

Supporting Information

Expeditious and eco-friendly fabrication of highly uniform microflower superstructures and their applications in highly durable methanol oxidation and high-performance supercapacitors

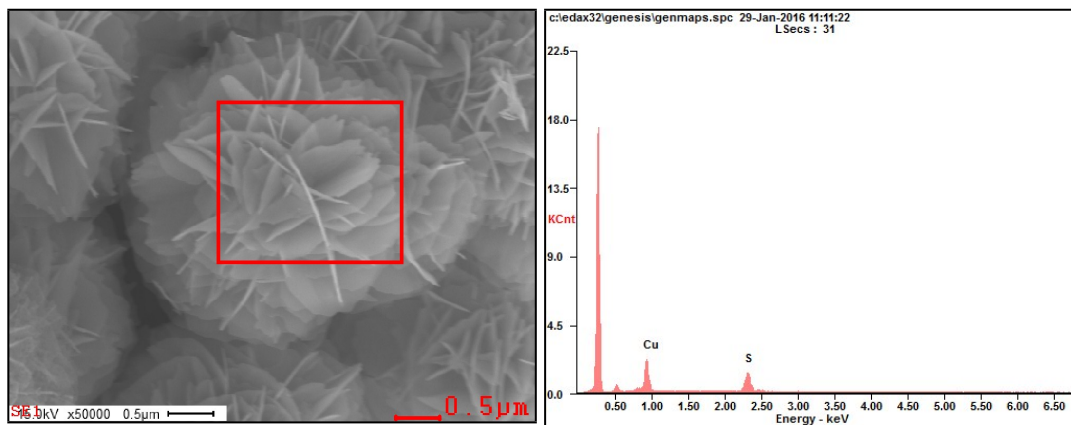
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<i>Element</i>	<i>Wt%</i>	<i>At%</i>
<i>Cu</i>	66.18	49.69
<i>S</i>	33.82	50.31

Fig. S1 Energy dispersive X-ray spectroscopy (EDX) and element composition for as-prepared CuS MF superstructure

