Electronic Supplementary Material (ESI) for RSC Advances.

Supporting Information

Wide-range work-function tuning of active graphene transparent electrodes via hole doping

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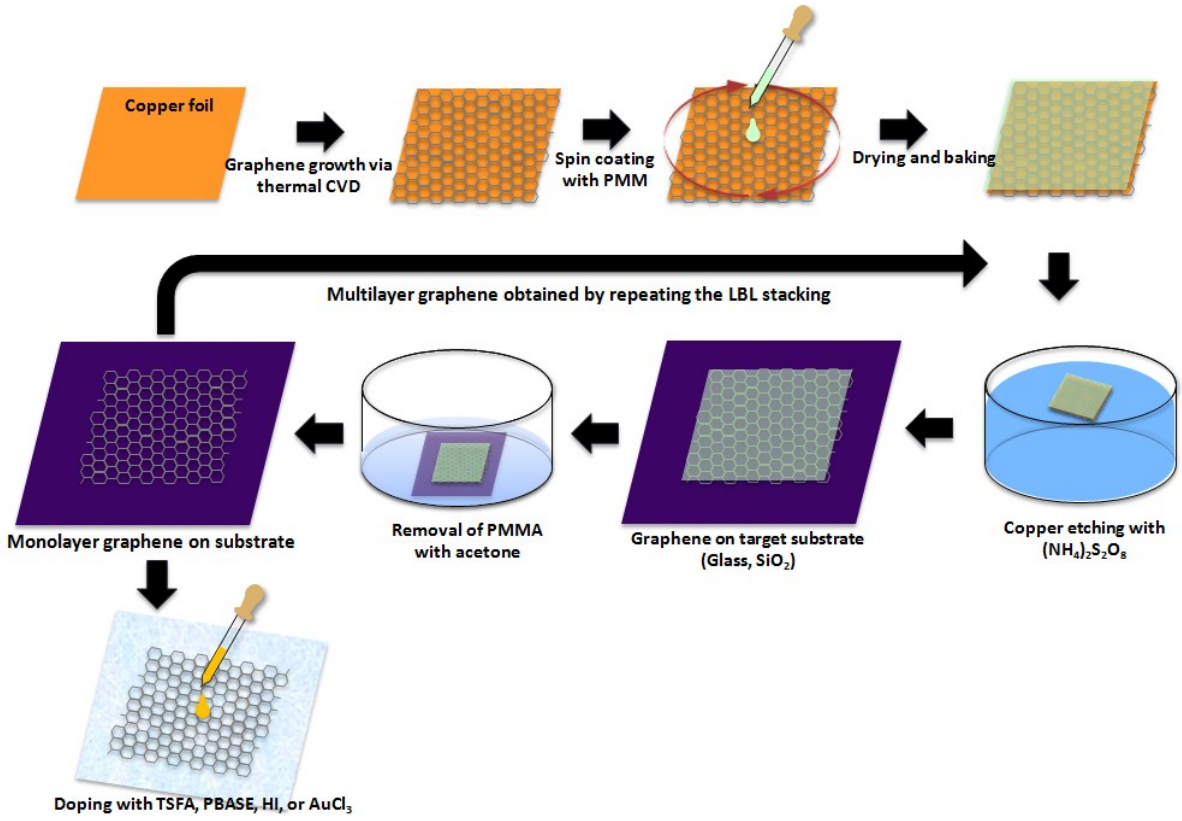

Figure S1. Schematic illustration of the LBL transfer and stacking of CVD-grown graphene. The processes can be divided into three main steps: (1) PMMA-assisted transfer onto the target substrate, (2) LBL stacking via the repetition of step (1) to achieve the desired number of graphene layers, and (3) chemical doping with the desired dopants.

