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Microwave heating followed by solvothermal method to synthesize nickel-cobalt selenide/rGO for high-performance supercapacitors

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The preparation of activate carbon (AC) electrode

The AC was used as active material mixing with carbon nanotubes (conductive agent) and Nafion solution (binder) at a ratio of 80:15:5, then a suspension was obtained. The suspension was coated on nickel foam to form an electrode material with an active materials mass loading of 1 mg cm^{-2}. Electrochemical performances of the electrode material were evaluated in a standard three-electrode system (platinum electrode as the counter electrode, and Hg/HgO electrode as the reference electrode) with 6 M KOH as the electrolyte.

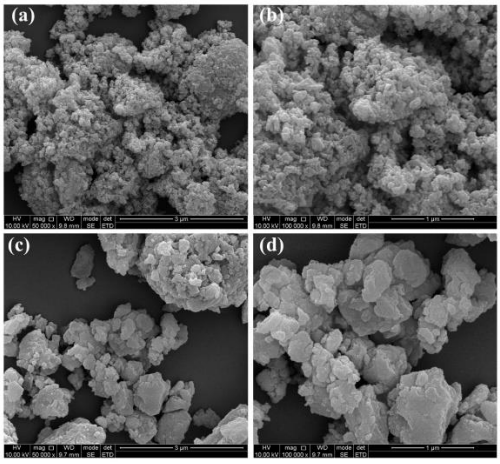

Figure S1. SEM images of $(Ni_{0.85}Se)_3(Co_{0.85}Se)$/rGO composites prepared by (a, b) microwave heating method; (c, d) solvothermal method.

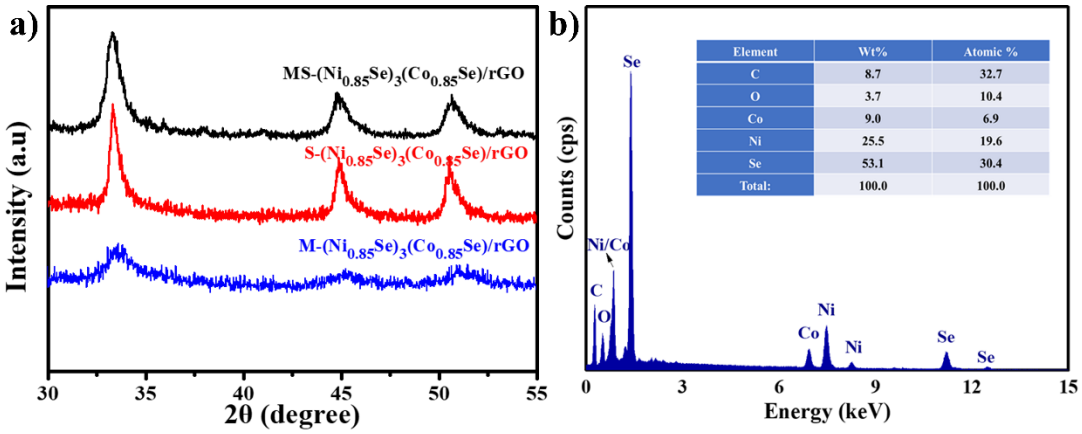

Figure S2. (a) XRD patterns of $(Ni_{0.85}Se)_3(Co_{0.85}Se)$/rGO synthesized *via* different methods; (b) EDS spectrum of MS-$(Ni_{0.85}Se)_3(Co_{0.85}Se)$/rGO.

