

Abstract Submitted
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Growth of Single-Layer Graphene Using Alcohol Catalytic Chemical Vapor Deposition on Cu Substrate XIAO CHEN, PEI ZHAO, BO HOU, ERIK EINARSSON, SHOHEI CHIASHI, SHIGEO MARUYAMA, Department of Mechanical Engineering, The University of Tokyo — CVD on metal substrates has been proved to be effective in the synthesis of graphene. Compared with commonly used carbon sources methane and ethylene, ethanol is safe and easy to use, thus is advantageous as an alternative graphene growth precursor. Here we report a systematic work of graphene growth on Cu substrate using ethanol precursor. Typically, Cu films were exposed to 100 sccm ethanol flow at 100 Pa and 1000°C for 20 seconds to yield a continuous single-layer graphene film. Characterization using SEM and Raman spectroscopy indicated that the graphene films were homogeneous and of high quality. We conducted a parametric study to prove that high-quality graphene could be grown when the reaction temperature is 900 to 950°C and the pressure is lower than 100 Pa. Moreover, graphene growth at lower pressure showed a strong tendency to be self-limiting, resulting in only single-layer graphene even with longer CVD duration (30 min).

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