

## Supporting Information

### One-step synthesis of open-cell Ni foams by annealing the Ni<sup>2+</sup>-based precursor in the air

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#### Supporting 1

The 2-methoxyethanol (C<sub>3</sub>H<sub>8</sub>O<sub>2</sub>) was changed to ethylene glycol (C<sub>2</sub>H<sub>6</sub>O<sub>2</sub>) in the experiment progress with 0.35 M Ni(NO<sub>3</sub>)<sub>2</sub>·6H<sub>2</sub>O.

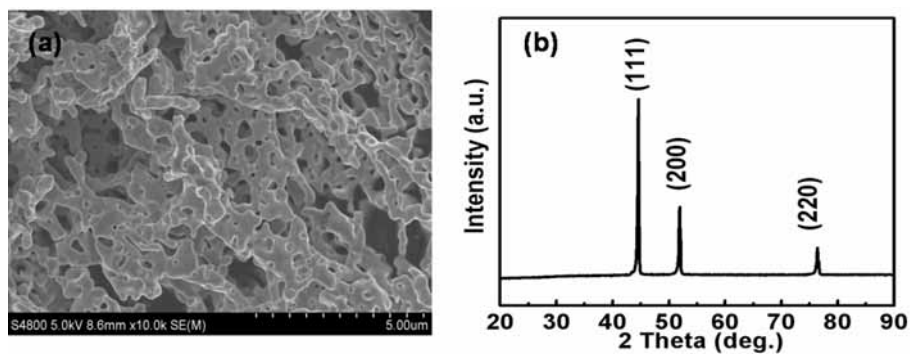


Fig. S1. The (a) SEM image and (b) XRD result of the product with 0.35 M Ni(NO<sub>3</sub>)<sub>2</sub>·6H<sub>2</sub>O in ethylene glycol.

#### Supporting 2

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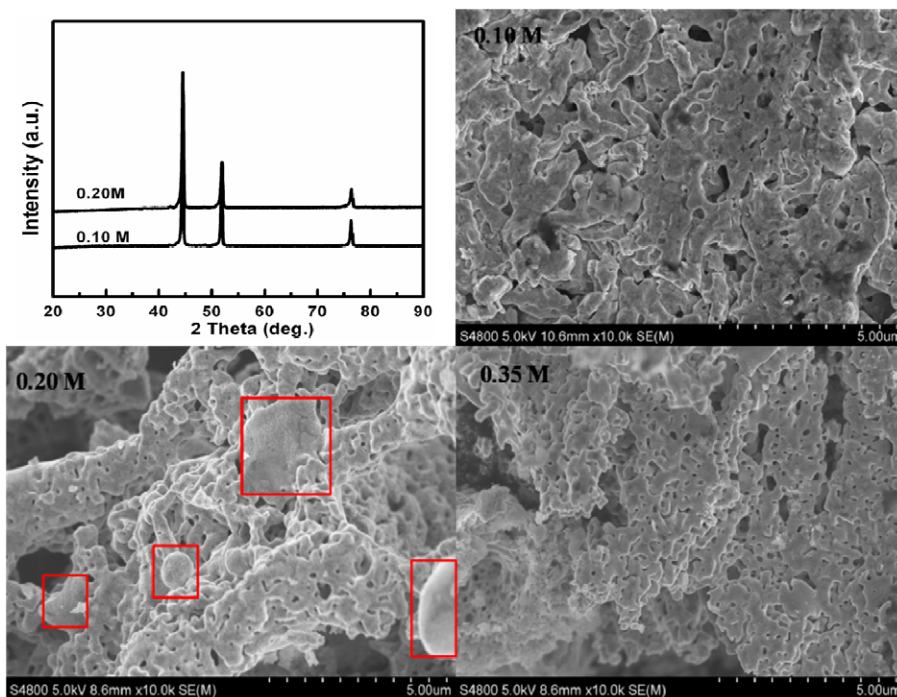


Fig. S2. XRD and SEM results of Ni foams with nickel concentration of 0.10, 0.20 and 0.35 M.