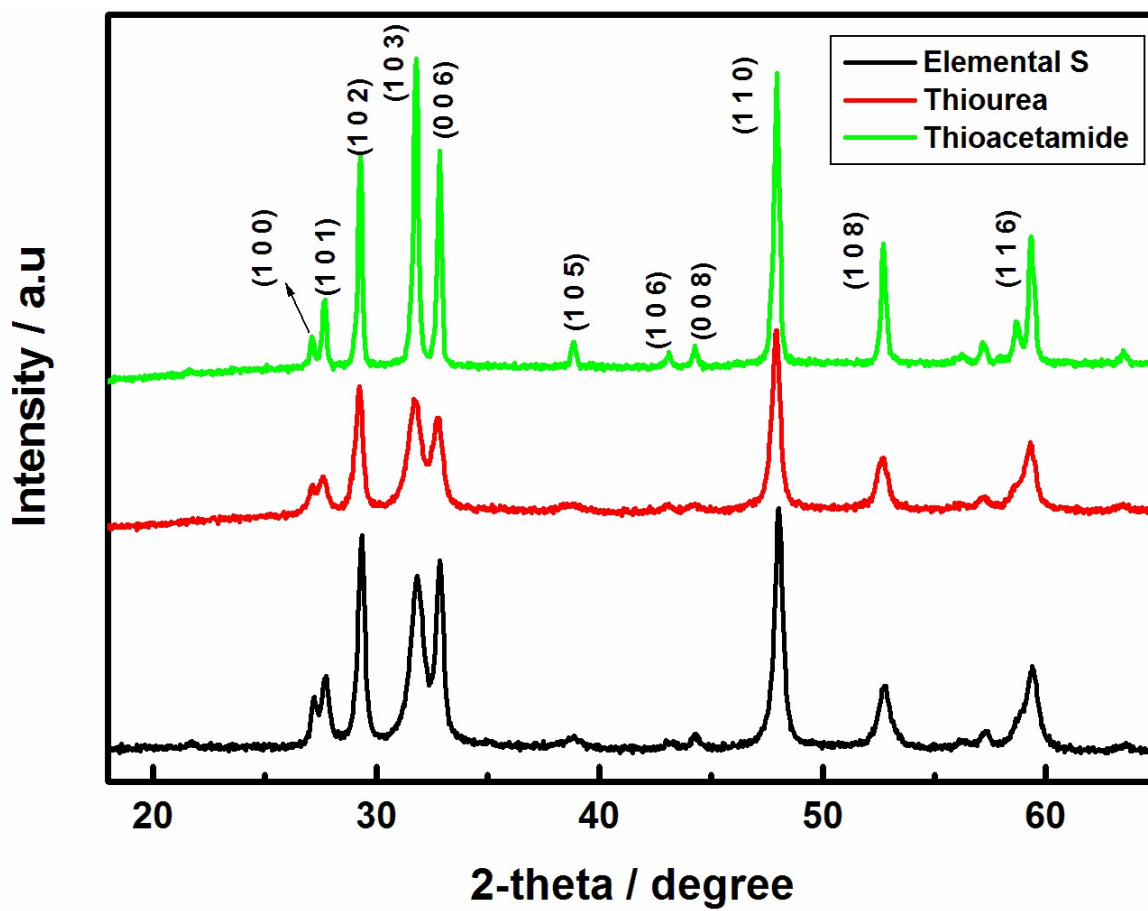


Fig. S2 XRD spectra of CuS product prepared in different sulfur sources

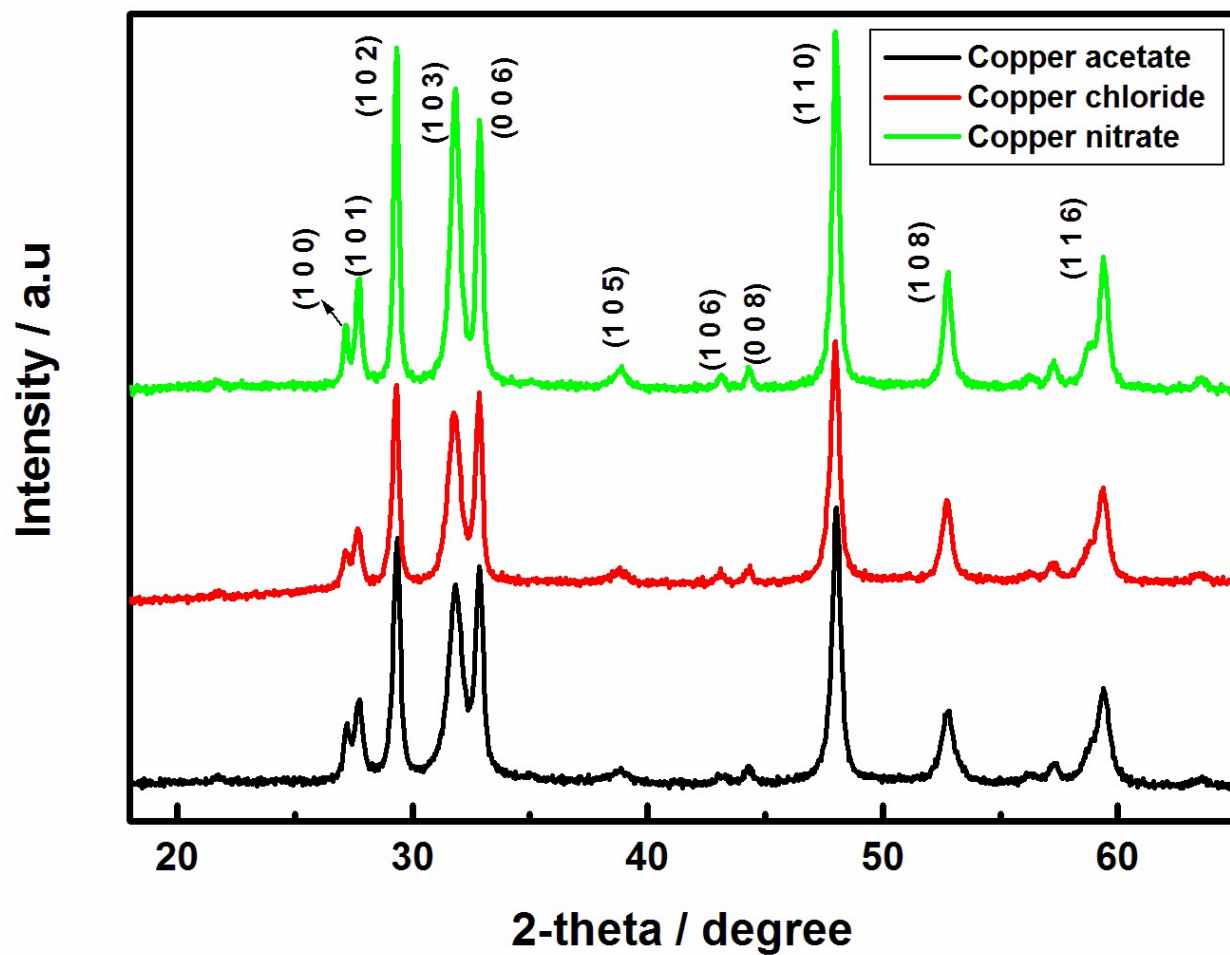


Fig. S3 XRD spectra of CuS product prepared in different copper sources

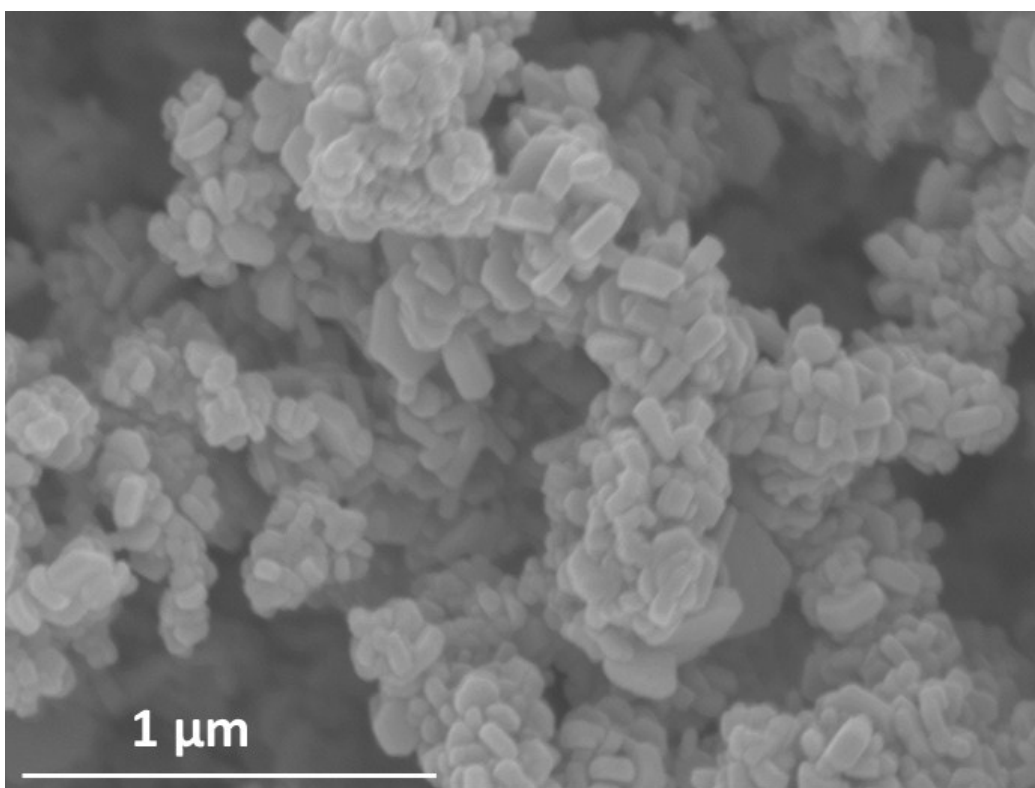


