

Nanostructures for Photovoltaics

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ABSTRACT

Single-crystalline copper sulfide (β -Cu₂S) nanocrystals (NCs) were grown in situ on multiwalled carbon nanotubes (MWCNTs) by the solvothermal method. The morphology of the Cu₂S NCs was varied from spherical particles (avg. size = 4 nm) to triangular plates (avg. size = 12 nm) by increasing the concentration of the precursors. The lattice matching between Cu₂S and the MWCNTs would be an important factor in the growth of Cu₂S NCs on the MWCNTs. The solar cells fabricated using these Cu₂S-MWCNT hybrid nanostructures respond more sensitively to light than those using the Cu₂S NCs (or MWCNTs) alone. The utilization of the active Cu₂S NCs through direct binding with the conductive MWCNTs would lead to enhanced performance of this photovoltaic device.

References

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