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Structure Control and Etching Stabilities of Carbon Nanowalls Grown by Low Magnetic-Field Helicon Plasma CVD MASAHIRO YAMAZAKI, TOSHIAKI KATO, Department of Electronic Engineering, Tohoku University, RYO UEDA, NTT-AT Nanofabrication Corporation, TOSHIRO KANEKO, RIKIZO HATAKEYAMA, Department of Electronic Engineering, Tohoku University, CHIHARU TAKAHASHI, NTT-AT Nanofabrication Corporation — The structure controlled carbon nanowalls (CNWs) are grown by low magnetic-field helicon plasma CVD [1, 2]. It is found that the wall distance and wall height of CNWs can be independently controlled by adjusting the ion energy coming to a deposition substrate during their growth. The etching stabilities of such high quality CNWs are also investigated through the electron cyclotron resonance (ECR) plasma etching. By carefully controlling the mixture gas condition of ECR plasma etching, amorphous carbon between the substrate and CNWs are selectively etched out. Furthermore, when we perform the SiO2 etching for such an amorphous-carbon removed CWNs/SiO2/Si sample, the nanowall like structures are found to be formed on the layer of SiO2. This nanowall like SiO2 structure can be useful for the wide range of optical and electrical applications. [1] G. Sato, W. Oohara, and R. Hatakeyama: Appl. Phys. Lett. 85 (2004) 4007. [2] G. Sato, T. Morio, T. Kato, and R. Hatakeyama: Jpn. J. Appl. Phys. 45 (2006) 5210.

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