Electronic Supplementary Material (ESI) for Nanoscale

Supplementary Information

Photocatalytic Water Splitting for Hydrogen Generation on cubic, orthorhombic, and tetragonal $KNbO_3$ Microcubes

Tingting Zhang,[a,c] Kun Zhao,[a] Jiaguo Yu,[d] Jian Jin,[d] Yang Qi,[c] Huiquan Li,[b] Xinjuan Hou*[b] and Gang Liu*[a]

[a]National Center for Nanoscience and Technology, Beijing 100190, China
[b]National Engineering Laboratory for Hydrometallurgical Cleaner Production Technology, Institute of Process Engineering, Chinese Academy of Sciences, Beijing, 100190, China
[c]Institute of Materials Physics and Chemistry, School of Sciences, Northeastern University, Shenyang 110004, China
[d]State Key Laboratory of Advance Technology for Material Synthesis and Processing, Wuhan University of Technology, Wuhan 430070, China

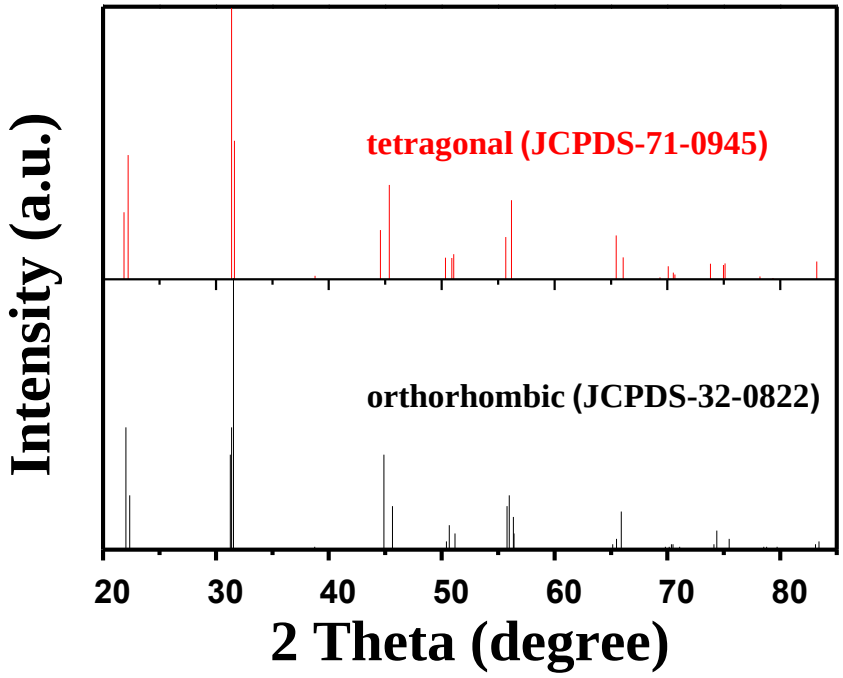

Fig. S1. XRD patterns of JCPDS database card 32-0822 and 71-0945 for orthorhombic and tetragonal $KNbO_3$, respectively.