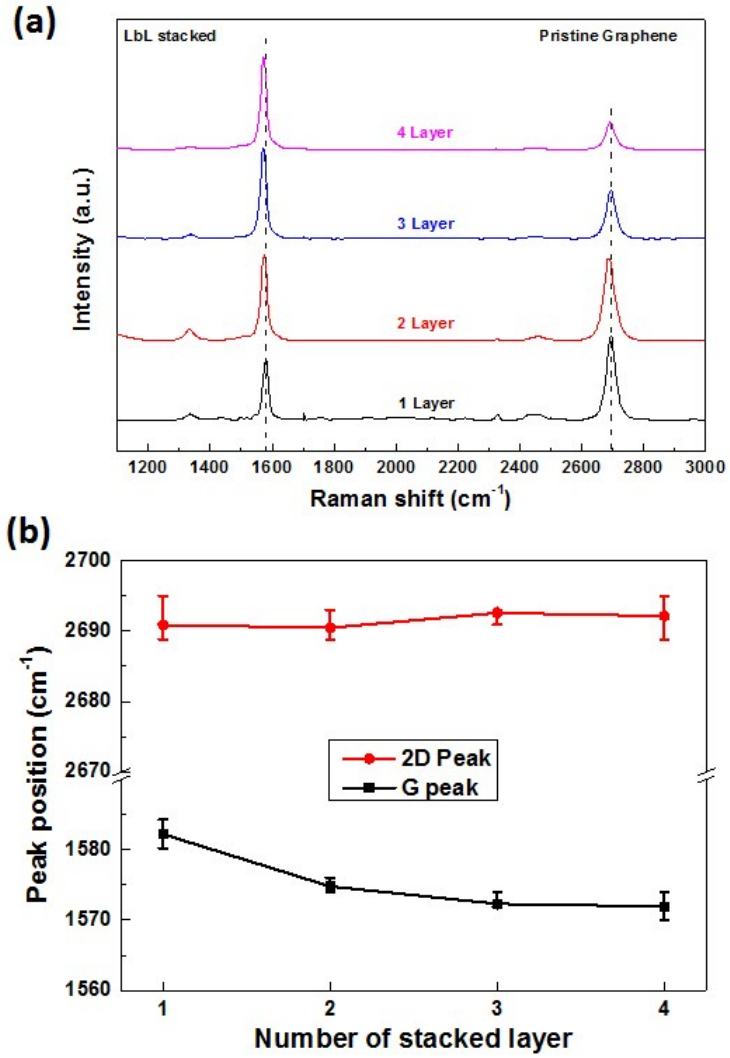

Figure S2. (a) Raman spectra of pristine graphene with different numbers of graphene layers.(b) The statistical G and 2D peak position analysis in (a).

