## Abstract Submitted for the GEC08 Meeting of The American Physical Society

Effects of High Energy Ar Ions on Synthesis of Carbon Nanowalls SHINGO KONDO, OLIVERA STEPANOVIC, MAKOTO SEKINE, MASARU HORI, Nagoya University, KOJI YAMAKAWA, SHOJI DEN, Katagiri Engineering Co., Ltd., MINEO HIRAMATSU, Meijo University — Carbon nanowalls (CNWs) are composed of graphene sheets standing vertically on the substrate. In order to apply CNWs to various industrial fields, clarification of the growth mechanism is strongly required. In this study, the new apparatus of two radical sources with an ion source was constructed in order to understand the fundamental studies of growth of CNWs. In particular, we have focused on which radicals or ions contributed to the CNWs formation. The Si substrate heated at 580°C was exposed to fluorocarbon  $(CF_X)$  and H radicals, which were generated from  $C_2F_6$ ,  $H_2$  gases, in addition to Ar ions. In the case of Ar ion irradiation at an acceleration of 200 V with  $CF_X$ and H radicals at 2.5 Pa, CNWs of 30 nm in height were formed in 25 min. On the other hand, the CNW growth was not confirmed in the cases without Ar ion irradiation and with Ar irradiation at 100 V. From these results, it was found that the threshold of ion energy bombardment for synthesis of CNWs was 100 V. The effects of Ar ions on CNWs formation will be presented.

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