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Study on synthesis processes and crystallinity changes of nanographene materials synthesized by alcohol liquid-plasma HIROKI KONDO, TATSUYA HAGINO, KEIGO TAKEDA, KENJI ISHIKAWA, Nagoya University, HIROYUKI KANO, NU-ECO Engineering co. ltd., MAKOTO SEKINE, MASARU HORI, Nagoya University, NAGOYA UNIVERSITY COLLABORATION, NU-ECO ENGINEERING CO. LTD. COLLABORATION — Nanometer-sized graphene is one of promising materials for novel applications such as electrical device, compound materials, and so forth, owing to its excellent and unique electrical, physical and morphological properties. In recent years, we have realized the high-speed synthesis, over 1mg/min., of the nanographene with high-crystallinity using in-liquid plasma. In this study, elementary steps of nanographene synthesis and crystallinity change during synthesis were investigated. A high-voltage (10 kV) 60 Hz ac-voltage was applied to the two electrodes above and below alcohol surface. After the plasma discharge for 15 minutes, nanographene materials were dispersed in the alcohols and collected by a filtration method. According to the Raman spectra, when ethanol was used, types of metal electrodes did not affect synthesis rates and crystallinity. However, when 1-butanol was used, crystallinity of nanographenes drastically changed depending on types of metal electrodes. It is because different synthesis processes depending on types of alcohols have different dependence on metal electrodes.

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