Electronic Supplementary Information (ESI)

Covalently Functionalized Reduced Graphene Oxide by Organically Modified Silica: A Facile Synthesis of Electrically Conducting Black Coatings on Glass

Koushik Bhowmik, Sourav Pramanik, Samar Kumar Medda and Goutam De*

Nano-Structured Materials Division, CSIR–Central Glass and Ceramic Research Institute, 196, Raja S. C. Mullick Road, Kolkata 700032 (India). E-mail: gde@cgcri.res.in

IR study of the as prepared graphene oxide (GO)

IR-spectrum (Fig. S1) of GO shows peaks at 1280 and 850 cm⁻¹ for asymmetric stretching and bending of -C-O-C- (epoxy) vibrations respectively.³⁴ The observed strong peaks at 1173, 1060, 1007 and 889 cm⁻¹ are due to C-OH stretching, C-O stretching, C-H in plane bending and possibly C-H out of plane wagging vibrations, respectively.³⁵ The peak at 1403 cm⁻¹ indicates presence of =C-H vibration.³⁶ A peak appeared at 1730 cm⁻¹ is due to the C=O stretching.³⁷ The peaks at 3400 (broad) and 1623 cm⁻¹ can be assigned as O-H stretching and H-O-H bending, respectively.



Fig. S1 IR spectrum of GO.



Fig. S2 Schematic representation of the lamellar structure of polymerized GLYMO functionalized with GO (FGO film). The interlayer distance (1.9 nm) observed from the low angle XRD analysis has been shown.



Fig. S3 TEM images of FRGO composite film.



Fig. S4 Schematic diagram showing the I-V measurement setup of FRGO film