Electronic Supplementary Information

One-step preparation of nickel sulfide/nickel hydroxide films for electrocatalytic hydrogen generation from water

Yanmei Chen, Ruixian Wu, Pingping Jiang, Gang Bian, Linggang Kong and Yuming Dong*

Key Laboratory of Food Colloids and Biotechnology (Ministry of Education of China), School of Chemical and Material Engineering, Jiangnan University, Wuxi 214122, P. R. China

* Corresponding authors. Fax: (+)86 510 85917763. E-mail address: dongym@jiangnan.edu.cn (Y. Dong).

Figure S1. Extended controlled potential electrolysis shows the accumulated charge and current versus time for Ni-S/ITO in buffer solution of pH 6 at E = -0.962 V. vs Ag/AgCl.
**Figure S2.** Plots of current density vs potential in 0.1 M KOH solution and 0.5M H₂SO₄ solution for representative samples of Ni-S/ITO.

**Figure S3.** Controlled potential electrolysis shows the accumulated charge versus time for Ni-S/ITO in 0.1 M KOH at an applied potential of -1.05V vs Ag/AgCl (η = -283mV).
Figure S4. Plots of current density vs potential in 1.0 M potassium phosphate buffer solution (pH=7) for representative samples of Ni-S/ITO. The bare ITO substrate and Pt are shown as controls.

Figure S5. Extended controlled potential electrolysis shows the accumulated charge and current versus time for Ni-S/ITO in 1.0 M potassium phosphate buffer solution of pH 7 at E = -0.908 V vs Ag/AgCl.
Figure S6. Extended controlled potential electrolysis shows the accumulated charge and current versus time for Ni-S/ITO in 1.0 M potassium phosphate buffer solution of pH 7 at E = -0.962 V vs Ag/AgCl.
Before

After

Binding energy (eV)
Figure S7. XPS spectra of the Ni-S films before and after electrolysis at -0.908 V vs Ag/AgCl in pH 7 phosphate buffer: (a) survey, (b) Ni 2p region, (c) O 1s region and (d) S 2p region.