Electronic Supplementary Material (ESI) for Journal of Materials Chemistry C

Supporting information

Synthesis, characterization and morphology of reduced graphene oxide-metal-TCNQ nanocomposites

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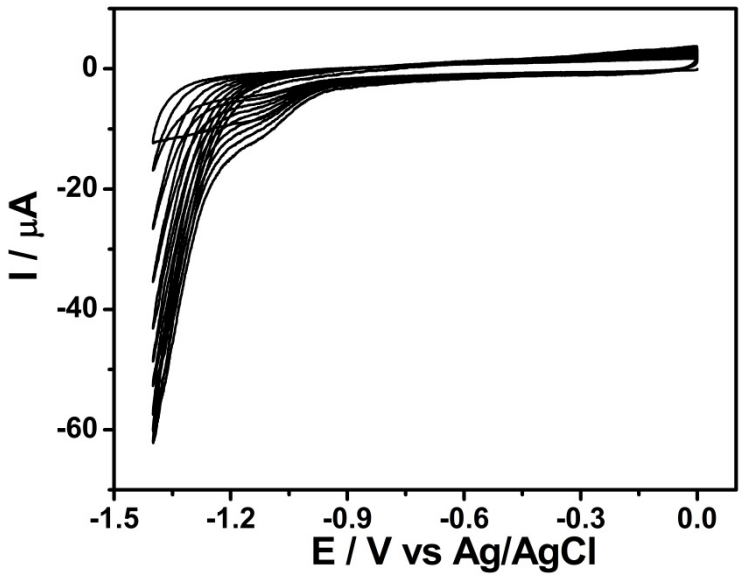

Figure S1. Cyclic voltammograms derived from reduction of 1.0 mg mL^{-1} GO in 0.05 M Na_2HPO_4 at a GC using a scan rate of 50 mV s^{-1} and cycling the potential 10 times between 0 and −1.4 V *vs* Ag/AgCl (3 M NaCl).

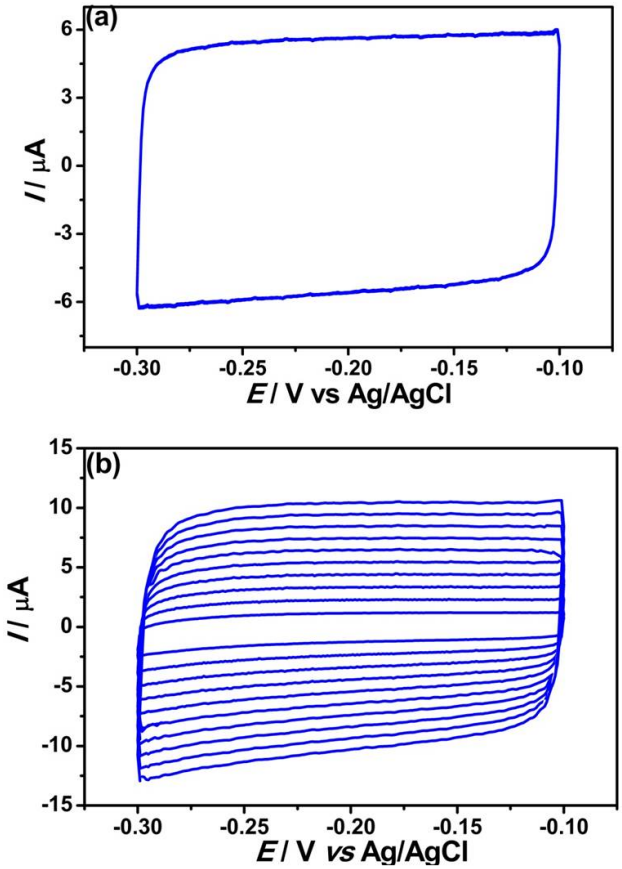

Figure S2. (a) Cyclic voltammogram obtained from a GC/rGO/Ag electrode in aqueous 0.5 M KCl electrolyte using a scan rate of 50 mV s^{-1}. (b) Cyclic voltammograms obtained as for (a) but as a function of scan rate (10 - 100 mV s^{-1}).

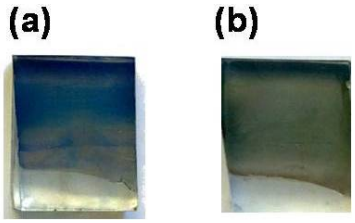

Figure S3. Photographs of well-washed substrate formed on an FTO substrate formed after 5 s of reaction time between (a) rGO/Ag and (b) rGO/Cu films, respectively, and a 10 mM TCNQ acetonitrile solution.

