Abstract Submitted
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Substrate temperature effects on amorphous carbon deposition process during acetylene plasma, investigated infrared spectroscopy[1] KOJIRO HARA, TAKA-AKI KAWAKAMI, MASANORI SHINOHARA, Graduate School of Sci. and Technol., Nagasaki Univ., YOSHINOBU MATSUDA, Dep. of EEE, Nagasaki Univ., HIROSHI FUJIYAMA, Graduate School of Sci. and Technol., Nagasaki Univ. — Amorphous carbon film has been widely used in a lot of fields. Acetylene plasma is often used for the film deposition, because the acetylene plasma can enhance the deposition rates. However, the detailed deposition mechanism has not been understood. We have investigated the film deposition process during acetylene plasma, using infrared spectroscopy in multiple internal reflection geometry (MIR-IRAS). In this paper, we investigate the substrate temperature effects on the surface reaction during acetylene plasma. Infrared spectral shapes were changed with the increases of the substrate temperature; the intensity ratio of the peak due to sp3-CHX (X=1, 2, 3) components to that due to sp2-C components was increased with the substrate temperatures. It indicates that the conversion of sp2-C components to sp3-CHX was increased with substrate temperatures. It also indicates that owing to substrate heating, the carbon clusters decreases its intensity in the film.

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