

Electronic Supporting Information (ESI)

Selective electrosynthesis of platform chemicals from the electrocatalytic reforming of biomass-derived hexanediol

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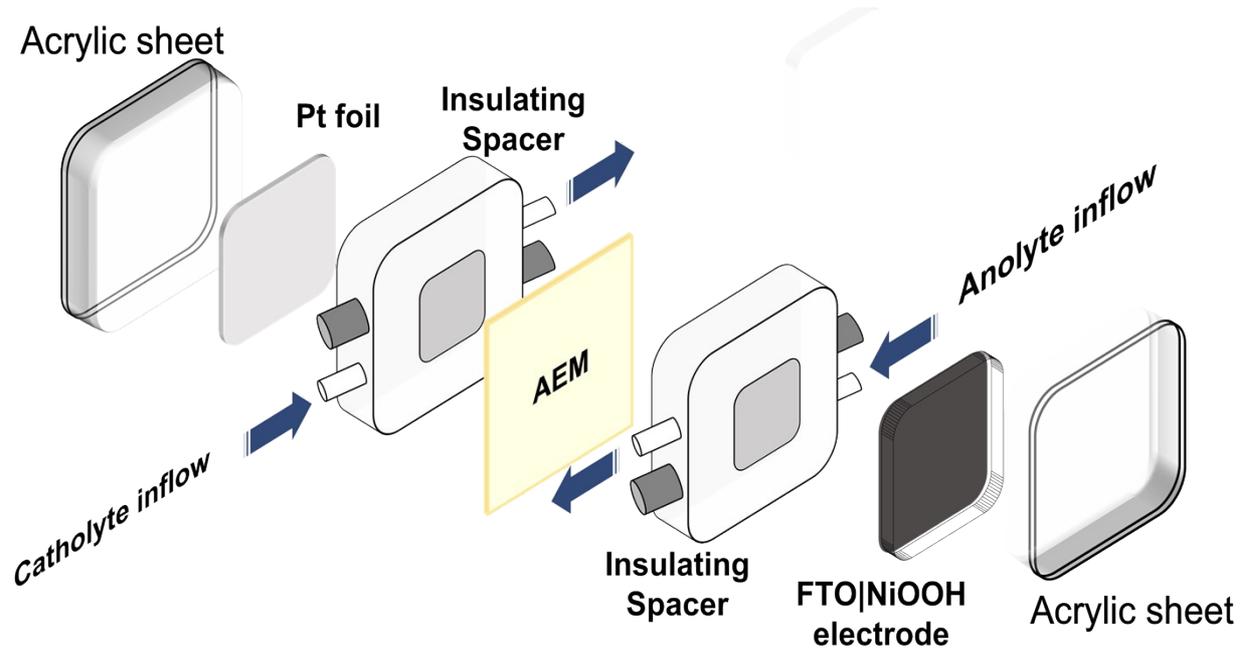
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Table S1 Summary of results obtained from 2-h CPE of nanoNiOOH-borate at 1.55 V vs. RHE in 1.0 M NaOH solution containing 0.4 M ϵ -caprolactone.

Parameters			
Charge passage (C cm ⁻²)	FE _{AA} (%)	R _{AA} (mmole cm ⁻² h ⁻¹)	TOF _{AA} (s ⁻¹)
484.92 ± 67.78	86.35 ± 0.10	0.54 ± 0.08	0.39 ± 0.05

Table S2 Summary of results obtained from 2-h CPE of Ni|NiOOH at 1.55 V vs. RHE in 1.0 M NaOH solution containing 0.4 M 1,6-hexanediol.

Parameters							
Charge passage (C cm ⁻²)	FE _{6HA} (%)	FE _{AA} (%)	R _{6HA} (μ mole cm ⁻² h ⁻¹)	R _{AA} (μ mole cm ⁻² h ⁻¹)	R _{AA} /R _{6HA}	TOF _{6HA} (s ⁻¹)	TOF _{AA} (s ⁻¹)
19.91 ± 5.52	18.25 ± 2.04	17.67 ± 4.48	12.16 ± 1.23	6.43 ± 1.63	0.53	0.06 ± 0.01	0.03 ± 0.01



Scheme S1 Schematic illustration of 5 cm² flow-type electrochemical cell.