Fig. S4 FE-SEM image of CuS product prepared in triethylene glycol as solvent

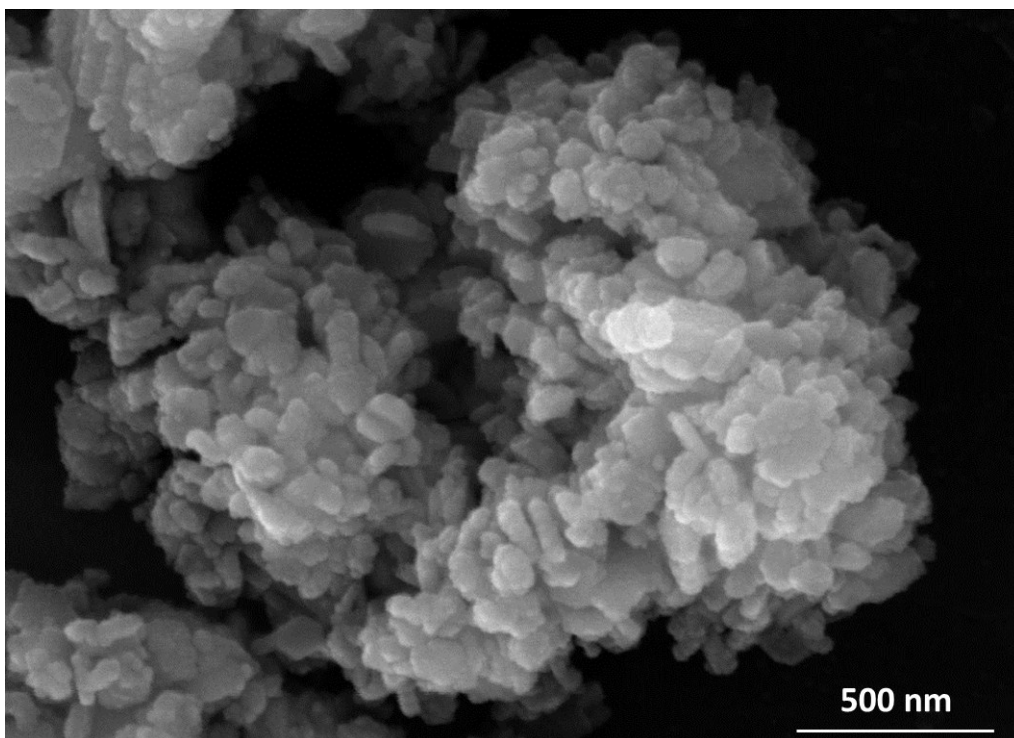


Fig. S5 FE-SEM image of CuS product prepared in water as solvent

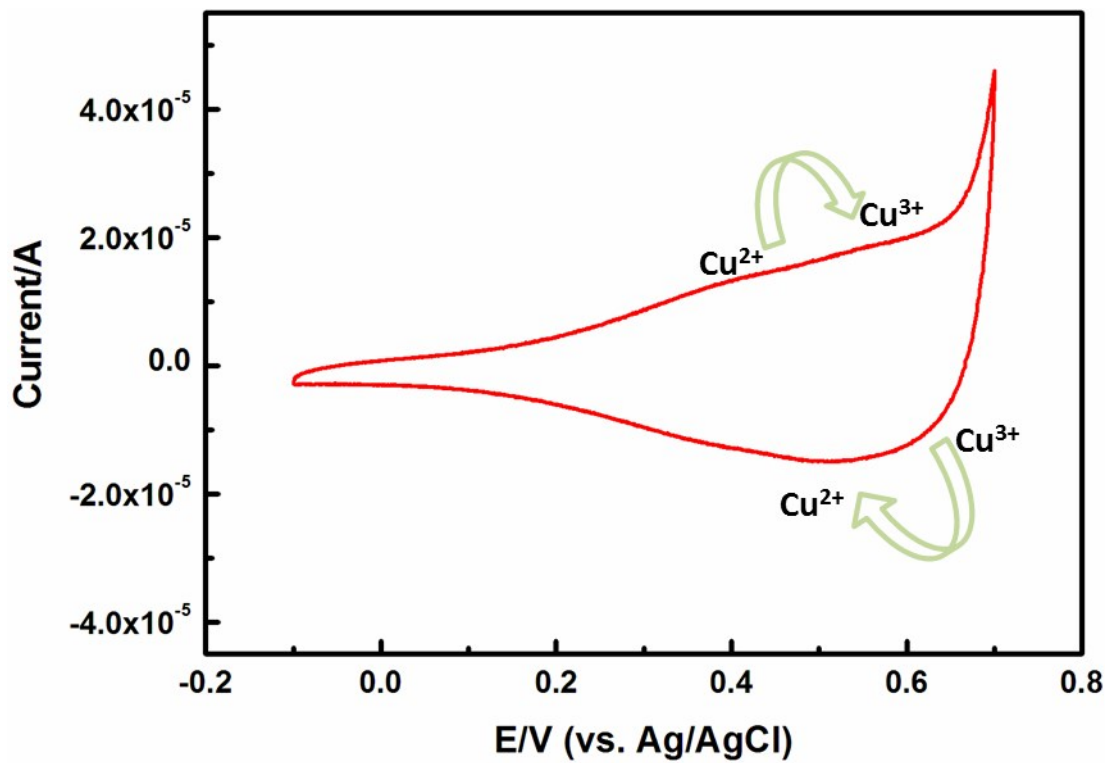


Fig. S6 Cyclic voltammeter characterization of CuS modified GC electrode in 0.1 M NaOH