Electronic Supplementary Material (ESI) for Nanoscale.

Supporting Information

Covellite CuS nanocrystals: realizing rapid microwave-assisted synthesis in air and unraveling the disappearance of their plasmon resonance after coupling with carbon nanotubes

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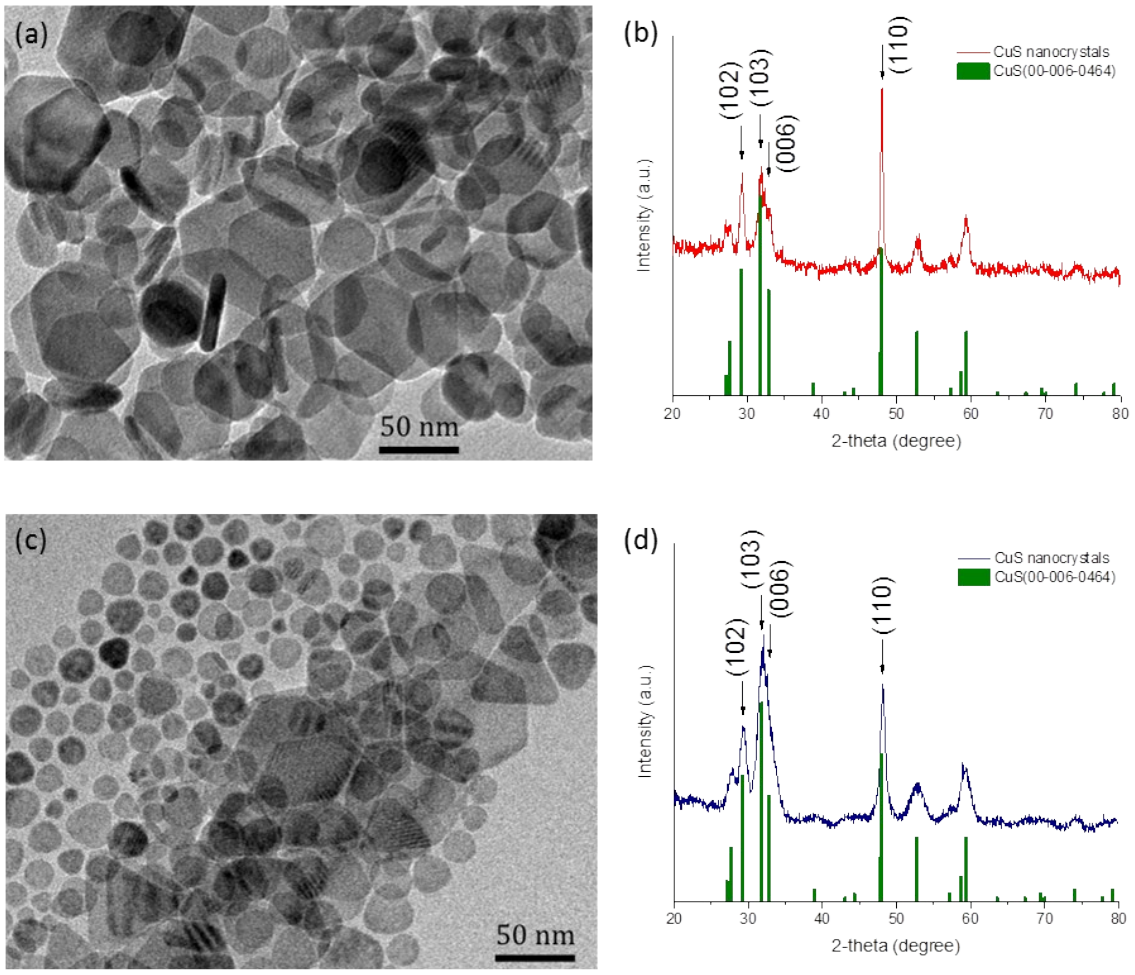

Fig. S1. (a, b) TEM image and XRD pattern of CuS nanocrystals synthesized by the microwave-assisted method with the reaction time of 10 min; (c, d) TEM image and XRD pattern of CuS nanocrystals synthesized by the oil-bath method with the reaction time of 10 min. Much larger covellite CuS nanocrystals were obtained from a longer reaction time.