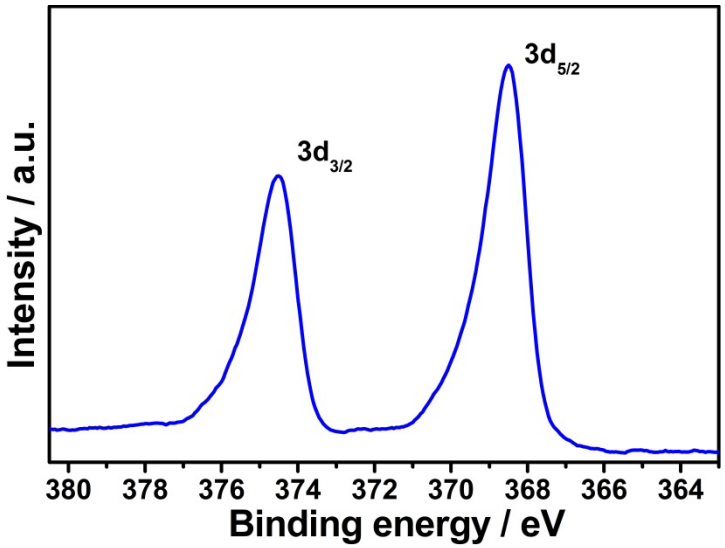

Figure S4. XPS spectra in the $3d^5$ region of a rGO/AgTCNQ sample on an FTO substrate formed by 5 s of reaction time between a rGO/Ag film and a 10 mM TCNQ acetonitrile solution.

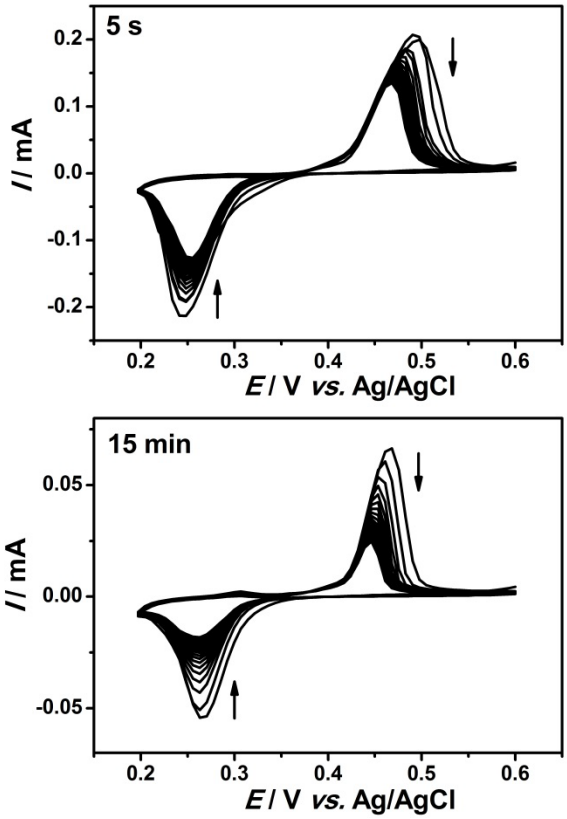

Figure S5. Voltammograms obtained at a scan rate at 20 mV s^{-1} for rGO/copper-TCNQ modified GC electrodes in contact with 0.1 M $CuSO_4$ when the rGO/copper-TCNQ electrode was prepared by 5 s and 15 min reaction times of a rGO/Cu modified GC electrode with a 10 mM TCNQ solution in acetonitrile.

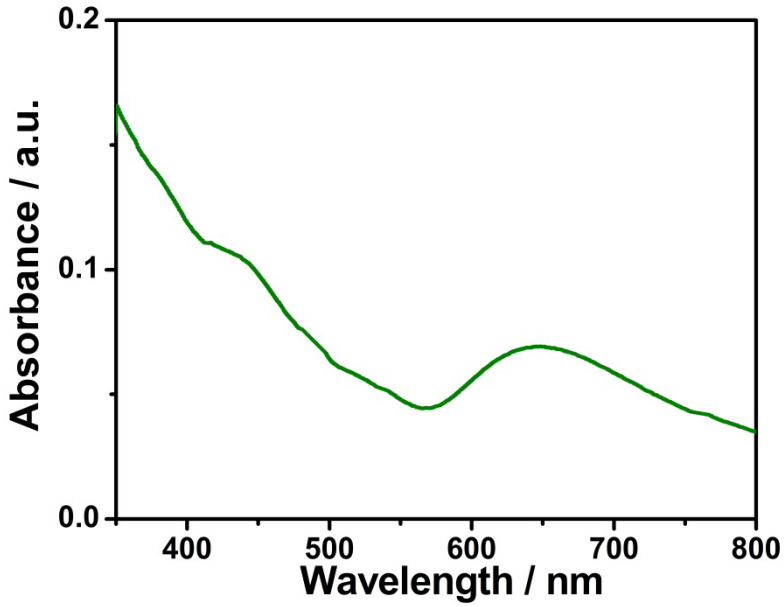

Figure S6. UV-Vis absorption spectra of a rGO/copper-TCNQ film on an FTO substrate after 15 min of reaction time between a rGO/Cu film and a 10 mM TCNQ acetonitrile solution.