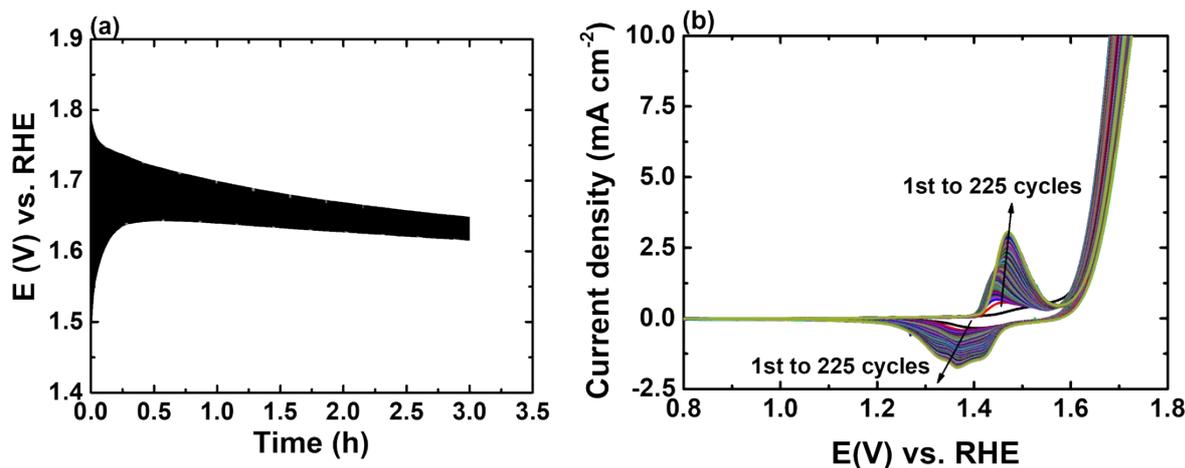


Figure S1 (a) Potential transient recorded during the PED preparation of the nanoNiOOH-borate electrode. (b) Cyclic voltammetry, recorded at a scan rate of 50 mV s^{-1} , during the preparation of the Ni|NiOOH electrode.

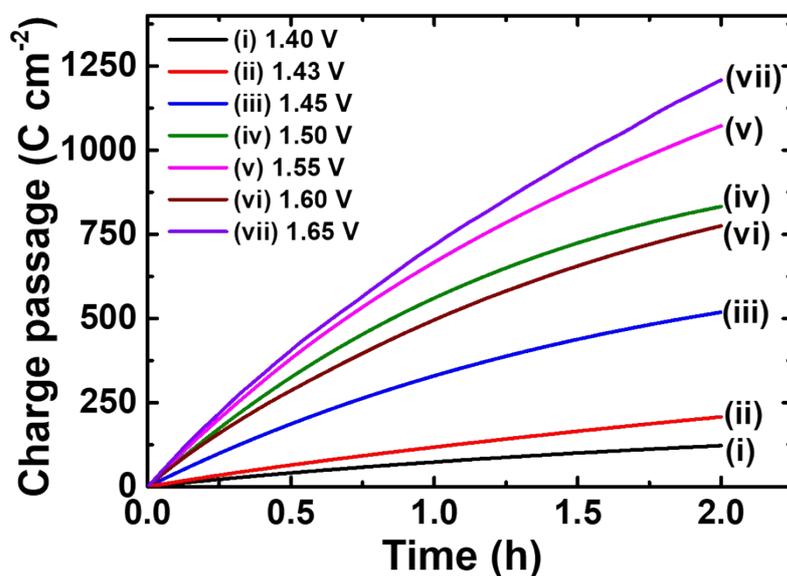


Figure S2 Charge transient recorded during the 2-h CPEs of the nanoNiOOH-borate electrode at various applied potentials in NaOH solution (1.0 M) containing 1,6-hexanediol (0.4 M).

