

Supplemental Information

Nature of the $1/f$ Noise in Graphene – Direct Evidence for the Mobility Fluctuations

Mechanism

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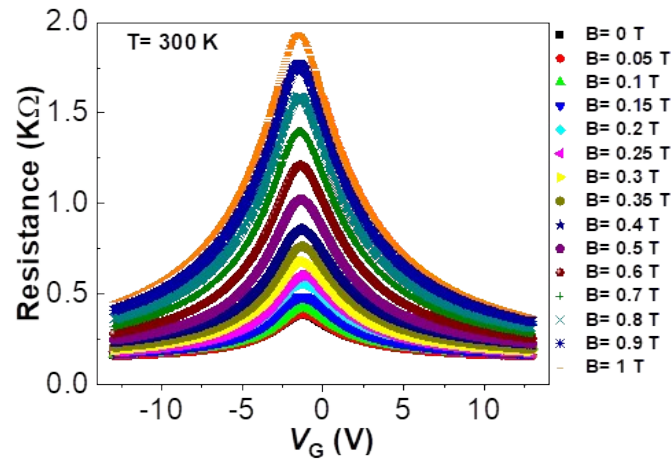


Fig. S1 Transfer I-Vg characteristics of h-BN encapsulated graphene field effect transistor at various magnetic field.

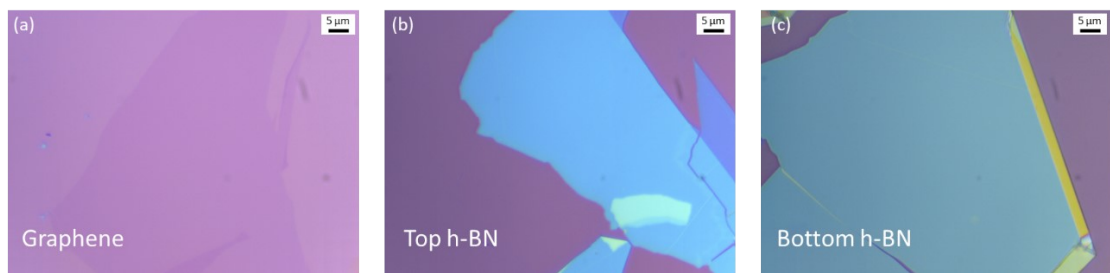


Fig. S2 Optical images of the exfoliated 2D materials. (a) Graphene (b) top h-BN and (c) bottom h-BN flakes exfoliated on a SiO_2/Si (300 nm of SiO_2) substrate before the staking.

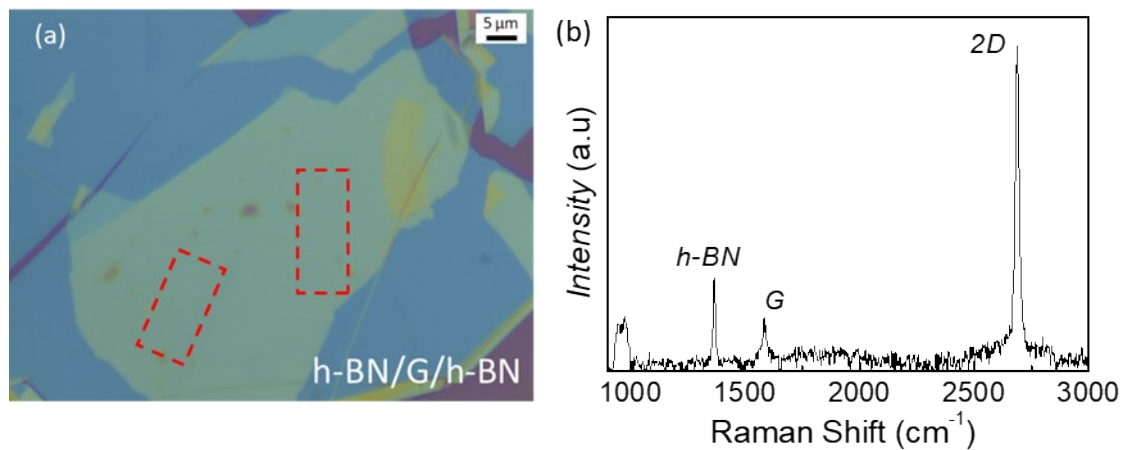


Fig. S3 Optical and Raman spectra of graphene device. (a) Optical image of the final heterostructure (h-BN/Graphene/h-BN) fabricated where the red dashed lines highlight two clean areas used for the GFETs fabrication and (b) its single point Raman spectra, where we found a I_{2D}/I_G peak ratio around 6.