solution as electrolyte in the potential window between -0.1 to 0.7 V at a scan rate of 50 mV/s.

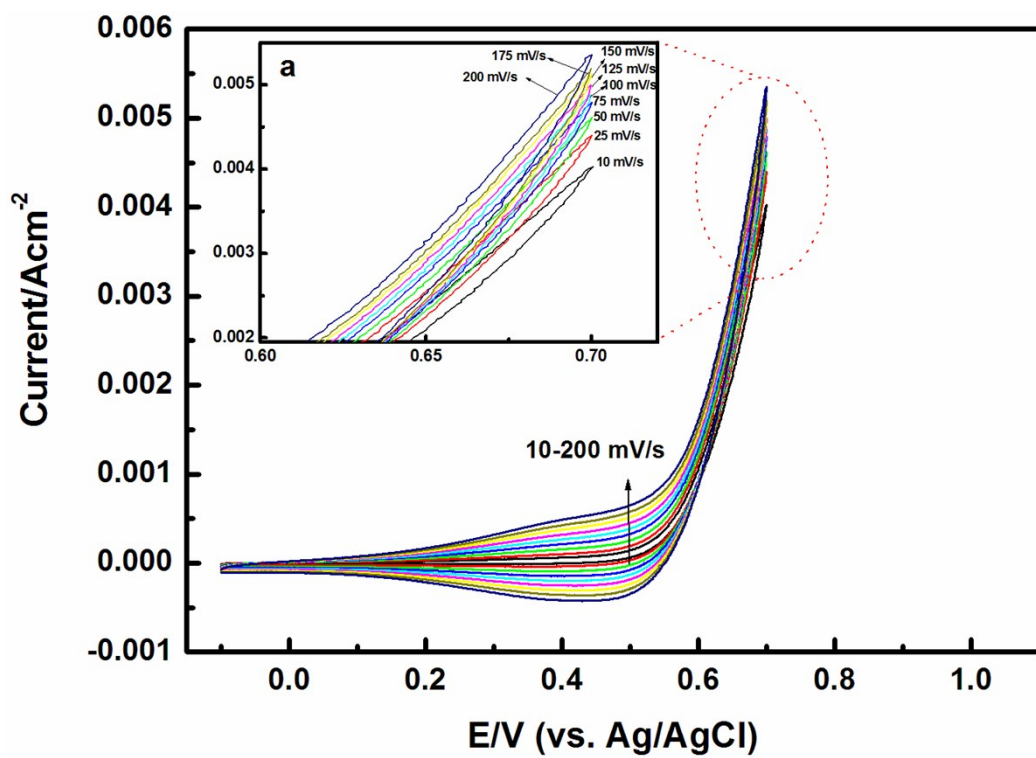


Fig. S7 Cyclic voltammogram response of CuS modified GC electrode at different scan rate 10-200 mV/s in 0.1 M NaOH solution containing 0.25 M methanol.

