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Supporting Information for:

The Impact of Nitrogen Doping and Reduced-Niobium Self-Doping on the Photocatalytic Activity of Ultra-Thin $Nb_3O_8^-$ Nanosheets

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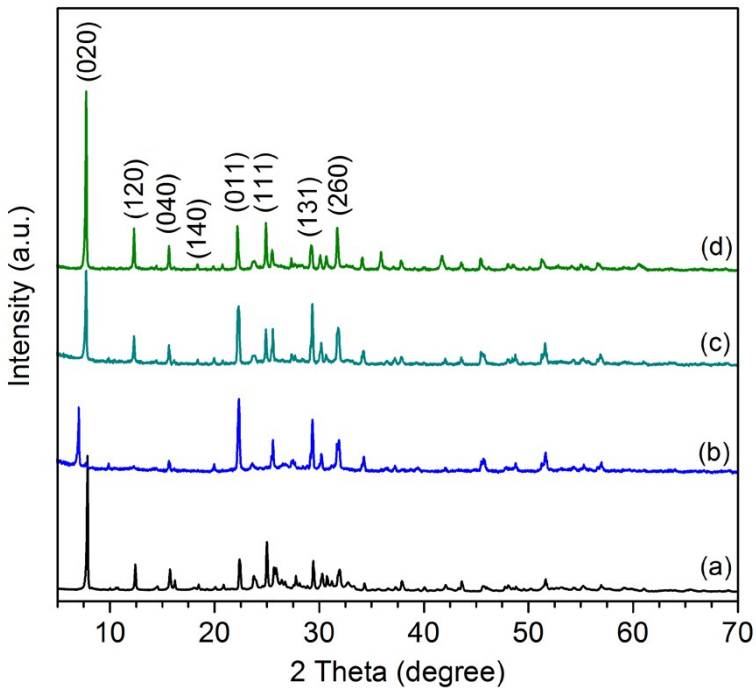

Fig. S1 XRD patterns for acid-exchanged phases, (a) KNO, (b) KNO-**1**, (c) KNO-**2** (d) KNO-**3**.

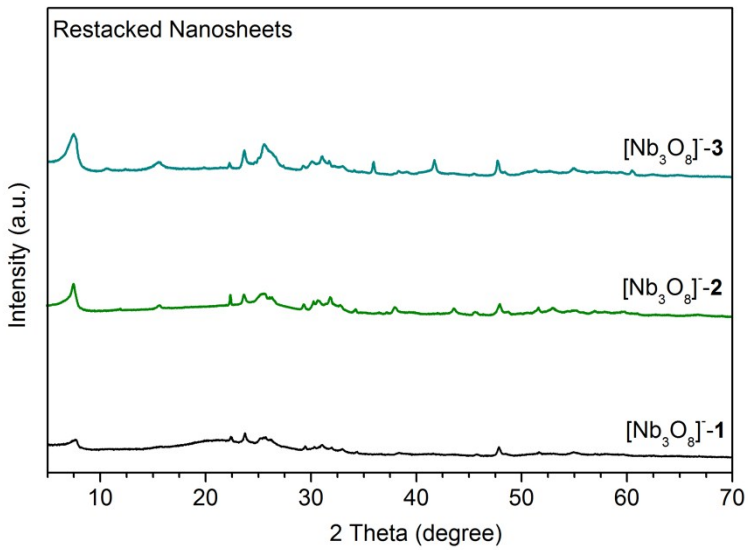

Fig. S2 XRD patterns for restacked samples, (a) $[Nb_3O_8]^-$-**1**, (b) $[Nb_3O_8]^-$-**2**, (c) $[Nb_3O_8]^-$-**3**.

