Branched nanorod couple heterostructures

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ZnSe nanorod couples have attracted substantial attention due to their novel growth mechanism and interesting electronic structures.[1] Here we report the branched ZnSe-ZnS nanorod couple heterostructure can be synthesized from ZnSe nanowires. Transmission electron microscopy (TEM), high-angle annular dark-field scanning TEM (HAADF-STEM) and energy-dispersive x-ray spectroscopy (EDS) characterizations revealed that a nanorod couple heterostructure was formed by the growth of ZnS on the end facets between two ZnSe nanorods. The obtained nanorod couple have two long arms of ZnSe and two short arms of ZnS, with branched structures of ZnS on the side walls of ZnSe long arms. Such branched heterostructures enable efficient charge separation, showing enhanced photocatalytic performance in water splitting reaction.

Reference

(1) Jia, G.; Sitt, A.; Hitin, G. B.; Hadar, I.; Bekenstein, Y.; Amit, Y.; Popov, I.; Banin, U. Couples of Colloidal Semiconductor Nanorods Formed By Self-Limited Assembly. *Nature materials* **2014**, *13*, 301 - 307.