SUPPORTING INFORMATION FOR

Selective Detection of Carbon Monoxide (CO) Gas by Reduced Graphene Oxide (rGO) at Room Temperature

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Results and discussion

The surface topography was examined and the height of different graphene fakes was measured using atomic force microscopy (AFM) and its associated height profile (Fig. S1). The dimensions of the graphene layer was about 1μ x 1μ and was mostly uniform. The topography measurement of the graphene surface level using AFM in the figure shows that the surface of the graphene is covered with regular network of mono-atomic steps. The color scale height variation is between 5 to 30 nm. The figure also depicts the presence of more than one over-lapped sheets. This observation was further confirmed by the field emission scanning electron microscopy (FESEM; shown as inset of Fig. S2). From FESEM study, continuous layer of more than 10 μ was observed, which is advantageous for device fabrication. It is reported that the step height of a mono layer graphene is 5-10 Å[1] and layer-to-layer spacing in bulk graphite is 3.4 Å.[2] Since, our synthesized graphene's inter-layer spacing was only 3.6 Å (obtained from x-ray analysis) so, we may confer that our sample consists of 2 to 3 nos. of graphene layers. From the height profile observation, it was found that the apparent height was 2 nm.

Ultraviolet-visible (UV-Viz.) spectra of reduced graphene oxide (RGO) is shown in Fig S2. The characteristic absorption peak at 265 nm is attributed to the excitation of π Plasmon of graphitic structure.[3]

References

1 J. Moser, A. Verdaguer, D. Jiménez, A. Barreiro, A. Bachtold, *Appl. Phys. Let*., 2008**,** **92**, 123507–123507-3.

2 M. Ishigami, J. H. Chen, W. G. Cullen, M. S. Fuhrer, E. D. Williams, *Nano Lett*., 2007, **7(6)**, 1643-1648.

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Figures

Fig. S1: AFM image of a multilayer graphene flake with height profile [INSET: FESEM micrograph of RGO].

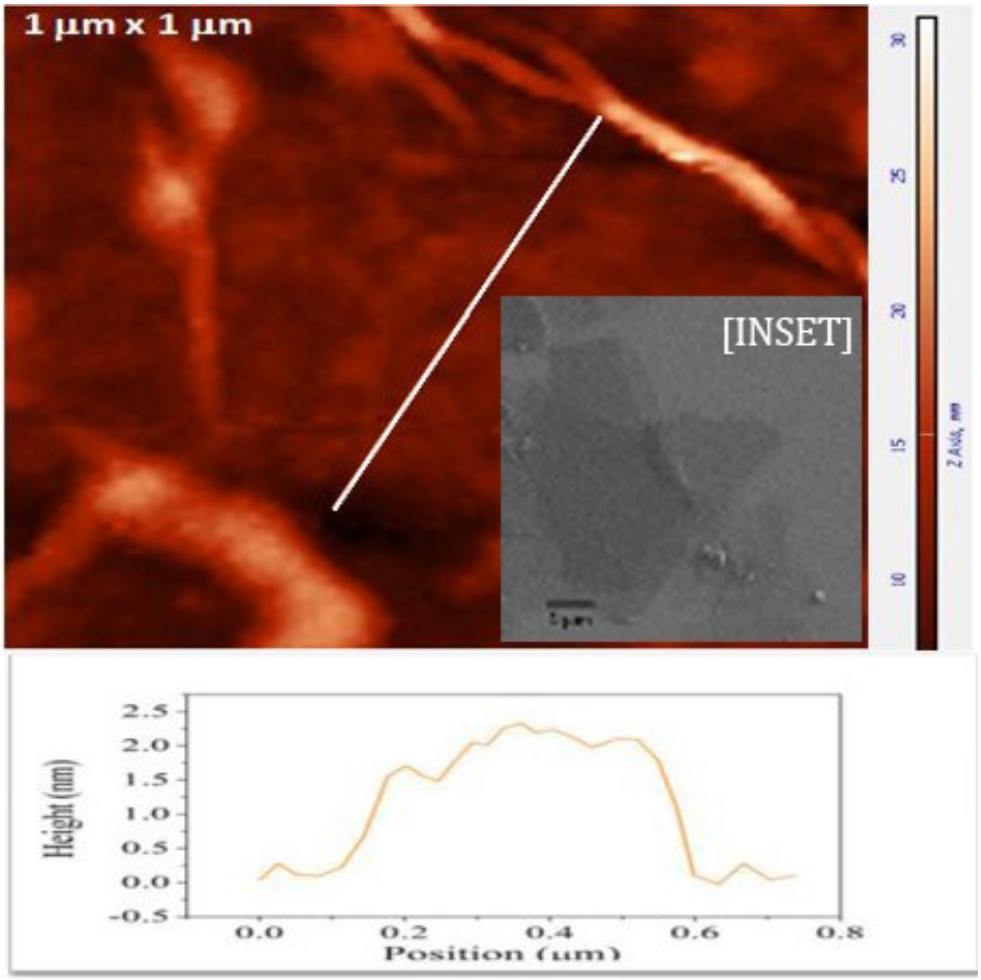

Fig. S2: UV-Visible spectra of RGO.