

Abstract Submitted  
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**Synthesis of Large-grain, Single-crystalline Monolayer and AB-stacking Bilayer Graphene** LUYAO ZHANG<sup>1</sup>, YUNG-CHEN LIN, YI ZHANG, HAN-WEN CHANG, WEN-CHENG YEH, CHONGWU ZHOU, University of Southern California, USC NANOTECHNOLOGY RESEARCH LABORATORY TEAM — We report the growth of large-grain, single-crystalline monolayer and AB-stacking bilayer graphene by the combination of ambient pressure chemical vapor deposition and low pressure chemical vapor deposition. The shape of the monolayer graphene was modified to be either hexagons or flowers under different growth conditions. The size of the bilayer graphene region was enlarged under ambient pressure growth conditions with low methane concentration. Raman spectra and selected area electron diffraction of individual graphene grain indicated that the each graphene grain is single-crystalline. With electron beam lithography patterned PMMA seeds, graphene nucleation can be controlled and graphene monolayer and bilayer arrays were synthesized on copper foil. Electron backscatter diffraction study revealed that the graphene morphology had little correlation with the crystalline orientation of underlying copper substrate.

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