

Abstract Submitted
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Growth Process of Carbon Nanowalls Fabricated Using Radical Injection Plasma Enhanced Chemical Vapor Deposition SHINGO KONDO, Nagoya University, OLIVERA STEPANOVIC, KOJI YAMAKAWA, MI-NEO HIRAMATSU, MASARU HORI — Carbon nanowalls (CNWs) consist of two-dimensional graphene sheets standing on the substrate. Due to their unique structures, CNWs have received great attention for various applications. CNWs were fabricated by plasma-enhanced chemical vapor deposition employing C_2F_6 gas with H radical injection. In order to clarify the mechanism of CNWs growth, we have investigated the initial growth process. It was found that a thin film of 10 nm in thickness grew at first 1 minute, and then CNWs grew in the vertical direction from the film. In XPS measurements, C and F were detected in the thin film. The thin film contained neither G-band (1590 cm^{-1}) nor D-band (1350 cm^{-1}) by Raman spectroscopy, on the other hand both bands were clearly detected in CNWs. As a result, the thin film was evaluated to be the amorphous carbon with a little amount of F, and the CNWs were made of graphene sheets. The same results were also obtained by ellipsometry. From these results, it is considered that controlling the structure of thin under layer is very important to synthesize CNWs.

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