

Abstract Submitted
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Modulation frequency dependence of bispectrum of laser light scattering intensity from nanoparticles formed in reactive plasmas¹

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Kyushu University — Interactions between plasmas and nano-interface are one of the most important issues in plasma processing. We have studied effects of plasma fluctuation on growth of nanoparticles in reactive dusty plasmas with amplitude modulation (AM) and have clarified that plasma fluctuation leads to generation of a large amount of nanoparticles with small size [1]. Here we report results of bispectrum analysis of time evolution of laser light scattering intensity from nanoparticles in reactive plasmas. Experiments were carried out using a capacitively-coupled discharge reactor. We employed Ar+DM-DMOS discharge plasmas to generate nanoparticles. We found higher harmonics and sub-harmonics in spectra of laser light scattering intensity, suggesting nonlinear coupling between plasma parameters and nanoparticle growth rate. We will report modulation frequency dependence of bispectrum of laser light scattering intensity.

[1] M. Shiratani, et al., Jpn. J. Appl. Phys. 53 (2014) 010201.

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