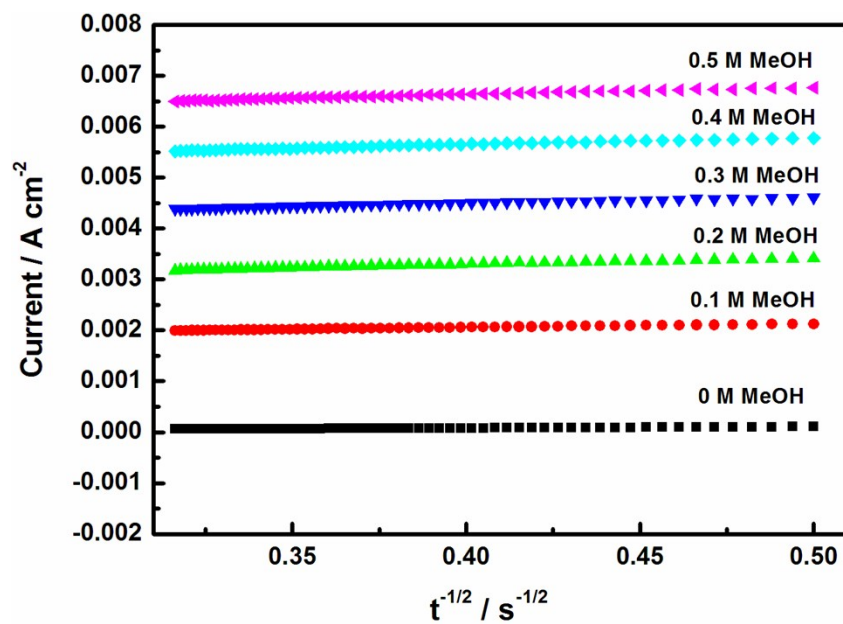


Fig. S8 The dependence of the transient current density values at CuS modified GC electrode on $t^{-1/2}$ in 0.1 M NaOH containing various concentration of methanol.

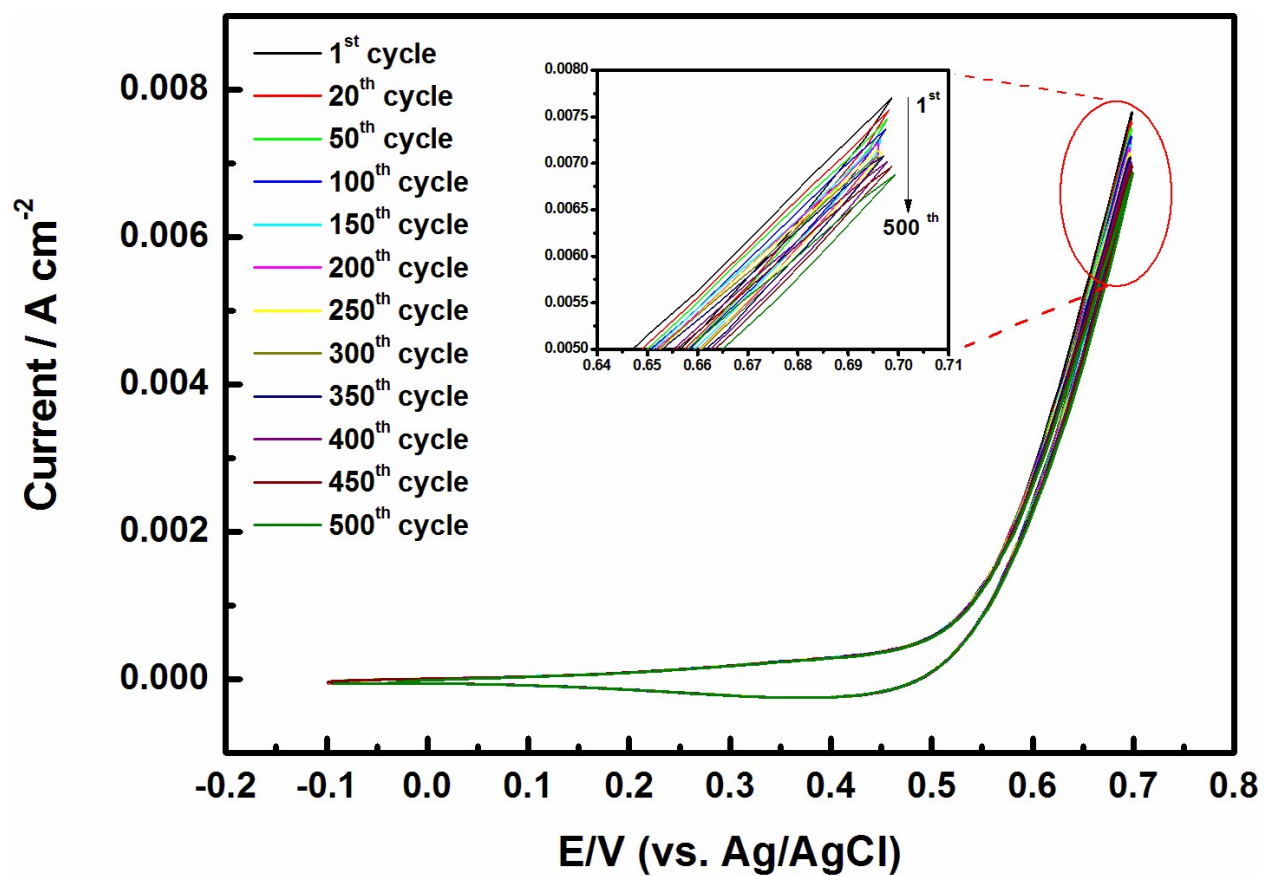


Fig. S9 Cyclic voltammograms curves for the CuS modified electrode in 0.1 M NaOH solution containing 0.5 M methanol at a scan rate of 50 mVs⁻¹. Inset shows the zoomed main panel

