

Supporting Information

Synthesis of copper nanowires decorated reduced graphene oxide for electro-oxidation of methanol

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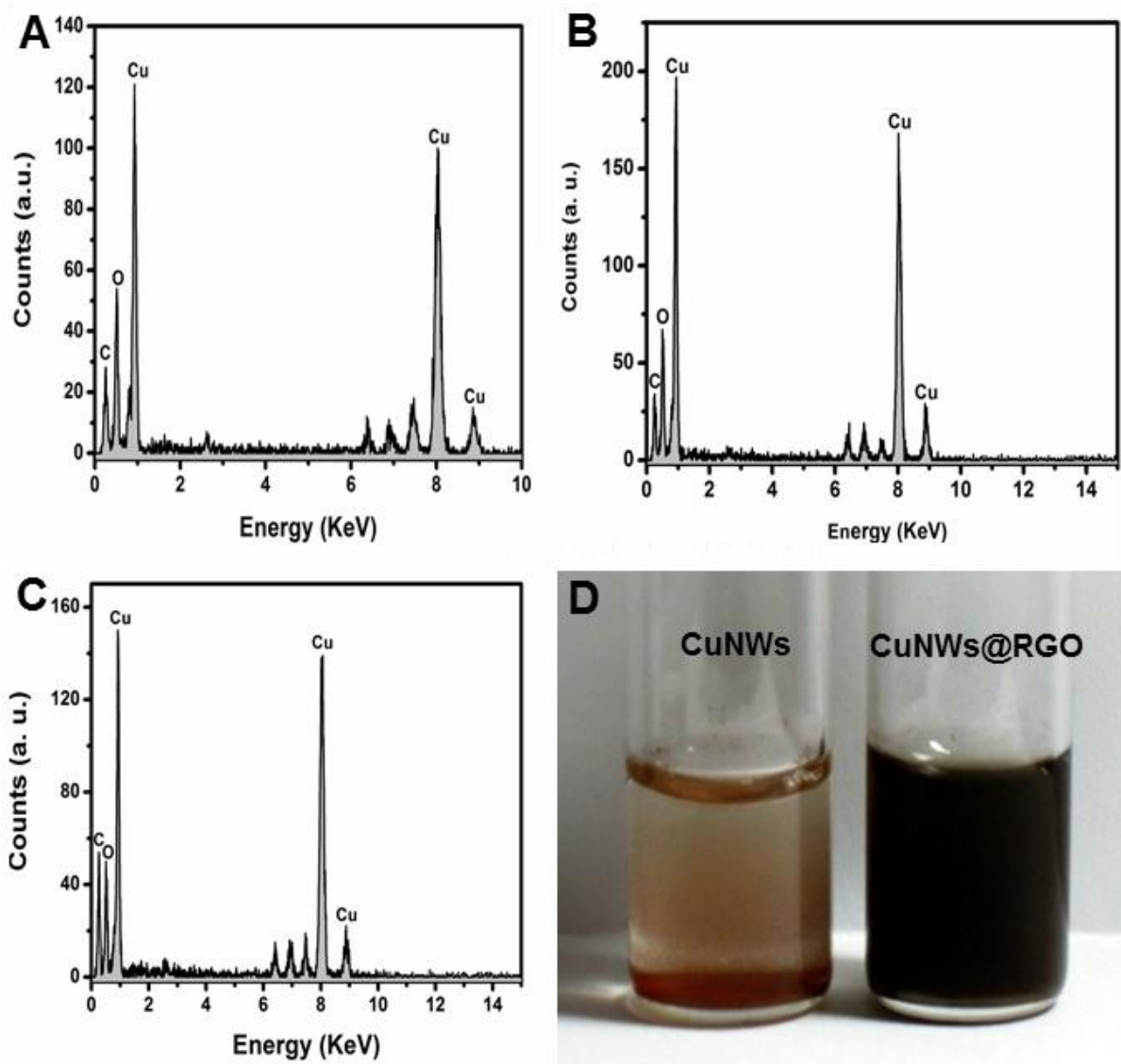


Figure S1. EDS patterns of (A) Cu NWs, (B) rose-like stem and (C) nano-thorns in Cu NWs@RGO, (D) photograph of Cu NWs and Cu NWs@RGO aqueous dispersions.

