

**Morphology oriented CuS nanostructures: Superior K-ion storage by surface
enhanced pseudocapacitive effects**

Chandrasekaran Nithya^{*a}, Gowtham Thiyagaraj^b

^aDepartment of Chemistry, PSGR Krishnammal College for Women, Coimbatore – 641 004,
India

^bDepartment of Energy and Environment, National Institute of Technology, Tiruchirappalli –
620 015, India

Supporting information

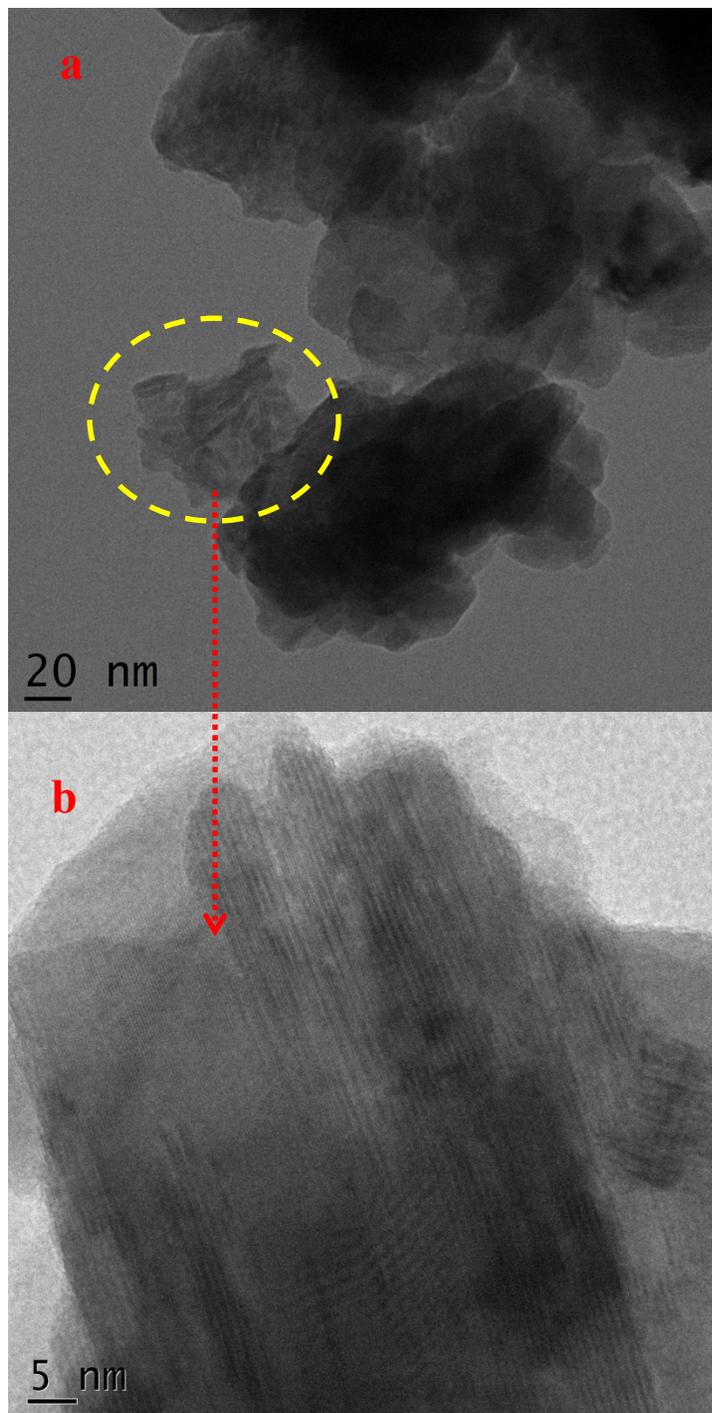


Fig. S1 HRTEM image of CuS-C (a) Magnification at 20 nm (b) Magnification at 5 nm

