

Supporting Information

Metal@I₂-II-IV-VI₄ Core-Shell Nanocrystals: Controlled Synthesis by Aqueous Cation Exchange for Efficient Photoelectrochemical Hydrogen Generation

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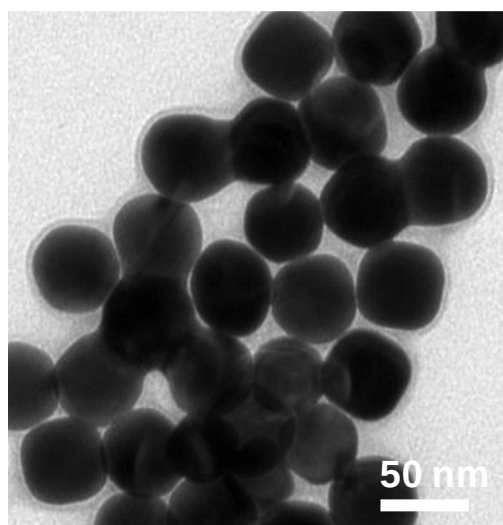


Figure S1 TEM image of the spherical Au colloids.

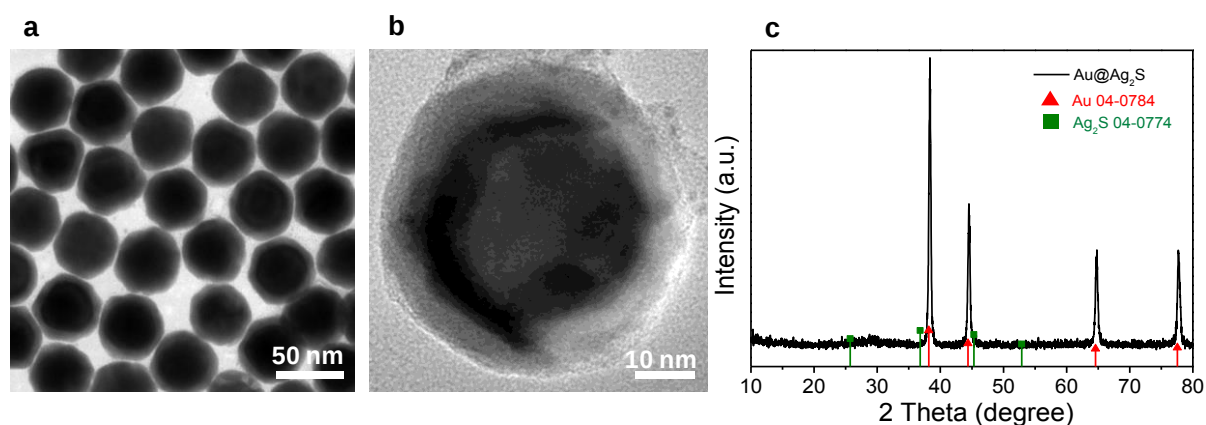


Figure S2 (a) TEM image, (b) HRTEM image and (c) XRD pattern of Ag@Ag₂S core-shell nanostructures. The characterization results of HRTEM and XRD suggested that the core is spatially confined by an amorphous matrix of the shell.^{1,2}

