**Supplementary Information**

5 **Controllable Synthesis of Ni Nanotube Arrays and Their Structure-Dependent Catalytic Activity toward Dye Degradation**

Xiang-Zi Li, a,b Kong-Lin Wu, b Yin Ye, b and Xian-Wen Wei* b

[a] Department of Chemistry, Wannan Medical College, Wuhu 241002, People's Republic of China

[b] College of Chemistry and Materials Science, Key Laboratory of Functional Molecular Solids, the Ministry of Education, Anhui Laboratory of Molecule-based Materials, Anhui Normal University, Wuhu 241000, People's Republic of China.

Fig. S1  XRD, EDS and XPS spectra of the nanotubes (280 nm).
**Fig. S2** SEM of the Ni nanotubes and nanorods at different concentrations (the template pore diameter of PC template is 0.2 μm, reaction time is 150 s). a, No. 1. b-h, No. 3-9 (Tab. 2).
Fig. S3 TEM of the Ni nanotubes and nanorods at different concentrations (the template pore diameter of PC template is 5.02 μm, reaction time is 150 s). a, No. 1. b-h, No. 3-9 (Tab. 2). Inserts are SAED patterns.
Fig. S4 TEM of the Ni nanorods at different reaction time with PC membrane (template pore diameter is 0.2 μm, \( \text{C}(\text{NaBH}_4) = 0.05\text{M}, \text{C}(\text{Ni}^{2+}) = 0.10\text{M} \)): (a) 1 min, (b) 5 min, (c) 10 min, and (d) 30 min.

Fig. S5 UV-vis absorption spectra of MO degradation by NaBH\(_4\) using Ni nanotubes as catalyst at room temperature.
Fig. S6 UV-vis absorption spectra of MB degradation by NaBH₄ using Ni nanotubes as catalyst at room temperature.
Fig. S7 UV-vis absorption spectra of RhB degradation by NaBH₄ using Ni nanotubes as catalyst at room temperature.

Fig. S8 The typical time dependence of the degradation for MO (at 460 nm) with the Ni nanotubes obtained in PC membrane with different template pore diameter: a, 2.0 µm. b, 0.2 µm. c, 0.05 µm. d, 0.015 µm.
Fig. S9 The typical time dependence of the degradation for MB (at 660 nm) with the Ni nanotubes obtained in PC membrane with different template pore diameter: a, 2.0 µm. b, 0.2 µm. c, 0.05 µm. d, 0.015 µm.
Fig. S10 The typical time dependence of the degradation for RhB (at 550 nm) with the Ni nanotubes obtained in PC membrane with different template pore diameter: a, 2.0 µm. b, 0.2 µm. c, 0.05 µm. d, 0.015 µm.