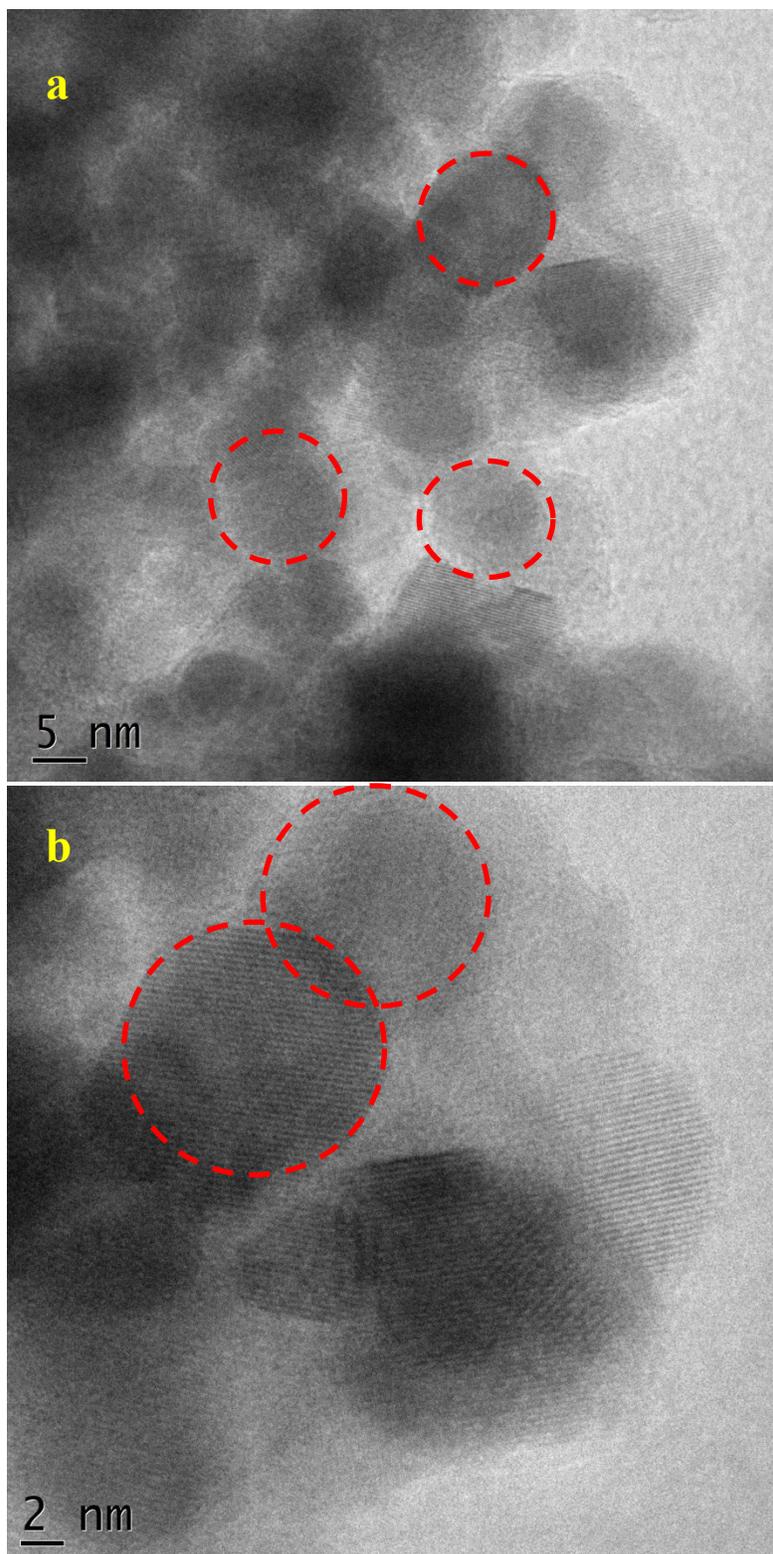


Fig. S2 HRTEM image of CuS-S (a) magnification at 5 nm (b) magnification at 2 nm

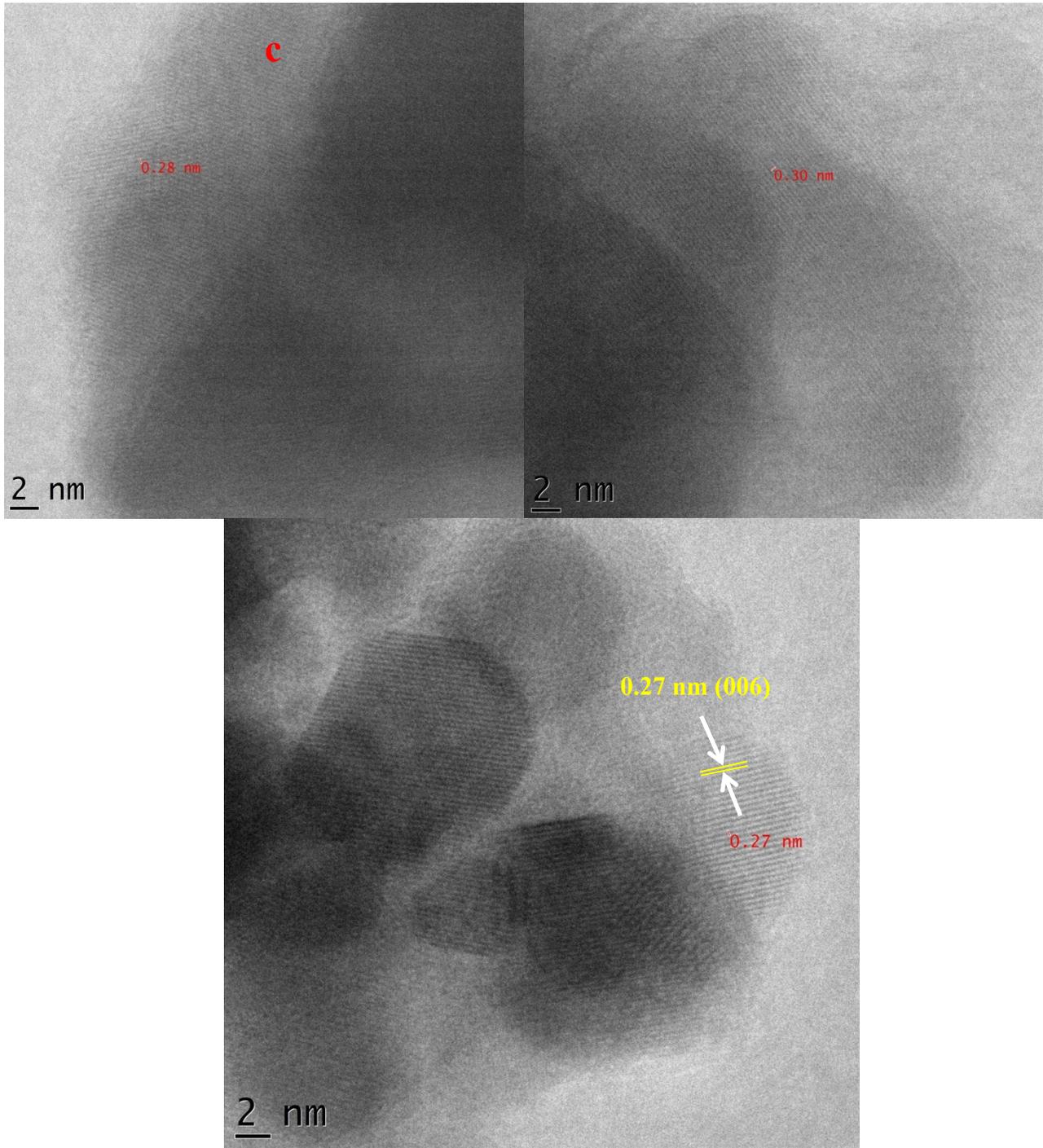


Fig. S3 d-spacings of CuS nanostructures (a) CuS (b) CuS-C (c) CuS-S

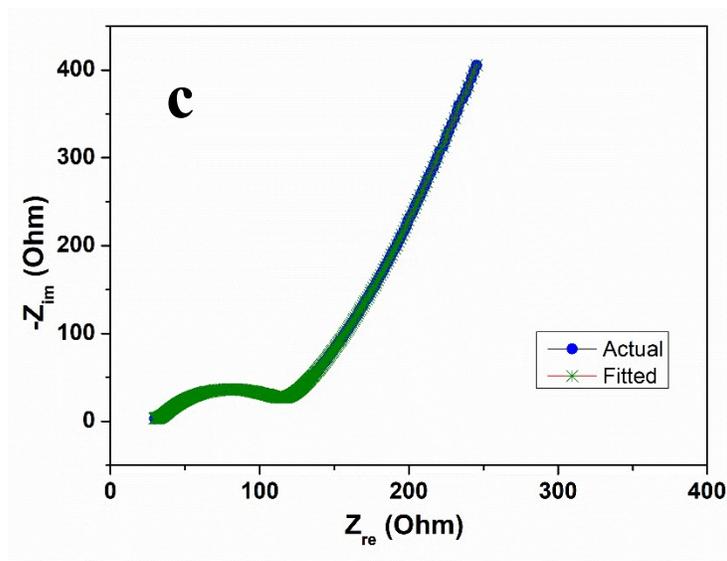
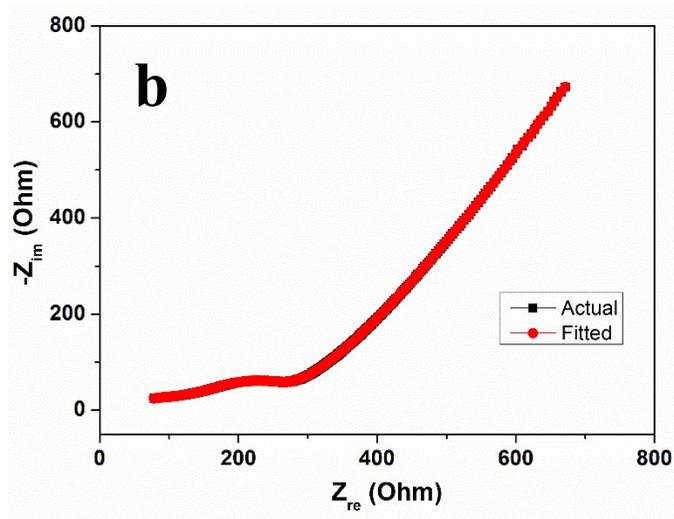
