

SUPPORTING INFORMATION

Control of the Electronic Structure of Graphene by Various Dopants and Their Effects on a Nanogenerator

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Optical image of graphene film transferred on 300 nm SiO₂/Si wafer. For TEM sample preparation, a size of 1 x 1 cm² graphene on Catalyst film (Ni or Cu) was floated on the etchant. After 20 min, Catalyst film (Ni or Cu) was fully etched away. Then, the etchant solution was diluted with deionized water to rinse the remaining etchant. Finally, the graphene sheet was simply picked up by carbon-coated copper grid. TEM observation of graphene sheet was done by JEM 2100F (JEOL).

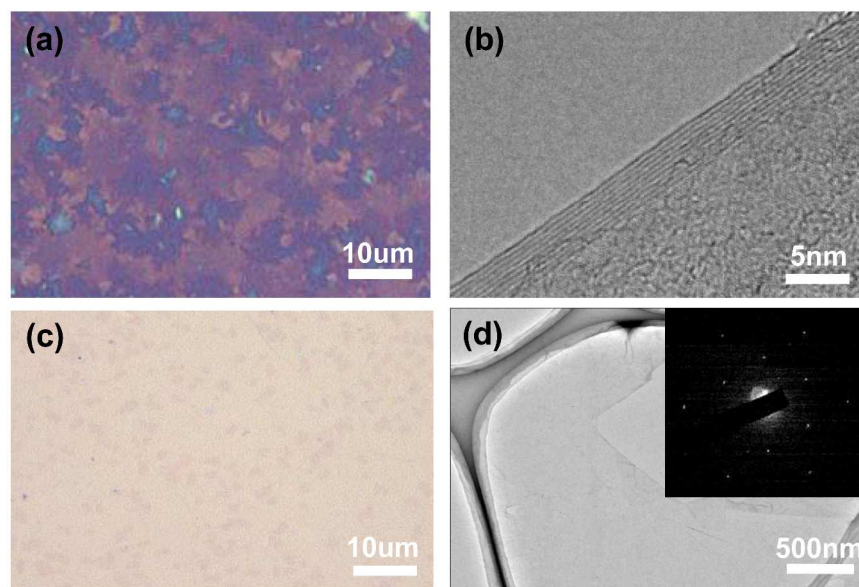


Figure S1: (a) Optical image and (b) TEM image of multiple graphene layers grown on Ni film with 72% transmittance. (c) and (d) show the corresponding images for monolayer graphene grown on Cu foil (inset ; electron diffraction pattern image).

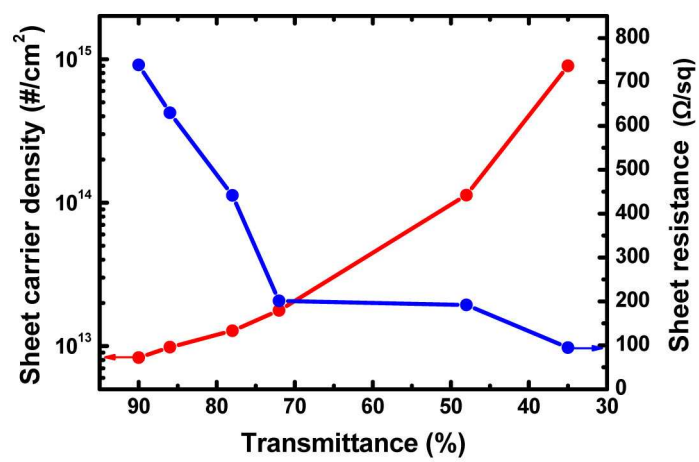


Figure S2: Sheet carrier density (left) and sheet resistance (right) as a function of transmittance at 550 nm.

