

Supporting Information

Electric Field-induced Nanopatterning of Reduced Graphene Oxide on Si and a p-n Diode Junction

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Supporting Figures

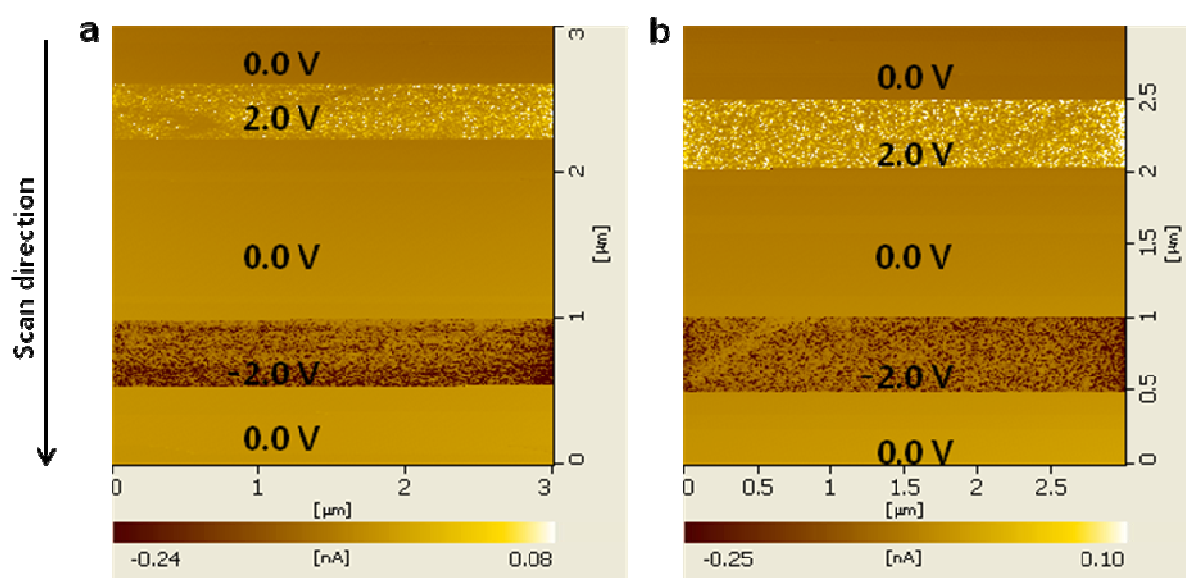


Fig. S1. (a), (b) Current images according to applied voltage to n- and p-doping Si substrates, respectively.

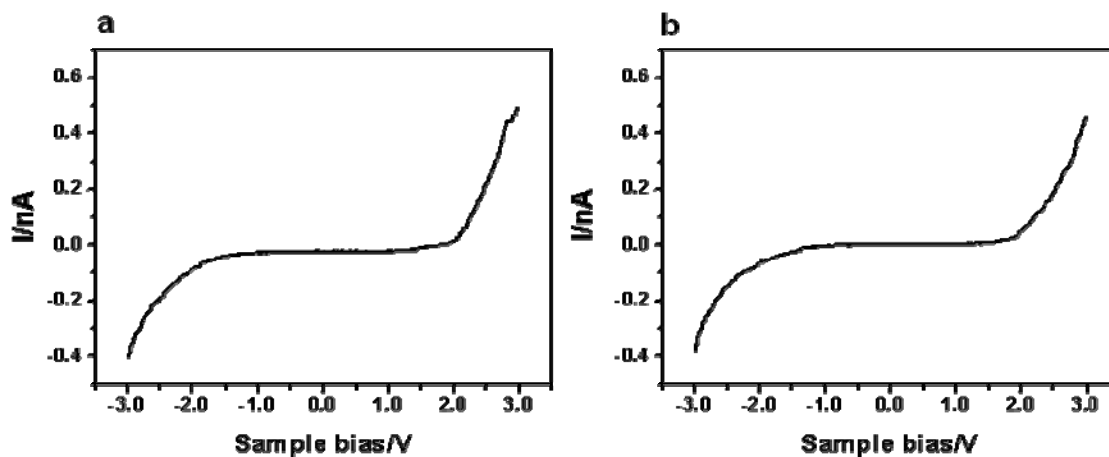


Fig. S2. Current-voltage (I - V) characteristics of (a) n-doping Si and (b) p-doping Si substrates: Au-coated AFM tip was used.