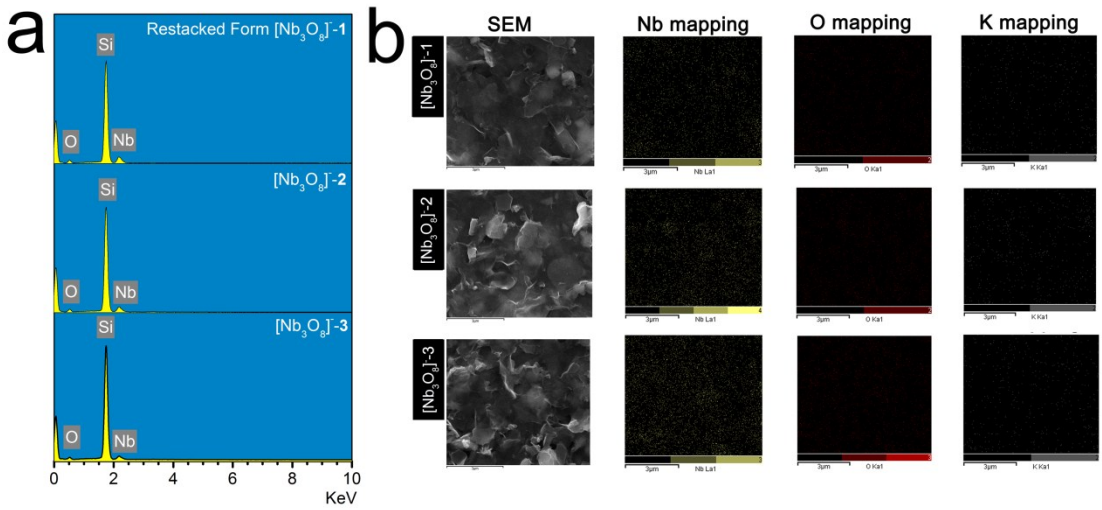

Fig. S3 The energy dispersive spectroscopy (EDS) and the corresponding element mapping (EM) for restacked nanosheets, (Si substrate).

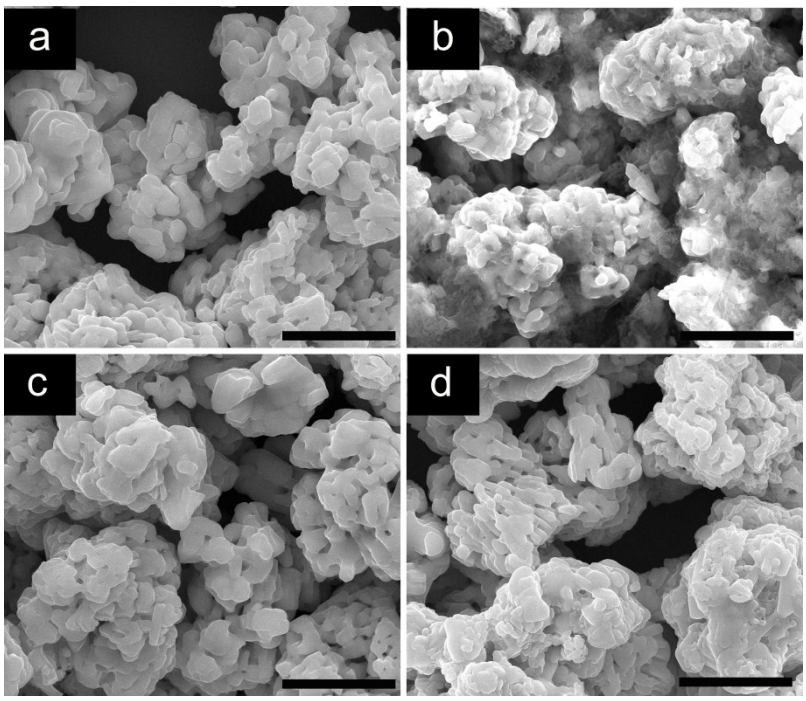

Fig. S4 SEM images of KNO (a), KNO-**1** (b), KNO-**2** (c), and KNO-**3** (d) samples. Scale bar: 5 μm.

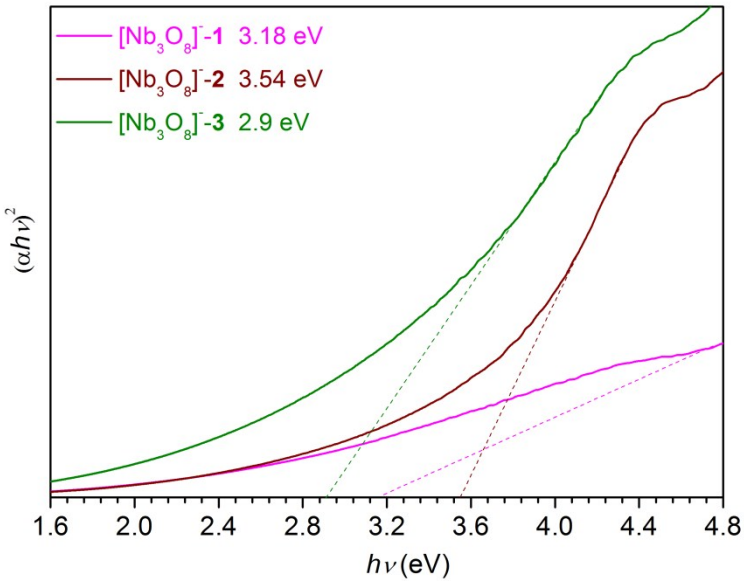

Fig. S5 The derived bandgap based on the Kubelka-Munk function of $[Nb_3O_8]^-$-**1**, $[Nb_3O_8]^-$-**2**, and $[Nb_3O_8]^-$-**3** nanosheets.