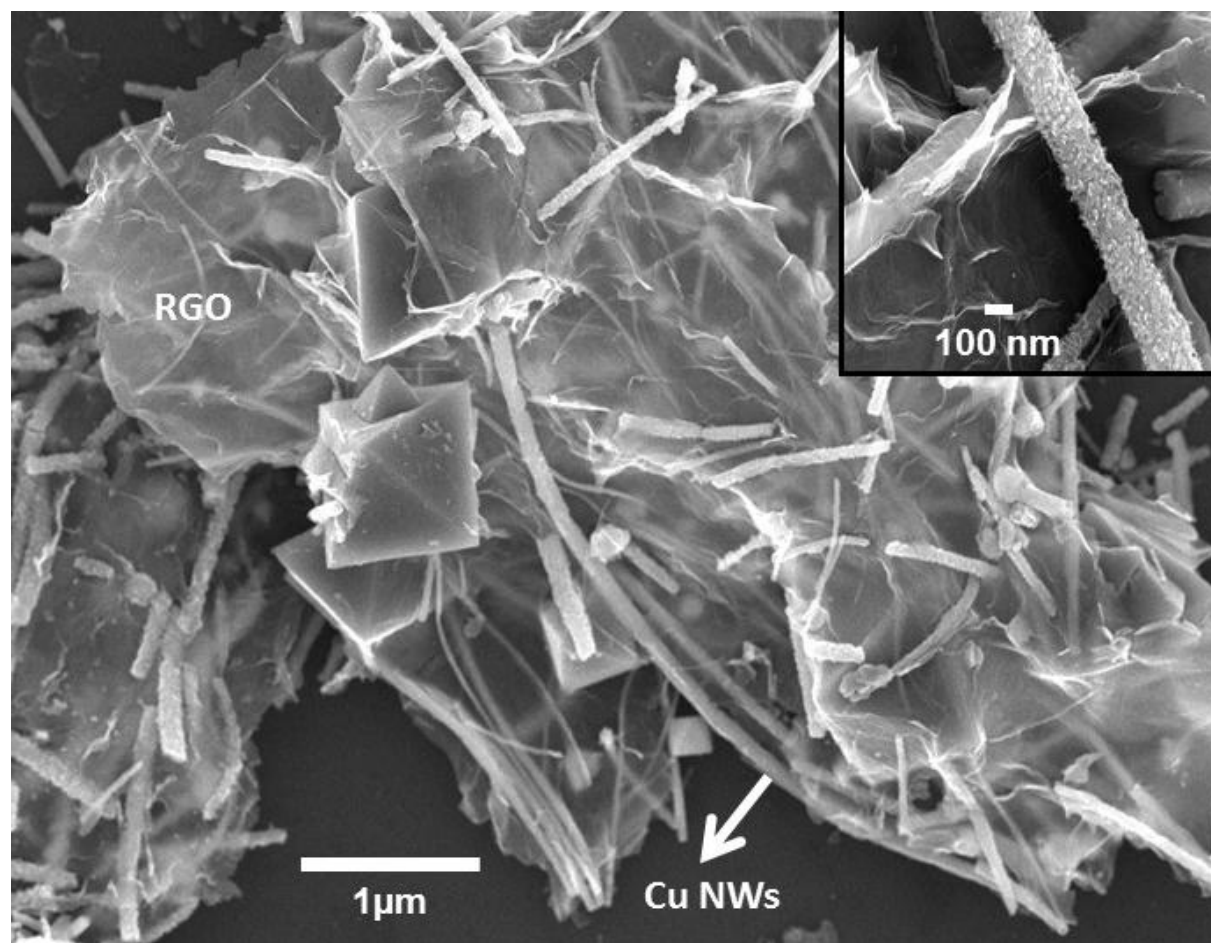


Figure S2. Low and high magnification (inset) SEM image of Cu NWs@RGO.