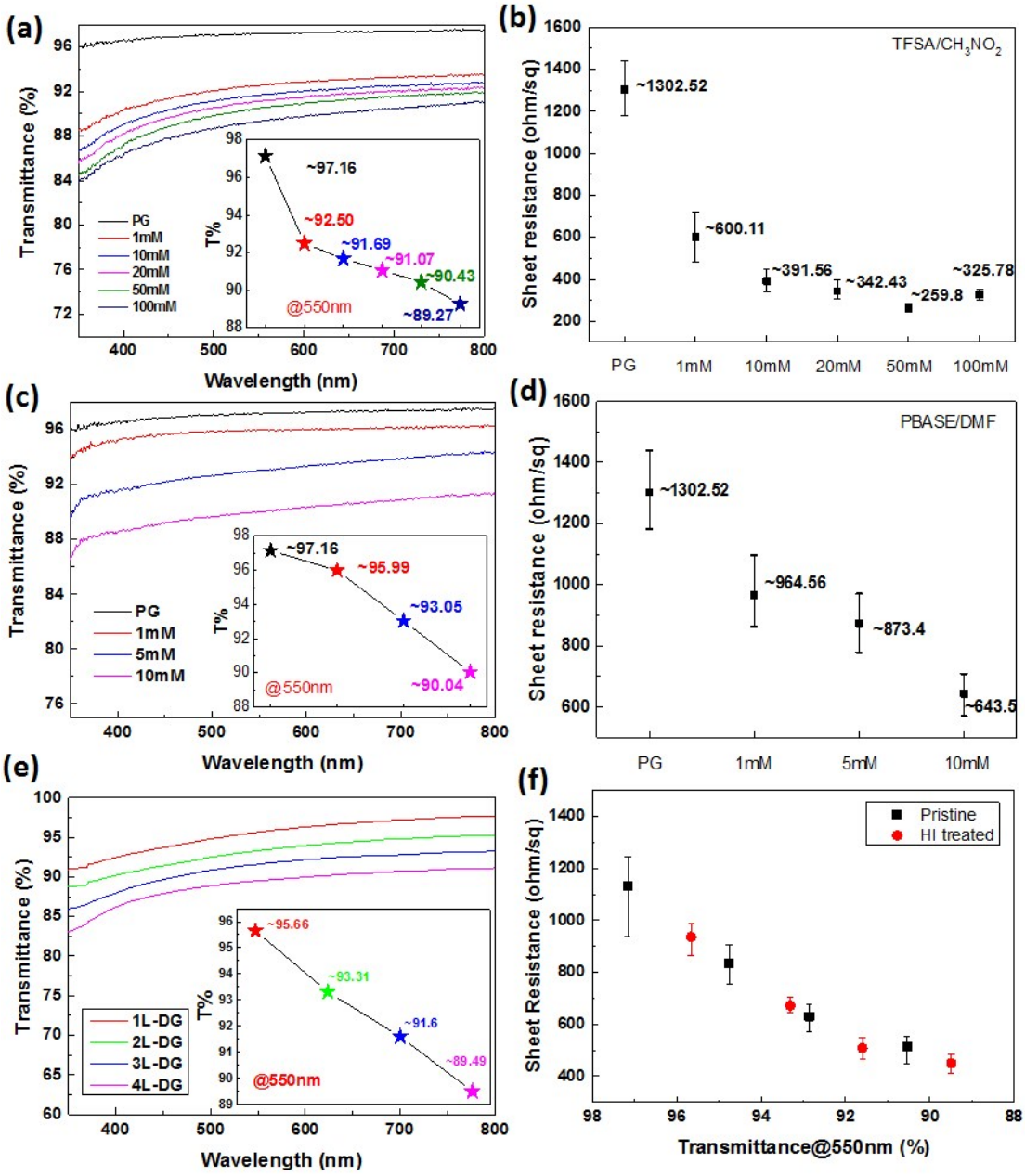

Figure S3. The transparency and sheet resistance for various doping approaches: (a)-(b) The TSFA doping. (c)-(d) PBASE doping. (e)-(f) HI vapor doping.