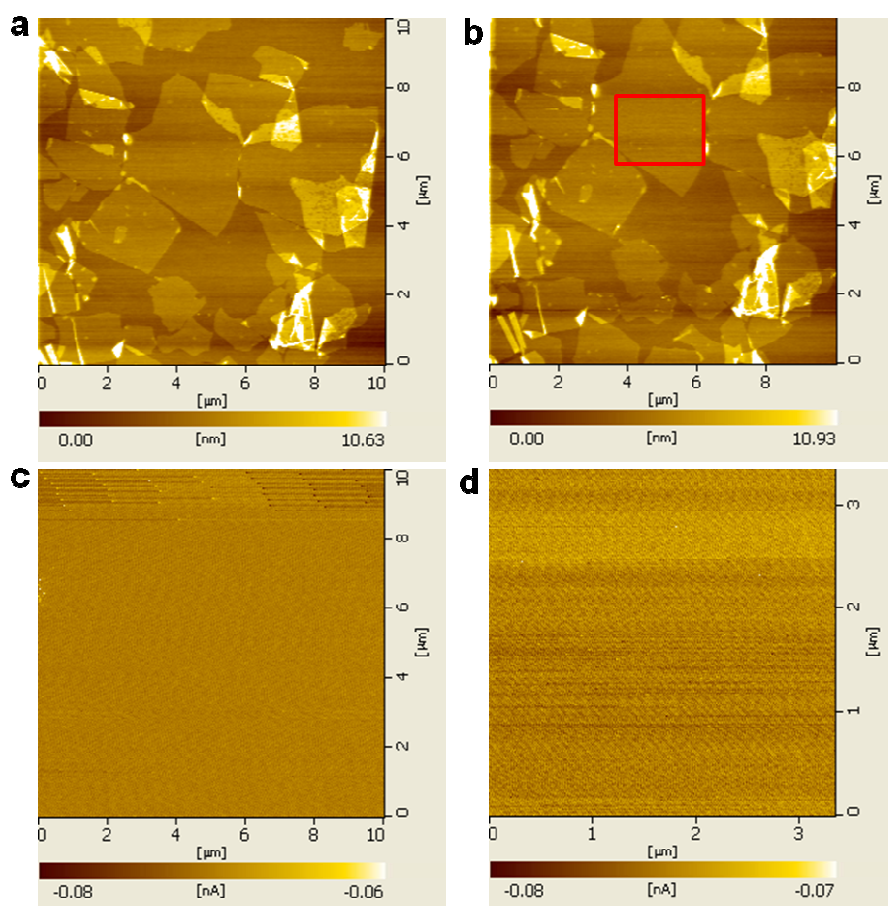


Fig. S3. EFI nanolithography at 35% RH: topographical AFM images (a) before and (b) after the EFI nanolithography at $-5.0 V_{sub}$ on an n-doping Si substrate. The EFI nanolithographic area is marked by a red rectangle in (b). (c) and (d) Corresponding current images at $1.0 V_{sub}$ for (a) and (b), respectively.

