

Electronic Supporting Information (ESI)

High-performance asymmetric supercapacitor based on CdCO₃/CdO/Co₃O₄ composite supported on Ni foam—Part II: a three-electrode electrochemical study

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Chemical reactions involved in the formation of the different hydrothermal compounds.



Table S1. Specific capacitances (C_s) values for the $\text{CdCO}_3/\text{CdO}/\text{Co}_3\text{O}_4@\text{NF}$ electrode obtained at different potential scan rates, obtained in a 3 M KOH electrolytic solution.

v (mVs^{-1})	C_s (Fg^{-1})
1	1.003×10^3
2	778.8
3	595.1
5	441.2
10	214.4

Table S2. Specific capacitances (C_s) values for the $\text{CdCO}_3/\text{CdO}/\text{Co}_3\text{O}_4@\text{NF}$ electrode at different GCD current density values, obtained in a 3 M KOH electrolytic solution.

E (V)	j (mAcm^{-2})	t_c	t_d	C_s (Fg^{-1})	η (%)
0.4	1	5719.0	5479.5	1.759×10^3	96%
0.4	5	1006.4	970.0	1.525×10^3	96%
0.4	10	425.6	416.5	1.326×10^3	98%
0.4	30	105.6	102.0	964.0	96%
0.4	50	49.8	48.0	792.8	96%

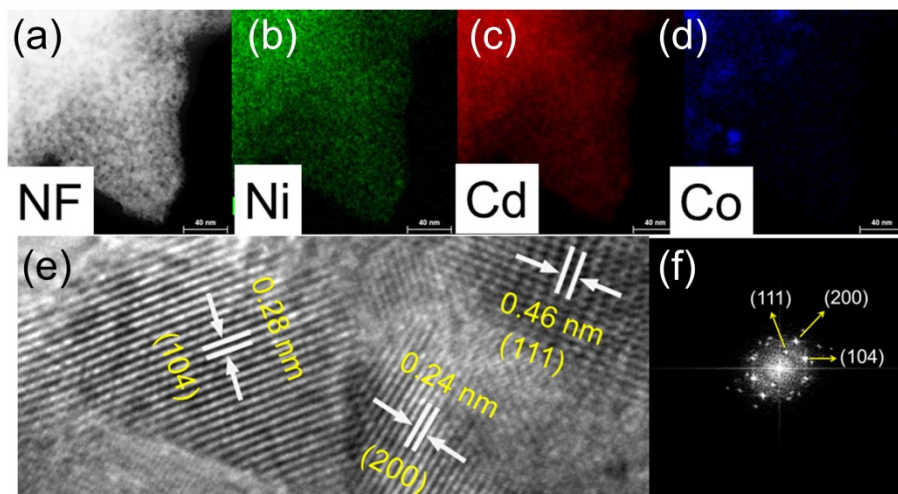


Figure S1. (a) TEM image of a nano-portion of nickel foam covered by the composite under study and the corresponding EDX elemental mapping of (b) Ni (green), (c) Cd (red) and (d) Co (blue). (e) HRTEM micrograph of the synthesized composite, lattice fringes corresponding to the involved chemical compounds is indicated. (f) The corresponding FFT pattern is depicted in this panel.

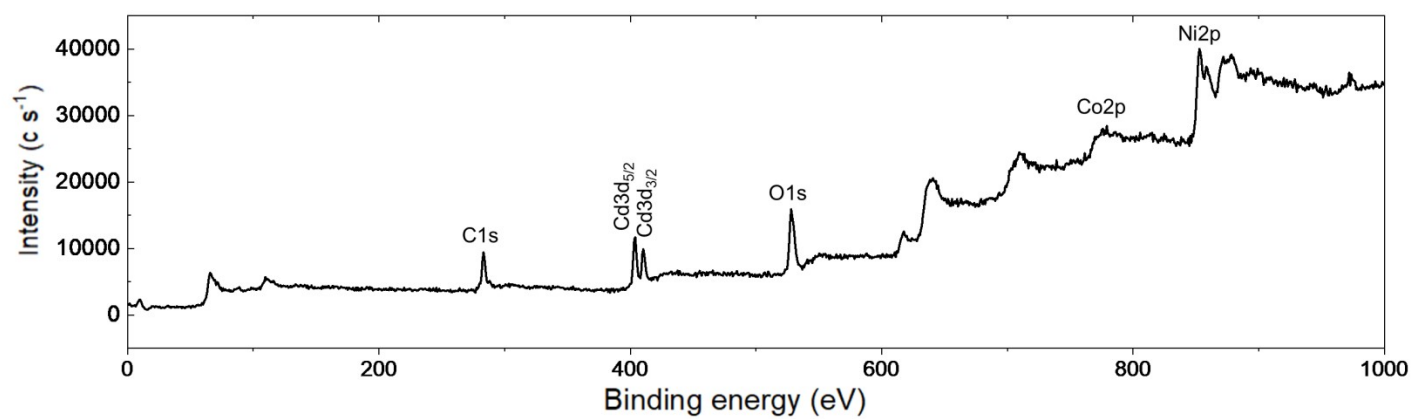


Figure S2. XPS survey scan of the chemical compound hydrothermally grown onto a NF substrate from a solution containing cadmium, cobalt and urea precursors and after an additional annealing treatment in an argon atmosphere.