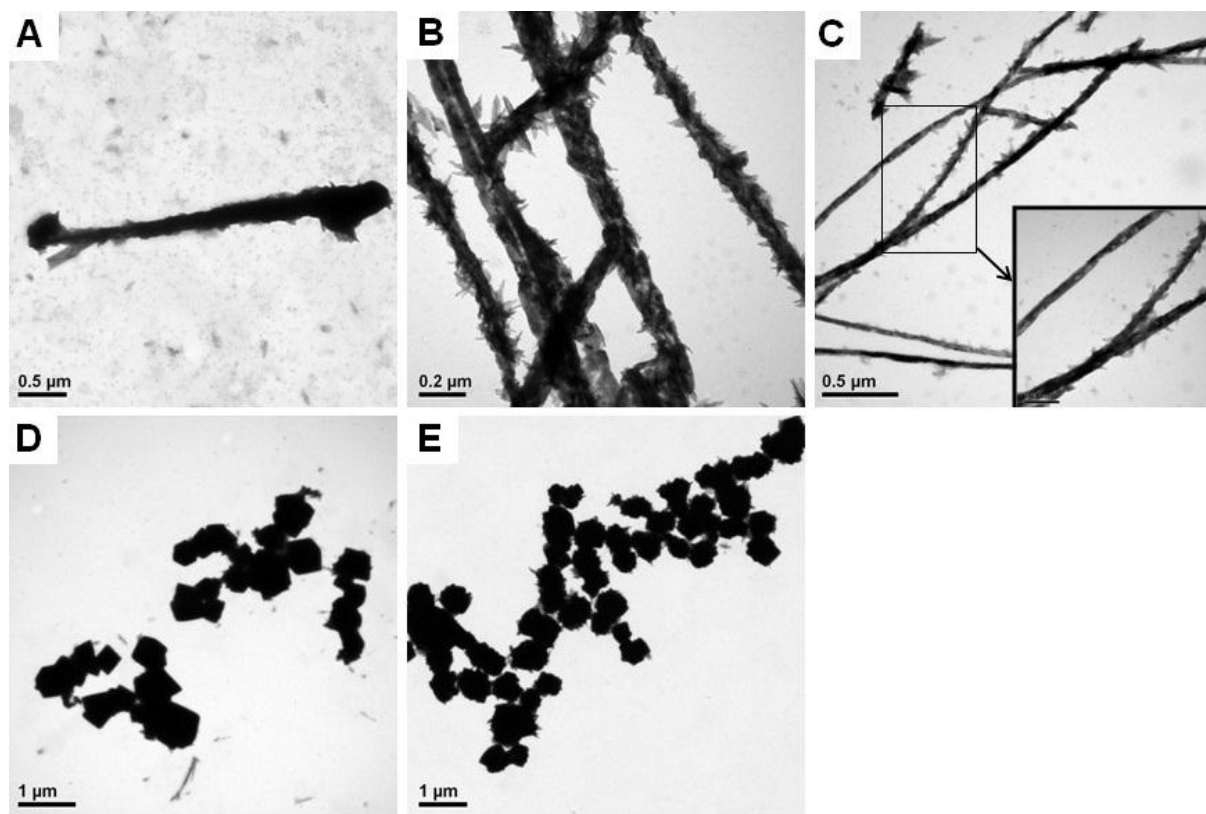


Figure S3. Representative TEM images of hierarchical Cu NWs and Cu nano cubes grown using different EDA concentrations: (A) 1.75, (B) 3.45, (C) 5.65 (D) 8.3, and (E) 10.8 mM. The final concentrations used were catechin (6 mM) and NaOH (13 M). The scale bar shown in the inset to (C) corresponds to 200 nm.

