Abstract Submitted
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ACCVD growth of mono- and bi-layer graphene and mechanism study XIAO CHEN, PEI ZHAO, BO HOU, ERIK EINARSSON, SHOHEI CHIASHI, SHIGEO MARUYAMA, Maruyama-Shiomi Lab, Department of Mechanical Engineering, The University of Tokyo — CVD on metal substrates has been proved to be effective in the synthesis of graphene. But before utilization in graphene electronics, the quality of the consequential graphene needs to be improved, and a reliable method to grow large-scale, high-quality bi-layer graphene is required. Besides, the mechanism of growth is not fully understood. Here we report utilizing Alcohol catalytic CVD (ACCVD) to produce mono- and bi-layer graphene. By applying alcohol as carbon source, we carefully studied how each parameter affects the growth process, and the defects and grain size of graphene. By changing growth conditions we could efficiently control the layer number (1 or 2). Afterwards, we conducted and compared the transfer procedures utilizing three commonly used mediators—PVA, PDMS and PMMA. We also employed ^{12}C, ^{13}C, and 2-^{13}C ethanol to synthesize graphene, and with the spectroscopy characterization results we are able to explain the growth mechanism on Cu and Ni substrates to a certain extent.

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