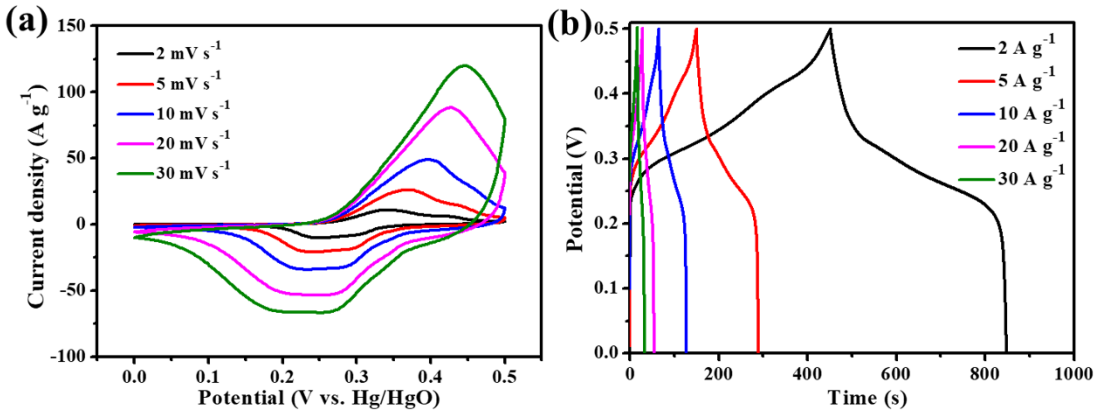

Figure S3. Electrochemical performances of M-$(Ni_{0.85}Se)_3(Co_{0.85}Se)$/rGO electrode: (a) CV curves; (b) GCD curves.

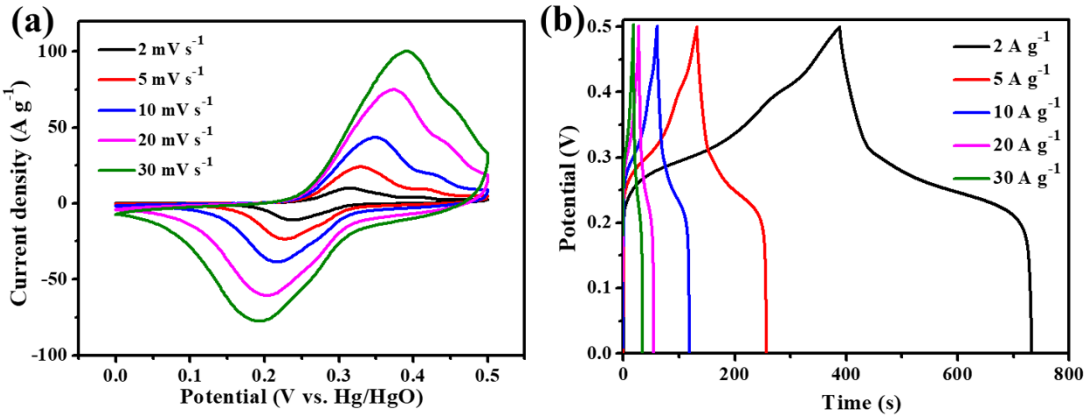

Figure S4. Electrochemical performances of S-$(Ni_{0.85}Se)_3(Co_{0.85}Se)$/rGO electrode: (a) CV curves; (b) GCD curves.

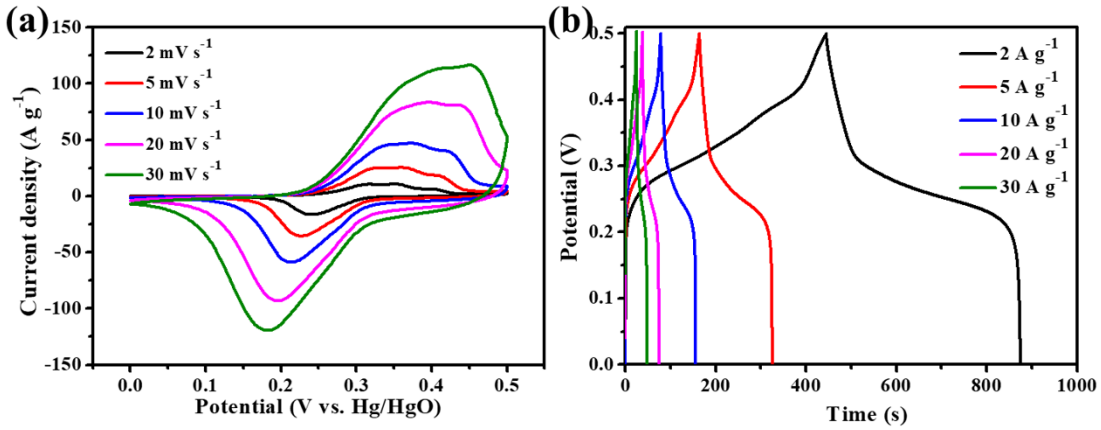

Figure S5. Electrochemical performances of $(Ni_{0.85}Se)_3(Co_{0.85}Se)$ electrode: (a) CV curves; (b) GCD curves.

