MOFs derived uniform Ni nanoparticles encapsulated in carbon nanotubes grafted on rGO nanosheet as bifunctional materials for lithium-ion batteries and hydrogen evolution reaction

Yingying Cao, Yidong Lu, Edison Huixiang Ang, Hongbo Geng, Xueqin Cao, Junwei Zheng and Hongwei Gu

Figure S1. (a) SEM and (b) TEM of the precursor for Ni@NC-rGO.

Figure S2. (a) XRD patterns of N-G, Ni-G and Ni-NC, (b) Raman spectra of N-G, Ni-G, Ni-NC and Ni@NC-rGO.
Figure S3. Nitrogen adsorption/desorption isotherms with inserted pore size distribution plots of the N-G (a), Ni-G (b) and Ni-NC (c).

Figure S4. (a) SEM and (d) TEM of the N-G, (b) SEM and (e) TEM of the Ni-G, (c) SEM and (f) TEM of the Ni-NC.
Figure S5. (a) SEM and (b) TEM images of Ni@NC-rGO after 120 cycles at 0.2 A g$^{-1}$.

Figure S6. CV curves of N-G (a), Ni-G (b) and Ni-NC (c) with different scan rates from 10 to 50 mV s$^{-1}$. 