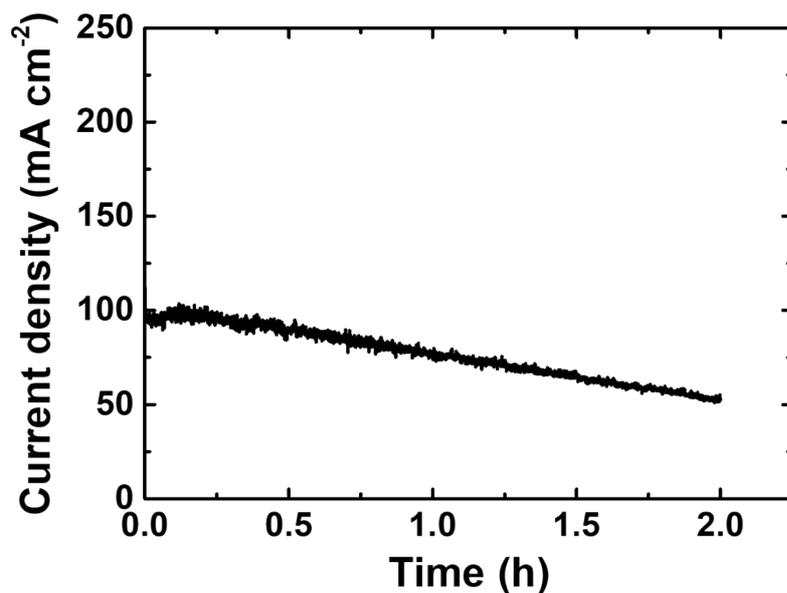


Figure S3 Current transient recorded during the 2-h CPEs of the nanoNiOOH-borate electrode at 1.55 V vs. RHE in NaOH solution (1.0 M) containing ϵ -caprolactone (0.4 M).

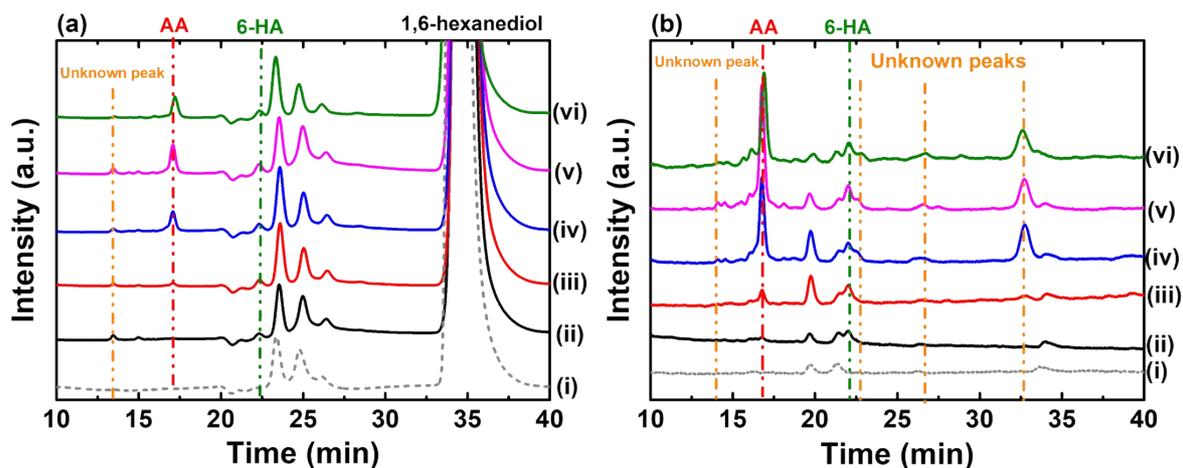


Figure S4 HPLC chromatograms, recorded with (a) RID detector and (b) PDA detector, of the electrolyte solution before (i) and after 2-h CPEs at different applied potentials (ii: 1.40 V; iii: 1.45 V; iv: 1.50 V; v: 1.55 V; vi: 1.60 V).