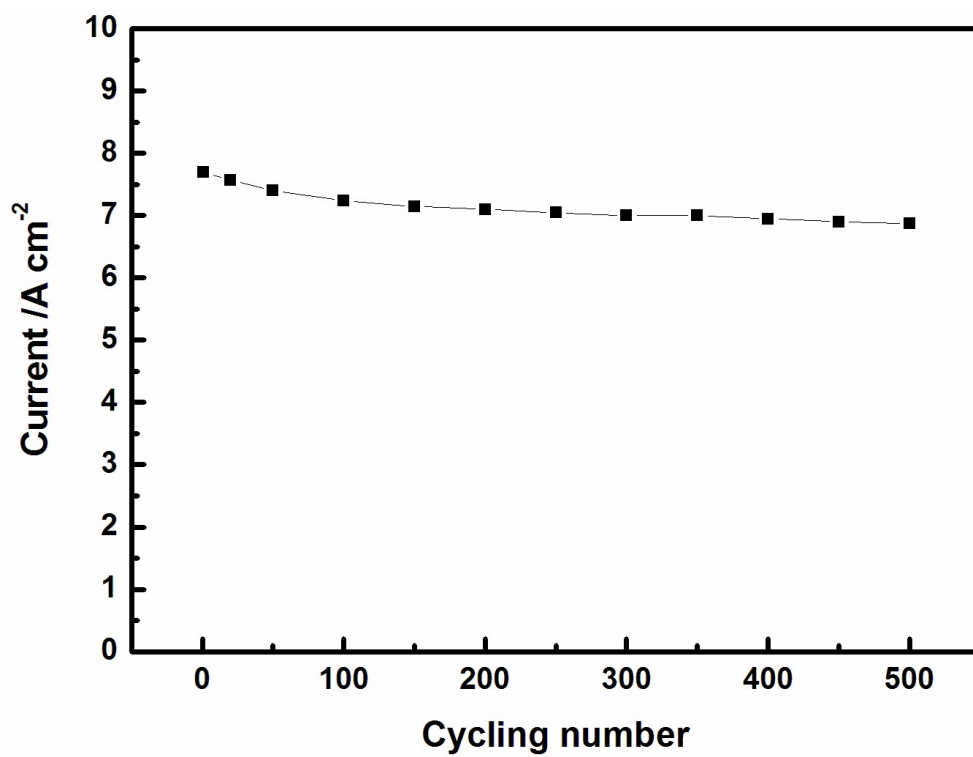


Fig. S10 The variation of the peak current with cycling number for the CuS modified electrode in 0.1 M NaOH solution containing 0.5 M methanol.

