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Alloy substrates: towards precise control of thickness and quality of multilayer graphene growth SHANSHAN CHEN, Univ. of Texas at Austin, WEIWEI CAI, Xiamen University, RICHARD D. PINER, Univ. of Texas at Austin, XUESONG LI, IBM, YANWU ZHU, RODNEY S. RUOFF, Univ. of Texas at Austin — Graphene has gained a lot of attention due to its remarkable properties, such as high electron hole mobility, high current carrying capability and high mechanical robustness. It has been further demonstrated that the properties of graphene materials depend on the number of graphene layers present. As a result, it is highly desirable to develop reliable synthesis techniques to synthesize few- or multi-layered high quality large area graphene materials. Here we report a facile method to grow few-layer graphene films using an alloy substrate by chemical vapor deposition. The thickness and quality of the graphene and graphite films can be controlled using CVD with methane and hydrogen gas as precursors, by varying the deposition temperature and cooling rate. The optical and electrical properties of the graphene/graphite films were studied as a function of their thickness.

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