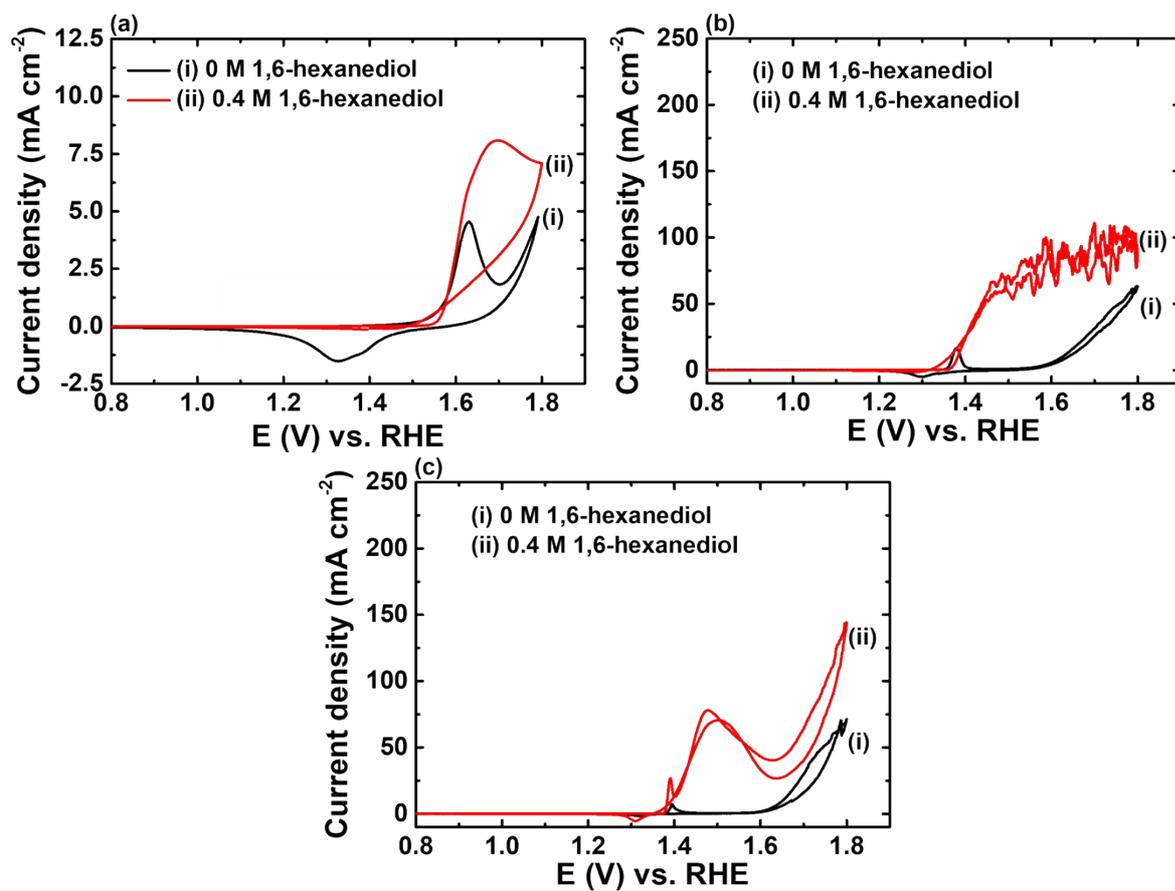


Figure S5 CVs of the nanoNiOOH-borate electrode, recorded at a scan rate of 10 mV s⁻¹, in (i) the blank and (ii) the 1,6-hexanediol (0.4 M)-contained electrolyte solutions (a: 0.1 M borate buffer; b: 0.1 M NaOH; c: 5 M NaOH).

