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CVD graphene films and its application in organic photovoltaic cells LEWIS GOMEZ, YI ZHANG, CODY SCHLENKER, University of Southern California, Chemistry, KOUNGMIN RYU, University of Southern California, Electrical Engineering, MARK THOMPSON, University of Southern California, Chemistry, CHONGWU ZHOU, University of Southern California, Electrical Engineering — In this work, CVD of graphene was used as a simple, scalable and cost-efficient method to prepare single and few-layer graphene films over large areas. CVD-G was characterized by Raman spectroscopy and TEM. Back-gated thin-film transistors were used to evaluate transport properties of the synthesized films. In addition, CVD graphene films were transferred to transparent substrates for photovoltaic cell fabrication. Solar cells obtained from the synthesized graphene films showed comparable performance to those fabricated with the standard indium tin oxide film (ITO) and showed superior performance under bending conditions due to the high flexibility of graphene. CVD Graphene constitutes a significant advance towards the production of transparent conductive films of graphene at large scale and has great implications for future graphene-related electronic devices.

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