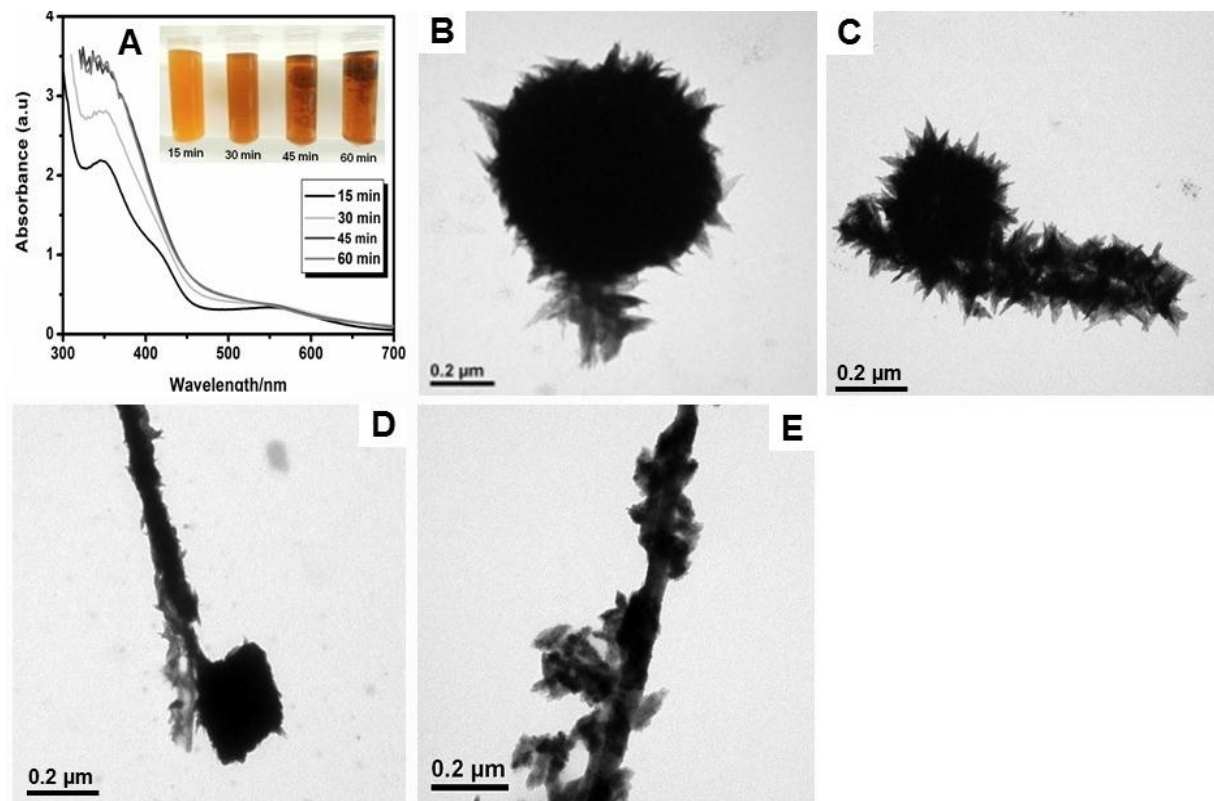


Figure S4. (A) Time dependent UV-visible spectra of Cu NWs growth solution at various reaction intervals. Time-evolution TEM images obtained for various reaction times (B) 15 (C) 30 (D) 45 and (E) 60 min. Inset to (A): Photograph of the corresponding solutions.

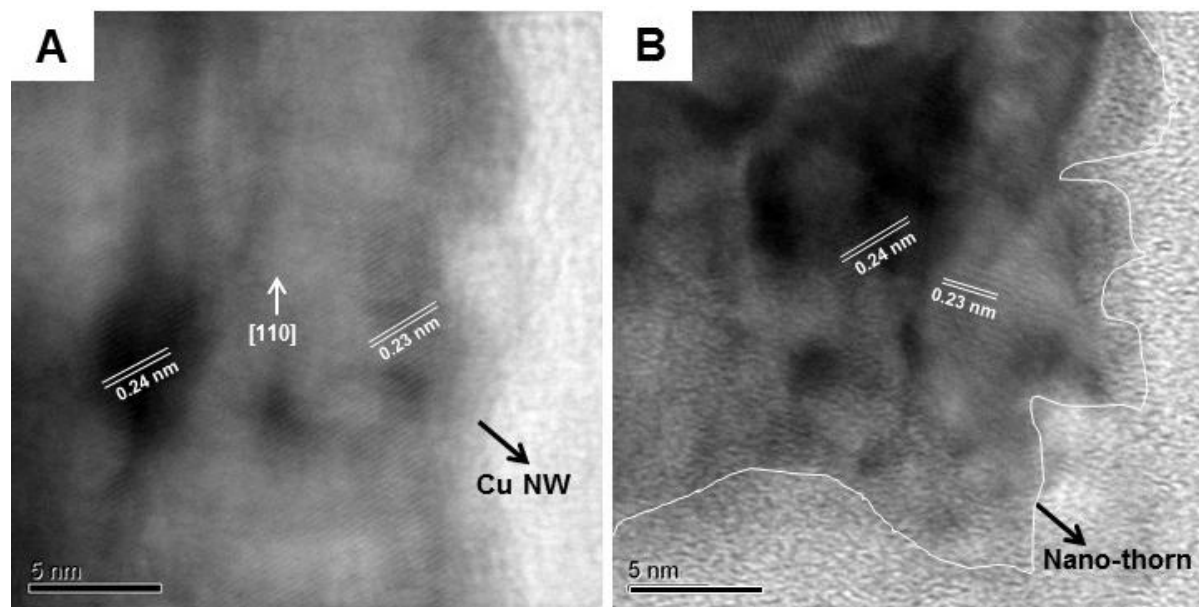


Figure S5. HRTEM images of (A) Cu NW and (B) nano-thorns in a Cu NW. To show a clear view of a nano-thorn, a thin guideline is provided in (B).