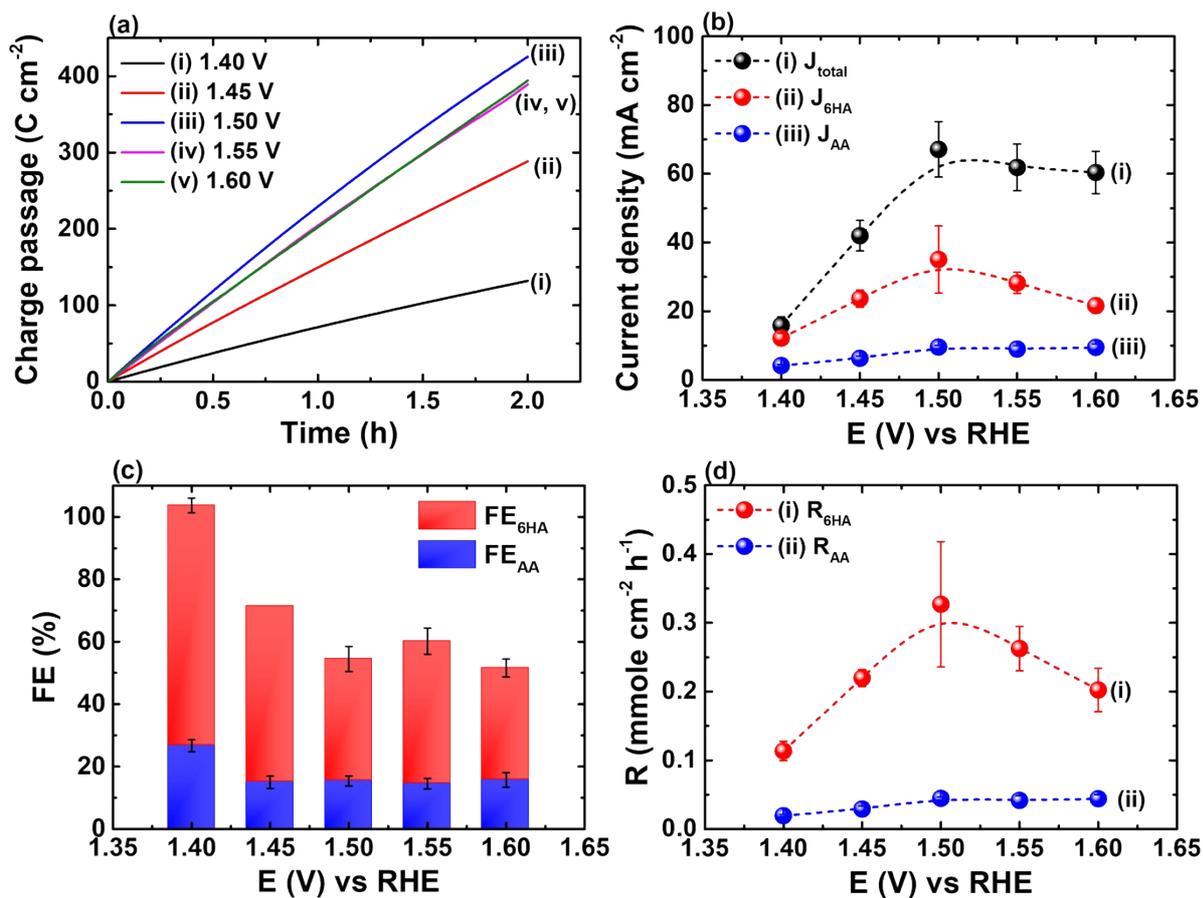


Figure S6 (a) Charge transient, (b) J_{total} , J_{AA} , and $J_{6\text{HA}}$, (c) FE_{AA} and $\text{FE}_{6\text{HA}}$, and (d) R_{AA} and $R_{6\text{HA}}$, obtained from 2-h CPEs of the nanoNiOOH-borate electrode at various applied potentials in NaOH (0.1 M) solution containing 1,6-hexanediol (0.4 M).