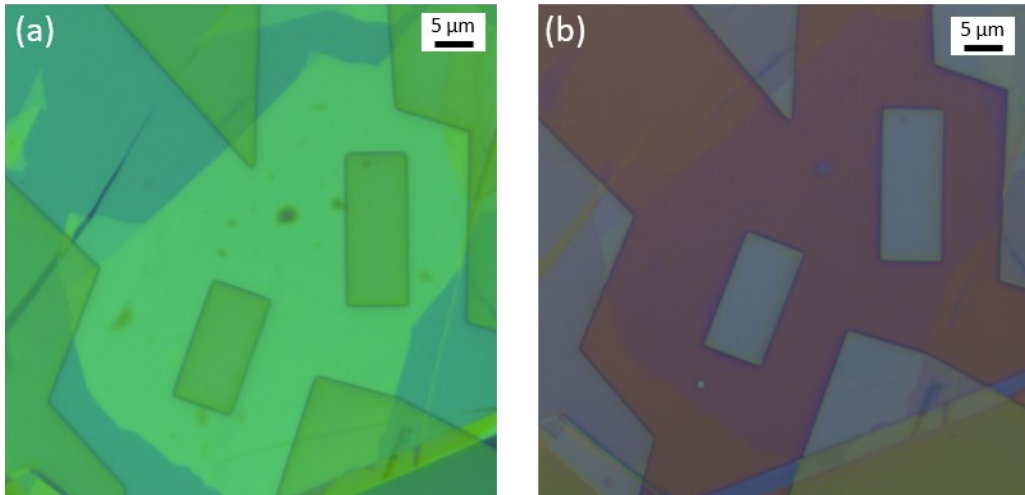


Fig. S4 Optical image of the graphene based heterostructure. (a) after the e-beam lithography process where two bars were defined and (b) after the dry etching process where the resist was used as mask.

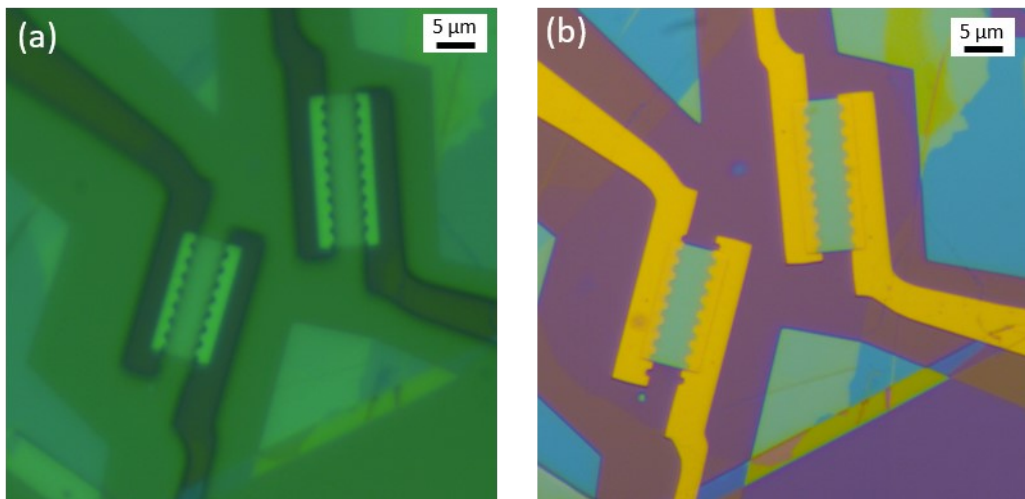


Fig. S5 Optical image of the graphene based heterostructure. (a) after the second round of e-beam lithography process where drain and source contacts were patterned and (b) the final graphene FET where drain and source contacts were metallized.