

## **Supporting Information**

### **Enhancing the Electrochemical Performance of Trimetallic Sulfide through Metal-Oxide Nanocomposite Engineering for High-Performance Supercapacitors**

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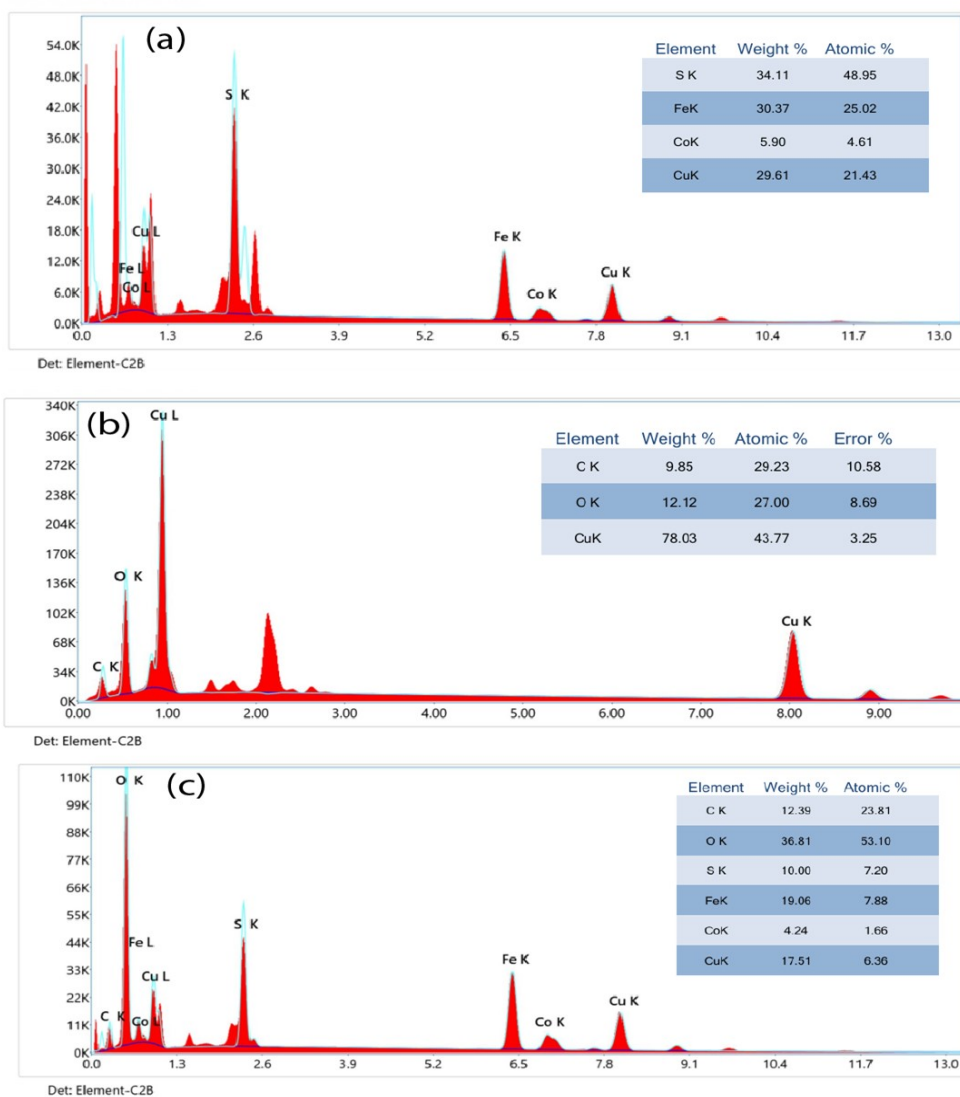


Fig. S1 The EDS spectra of (a)  $\text{Fe}_{0.67}\text{Cu}_{0.22}\text{Co}_{0.11}\text{S}$ , (b)  $\text{CuO}$ , and (c)  $\text{Fe}_{0.67}\text{Cu}_{0.22}\text{Co}_{0.11}\text{S}/\text{CuO}$  (5:1) demonstrate the elemental composition and successful composite synthesis.