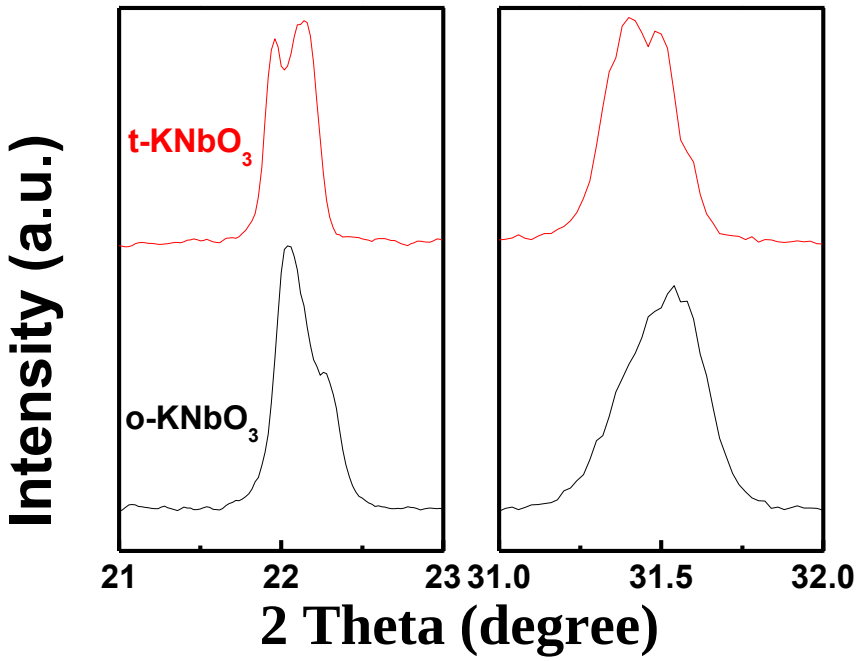

Fig. S2. XRD patterns of o-$KNbO_3$ and t-$KNbO_3$ at ca. 22.0^o and 31.5^o .

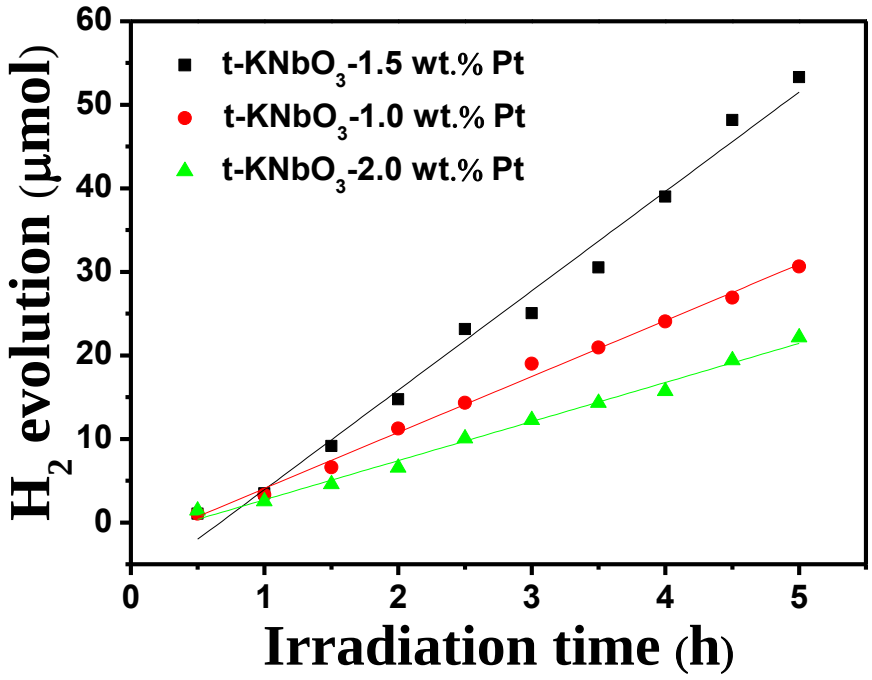

Fig. S3. Photocatalytic H_2 evolution from an aqueous methanol solution over t-$KNbO_3$ microcubes with various Pt loadings of 1.0, 1.5 and 2.0 wt.%. Reaction conditions: 0.1 g catalyst, 25% methanol aqueous solution (20 mL methanol + 60 mL distilled water), 300 W Xe-lamp (λ: 250~380 nm).

