Supporting Information

Photocurrent, Humidity Sensitive and Proton Conductive Properties of a New Sulfide Semiconductor $CsCuS_4$

Qiu-Nan Yan,[a,b] Bin-Wen Liu,[a] Xiao-Ming Jiang,*[,a] Jin-Xu Zhao,[a,b] Shao-Min Pei,[a] Wen-Fa Chen,[a] and Guo-Cong Guo*[,a]

[a] State Key Laboratory of Structural Chemistry, Fujian Institute of Research on the Structure of Matter, Chinese Academy of Sciences, Fuzhou, Fujian 350002, China.

[b] School of Physical Science and Technology, ShanghaiTech University, Shanghai 201210, China.

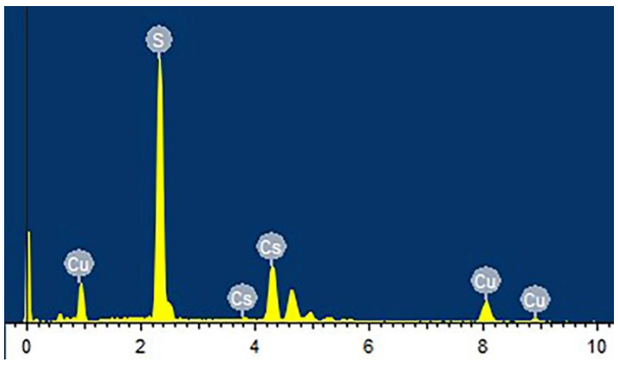

Figure S1. The EDX spectra of **1**.

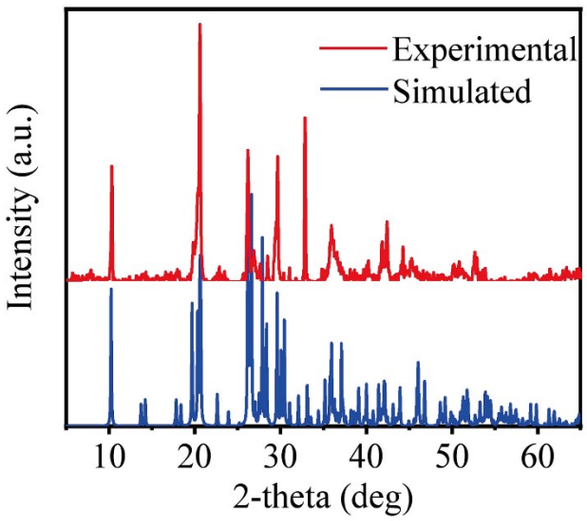

Figure S2. Simulated and experimental powder X-ray diffraction patterns of **1**.

Table S1. Fractional atomic coordinates ($\times 10^4$) and equivalent isotropic displacement parameters ($Å^2 \times 10^3$) for **1**.

Atom	*x*	*y*	*z*	*U*(eq)
Cs1	3751.7(19)	6434.8(15)	2585.3(12)	37.0(4)
Cu1	2537(4)	84(3)	99(2)	33.1(5)
S1	118(7)	825(5)	8176(5)	31.0(8)
S2	6742(7)	2811(5)	1364(5)	31.1(8)
S3	858(8)	1860(6)	3682(4)	35.5(9)
S4	7403(8)	2422(7)	3517(5)	40.0(10)

Table S2. Selected bond lengths (Å) of **1**.

Atom1	Atom2	Length/Å	Atom1	Atom2	Length/Å
Cu1	S1	2.338(4)	S1	S3	2.079(6)
Cu1	S2	2.349(4)	S2	S4	2.076(6)
Cu1	S1	2.360(4)	S3	S4	2.056(6)
Cu1	S2	2.368(4)			