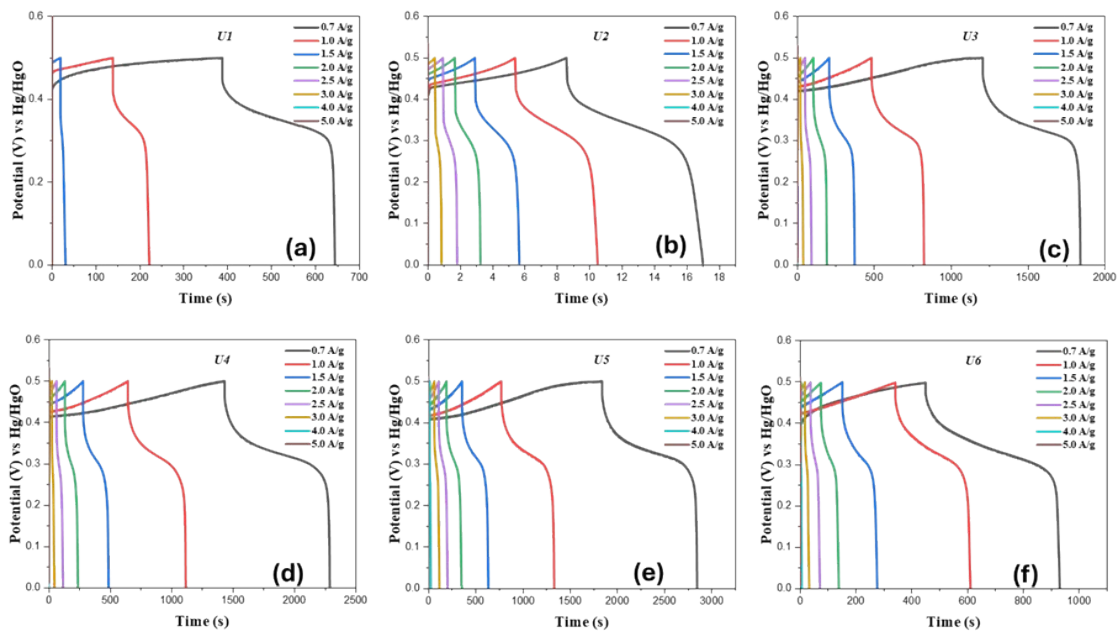


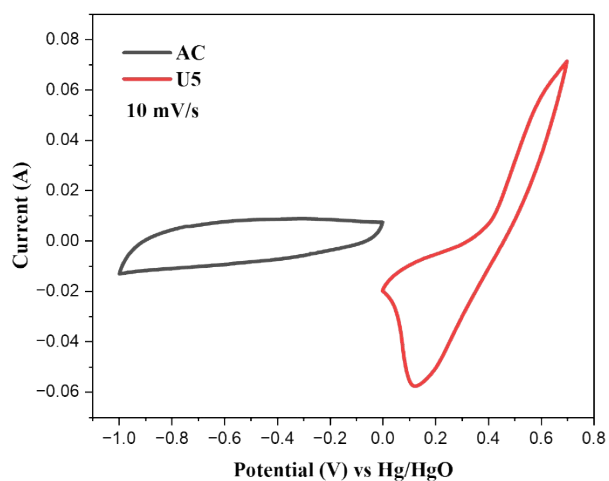
Fig. S2. GCD Curves of various electrodes at 0.7-6A. g<sup>-1</sup>, i.e., (a) U1, (b) U2, (c) U3, (d) U4, (e) U5, and (f) U6.

### Charge and mass balance:

Based on the cyclic voltammograms, the specific capacitance,  $C_s$ , of the corresponding electrode was calculated using the equation.

$$Q_s = \frac{\int_{v_i}^{v_f} I \times dv}{m \times v}$$

The value of specific capacity recorded for positive electrode was 314.16 C/g and for negative electrode was 153.33 C/g at same scan rate.



### Charge balance condition:

$$q^+ = q^- \Rightarrow Q_s^+ m^+ = Q_s^- m^-$$

### Calculating Mass ratio:

$$\frac{m^+}{m^-} = \frac{Q_s^-}{Q_s^+} = \frac{153.33}{314.16}$$

$$\frac{m^+}{m^-} = 0.488$$

$$m^+ : m^- = 0.488 : 1$$

$$m^- \approx 2 \times m^+$$

**Final Charge-Balanced Masses:**

<b>Electrode</b>	<b>Mass (mg)</b>
U5 (Positive)	6 mg
AC (Negative)	12 mg

The referred citation has been made as per reviewer's suggestion.