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Facile Growth of Suspended SWNTs by Wet Catalyst Method G.-H. JEONG, 1, A. YAMAZAKI, 2, D. TAKAGI, 2, M. OKUDA, 3, S. SUZUKI, 1, H. YOSHIMURA, 3, Y. KOBAYASHI, 1, Y. HOMMA, 2, 1.NTT BASIC RESEARCH LABS. TEAM, 2.CREST, JST, C/O DEPT. OF PHYSICS, TOKYO UNIVERSITY OF SCIENCE COLLABORATION, 3.DEPT. OF PHYSICS, MEIJI UNIVERSITY COLLABORATION — Nanosized wet catalysts have recently employed for the single-walled carbon nanotubes (SWNTs) growth with a uniform diameter, which is a key factor governing electronic properties of the SWNTs. Suspended SWNTs are useful for clarification of the physical/optical properties due to their interaction-free feature between substrate. For this reason, we tried to grow the diameter-controlled suspended SWNTs using pillar substrates and catalytic-metal containing organic molecules, which have refined catalyst size. Ferritin consisting of protein shell and encaging iron particles in its inner space and Co-filled apoferritin are utilized as a wet catalyst. By controlled experiments, SWNTs are successfully synthesized not only on flat substrates but also on Si-substrates with nanopillars. Low concentration of the ferritin gives the narrow diameter distribution of the SWNTs, which is confirmed by Raman spectroscopy. In addition, suspended SWNTs with narrow tube-diameter ranges are for the first time achieved using Co-filled aopferritins.

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