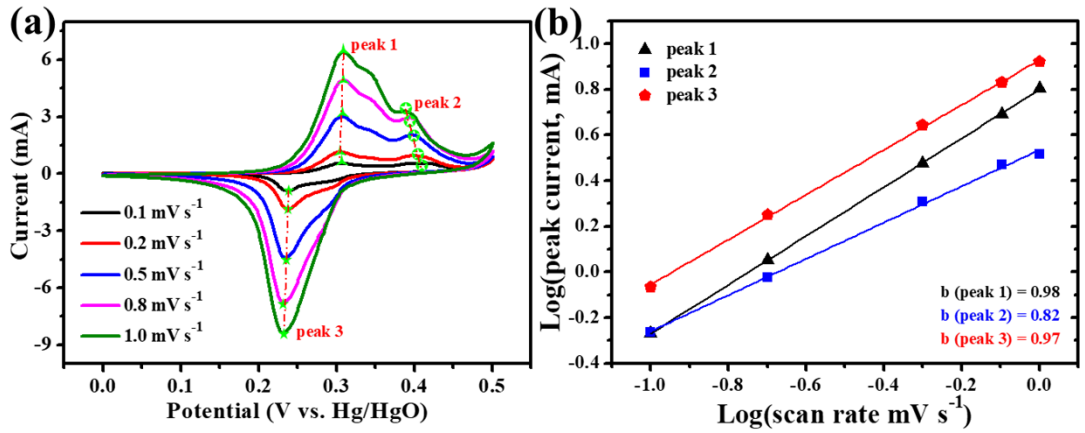

Figure S6. (a) CV curves of MS-$(Ni_{0.85}Se)_3(Co_{0.85}Se)$/rGO at scan rates of 0.1~1.0 mV s^{-1}; (b) the linear fitting plot of b value of different peaks.

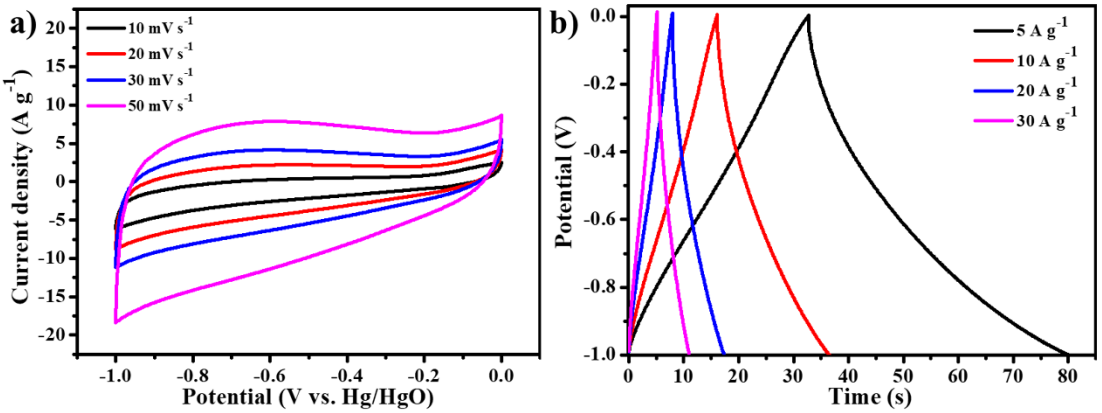

Figure S7 Electrochemical performances of AC electrode: (a) CV curves; (b) GCD curves.