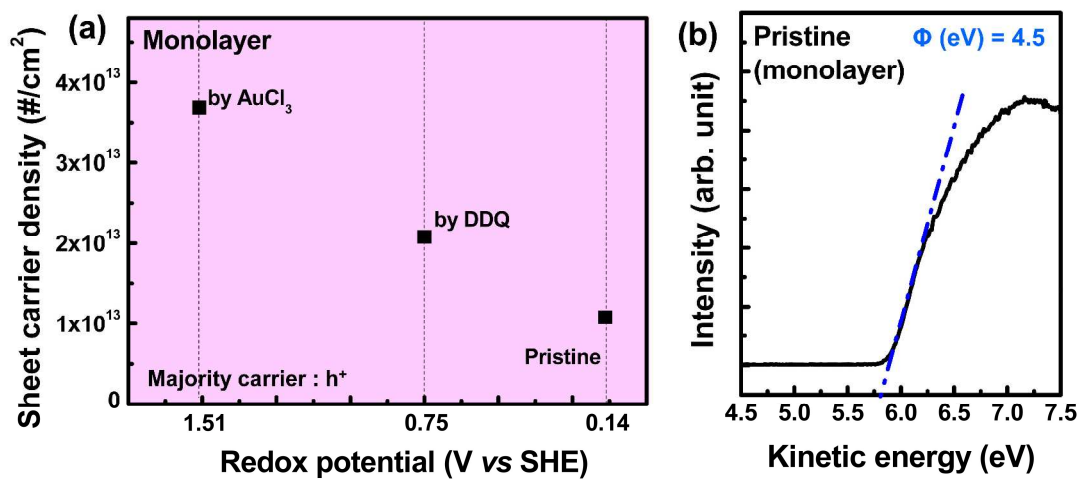


Figure S3: (a) Sheet carrier density according to dopants and (b) work function of monolayer graphene.

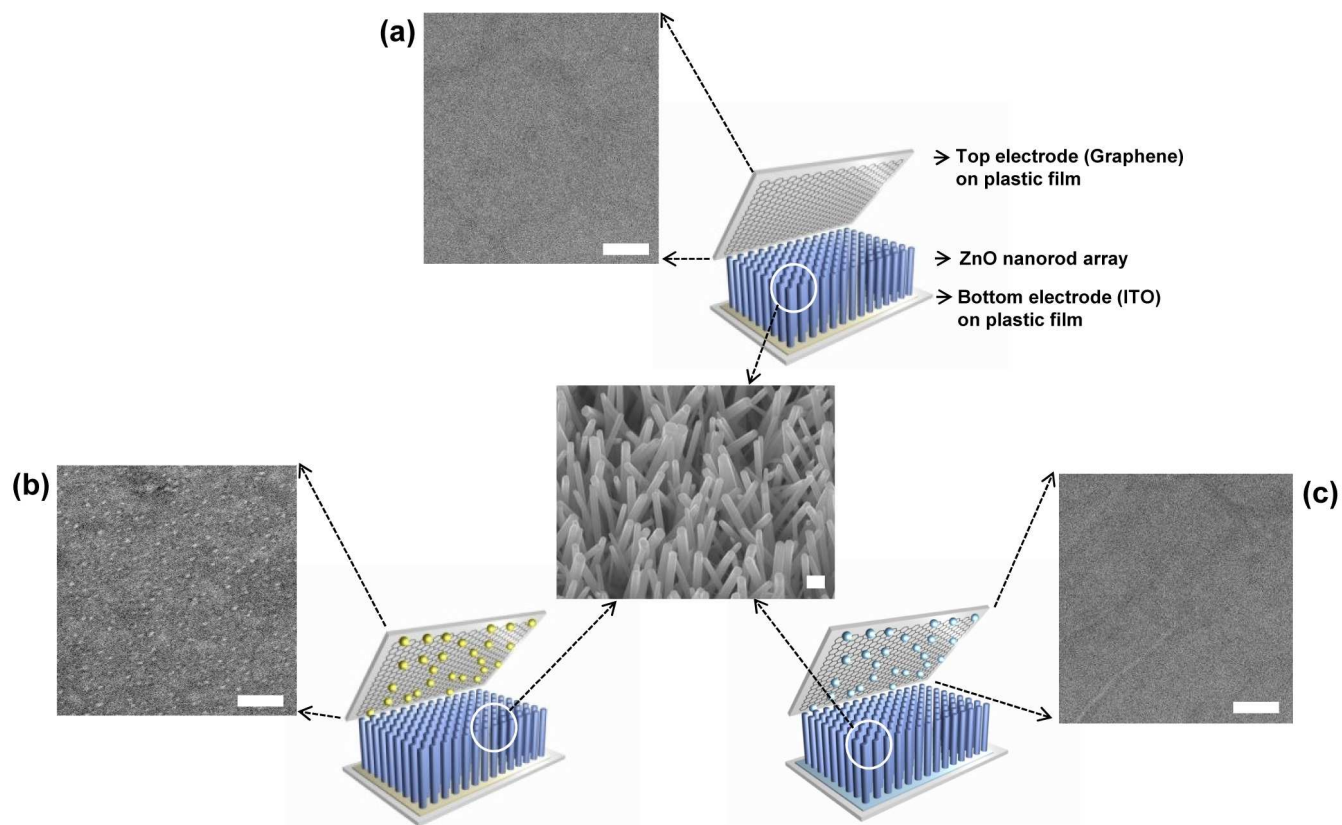


Figure S4: Charge-generating piezoelectric nanodevice with graphene electrode of a different work function on ZnO nanorods. (a) The pristine graphene with a work function of 4.5 eV and its surface morphology, (b) Au-doped graphene with a work function of 4.8 eV and Au nanoparticles (Au^0) below 10 nm exist on the graphene surface, and (c) BV-doped graphene with a work function of 4.0 eV and its morphology was similar to the pristine graphene. (Scale bar = 100 nm)