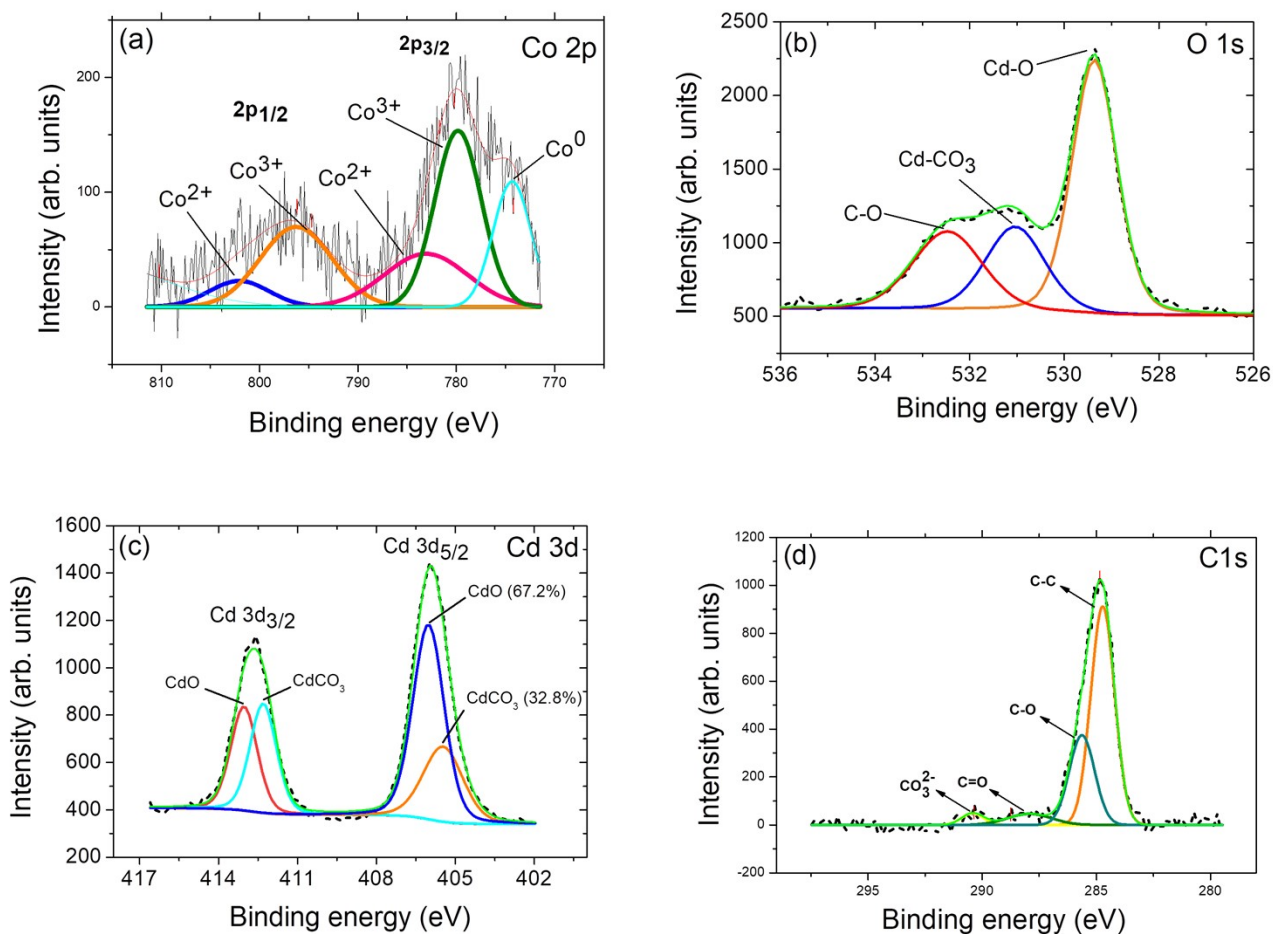


Figure S3. XPS spectra of the chemical compound hydrothermally grown onto a NF substrate from a solution containing cadmium, cobalt and urea precursors and after an additional annealing treatment in an argon atmosphere. (a), (b), (c) and (d) High-resolution XPS scan of Co 2p, O 1s, Cd 3d and C1s respectively. The short dashed black lines are the original spectra while the colored lines represent each individual component. The fit lines are represented as light green lines.

