Supporting Information

High-performance dye-sensitized solar cells using Ag-doped CoS counter electrodes

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Table S1. Comparison of the power conversion efficiency between the reported CoS based DSSCs and the present work.

CEs	η (%)	Ref.[a]
porous CoS	6.33%	S1
CoS acicular nanorod arrays	7.67%	S2
CoS nanoparticles	8.1%	S3
honeycomb-like CoS	7.72%	S4
CoS-Graphene Composite	6.31%	S5
CoS nanosheet arrays	6.39%	S6
CoS/graphene composite	7.08%	S7
Nickel doped cobalt sulfide	5.50%	S8
mixed-phase cobalt sulfide	7.2 %	S9
PANi-CoS	8.55%	S10
CoS nanosheets-coupled graphene quantum dots	7.30%	S11
PAN/CoS nanocomposite	7.41%	S12
5% Ag-doped CoS	8.35%	This work

[a]Reference:

S1. Lin, J. Y., Liao, J. H., & Chou, S. W. (2011). Cathodic electrodeposition of highly porous cobalt sulfide counter electrodes for dye-sensitized solar cells. Electrochimica Acta, 56(24), 8818-8826.

S2. Kung, C. W., Chen, H. W., Lin, C. Y., Huang, K. C., Vittal, R., & Ho, K. C. (2012). CoS acicular nanorod arrays for the counter electrode of an efficient dye-sensitized solar cell. ACS nano, 6(8), 7016-7025.

S3. Hsu, S. H., Li, C. T., Chien, H. T., Salunkhe, R. R., Suzuki, N., Yamauchi, Y., ... & Wu, K. C. W. (2014). Platinum-free counter electrode comprised of metal-organic-framework (MOF)-derived cobalt sulfide nanoparticles for efficient dye-sensitized solar cells (DSSCs). Scientific reports, 4, 6983.

S4. Huo, J., Zheng, M., Tu, Y., Wu, J., Hu, L., & Dai, S. (2015). A high performance cobalt sulfide counter electrode for dye-sensitized solar cells. Electrochimica Acta, 159, 166-173.

S5. Wang, F., Wu, C., Tan, Y., Jin, T., Chi, B., Pu, J., & Jian, L. (2015). CoS-Graphene composite counter electrode for high performance dye-sensitized solar cell. Journal of nanoscience and

nanotechnology, 15(2), 1180-1187.

S6. Tai, S. Y., Chang, C. F., Liu, W. C., Liao, J. H., & Lin, J. Y. (2013). Optically transparent counter electrode for dye-sensitized solar cells based on cobalt sulfide nanosheet arrays. Electrochimica Acta, 107, 66-70..

S7. Wang, G., Zhang, J., Kuang, S., Liu, S., & Zhuo, S. (2014). The production of cobalt sulfide/graphene composite for use as a low-cost counter-electrode material in dye-sensitized solar cells. Journal of Power Sources, 269, 473-478.

S8. Kim, H. J., Kim, C. W., Punnoose, D., Gopi, C. V., Kim, S. K., Prabakar, K., & Rao, S. S. (2015). Nickel doped cobalt sulfide as a high performance counter electrode for dye-sensitized solar cells. Applied Surface Science, 328, 78-85.

S9. Luo, Y., Shen, J., Cheng, R., Chen, X., Chen, Y., Sun, Z., & Huang, S. (2015). Facile synthesis of mixed-phase cobalt sulfide counter electrodes for efficient dye sensitized solar cells. Journal of Materials Science: Materials in Electronics, 26(1), 42-48.

S10. Yang, P., Duan, J., & Tang, Q. (2015). Cobalt sulfide decorated polyaniline complex counter electrodes for efficient dye-sensitized solar cells. Electrochimica Acta, 184, 64-69.

S11. Yu, C., Liu, Z., Chen, Y., Meng, X., Li, M., & Qiu, J. (2016). CoS nanosheets-coupled graphene quantum dots architectures as a binder-free counter electrode for high-performance DSSCs. Science China Materials, 59(2), 104-111.

S12. Murugadoss, V., Arunachalam, S., Elayappan, V., & Angaiah, S. (2018). Development of electrospun PAN/CoS nanocomposite membrane electrolyte for high-performance DSSC. Ionics, 1-10.