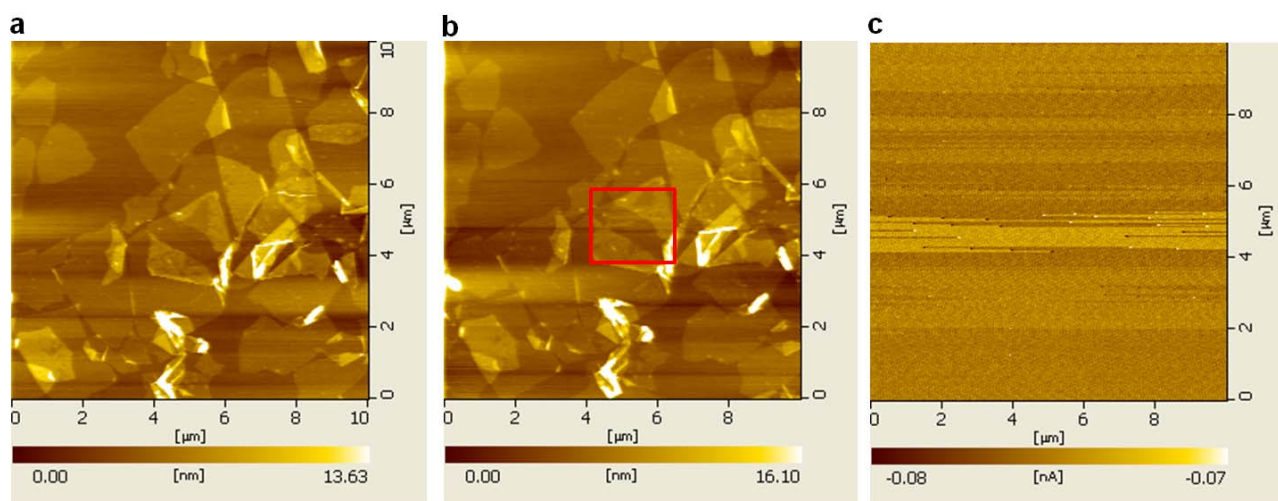


Fig. S4. Topographical AFM images (a) before and (b) after the EFI nanolithography at $-10.0 V_{\text{sub}}$ on a p-doping Si substrate. The EFI nanolithographic area is marked by a red rectangle in (b). (c) Corresponding current image for (b) at $1.0 V_{\text{sub}}$.

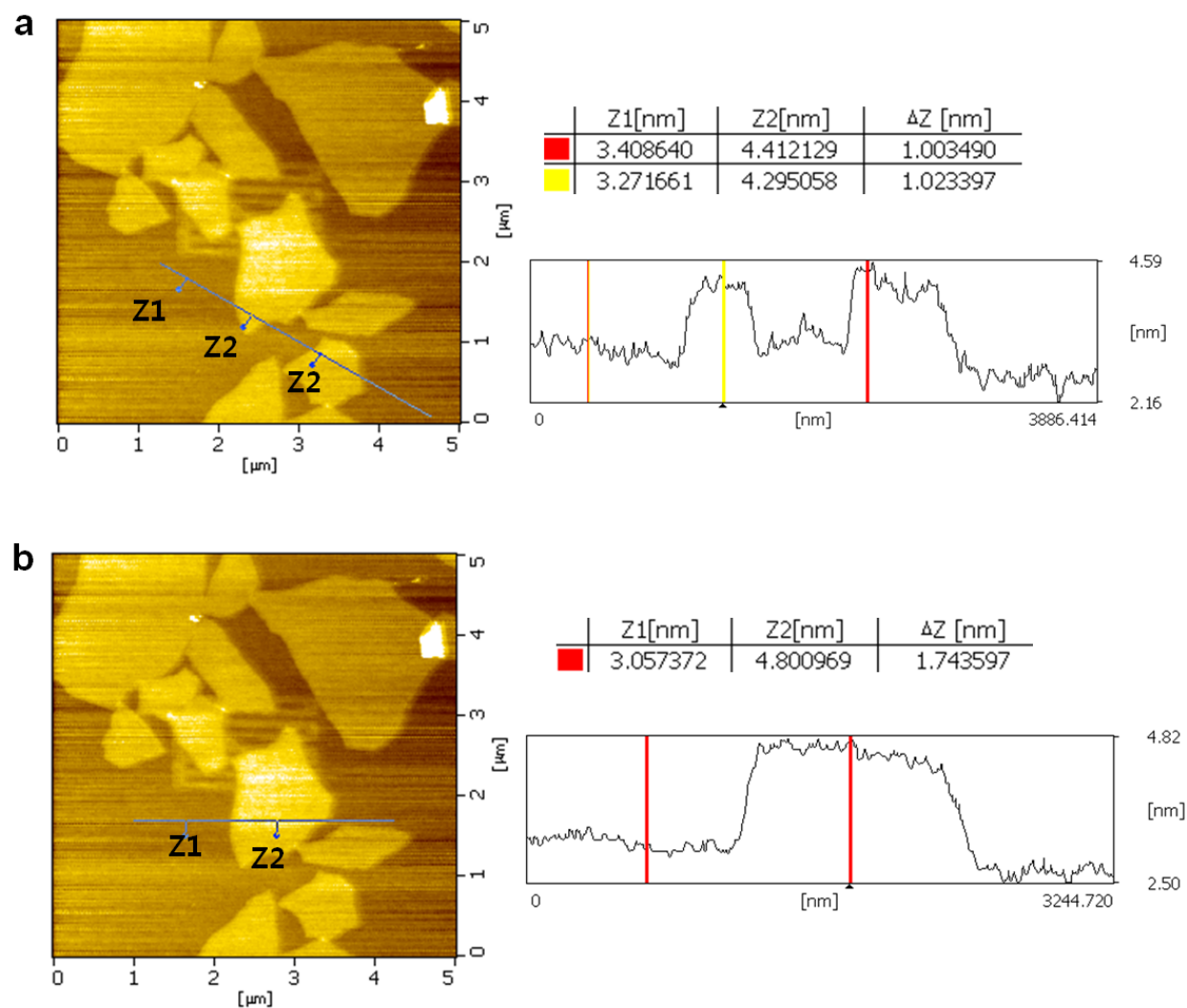


Fig. S5. Cross-sectional analysis for topographical AFM image of GO on p-doping Si after the EFI lithography at 5.0 V_{sub} . (a) Z2 (red) and Z2 (yellow) indicate rGO/Si and GO/Si, respectively. (B) Z2 indicates rGO/SiO_x.

