

DFT aided Experimental Investigation on the Electrochemical Performance of Hetero-Interface Functionalized CuO Nanoparticles Decorated MoS₂ Nanoflower for Energy Storage Applications

Muhammad Rakibul Islam^{1*}, Nahid Farzana², Md. Rajbanul Akhond³, Mizanur Rahman²,
Md Jahidul Islam³, Ishtiaque M Syed²

¹Department of Physics, Bangladesh University of Engineering and Technology, Dhaka, Bangladesh

²Department of Physics, University of Dhaka, Dhaka, Bangladesh

³Department of Materials and Metallurgical Engineering, Bangladesh University of Engineering and Technology, Dhaka, Bangladesh

*Corresponding Author: rakibul@phy.but.ac.bd

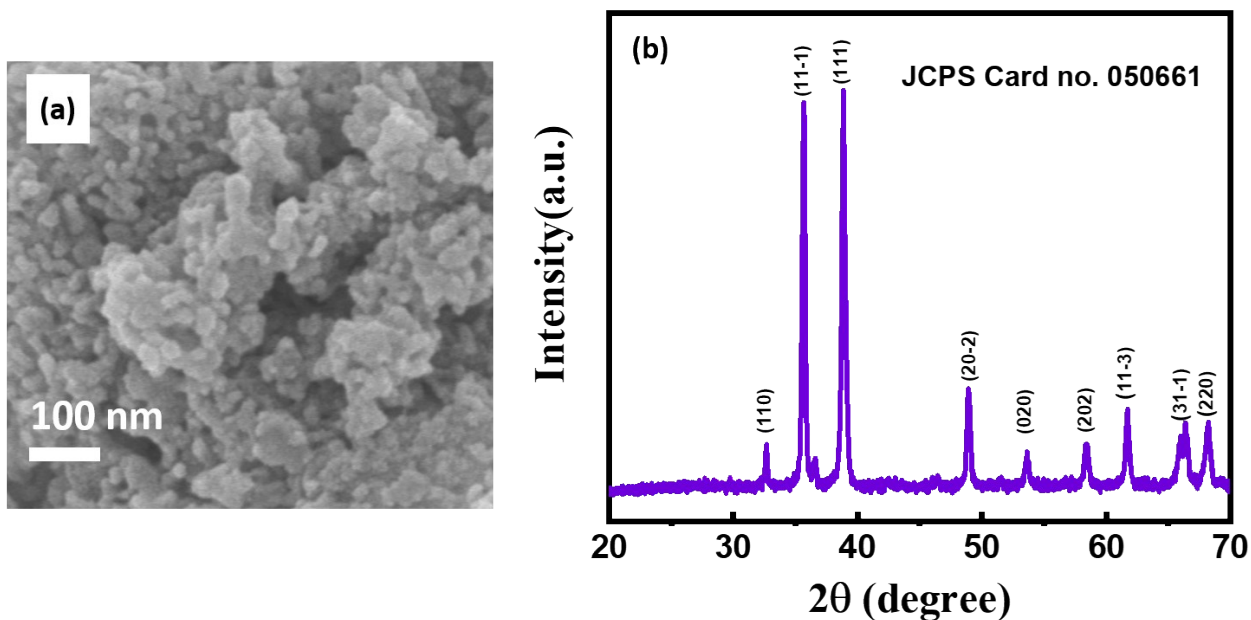


Figure. SF1. (a) FESEM images and (b) XRD pattern of CuO nanoparticle

