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**Fabrication of Nanoplatfrom Based on Vertical Nanographene**

MINEO HIRAMATSU, MASAKAZU TOMATSU, Meijo University, HIROKI KONDO, MASARU HORI, Nagoya University — Nanoplatfrom based on vertical nanographene with large surface area offers great promise for providing a new class of nanostructured electrodes for electrochemical sensing, biosensing and energy conversion applications. Carbon nanowalls (CNWs) are composed of few-layer graphene standing almost vertically on the substrate, forming a self-supported network of maze-like wall structures. Their morphologies depend on source gases, pressure, process temperature as well as the type of plasma used for the growth. In view of practical use of CNWs for device applications such as biosensors in the form of micro-total analysis system, the structure of CNWs should be controlled in the nucleation and growth stages. Furthermore, post processes including etching and surface functionalization should also be established. In this study, CNWs were synthesized by PECVD methods using ICP and CCP with radical injection employing methane/hydrogen system. We investigated systematically the early growth stage of CNWs to control their structures for the fabrication of nanoplatfrom based on vertical nanographene. We report the current status of the control of CNW structures by nucleation control as well as post treatment, together with examples of electrochemical applications using CNWs.

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