTorr, 150 W, (11.4-11.8) s after the plasma on was (80-110) nm. In comparison, the scanning electron microscope photographs of the fallout particles showed (90-100) nm spherical particles under the similar experimental condition. The time evolution of the spatially distributed particle size at various plasma conditions was studied by using a 2-dimensional 16 channel photomultiplier tube as a detector of scattered laser light.

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