

Electronic supplementary information

High and Stable Photoelectrochemical Activity of ZnO/ZnSe/CdSe/Cu_xS Core-Shell Nanowire Arrays: Nanoporous Surface with Cu_xS as a Hole Mediator

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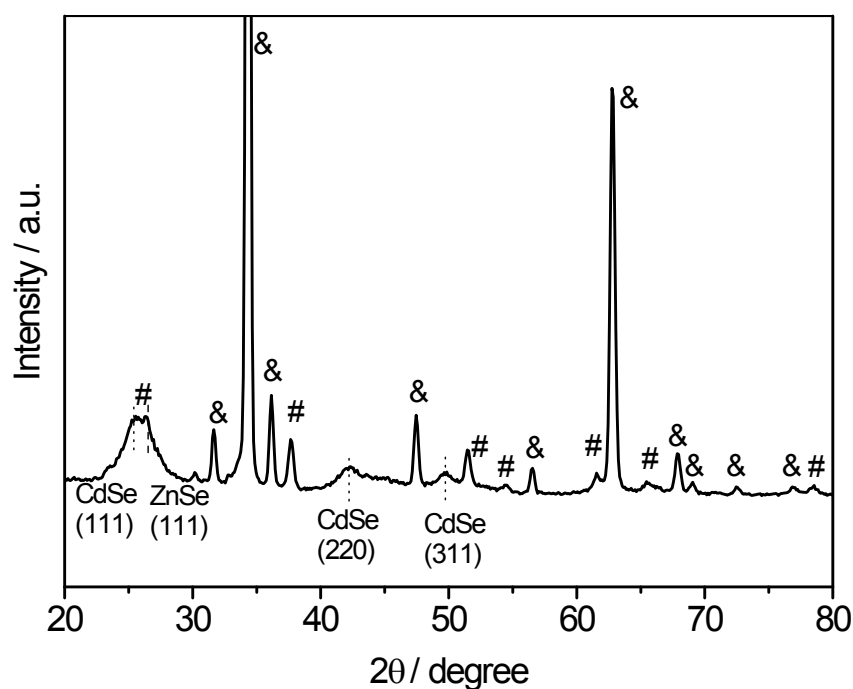


Figure S1. XRD pattern of ZnO/ZnSe/CdSe/Cu_xS sample. Peaks from FTO and ZnO are indicated by # and &, respectively.