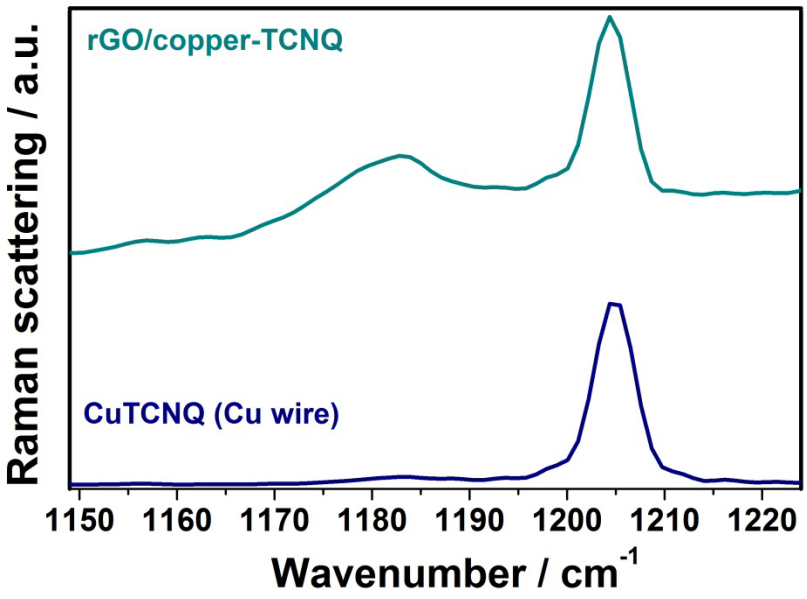

Figure S7. Raman spectra on an FTO substrate derived from copper-TCNQ prepared from reaction of a 10 mM TCNQ acetonitrile solution with Cu wire (lower curve) and a rGO/copperTCNQ composite film (upper curve) where the band at 1183 cm^{-1} is assigned to the presence of the $TCNQ^{2-}$ dianion.

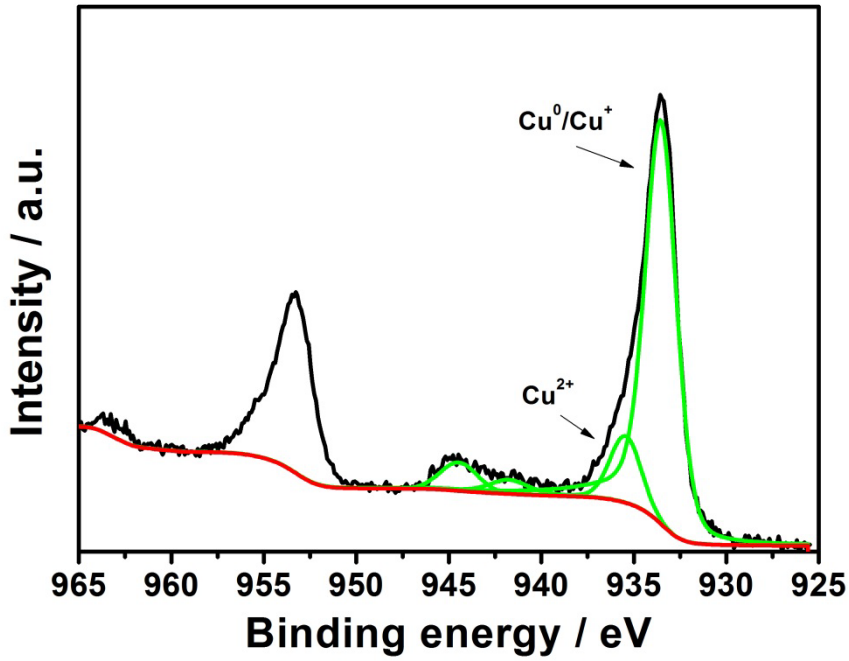

Figure S8. XPS spectra on an FTO substrate in the Cu $2p_{3/2}$ and $2p_{1/2}$ region for a rGO/Cu sample prepared by electrochemical reduction of 1.0 mg mL^{-1} GO in aqueous 0.05 M Na_2HPO_4 electrolyte containing 0.5 mM $CuSO_4$ and 2.5 mM of tri-sodium citrate.