

## Supplementary information

### **Eco-friendly and High-performance Photoelectrochemical Anode based on AgInS<sub>2</sub> Quantum Dots Embedded in 3D Graphene Nanowalls**

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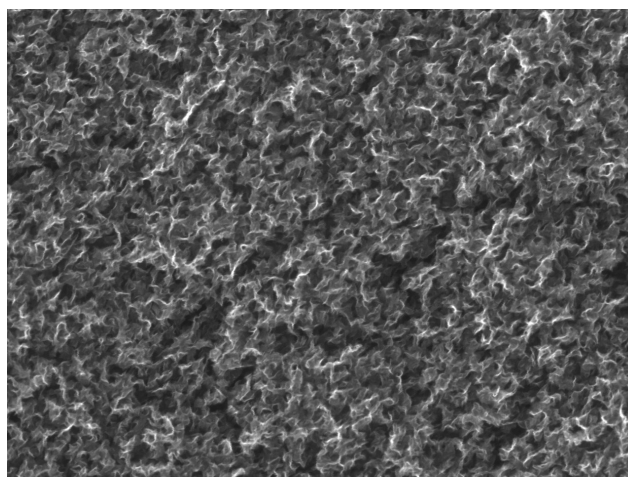


Fig. S1 SEM image of the pure GNWs

Table S1 Calculated average diameters of QDs using Scherrer's formula when X-Ray Wavelength is 0.15418nm.

S#	2θ (deg)	FWHM (deg)	Size (nm)	Average size (nm)
120°C	27	4.7	1.82	2.31
	45	3.8	2.36	
	54	3.4	2.74	
150°C	27	3.3	2.59	3.19
	45	2.9	3.1	
	54	2.4	3.88	
180°C	27	2.4	3.56	4.55
	45	2.1	4.28	
	54	1.6	5.82	

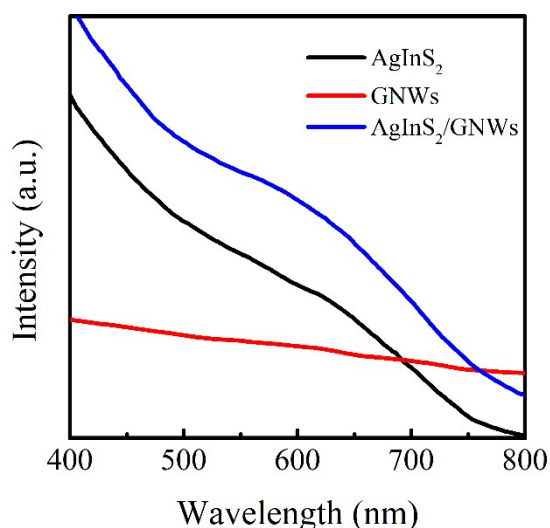


Fig. S2 UV-Vis spectra of AgInS<sub>2</sub>, pure GNWs and AgInS<sub>2</sub>/GNWs. The temperature of AgInS<sub>2</sub> QDs used for measurement here is 180°C. The pure GNWs can absorb a wide range of the visible light due to its wideband absorption feature. After combining with AgInS<sub>2</sub> QDs, the absorption spectrum exhibits the absorption property of AgInS<sub>2</sub> QDs but with a higher absorption, indicating their successful combination.

Table S2 Element content of the GNWs and AgInS<sub>2</sub>/GNWs on SiO<sub>2</sub> substrate.

wt%	GNWs	AgInS <sub>2</sub> /GNWs
C	46.32	45.57
O	16.30	13.45
Si	37.37	30.10
S	0	7.28
Ag	0	1.62

