

Abstract Submitted
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Preparation of diamond-like carbon films using pulsed glow discharge plasmas at atmospheric pressure K. TANAKA, Y. KIKUCHI, Y. MATSUO, University of Hyogo, A. OTSUBO, Y. NISHIMURA, Kurita Seisakusyo Co. Ltd., M. NAGATA, M. YATSUZUKA, University of Hyogo — Diamond-like carbon (DLC) films have a lot of possibilities for industrial applications due to high mechanical hardness, low friction, chemical inertness, electrical insulation, optical transparency, and biological compatibility. For preparation of DLC films, the glow discharge plasma at atmospheric pressure was generated by a torch-type plasma device with a high-voltage, high-repetition bipolar pulse. A mixed gas of He as a carrier gas and CH₄ as a precursor was supplied to the discharge region. A bias voltage was applied between the torch plasma and the substrate in order to prepare a carbon film. The Raman spectrum of the deposited film showed two peaks around 1380 cm⁻¹ (D band) and 1580 cm⁻¹ (G band), indicating the amorphous carbon film. The deposition rate of the amorphous carbon film was 0.2 μm/min that was one order larger than the conventional CVD process using low-pressure plasmas. Effects of the bias voltage on the DLC film properties will be shown in the conference.

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