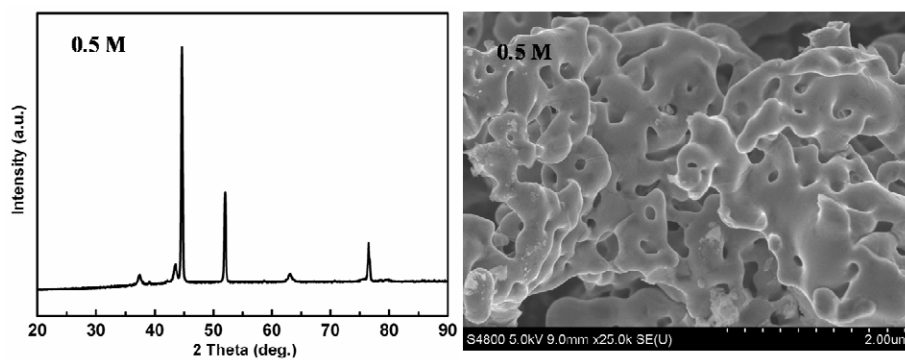


Fig. S2. XRD and SEM results of Ni foams with nickel concentration of 5 M.

### Supporting 3

The  $\text{Ni}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$  was changed to  $\text{Ni}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$  and  $\text{Co}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$  with different mol ration (4:1, 2:1, 1:1, 1:4) in the experiment progress.

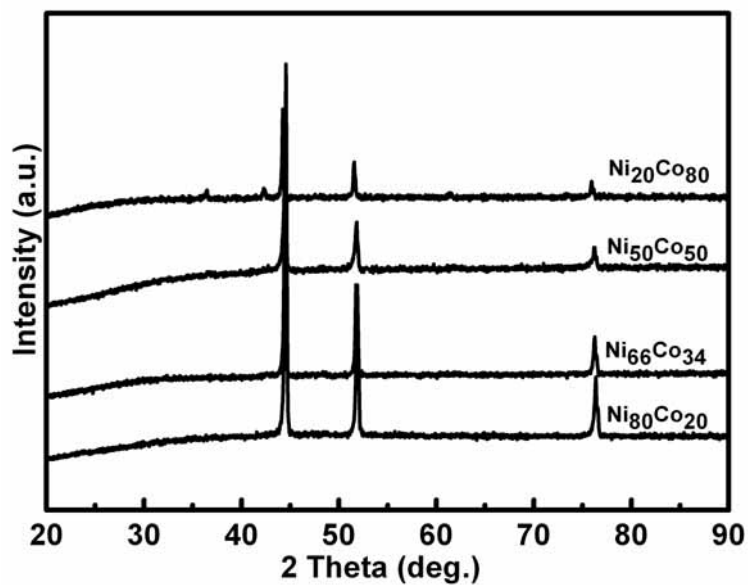


Fig. S3. XRD results of the products with Ni(NO<sub>3</sub>)<sub>2</sub>·6H<sub>2</sub>O and Co(NO<sub>3</sub>)<sub>2</sub>·6H<sub>2</sub>O with different mol ration (4:1, 2:1, 1:1, 1:4, the total ion concentration is 0.35 M) in 2-methoxyethanol.

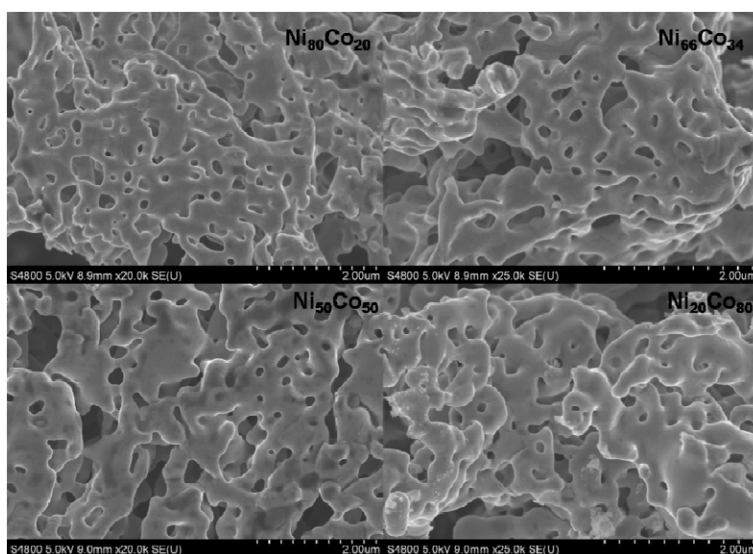


Fig. S3. SEM results of the products with Ni(NO<sub>3</sub>)<sub>2</sub>·6H<sub>2</sub>O and Co(NO<sub>3</sub>)<sub>2</sub>·6H<sub>2</sub>O with different mol ration (4:1, 2:1, 1:1, 1:4, the total ion concentration is 0.35 M) in 2-methoxyethanol.