

## Article

# Performance and Mechanism of Nanoporous Ni@NiO Composites for RhB Ultrahigh Electro-Catalytic Degradation

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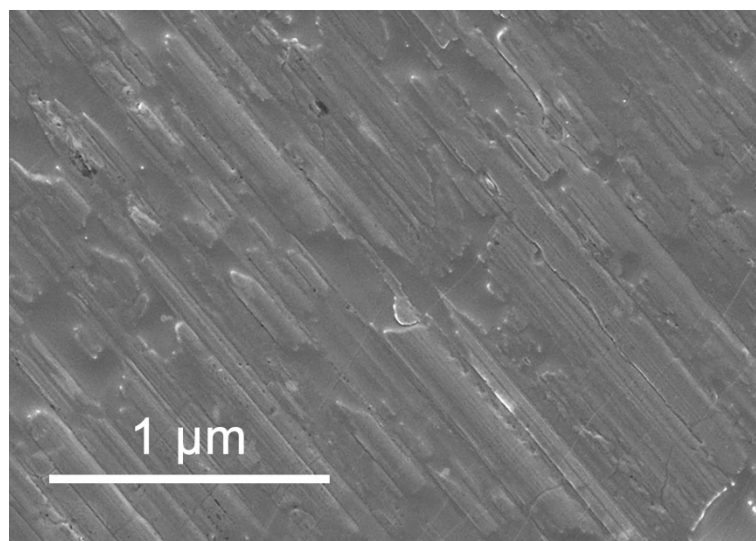


Figure S1. SEM images of the as-spun sample.

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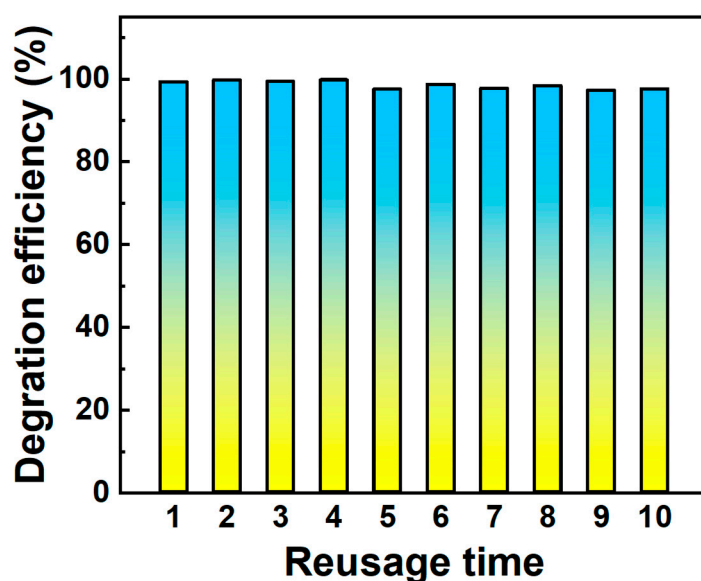


Figure S2. Reusability of np-Ni@NiO anode for electrochemical degradation of RhB.

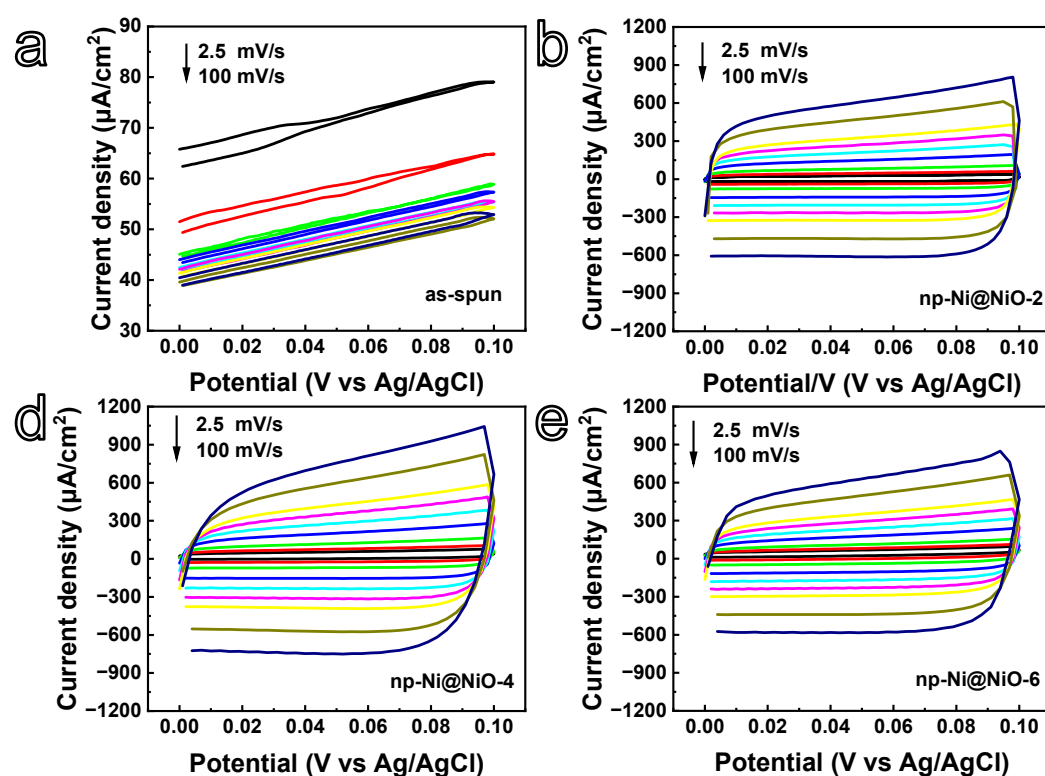


Figure S3. Cyclic voltammograms of as-spun (a), np-Ni@NiO-2 (b), np-Ni@NiO-4 (c) and np-Ni@NiO-6 (d) electrode in 0.1 M KOH at different scan rates in the potential range of 0–0.1 V.

