Supporting Information

Enhanced wave absorption of nanocomposites based on the synthesized CuS complex symmetrical nanostructure and poly(vinylidene fluoride)

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To study the optical properties of the synthesized nanocrystals, UV–Vis absorption and photoluminescence have been studied extensively. Figure Sa shows the UV–Vis absorption spectrum of the complex geometrical symmetry CuS structures. A broad and strong absorption, which was reported in early research [1], can be found in the detected range from 400 to 800 nm. It indicates that the complex geometrical symmetry CuS nanostructures lead to the broadening of optical absorption, which can be used in the field of solar cell. The photoluminescence (PL) spectrum of the complex geometrical symmetry CuS nanostructures is present in Figure Sb, Under the photoluminescent excitation of 324 nm there are two emissions peaks: one is at about 427 nm, which is similar with the PL of CuS nanowires; [2] the other is at about 525 nm, which is different from reported that there was no emission peak for CuS in the range of 400–800 nm by the Jiang et al. [3] Such variation in PL intensity can be explained in terms of the size effect of the products, which in turn accounts for the increase in the content of surface oxygen vacancy and defects with a decrease in the size of materials [4] and is in agreement with other workers on other

nanomaterials. [5] However, the possibility of improvement in PL intensity due to higher crystallinity of the product cannot be ruled out. [6]

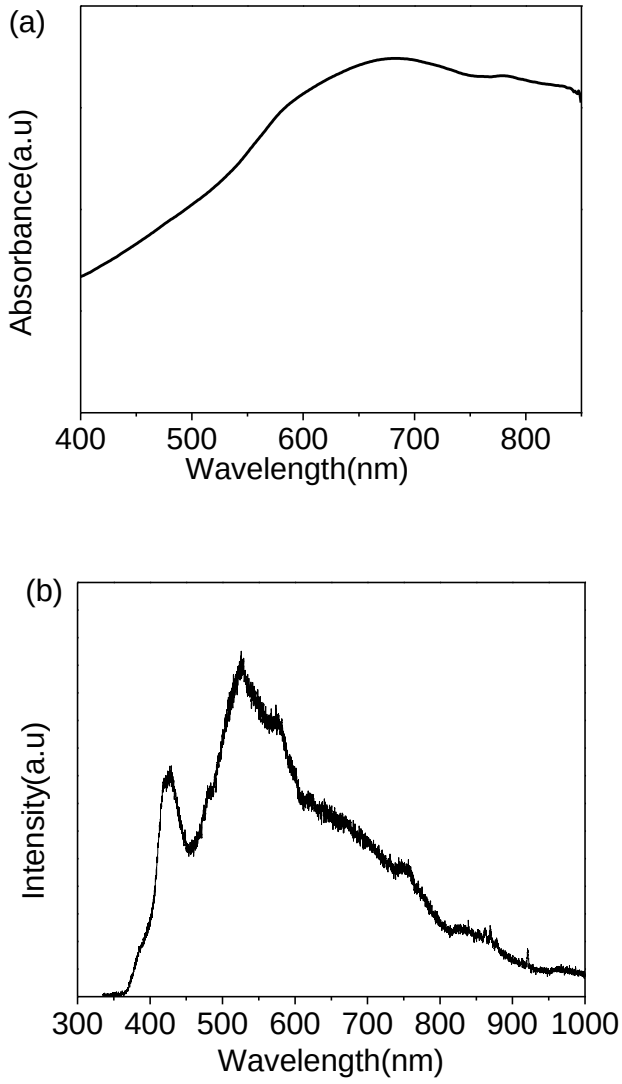


Fig. S1 (a) UV–Vis absorption spectrum of and (b) PL spectrum of the complex geometrical symmetry CuS nanostructures.

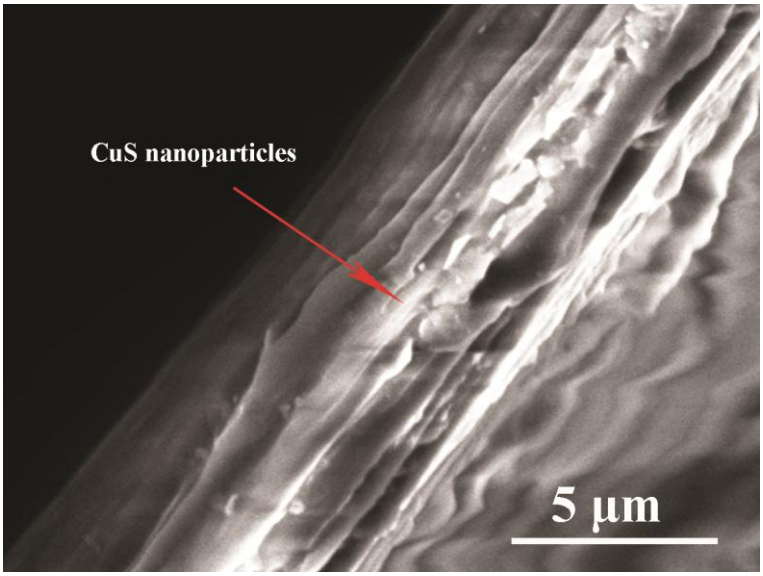
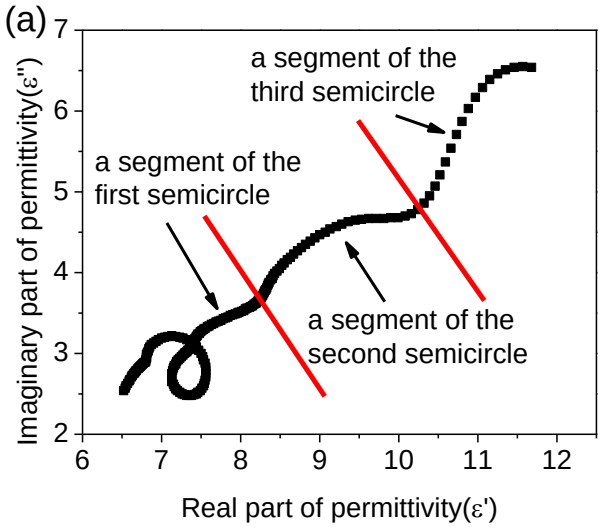


Fig. S2 SEM imagine of CuS/PVDF nanocomposite with a loading of 10wt%.



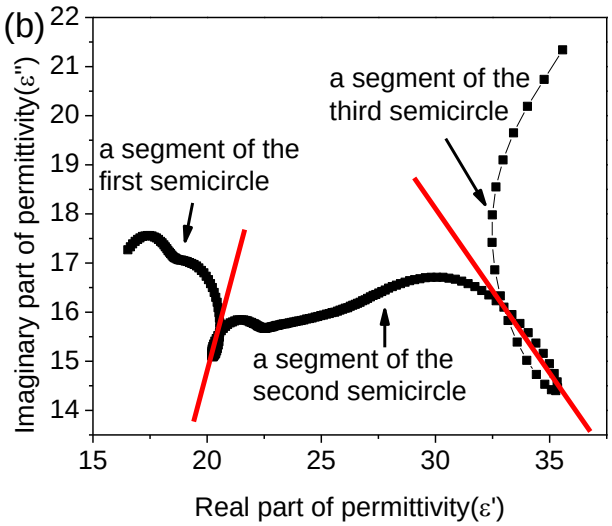


Fig. S3 CuS/PVDF nanocomposites with a loading of (a)5 wt% and (b) 20 wt%

References

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