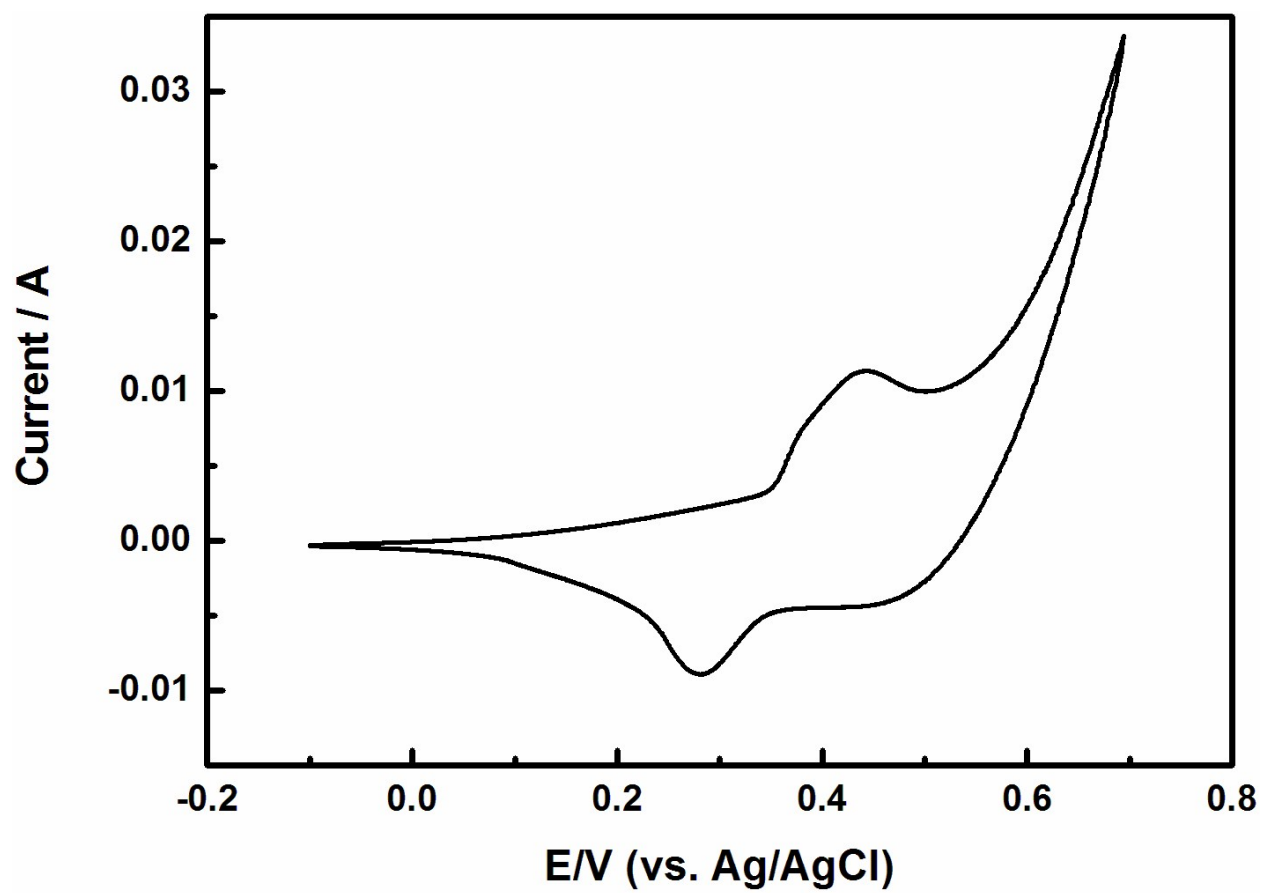


Fig. S11 CV behavior of CuS modified nickel foam electrode at a scan rate of 5 mVs^{-1} in 2 M NaOH solution.

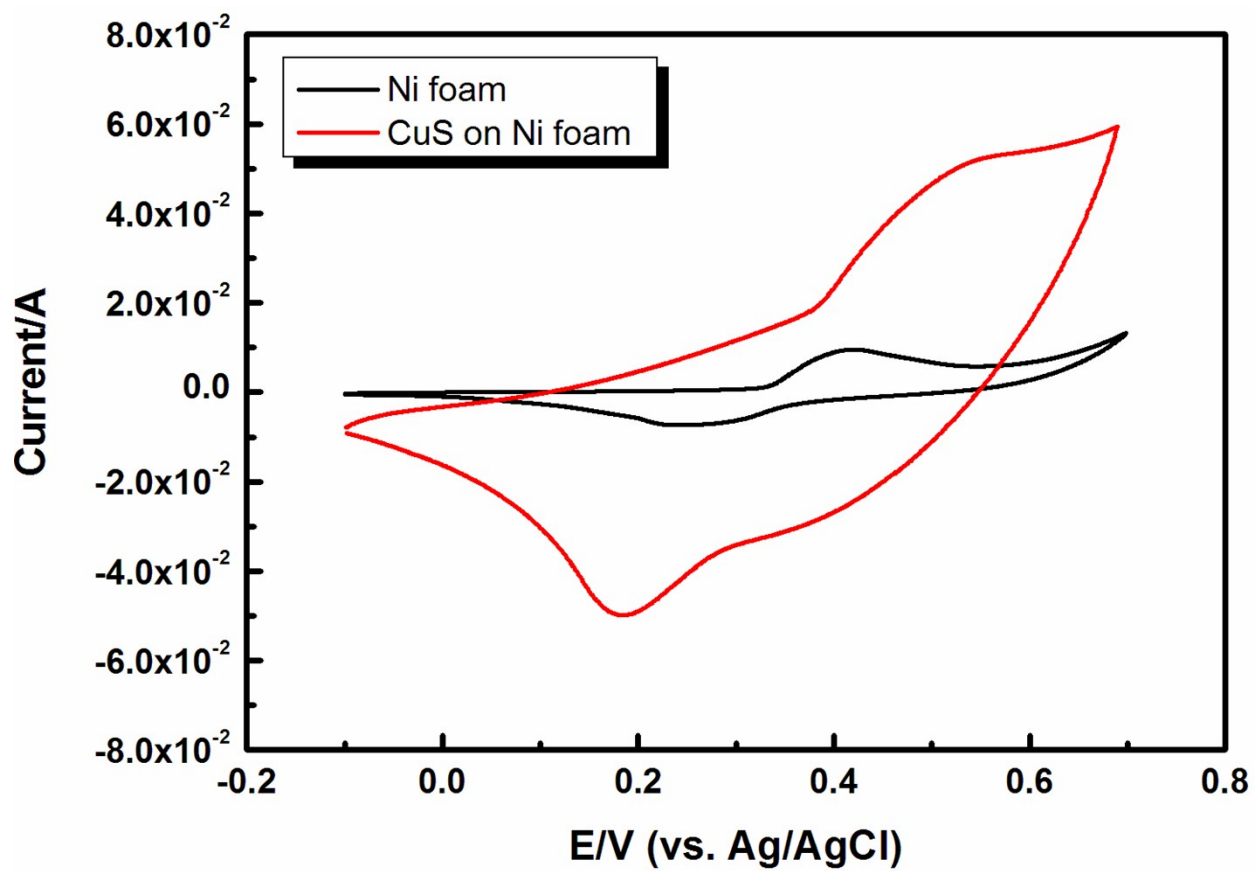


Fig. S12 CV behavior of CuS modified nickel foam and bare nickel foam electrode at a scan rate of 50 mVs^{-1} in 2 M NaOH solution.

