

Abstract Submitted
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Acetylene-Boosted Growth of Vertically Aligned SWNTs by Alcohol CCVD Method¹ RONG XIANG, JUN OKAWA, ERIK EINARSSON, YUHEI MIYAUCHI, SHIGEO MARUYAMA, Department of Mechanical Engineering, The University of Tokyo, Japan — We present an interesting growth boost of vertically aligned SWNTs achieved by introducing a very small amount of acetylene into the conventional Alcohol Catalytic CVD (ACCVD) system. This acetylene assisted ACCVD, as investigated *in situ* by optical absorption, not only provides us a way to enhance the SWNT growth rate by an order of magnitude, but also confirms that 0.1% of acetylene can reach the same activity as ethanol. Considering that acetylene is one of the products of thermal decomposition of ethanol at our growth temperature, we need to consider the chemical pathway to form SWNTs via acetylene besides the direct pathway from ethanol. A no-flow ACCVD condition fully utilizes this decomposed acetylene as the growth promoter. Since this highly efficient growth through acetylene is only observed with sufficient accompanying ethanol, the critical roles of ethanol and acetylene are discussed.

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