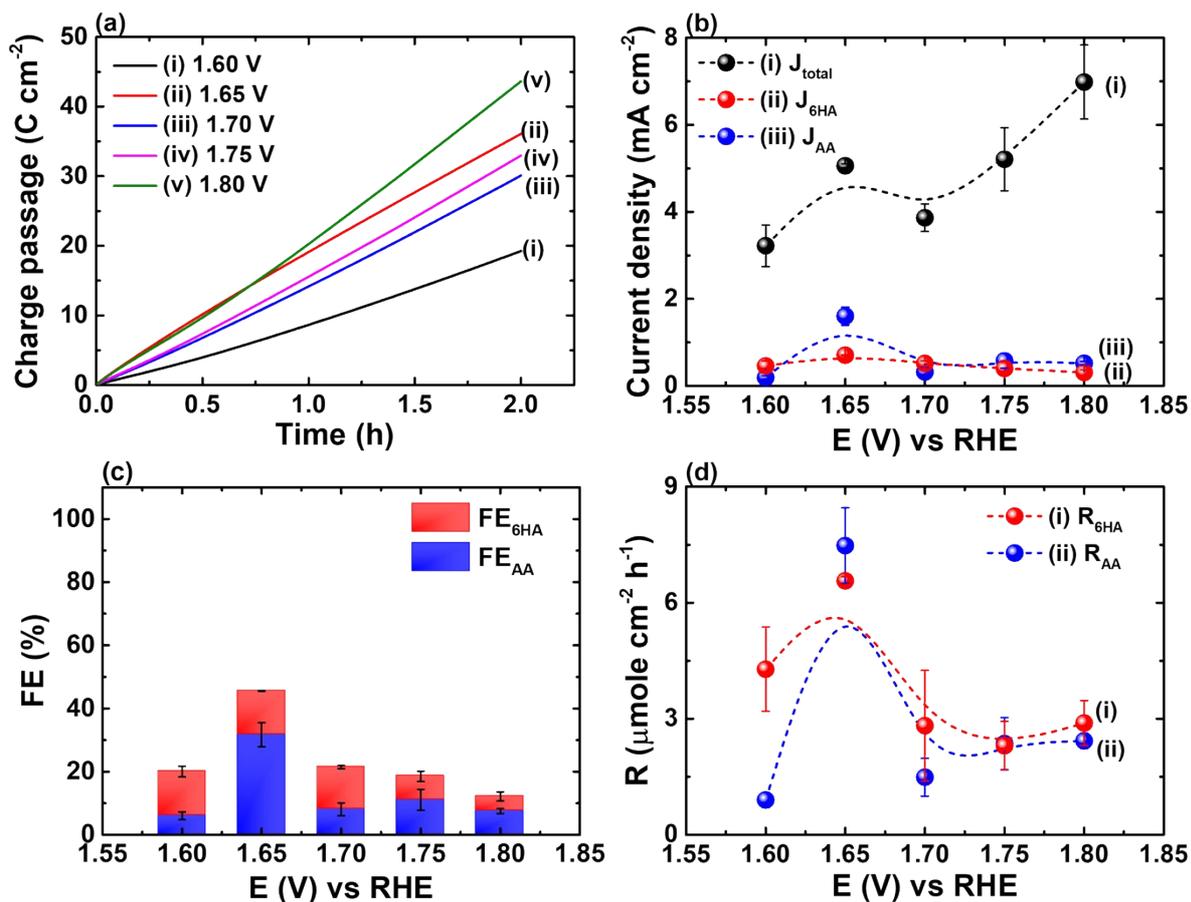


Figure S7 (a) Charge transient, (b) J_{total} , J_{AA} , and J_{6HA} , (c) FE_{AA} and FE_{6HA} , and (d) R_{AA} and R_{6HA} , obtained from 2-h CPEs of the nanoNiOOH-borate electrode at various applied potentials in borate buffer (0.1 M, pH 9.2) containing 1,6-hexanediol (0.4 M).

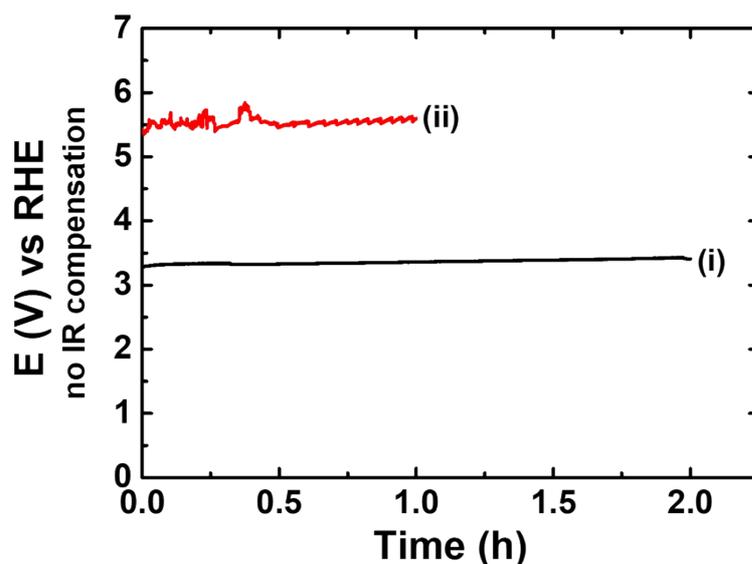


Figure S8 Chronopotentiograms of the nanoNiOOH-borate electrode recorded at applied current densities of (i) 25 mA cm⁻² and (ii) 50 mA cm⁻² in NaOH solution (1.0 M, pH 13.6) containing 1,6-hexanediol (0.4 M).