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Supporting information



Figure S1 TEM image of hollow Fe_3O_4 microspheres prepared with the reaction time of 20 h.



Figure S2 Isotherm curves and multi-point plot of BET test for the interconnected Fe₃O₄@Ni-200 synthesized under sonication.



Figure S3 EIS curve of Fe_3O_4 @Ni-25.



Figure S4 GCD curves of (a) $Fe_3O_4@Ni-25$, (b) $Fe_3O_4@Ni-50$, (c) $Fe_3O_4@Ni-100$, (d) $Fe_3O_4@Ni-150$, (e) $Fe_3O_4@Ni-200$, (f) $Fe_3O_4@Ni-300$.



Figure S5 SEM images of Fe₃O₄@Ni electrodes (a-b) before and (c-d) after electrochemical

test.



Figure S6 Long-cycle performance of Fe $_3O_4$ @Ni electrode by CV test with a scan rate of 20 mV/s.



Figure S7 Long-cycle performance of the Fe $_3O_4$ @Ni electrode by CV test with a scan rate of 5 mV/s.



Figure S8 EIS curves of the Fe₃O₄-MCNTs@Ni electrodes with different thicknesses.