Supporting information



Figure S1. Low magnification SEM images in top and cross-section view of (a), (b) Fe and (c), (d) $Fe_{62.5}Ni_{37.5}$ electrodes.



Figure S2. Cross-sectional SEM images at different magnifications of (a), (b) Fe and (c), (d) $Fe_{62.5}Ni_{37.5}$ electrodes.



Figure S3. Evolution of the XRD curves of $Fe_{62.5}Ni_{37.5}$ electrodes after 0, 40 and 800 cyclic voltammetric cycles between a potential of -1.2 and 0 V vs. NHE.



Figure S4. XRD patterns of as-prepared $Fe_{100-x}Ni_x$ electrodes.



Figure S5. GS discharge curves at 1 A g^{-1} of Fe_{100-x}Ni_x electrodes.



Figure S6. Evolution in the capacitance retention fraction with electrochemical cycle number for $Fe_{100-x}Ni_x$ electrodes.



Figure S7. TEM image of as-prepared (a) Fe and (b) Fe_{62.5}Ni_{37.5} nanopowders before sintering.



Figure S8. XRD patterns of as-prepared (a) Fe, (b) $Fe_{62.5}Ni_{37.5}$ electrodes and the (c) Fe, (d) $Fe_{62.5}Ni_{37.5}$ nanopowders before sintering.