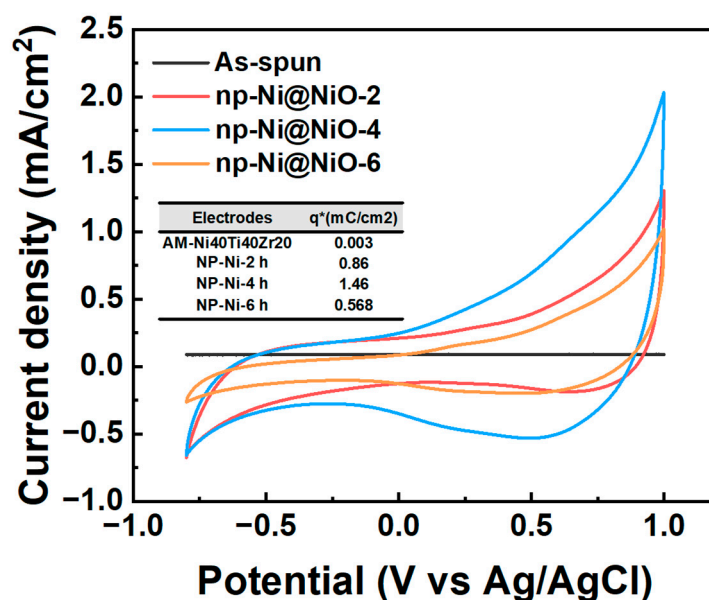
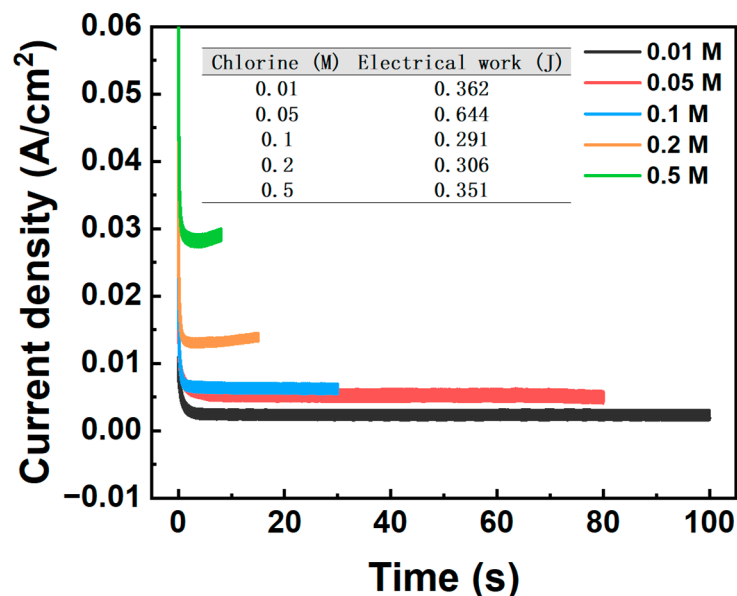


Figure S4. CV (sweep rate of 0.05 V/s) curves for electrode materials in 0.5 M Na<sub>2</sub>SO<sub>4</sub> (the inset shows the value of voltammetric charge).

For metal oxide electrodes, the voltammetric charge ( $q^*$ ) is commonly used to characterize the catalytic activity of the electrodes. The voltammetric charge ( $q^*$ ) can be obtained by integrating the area of the cyclic voltammetric curves between the hydrogen evolution potential and the oxygen evolution potential. Figure S4 represents the CV curves of the as-spun and as-dealloyed samples in 0.5 M Na<sub>2</sub>SO<sub>4</sub> solution at a scan rate of 50 mV/s. The  $q^*$  could be shown in the inset of Figure S4 and the  $q^*$  values of as-dealloyed samples (np-Ni@NiO) are much larger than as-spun sample, indicating as-dealloyed

samples have higher catalytic performance. Moreover, it is clearly seen that the  $q^*$  value of np-Ni@NiO-4 is higher than those of np-Ni@NiO-2 and np-Ni@NiO-6. These results reveal that the existence of nanopores effectively enhances the electrocatalytic activity of materials. This result is consistent with ECSA.



**Figure S5.** The chronoamperometric response of np-Ni@NiO electrodes under a NaCl concentration from 0.05–0.1 M.



**Video S1.** The electrochemical degradation of RhB for the np-Ni@NiO-4 (10 mg/L RhB, 0.1 M NaCl, 1.5 V applied potential, pH 7).