Abstract Submitted
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High quality charge- and spin transport in graphene on commercially available boron nitride[1] PAUL ZOMER, MARCOS GUIMARAES, SAROJ DASH, NIKOLAOS TOMBROS, BART VAN WEES, Zernike Institute for Advanced Materials, University of Groningen — In order to overcome the limitations that a silicon oxide substrate imposes on the electronic transport properties of graphene, hexagonal boron nitride (h-BN) has proven to be an excellent alternative. We present a fast, simple and accurate transfer technique of graphene, which yields atomically flat graphene flakes on h-BN that are almost completely free of bubbles or wrinkles. Using this transfer technique we prepared single- and bilayer graphene electronic devices on commercially available hexagonal boron nitride and extract mobilities as high as 125 000 cm^2/Vs at room temperature and 275 000 cm^2/Vs at 4.2 K. The high electronic quality is further confirmed by magnetotransport measurements, which show the development of the $1e^2/h$ Landau level already at 5T (P. J. Zomer et al. arXiv:1110.1045v1). Finally, we present very recent results of spin transport in high mobility h-BN supported graphene flakes (P. J. Zomer et al. in preparation). In conclusion, the potential of commercially available boron nitride combined with our transfer technique makes high mobility graphene devices more accessible.

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