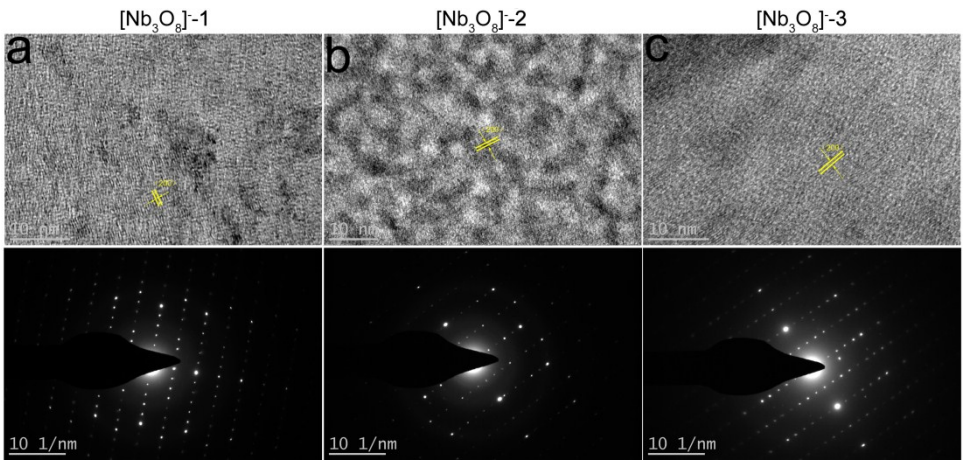

Fig. S6 HRTEM and SAED of nanosheets colloidal suspension images of $[Nb_3O_8]^-$-**1** (a), $[Nb_3O_8]^-$-**2** (b), and $[Nb_3O_8]^-$-**3** (c) nanosheets.

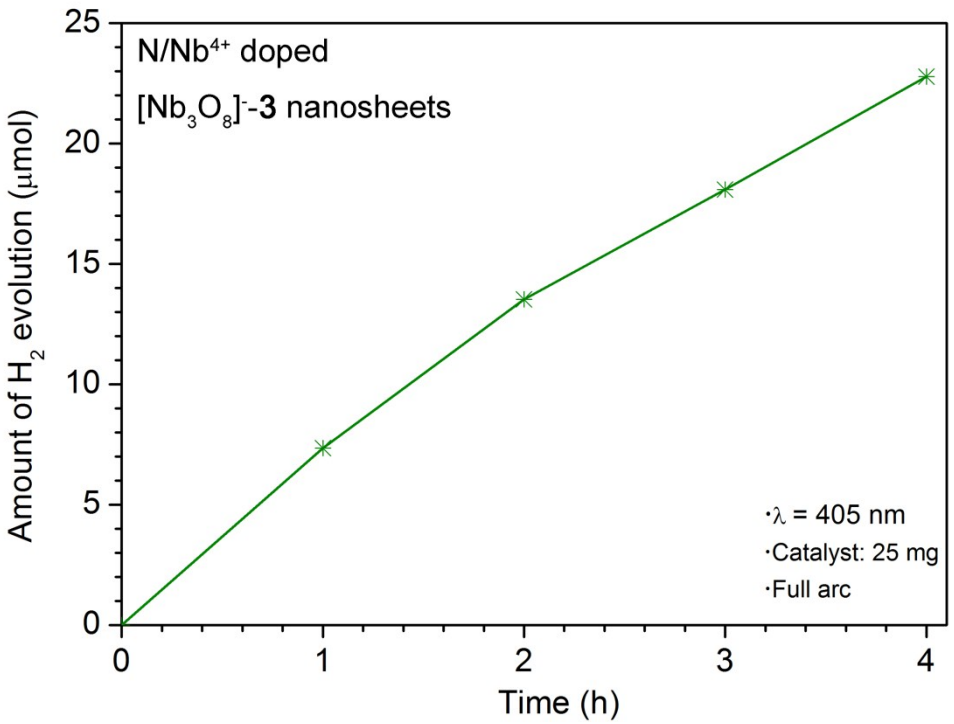

Fig. S7 Hydrogen evolution by photocatalytic water splitting of $[Nb_3O_8]^-$-**3** with irradiation light at 405 nm by using cut-off filter (QD405).

Table S1 Platinum content of loaded photocatalysts determined by ICP-OES before and after 4 h reaction.

Samples	Pt (wt %)	
	before	after
$[Nb_3O_8]^-$-**1**	0.473	0.455
$[Nb_3O_8]^-$-**2**	0.455	0.420
$[Nb_3O_8]^-$-**3**	0.467	0.440

For KNb_3O_8, band edge positions were given by the following equations:

$$E_c = (\chi_{(K)}^{1} \cdot \chi_{(Nb)}^{3} \cdot \chi_{(O)}^{8})^{1/(12)} - 1/2\, E_g + E_0 \qquad (1)$$

$$E_v = E_c + E_g \qquad (2)$$

The absolute electronegativities of the constituent atoms K, Nb, and O are $\chi_{(K)}$ = 2.42, $\chi_{(Nb)}$ = 4.0, and $\chi_{(O)}$ = 7.54, respectively, E_C, E_V, and E_g are the energy levels of the CBM, VBM and the bandgap energy of the semiconductor respectively, E_g was determined by UV-vis diffuse reflectance spectra, and E_0 = –4.5 eV_{VAS} at pH=0.