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## **Supporting Information**

## Highly efficient Nano-graphite electron transport layer for high performance ZnO/Si solar cells

Ming Chen<sup>a,b</sup>, Gang Wu<sup>a</sup>, Minmin Zhang<sup>a</sup>, Jie Liu<sup>a</sup> Jiantao Zai<sup>b\*</sup>, Xuefeng Qian<sup>b</sup> and Xibin Yu<sup>a\*</sup>,

a The Education Ministry Key Laboratory of Resource Chemistry and Shanghai Key Laboratory of Rare Earth Functional Materials, Department of Chemistry, Shanghai Normal University, Shanghai 200234, People's Republic of China

b Shanghai Electrochemical Energy Devices Research Center, School of Chemistry and Chemical Engineering and State Key Laboratory of Metal Matrix Composites, Shanghai Jiao Tong University, Shanghai, 200240, P. R. China.

Corresponding author: xibinyu@shnu.edu.cn; Tel: +86-21-64324528; zaijiantao@sjtu.edu.cn

**The method of sample preparation for TEM measurements:** 1 The polycrystalline silicon wafer with ZnO QDs is cut into pieces (The area is about 0.5cm<sup>2</sup>), then, those pieces are dipped into absolute ethyl alcohol by beaker. 2 The second process is ultrasonic processing. The ultrasound time is about 30min. So far, the solution in beaker is the sample for TEM.



Figure S1. XRD spectra for graphite standard sample



Figure S2. XRD spectra for ZnO and C-ZnO

Table S1. Size of ZnO nano-crystalline estimated from XRD

	1	2	3
FWHM (β	0.03297	0.03346	0.03476
)			
20	31.88613	34.54997	36.37488
D	4.325nm	4.291 nm	4.152 nm

$$\mathbf{D} = \frac{K * \lambda}{\beta} * \cos \Theta$$



Figure S3.TEM image of graphite standard sample

![](_page_2_Picture_0.jpeg)

Figure S4. Selected area (electron) diffraction pattern of nano-graphite

![](_page_2_Figure_2.jpeg)

Figure S5.EDS spestra of graphite standard sample.

![](_page_3_Figure_0.jpeg)

Figure S6. Resistivity of solar cells

![](_page_3_Figure_2.jpeg)

Figure S7. J–V characteristics of the devices measured under dark condition