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Transport properties of chemically functionalized graphene GEORGI DIANKOV, FRANCOIS AMET, YONGTAO CUI, ZHI-XUN SHEN, DAVID GOLDHABER-GORDON, Stanford University — We use low-temperature transport measurements and microwave impedance microscopy to investigate the properties of graphene on hBN substrates. In particular, we study the Quantum Hall-insulator transition in pristine graphene and then study its evolution as the graphene is hydrogenated, observing the effect of the interplay between inter-defect distance and magnetic length. Using real-space imaging with microwave impedance microscopy, we observe well-defined edge states and suppression of conductivity in the bulk. We correlate the results from microwave impedance imaging with transport measurements. The study elucidates mechanisms that can be used to introduce controlled amounts of defects and thus, to tune the quantum transport properties of graphene.

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