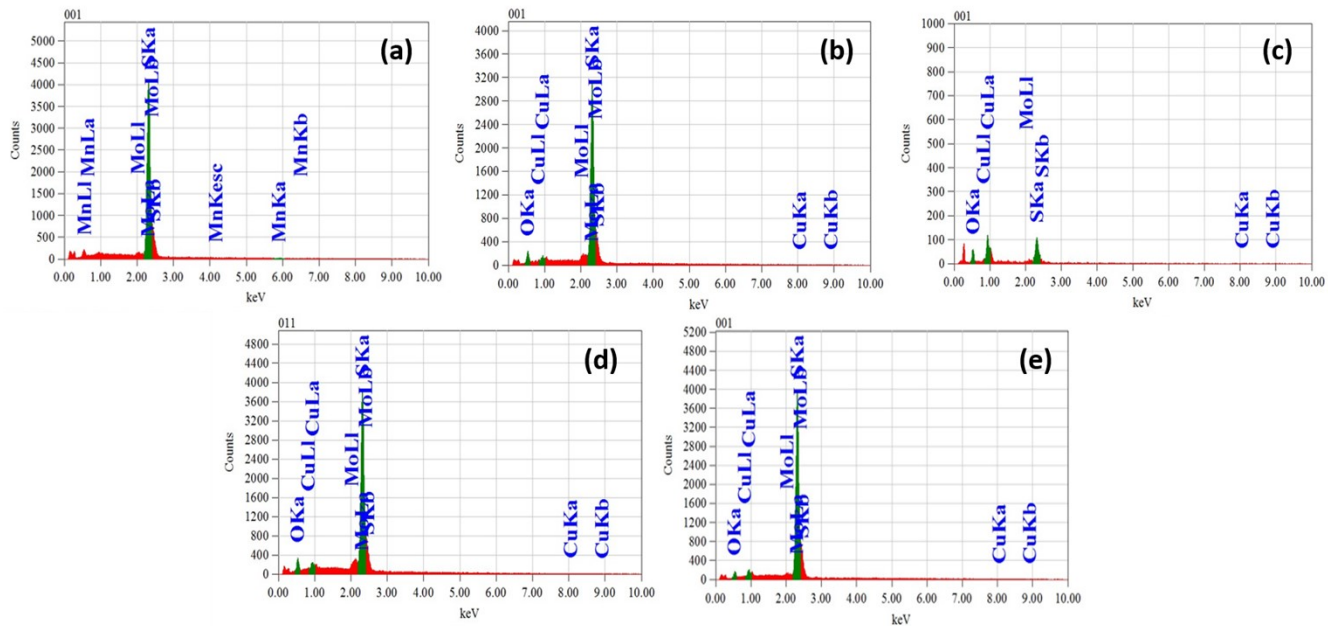


Figure. SF2. EDX spectrum of (a) MoS₂ (b) MoS₂/CuO(1%) (c) MoS₂/CuO(2%), (d) MoS₂/CuO(4%), and (e) MoS₂/CuO(6%).

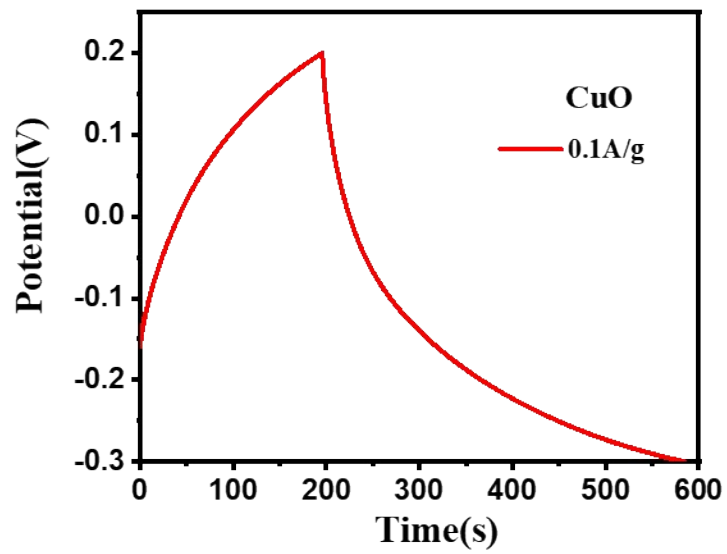


Figure. SF3. Galvanostatic charging-discharging curve of CuO nanoparticles.

Table. ST1. Compositional analysis of MoS₂/CuO nanocomposite

Sample	Elements	Weight %	Atomic %
MoS ₂	Mo	36.54	16.14
	S	63.46	83.86
MoS ₂ /CuO (1wt%)	Mo	24.85	8.96
	S	64.56	69.64
	Cu	0.91	0.50
	O	24.85	8.96
MoS ₂ /CuO (2wt%)	Mo	14.81	4.49
	S	30.16	27.33
	Cu	23.37	10.69
	O	31.66	57.49
MoS ₂ /CuO (4wt%)	Mo	16.27	5.44
	S	71.19	71.30
	Cu	1.28	0.65
	O	11.26	22.60
MoS ₂ /CuO (6wt%)	Mo	24.70	9.48
	S	69.43	79.76
	Cu	1.60	0.93
	O	4.27	9.83