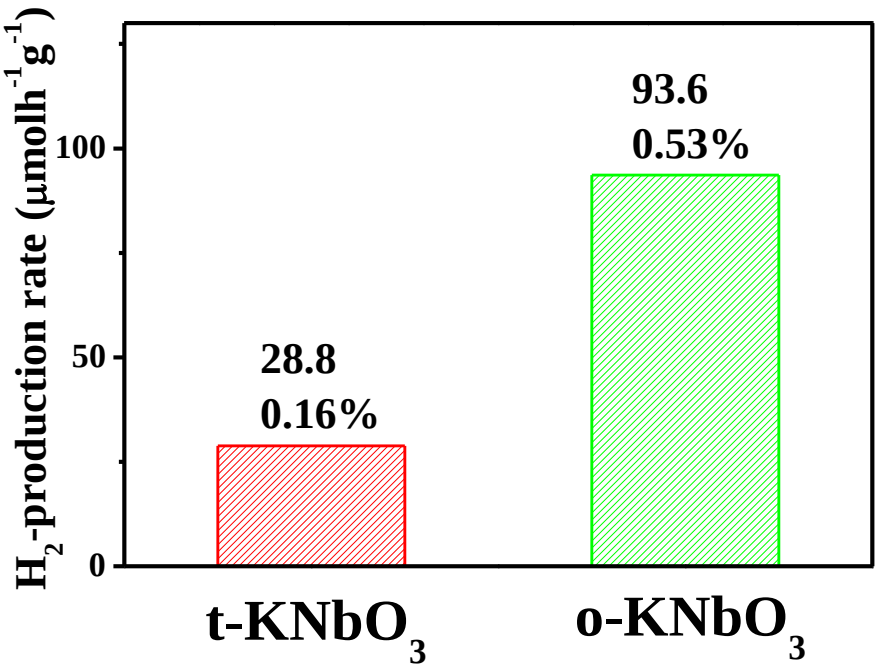

Fig. S4. The rate of hydrogen generation and QE (%) over $KNbO_3$ samples. Reaction conditions: 0.1 g catalyst, 25% ethanol aqueous solution (20 mL ethanol + 60 mL distilled water), 1 wt.% Pt cocatalyst, four 3 W LED lights (λ=365 nm). The respective QE (%) was marked.

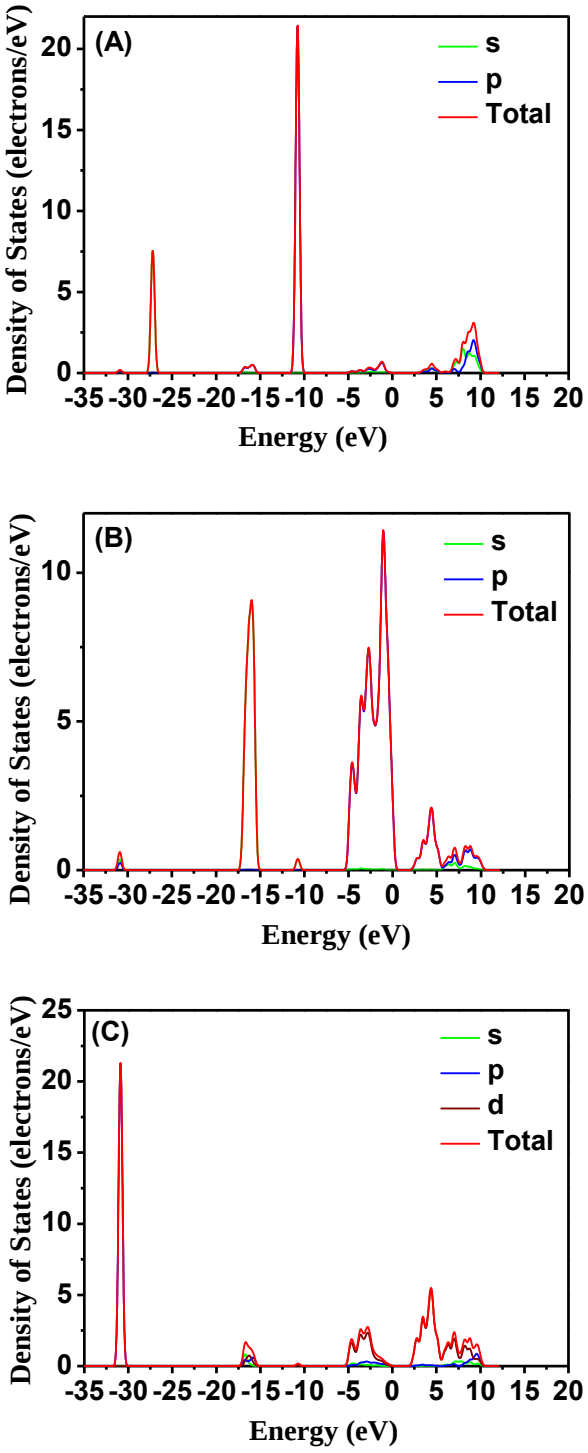

Fig. S5. The DOS of (A) K atom, (B) O atom and (C) Nb atom in o-$KNbO_3$.