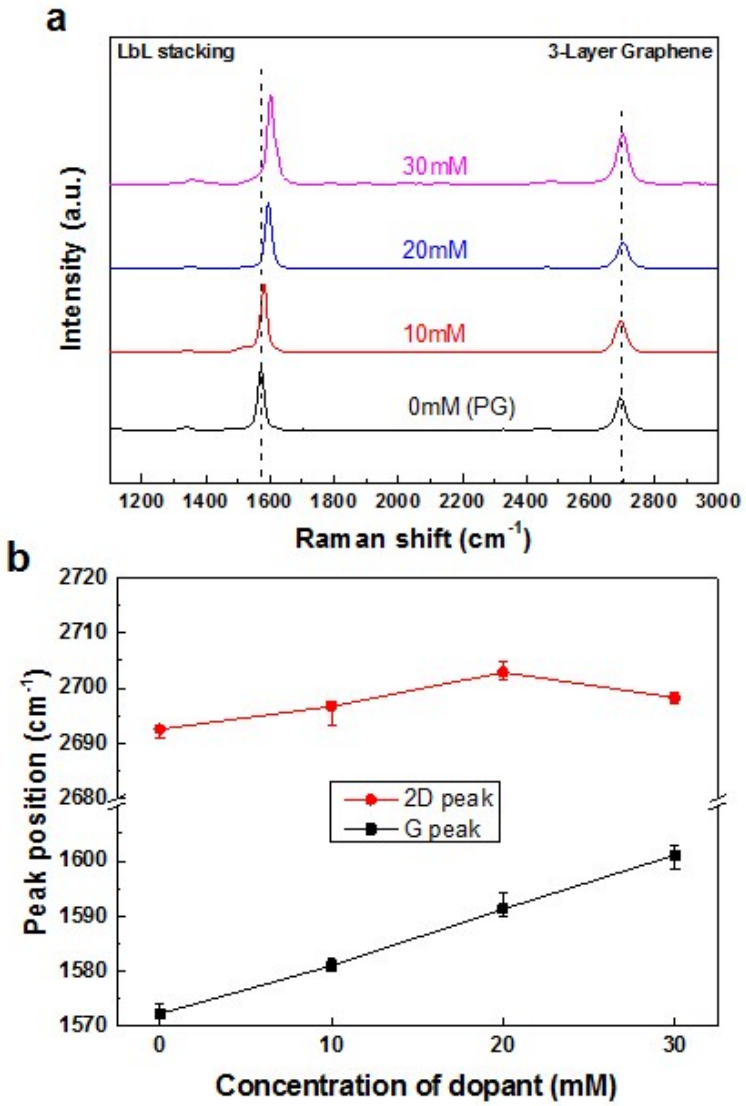

Figure S4. (a) Raman spectra of pristine graphene with different $AuCl_3$ doping concentrations.(b) The statistical G and 2D peak position analysis in (a).