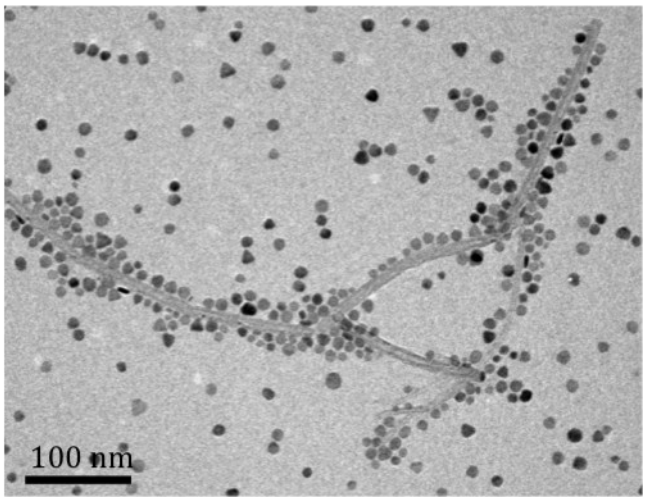

Fig. S2. TEM image showing the mixture of pristine MWCNTs and as-prepared CuS nanoplatelets after being sonicated in toluene for 30 min. The pristine MWCNTs did not undergo the carboxyl functionalization procedure.

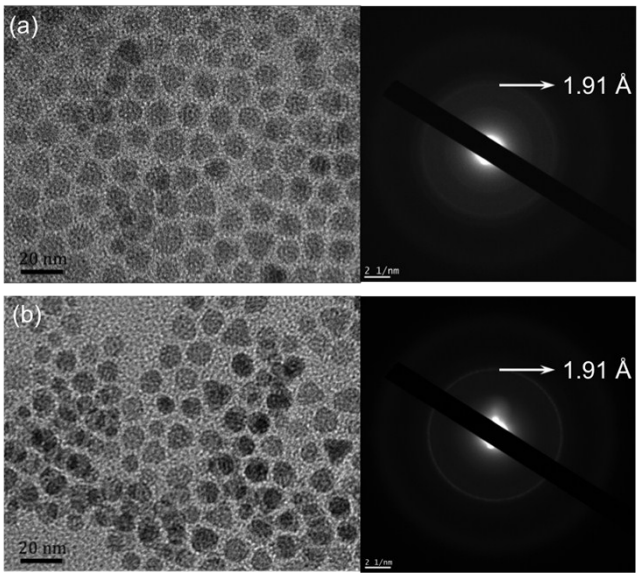

Fig. S3. (Left) TEM images and (right) SAED patterns of (a) as-prepared CuS nanoplatelets, and (b) CuS nanoplatelets following the same procedure for the preparation of the CuS-MWCNT hybrid in the absence of MWCNTs. The nanoplatelet sizes in both

TEM images are similar and the SAED patterns in a and b prove both nanocrystals are covellite CuS.

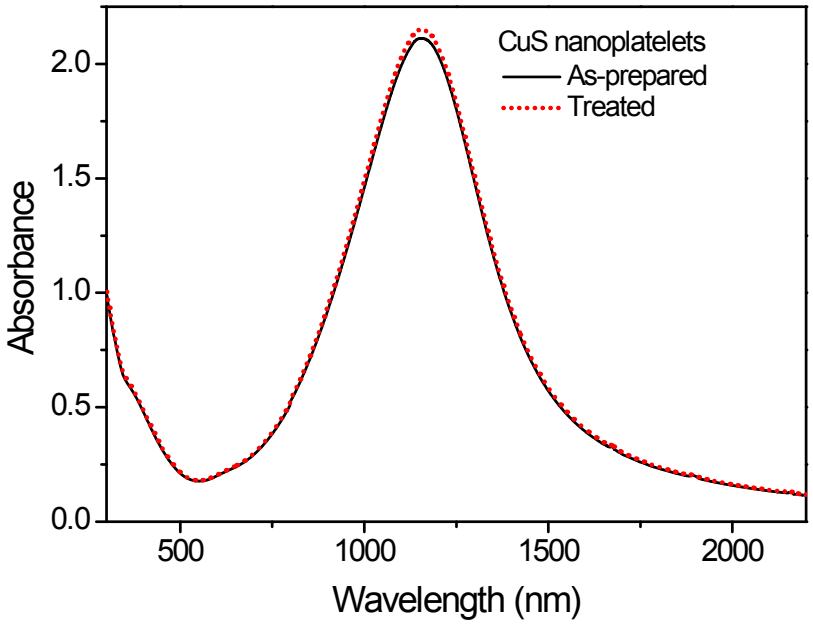

Fig. S4. UV-Vis-NIR absorption spectra of as-prepared CuS nanoplatelets (solid, black) dispersed in toluene, and treated CuS nanoplatelets (dotted, red) dispersed in toluene for the comparison with those coupled with MWCNTs.