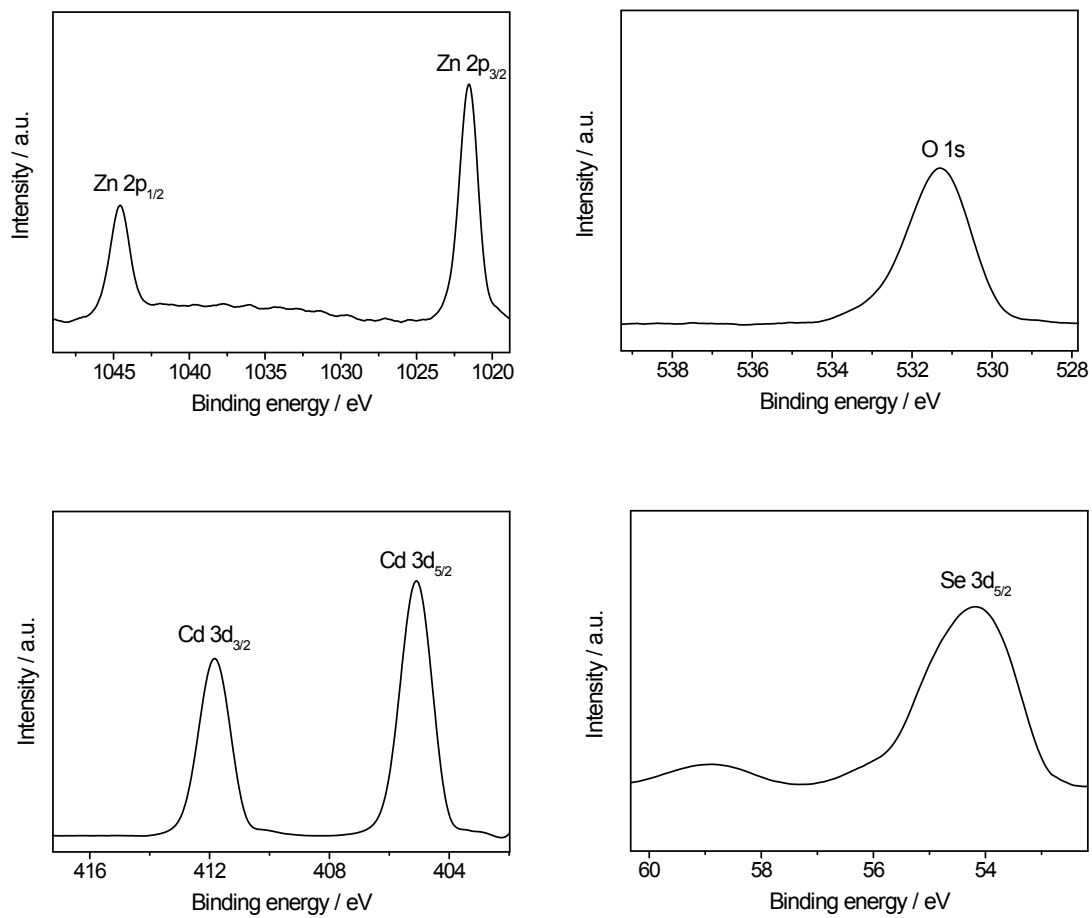


Figure S2. XPS spectra of Zn, O, Cd and Se elements of the ZnO/ZnSe/CdSe/Cu_xS

Table S1. Photoelectrochemical Performance Using II -VI Group Semiconductor

Sensitized ZnO Nanowire/Nanorod Array Photoelectrodes

Electrode Materials	Methods ^(a)	Light Source	Electrolyte	Saturated Photocurrent density (mA/cm ²)	Maximum IPCE	Ref.
CdSe/ZnO	SILAR	AM 1.5	0.5M Na ₂ S	3.5 (0.25V vs Ag/AgCl)	46% at 460 nm	1
CdSe/CdS/ZnO	SILAR-CdS CBD-CdSe	AM 1.5G	1M Na ₂ S	9.15 (0V vs SCE)	-	2
IrO _x ·nH ₂ O/CdSe /CdS/ZnO	SILAR-CdS CBD-CdSe	AM 1.5G	0.25M Na ₂ S, 0.35M Na ₂ SO ₃	13.9 (0.6V vs. RHE)	-	3
ZnO/CdTe/CdS	SILAR-CdS ED-CdTe	AM 1.5G	0.1 M KCl, 0.1 M Na ₂ S, 0.3 M S	12.4 (0V vs Ag/AgCl)	-	4
ZnO/CdSe	ED-CdSe	AM 1.5G	0.2 M Na ₂ S	14.9 (0.86V vs. RHE)	34% at 410 nm	5
ZnSe/CdS/CdSe/ ZnO	IE-ZnSe CBD-CdS, CdSe	AM 1.5G	0.35 M Na ₂ SO ₃ , 0.24 M Na ₂ S	5.6 (0.25V vs Ag/AgCl)	35% at 380 nm	6
CdSe/CdS/ZnO	SILAR-CdS, CdSe	AM 1.5	0.5 M Na ₂ S	14.5 (0.25V vs Ag/AgCl)	-	7
ZnO/ZnSe/CdSe /Cu _x S	IE-ZnSe, CdSe SILAR-Cu _x S	AM 1.5G	0.50 M Na ₂ S, 0.50 M Na ₂ SO ₃	16.7 (0.25V vs Ag/AgCl)	89.5% at 500 nm	This work

(a) SILAR: Successive Ionic Layer Adsorption and Reaction; CBD: Chemical Bath Deposition; ED: Electrochemical Deposition; IE: Ion Exchange;

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