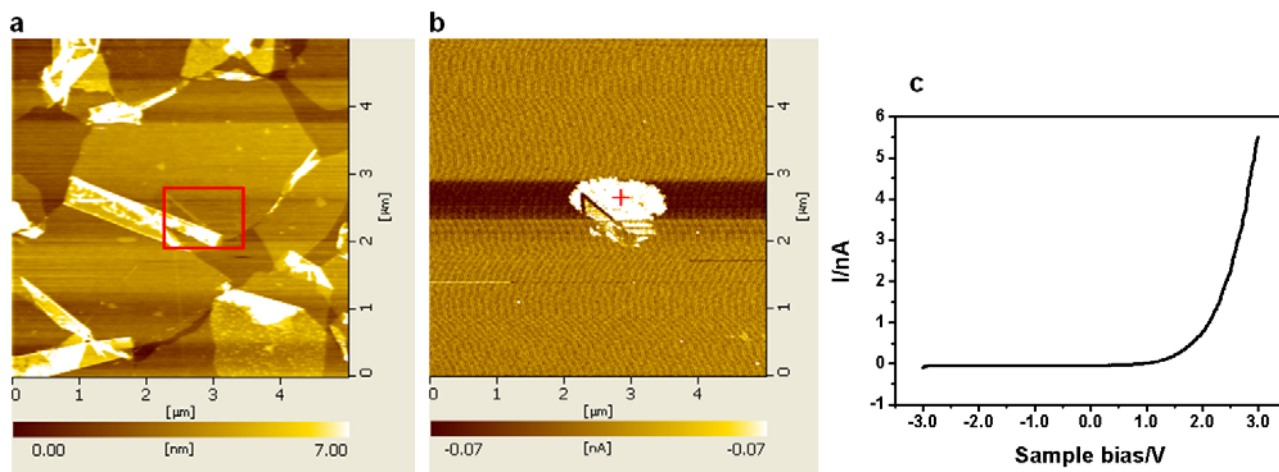


Fig. S6. (a) Topographical AFM image and (b) corresponding current image after the EFI nanolithography at 5.0 V_{sub} on an n-doping Si substrate. The EFI nanolithographic area is marked by a red rectangle in (a). Current image was taken at 1.0 V_{sub} . (c) Current-voltage (I - V) characteristics of a point (+) in (b): Au-coated AFM tip was used.

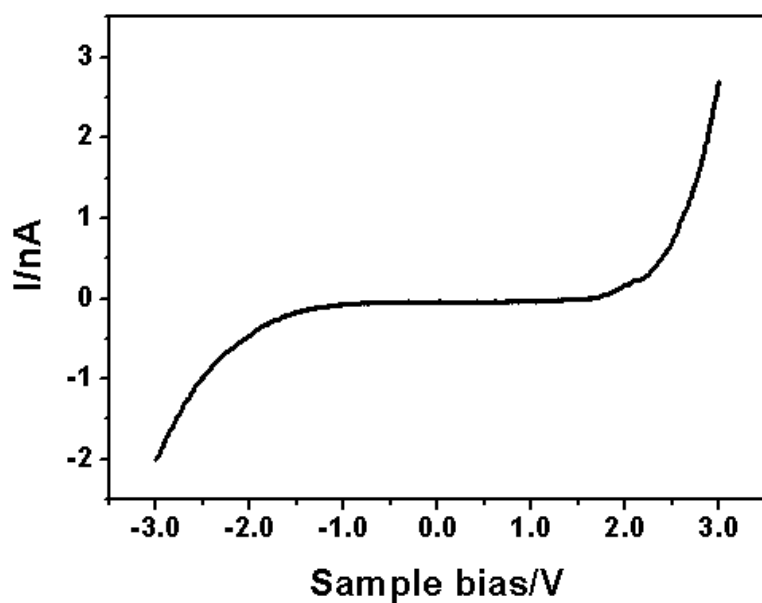


Fig. S7. Current-voltage (I - V) characteristics of rGO/p-doping Si (Fig. 4b): Au-coated AFM tip was used.