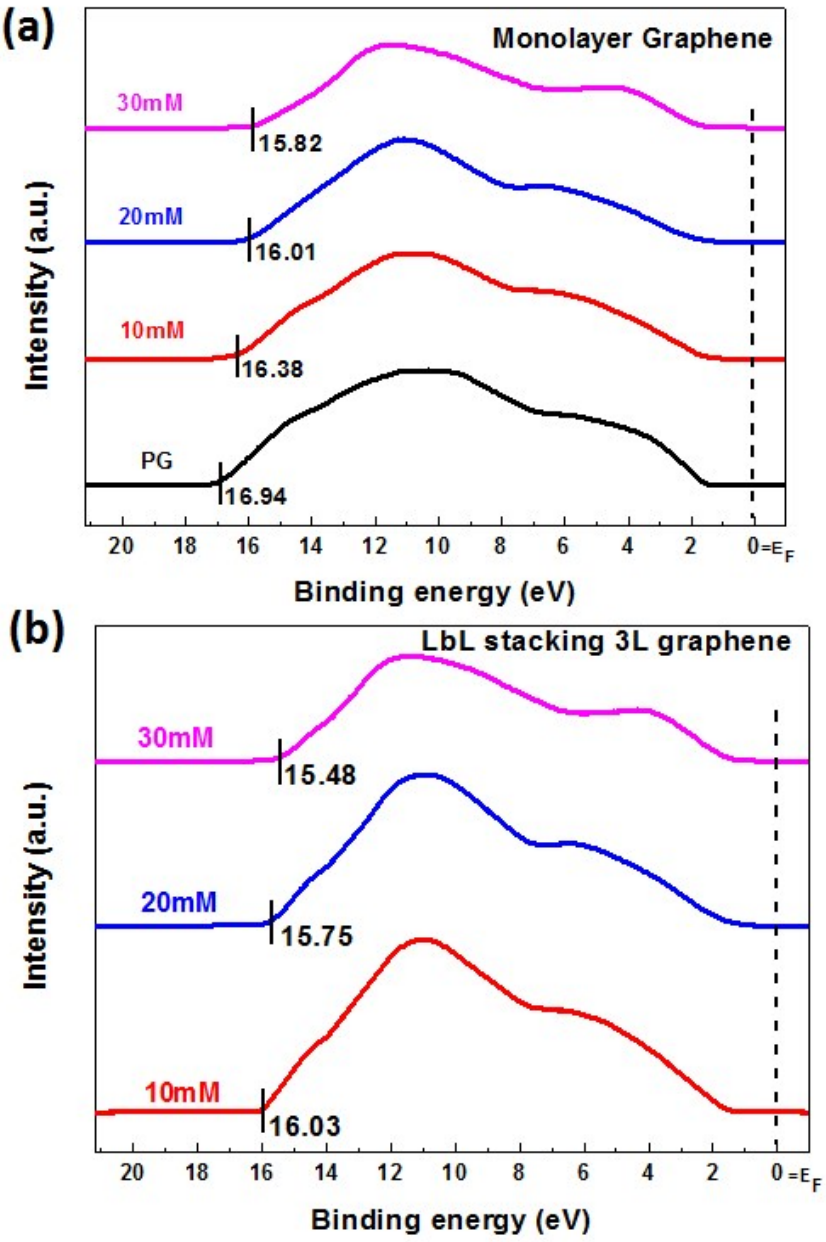

Figure S5. The full photoemission spectra for $AuCl_3$-doped (a) monolayer and (b) 3L stacking graphene film at various concentrations

