

Supplementary Materials: Electrodeposition from a Graphene Bath: A Sustainable Copper Composite Alloy in a Graphene Matrix

Hayley Richardson, Charles Bopp, Bao Ha, Reeba Thomas and Kalathur S.V. Santhanam *

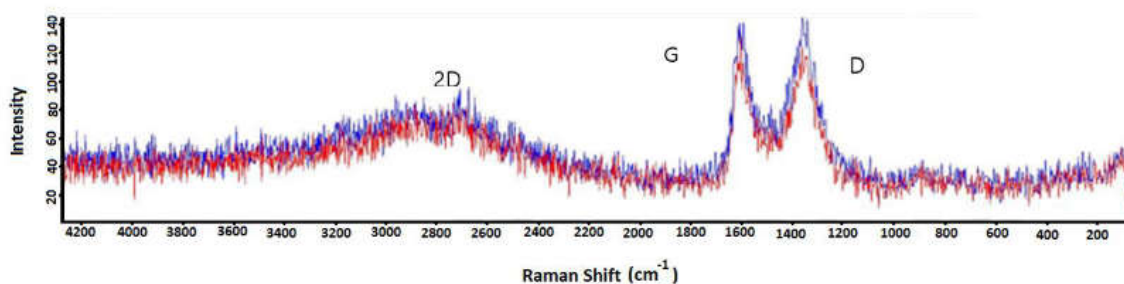
School of Chemistry and Materials Science, Rochester Institute of Technology, Rochester, NY 14623, USA; hrk3290@rit.edu (H.R.); cbs9344@rit.edu (C.B.); bha9120@rit.edu (B.H.); rthomas@saunders.rit.edu (R.T.)

* Correspondence: ksssch@rit.edu

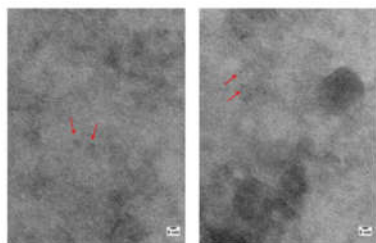
Supplement S1: Graphene quantum dots and Raman Spectrum



Sample analyzed by Raman, TEM and UV-Vis Spectroscopy and Florescence spectroscopy.



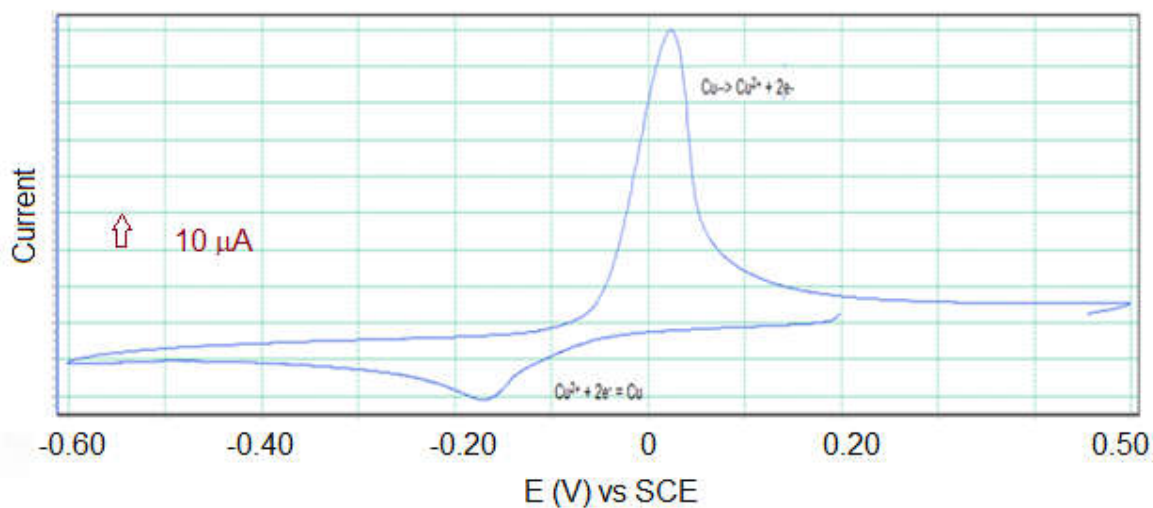
Raman spectrum of GQD placed on a substrate for recording. Blue and green represent two different runs of the same sample.



Some small particles found (arrows). Contrast enhanced to improve visibility.

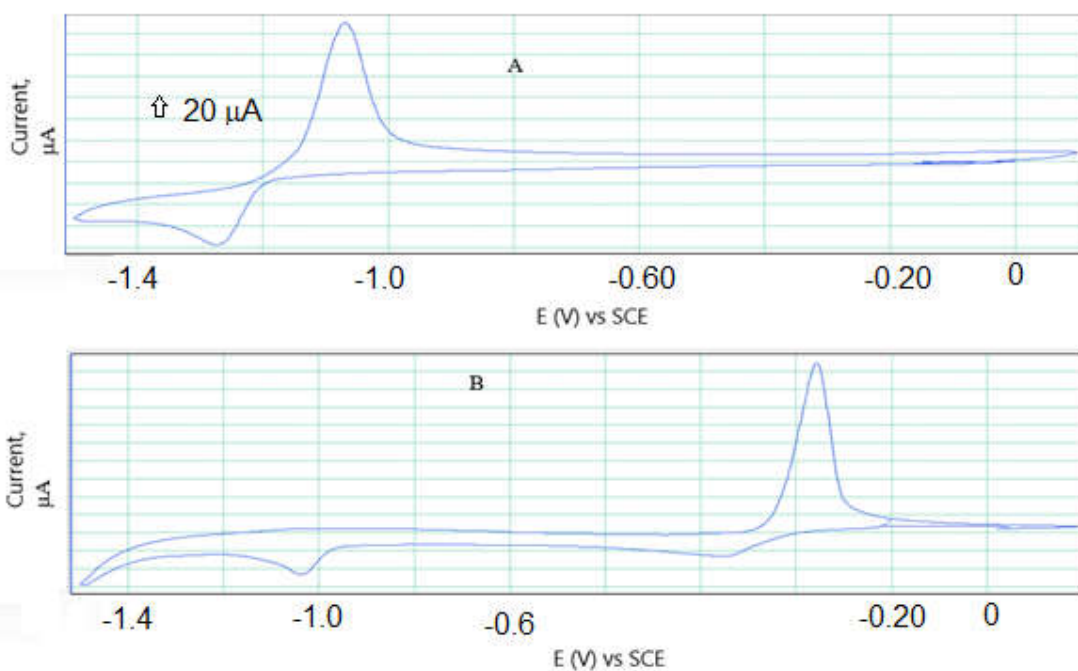
GQD sample under TEM for size Scale 5 nm

