Supporting Material

Development of an aqueous zinc ion rGH//Bi_2MoO_6 photo-assisted charging supercapacitor

Wenlong Zhang[a], Chengbin Zheng[a], Jiake Li[a,b,*], Hedong Jiang[a], Xin Liu[a], Pingchun Guo[a], Xueguo Zhao[a], Hua Zhu[c], Yanxiang Wang[a]

Corresponding Author: Jiake Li, E-mail: jiakeli.jci@163.com

a School of Materials Science and Engineering, Jingdezhen Ceramic University, Jiangxi, 333403, China

b Jiangxi Key Laboratory of Advanced Ceramic Materials, Jiangxi, 333403, China

c School of Mechanical and Electrical Engineering, Jingdezhen Ceramic University, Jiangxi, 333403, China

2.4 Characterization

The energy density (E_g, Wh kg-1), and power density (P, W kg-1) were calculated according to the equations (Eq.1) - (Eq.2).

$$E_g = \frac{1}{2 \times 3.6} C(\Delta V)^2 \qquad (Eq.1)$$

$$P = \frac{3600 E_g}{\Delta t} \qquad (Eq.2)$$

C: the capacitances (F g^{-1}), ΔV: tested voltage window (V), Δt: the discharge time (s).

The PCE calculation method in this work is as follows: The photoelectric conversion efficiency (PCE) of the supercapacitor is the ratio of the stored energy of the supercapacitor to the light energy irradiated on the photoanode, which is calculated according to Eq.3:

PCE (%) = Device storage energy/ The light energy irradiated on the photoanode

$= (E_g \times m \times 3600) / (A \times S \times t) \times 100\%.$ (Eq.3)

PCE: photoelectric conversion efficiency (%), E_g: energy density (Wh.kg^{-1}), m: mass of active materials in electrodes (g), A: power density of the incident light (mW.cm^{-2}), S: effective area of the photoanode (cm^2), t: illumination time (s).

3.3 Photoelectric properties analysis of the rGH//Bi_2MoO_6 supercapacitor in a two-electrode system

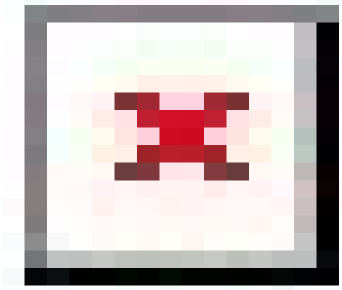

Fig. S1 XRD patterns of the photoanode before and after 10000 cycles.

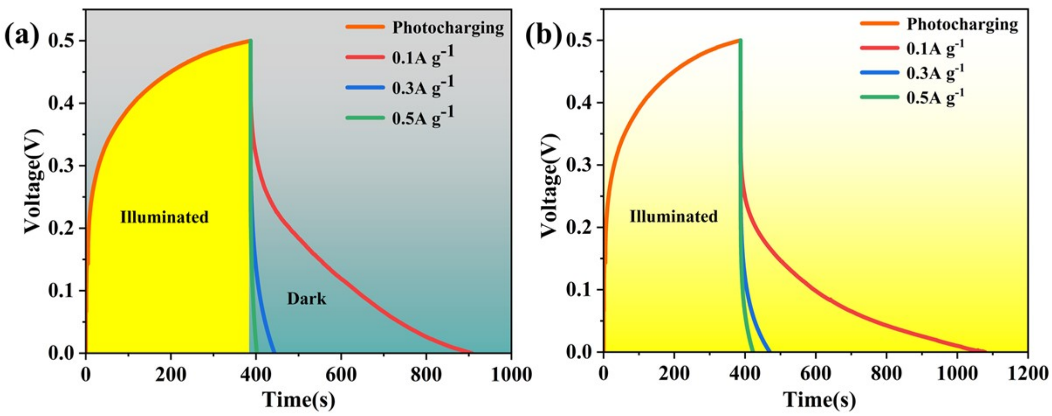

Fig. S2 GCD curves of the supercapacitor photocharged followed by discharging (a) without illumination (b) with illumination.