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**Low temperature synthesis of graphene on arbitrary substrates and its transport properties** RONG ZHAO, MEYSAM AKHTAR, ADEL ALRUQI, JACEK JASINSKI, GAMINI SUMANASEKERA, Univ of Louisville, CONN CENTER FOR RENEWABLE ENERGY, UNIVERSITY OF LOUISVILLE COLLABORATION, DEPARTMENT OF PHYSICS AND ASTRONOMY, UNIVERSITY OF LOUISVILLE COLLABORATION — Here we report the direct synthesis of uniform and vertically oriented graphene films on multiple substrates including glass, Si/SiO<sub>2</sub>, and copper foil by radio-frequency plasma enhanced chemical vapor deposition (PECVD) using methane as the carbon precursor at relatively low temperatures. Raman spectra of all the samples show characteristic Raman peaks of graphene. The temperature dependence of electrical transport properties such as 4-probe resistance, thermo electrical power and hall mobility were measured for graphene grown on glass substrates at varying temperature from 500 C to 700 C. The morphological and surface characteristics were also studied by scanning electron microscopy (SEM) and transmission electron microscopy (TEM). This work demonstrates the potential of low temperature and transfer-free graphene growth for future graphene-based electronic applications.

Rong Zhao  
Univ of Louisville

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