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Charge-transfer with CVD graphene: Recent Progress LES SHEFFIELD, IGOR LYUKSYUTOV, DUDLEY HERSCHBACH, DAYA RATHNAYAKA, Texas A&M University — The unique electronic, mechanical, and optical properties of graphene, a one atom thick layer of carbon atoms, were reported in 2004 (Science 22 October 2004: 306 (5696)). One obvious property is the large surface area ($2630 \text{ m}^2/\text{g}$) which indicates that every atom of the sample is capable of adsorbing gas molecules – thus providing the largest sensing area per volume. Utilizing this advantage to fabricate gas sensors requires considerable knowledge into the charge transfer effects exhibited by graphene samples with different types and quantities of surface dopants. Resistivity measurements with gate bias on commercially produced, chemical vapor deposited (CVD) graphene samples with large area are not feasible so far due to leakage through the insulating layer. Starting with 1cmX1cm commercially produced CVD graphene sheets we have prepared samples with mm dimensions for electronic transport measurements with gate biasing. Measurements can be made in a temperature range of 100-400K in high vacuum with the exposure of the sample to different gas beams (Rev. Sci. Instrum. 83, 064102) after degassing at 150°C . Preliminary results of our experiment will be presented.

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