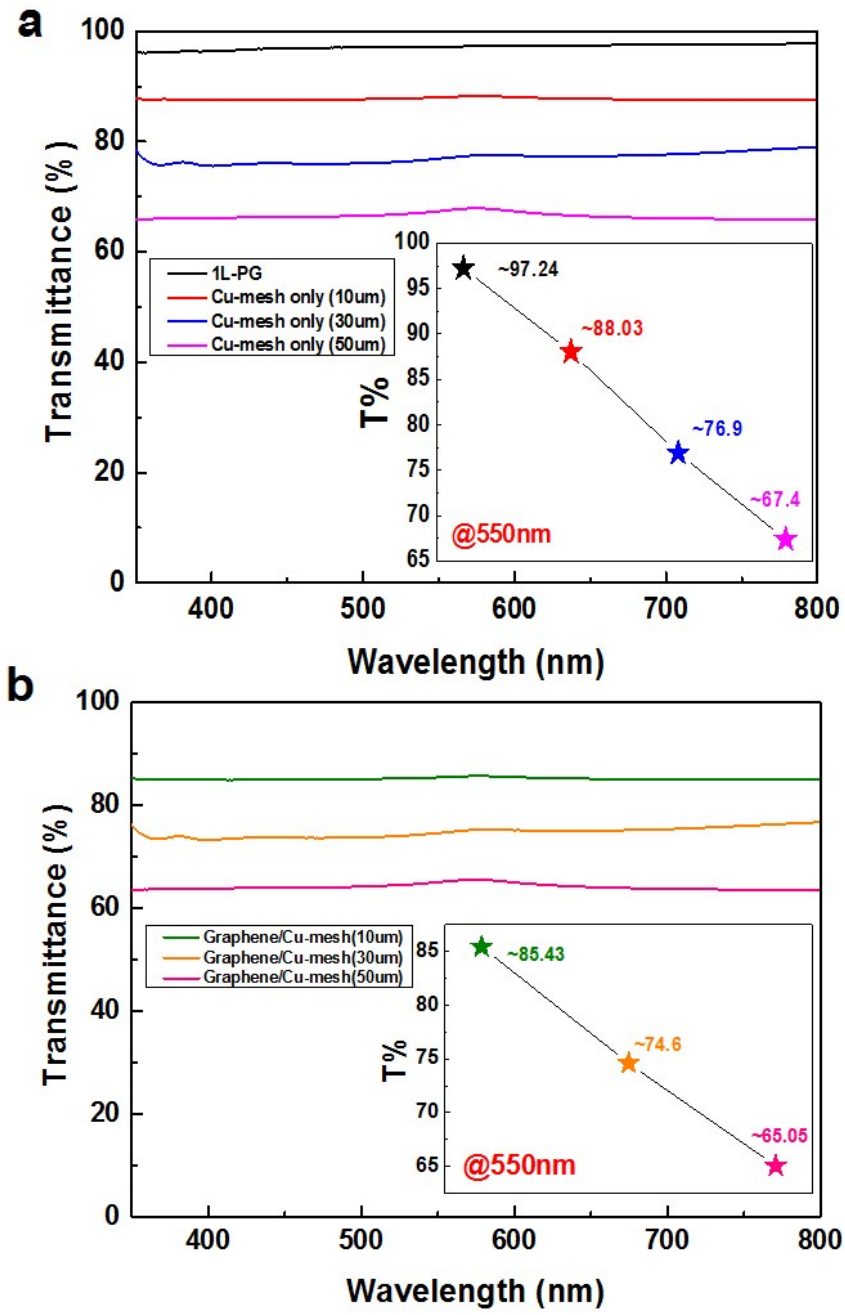

Figure S6. The transparency of (a) pristine graphene film and Cu mesh only with various grid widths of 10, 30, and 50 μm; (b) hybrid electrode composed of doped graphene and Cu mesh with various grid widths.

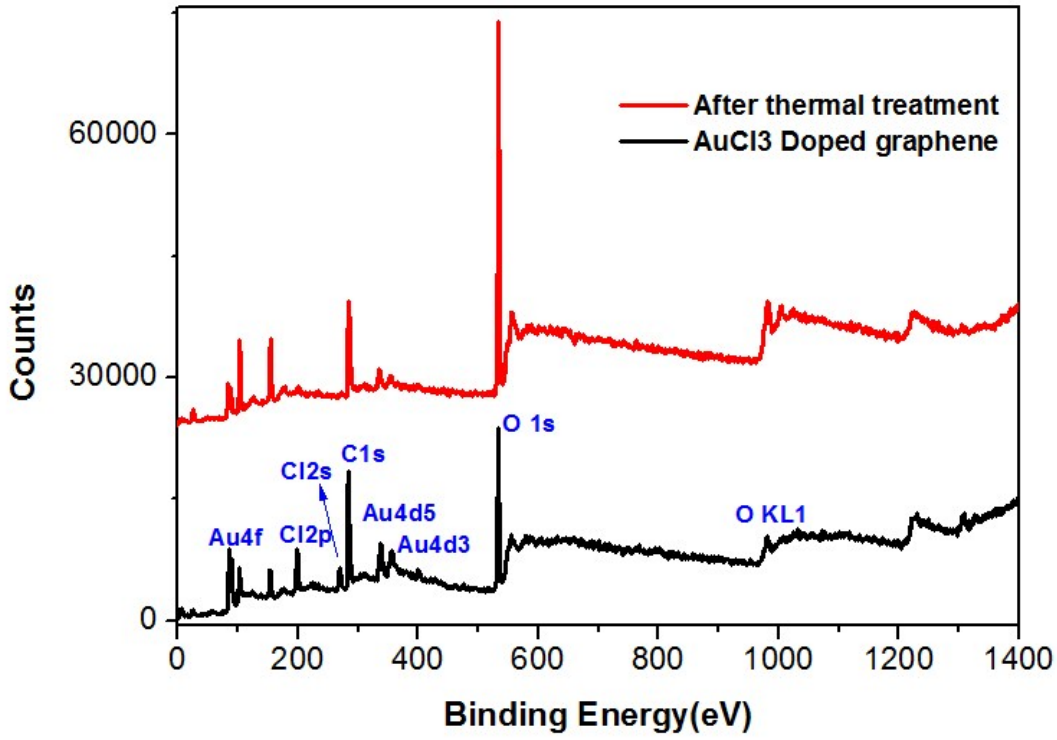

Figure S7. The XPS survey spectra for the initial doped graphene sample and the sample subjected to thermal treatment. When compare the ratio of C1s/Cl2p, the Cl concentration were significantly reduced from 15.45 at% to 2.86 at%, suggesting the increase of sheet resistance is mainly from Cl ion desorption.