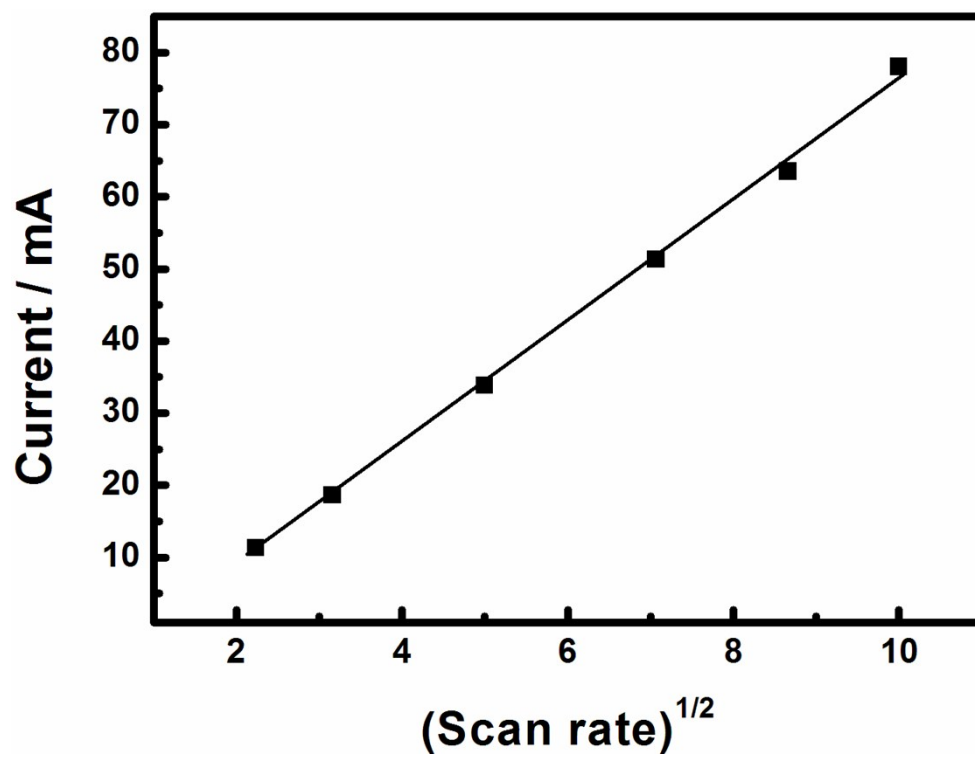


Fig. S13 Peak current vs. square root of the scan rate.

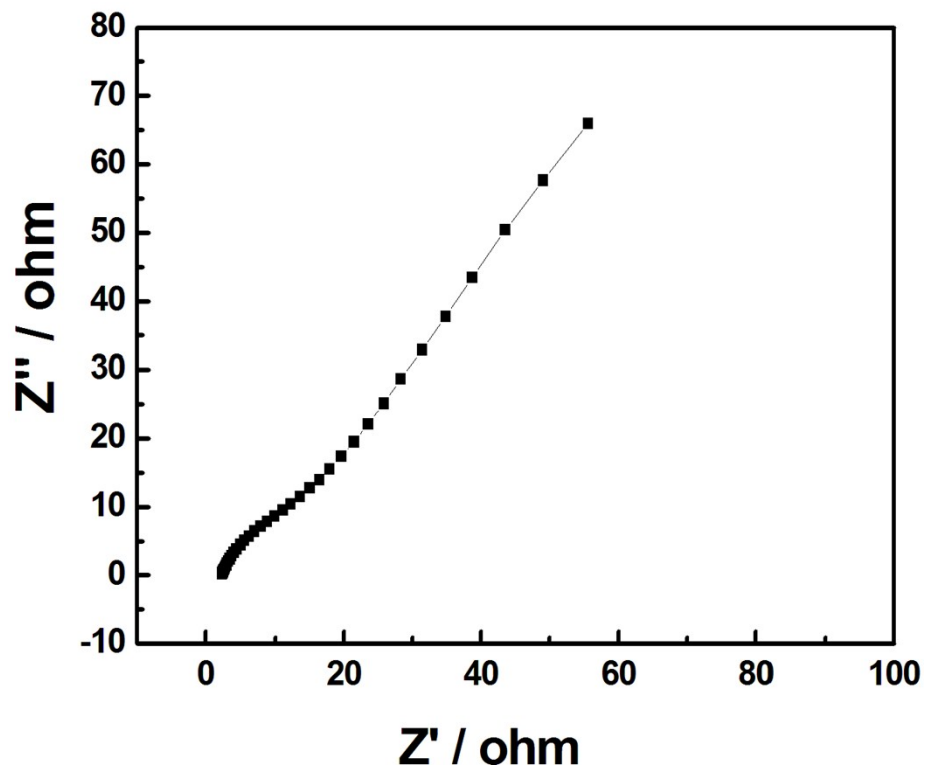


Fig. S14 Electrochemical impedance spectrum as Nyquist plot of CuS electrode

Table S1 Comparison of the catalytic rate constant (k) of different modified electrodes for electrocatalytic oxidation of methanol reported in literature

Electrode	Modifier	$K/\text{cm}^3 \text{ mol}^{-1} \text{ s}^{-1}$	Ref.
Carbon rod	Ni-MnO _x /C	3.26×10^3	[1]
Carbon steel plate	Ni-Cu-P alloy	1.40×10^4	[2]
Carbon paste	Ni(OH) ₂ -NiCo ₂ O ₄	1.16×10^2	[3]
Glassy carbon	NiMn-salenA	7.56×10^3	[4]
Carbon paste	Ni/ZIF-8	1.31×10^4	[5]
Glassy carbon	Poly(Ni-Curcumin)	2.04×10^3	[6]
Glassy carbon	CuS	7.44×10^5	This work

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