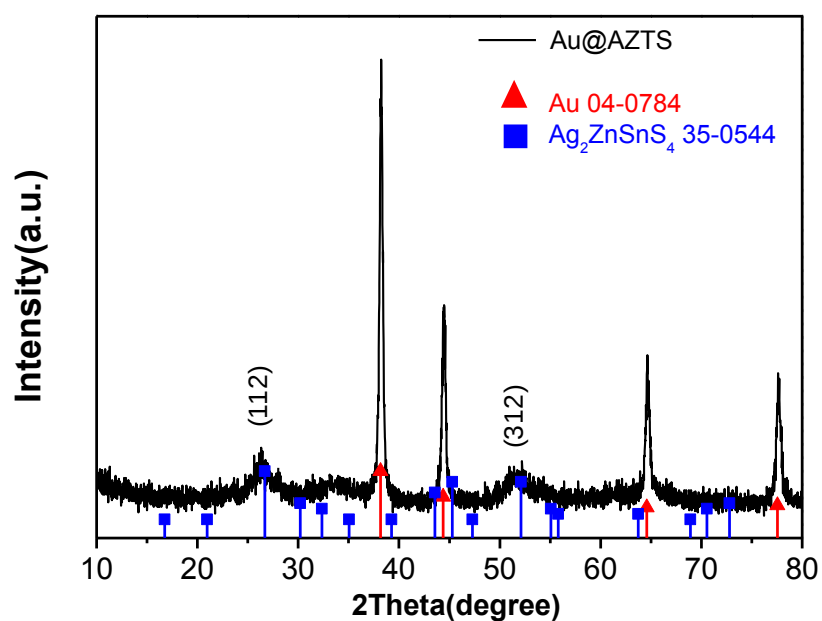


Figure S3 XRD pattern of the Au@AZTS core-shell NCs. Here the Au@AZTS core-shell NCs with Au core size of 13 nm and shell thickness of 6 nm were employed to generate discernable diffraction peaks assignable to AZTS.

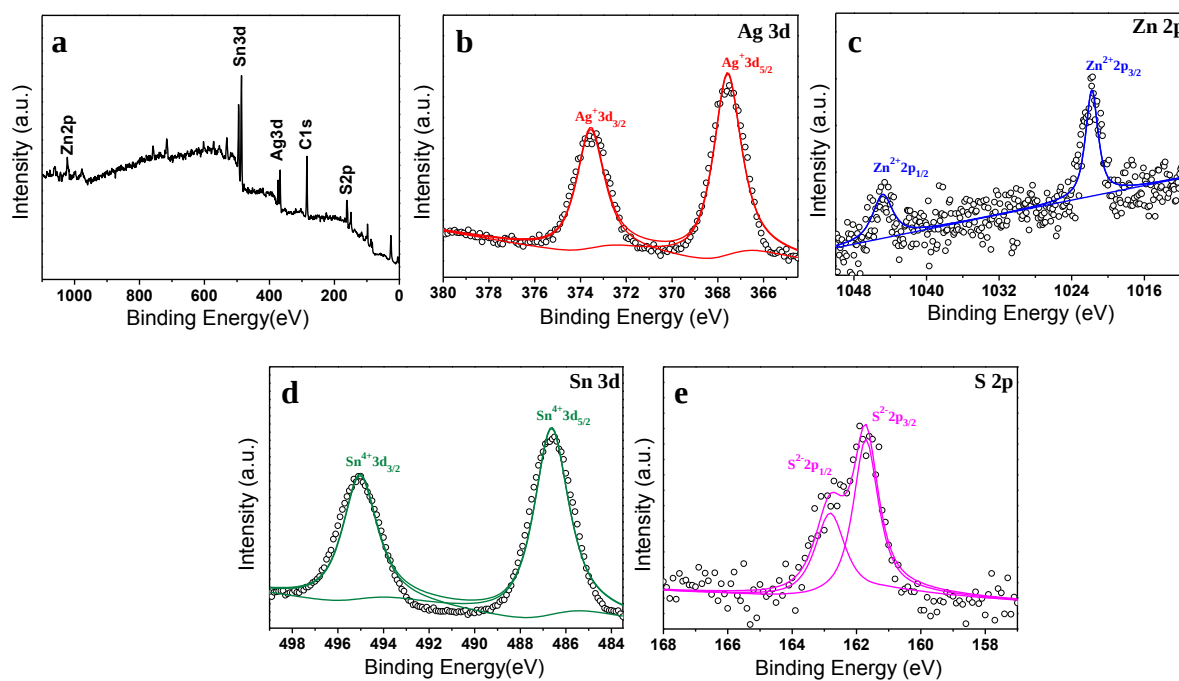


Figure S4 (a) XPS survey spectrum and (b-e) high-resolution XPS spectra of the Au@AZTS core-shell NCs.