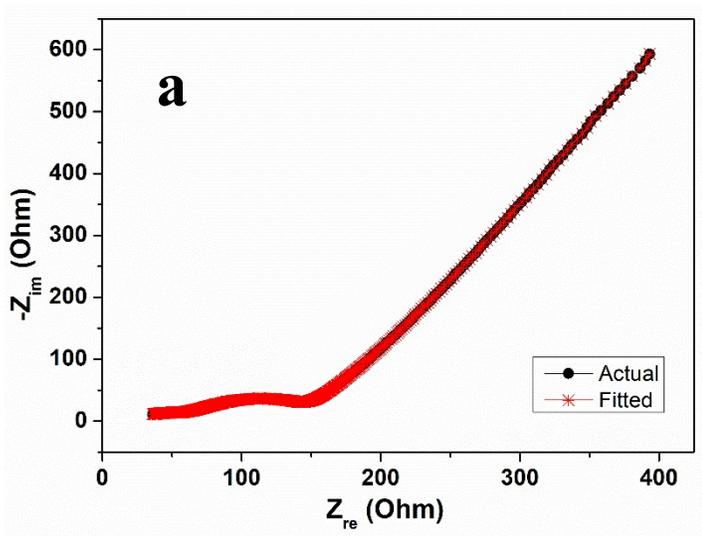


Fig. S4 Actual and fitted Nyquist plots of (a) CuS (b) CuS-C (c) CuS-S

Table S1. Comparison of CuS nanostructures with previously reported literatures for LIBs, SIBs and KIBs.

S.No.	Electrode material	Current density (mA/g)	Specific capacity (mAh/g)	Number of cycles	Reference
1	CuS for SIBs	100	509	50	18
2	CuS nanowires for LIBs	200	480	100	19
3	CuS@rGO for LIBs	100	658	50	31
4	CuS for LIBs	100	450	100	32
5	CuS@Graphene for LIBs	50	568	100	49
6	CuS for SIBs	100	522	100	53
7	CuS microflower for SIBs	100	356	100	54
8	CuS@rGO for KIBs	100 1000	410 196	100 10	33
9	CuS for KIBs	100 500 1000 5000	455 331 382 112	100 500 10	This work