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Synthesis of large area single- and bilayer graphene on Ni (111) by chemical vapor deposition YI ZHANG, LEWIS GOMEZ, CHONGWU ZHOU, University of Southern California — Graphene has been reported as a promising material due to the fascinating electronic properties of ideal two-dimensional carbon. A lot of efforts have been made on the synthesis of graphene on Ni but achieving large graphene domains with uniform thickness remains a challenge. In this talk we will present our method of single- and bilayer graphene synthesis over large area, as well as micro Raman study of obtained graphene. The graphene synthesis was achieved by using Ni (111) as substrates and a scalable technique via chemical vapor deposition. The formation of the graphene layers were confirmed by micro Raman analysis. Furthermore, we obtained the information of number of layers of as-grown graphene over a large area by micro Raman map. A clear comparison of the layers between graphene synthesized on Ni (111) substrates and polycrystalline Ni films was given by Raman spectra: Within about the same size map (∼40um*40um), graphene grown on Ni (111) has a much higher percentage of single- and bilayer graphene. Our results demonstrate that Ni (111) substrates have a great advantage over polycrystalline Ni film on the synthesis of large area, single- and bilayer graphene.

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