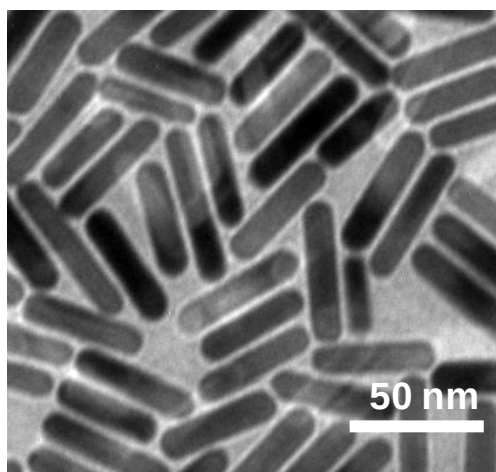


Figure S5 TEM image of the rod-like Au colloids.

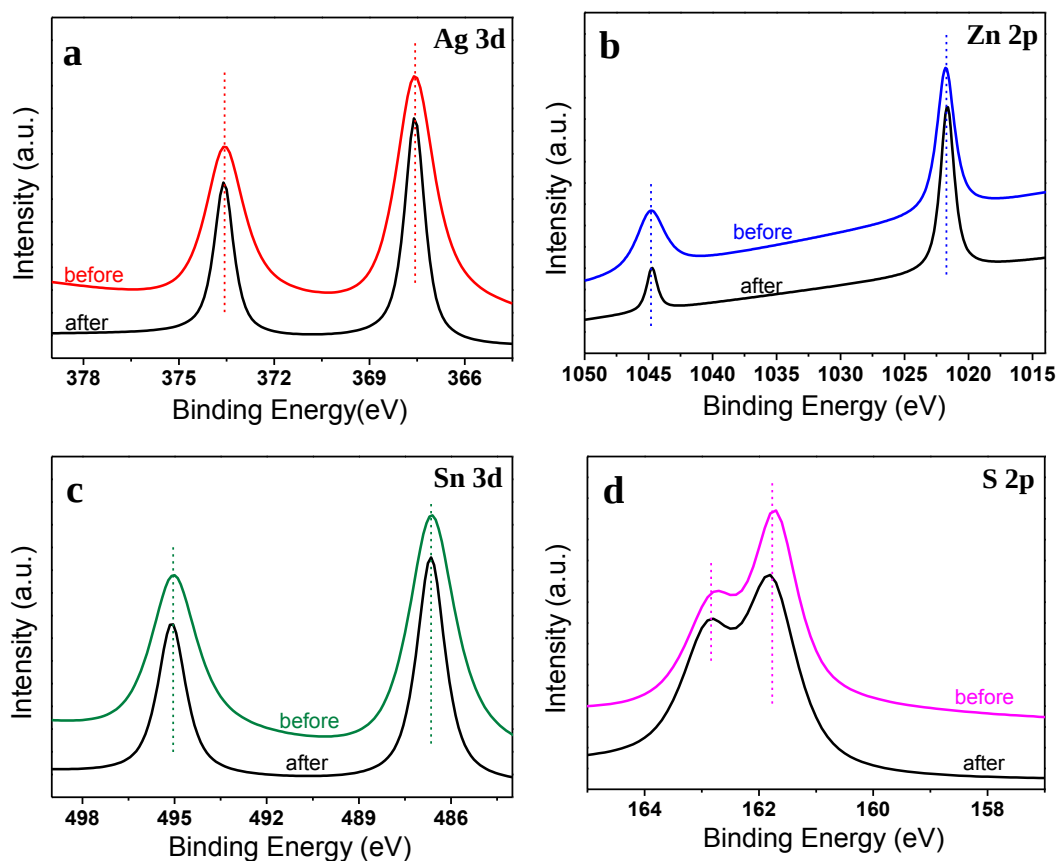


Figure S6 Comparison of the high-resolution XPS spectra of Au@AZTS core-shell NCs before and after the PEC hydrogen evolution test.

Reference

- [1] J. T. Zhang, Y. Tang, K. Lee, M. Ouyang, *Science*, 2010, **327**, 1634-1638.
- [2] J. Gui, M. W. Ji, J. J. Liu, M. Xu, J. T. Zhang, H. S. Zhu, *Angew. Chem. Int. Ed.*, 2015, **54**, 3683-3687.