Supplemental S2: Cyclic Voltammetry of Copper Sulfate



Cyclic voltammetry of 5 mM Copper sulfate in 0.1 M K₂SO₄ with glassy carbon working electrode. Sweep rate 20 mV/s

Supplemental S3: Cyclic voltammetry of copper sulfate and zinc sulfate in the presence of GQD



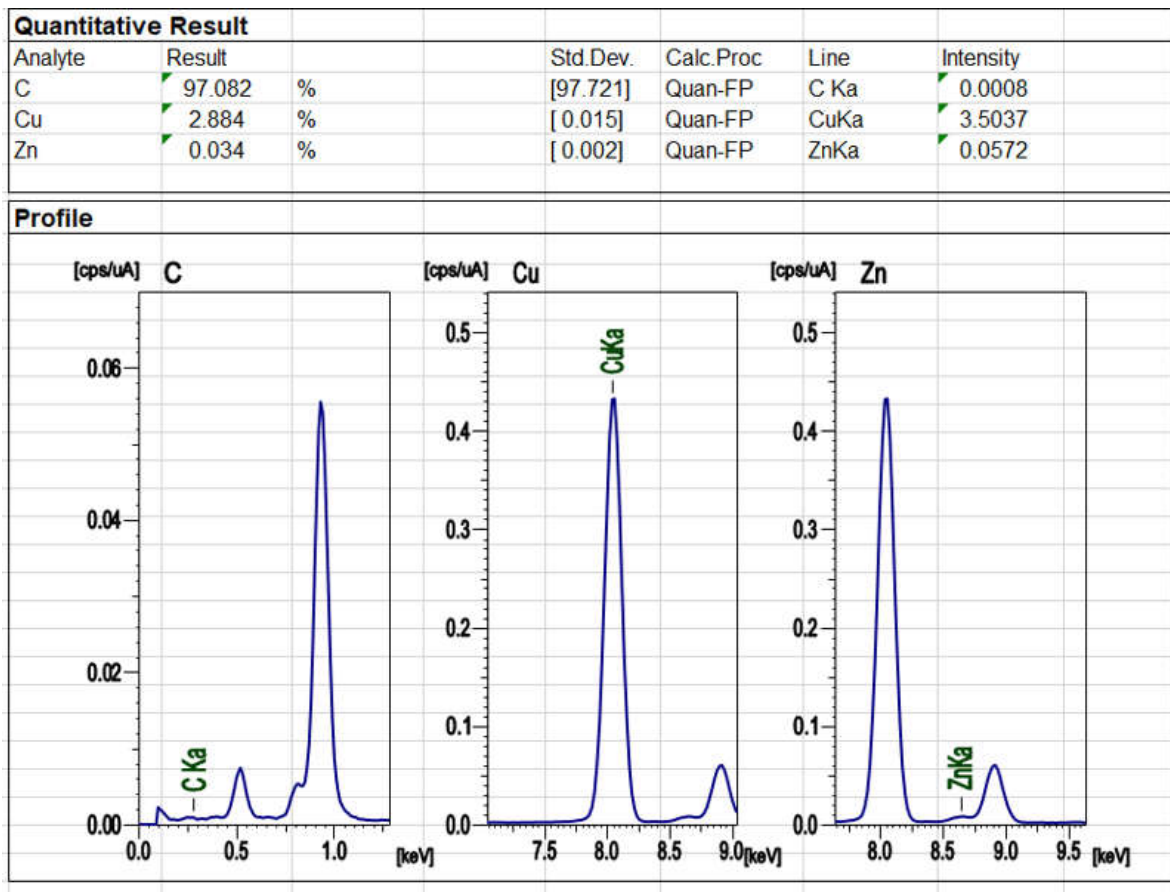
Upper curve: Cyclic voltammetry of 5 mM zinc sulfate in 0.1 M K₂SO₄ at glassy carbon working electrode. Sweep rate: 20 mV/s

Lower curve: Cyclic voltammetry of 5 mM zinc sulfate and 5 mM copper sulfate in 0.1 M K₂SO₄ containing 1 ml GQD at glassy carbon working electrode. Sweep rate: 20 mV/s

Supplemental S4: Excel Files of Current-Time Transients Sheet 10

Excel file giving Potential-step electrolysis results Sheet 10. Other sheets in excel show our different efforts to understand the mechanism.

Supplement S5: XRF Recording of the Electrodeposited Composite



Supplement S6: AFM Images and Roughness Details