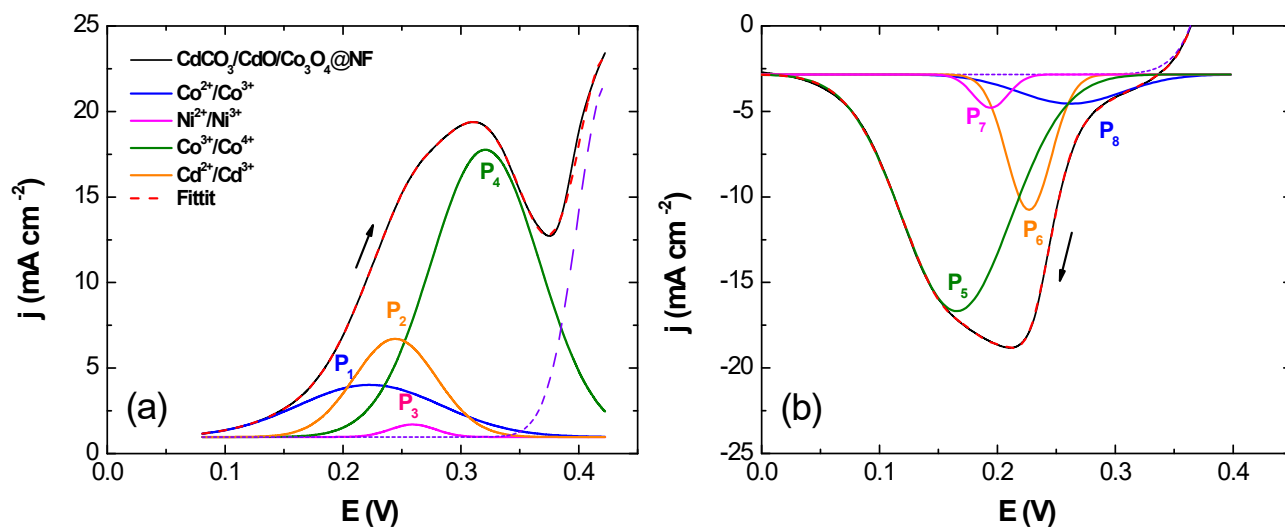


Figure S4. Deconvolution of the potentiodynamic response of the $\text{CdCO}_3/\text{CdO}/\text{Co}_3\text{O}_4@\text{NF}$ electrode recorded at 1mVs^{-1} in 3M KOH electrolyte. (a) anodic potential scan and (b) reversal cathodic potential scan. The dashed curve is associated with the oxidation of NF electrode.

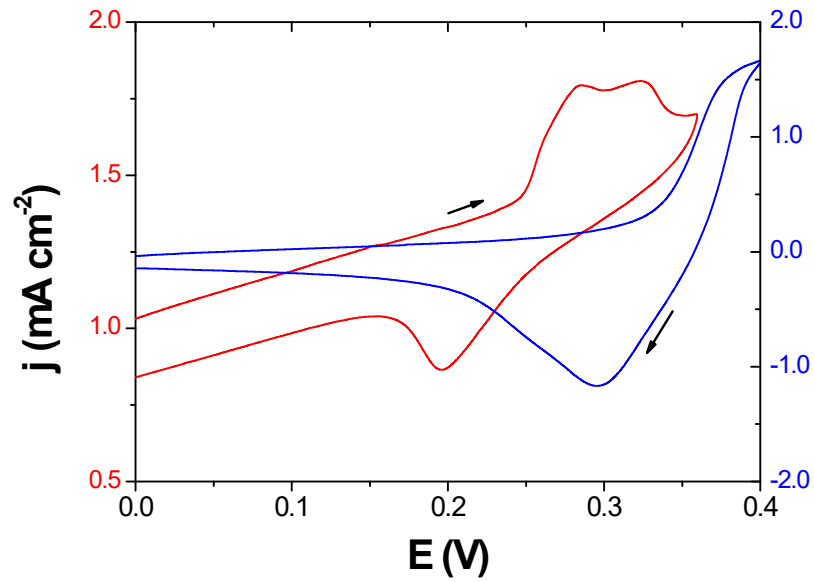


Figure S5. Cyclic voltammetry recorded at 1 mV s^{-1} in 3M KOH solution for: (—) clean NF and (—) NF after being submitted to an annealing process similar to that applied to the $\text{CdCO}_3/\text{CdO}/\text{Co}_3\text{O}_4$ composite electrode.