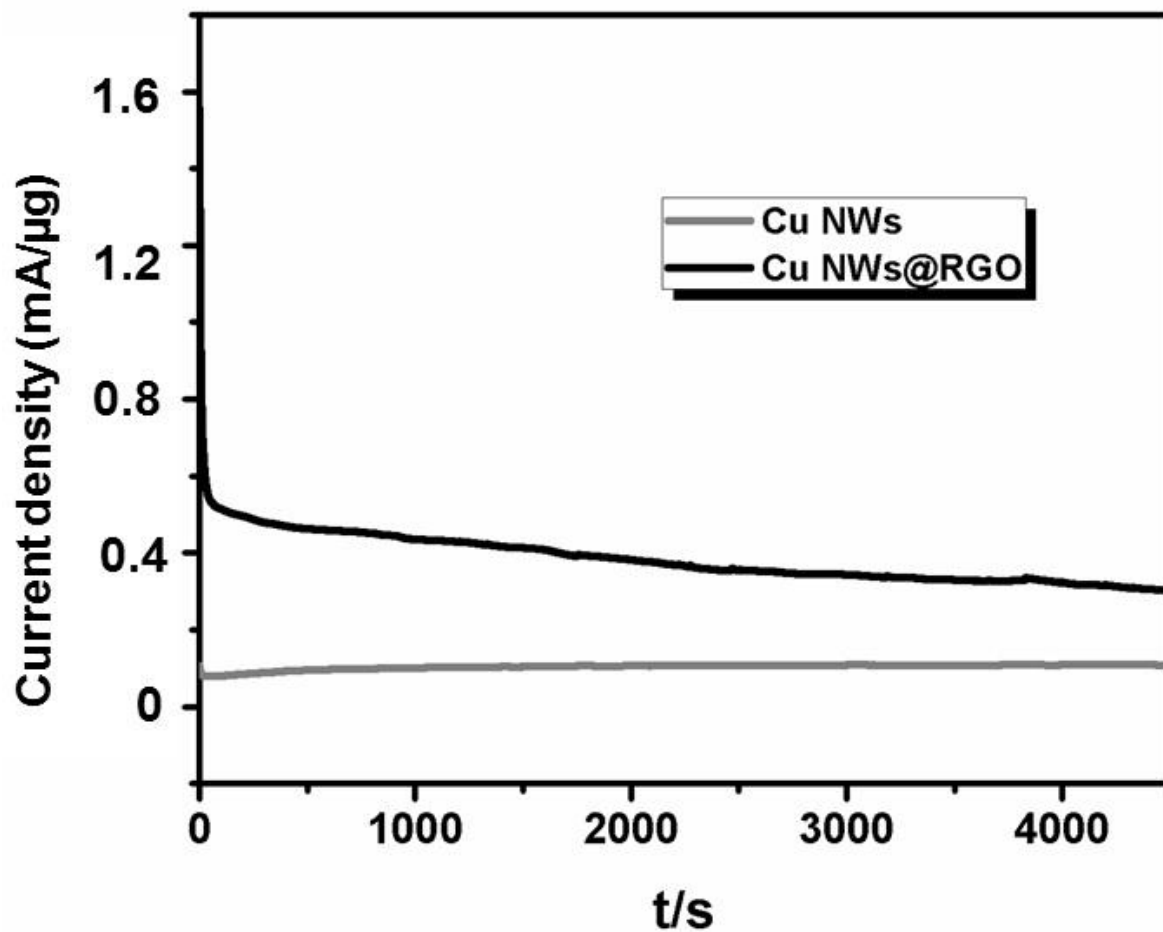


Figure S6. Chronoamperograms of Cu NWs@RGO and Cu NWs for methanol oxidation in methanol solution (1.0 M) containing 0.1 M NaOH at a fixed potential of 1.0 V.