

## Step like surface potential on few layered graphene oxide

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### Abstract

Graphite oxide (GO) and its derivatives have attracted much interest recently as a possible route for the large-scale production of graphene [1]. Due to its two dimensional nature, mechanical resilience [2] and tunable conductivity [3] it is being tested for a variety of application that, among others, include, transparent conducting films, sensors, transistors and double layered capacitors.

Many of these applications involve deposition of graphene oxide films on either metal or insulating supports. We report surface potential maps of few layered graphene oxide films on different metallic substrates. Kelvin probe force microscopy images reveal that the surface potential decreases in steps with increasing number of layers on the substrate until five layers are reached, where it saturates to a constant value [4].

Electrostatic Force Microscopy proves to be a fast and suitable technique to quickly determine the coverage of GO. We also present a detailed study on how environmental conditions influence these measurements.

### References

- [1] Park, S., and Ruoff, R.S., *Nature Nanotechnology*, **10** (2009) 1038.
- [2] Gomez- Navarro, C., Burghard, M., and Kern, K., *Nano Letters*, **8(7)** (2008) 2045.
- [3] Jung, I., Dikin, D. A., Piner, R. D., and Ruoff, R. S., *Nano Letters*, **8 (12)** (2008) 4283.
- [4] Jaafar, M., López-Polín, G., Gómez-Navarro, C. and Gómez-Herrero, J., *Applied Physics Letters*, **101** (2012) 263109.

### Figures

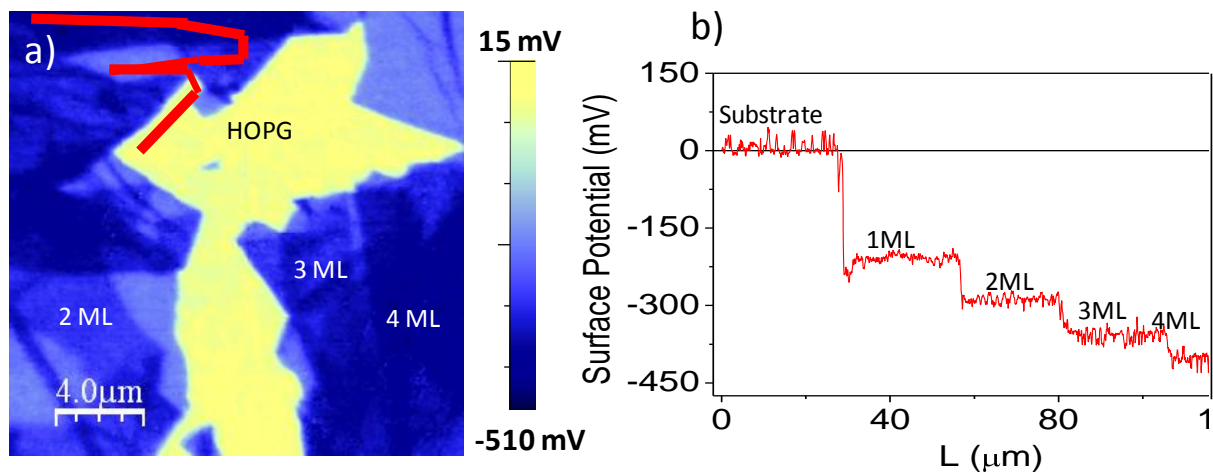


Figure 1. (a) Surface potential map of GO deposited on HOPG. Equipotential areas corresponding to different coverages can be appreciated. (b) Profile performed on the surface potential map following regions with different coverages (The red line in (a) indicates schematically the paths followed to perform the profile)