Supporting Information

Commuting CO_2 Electro-Reduction Active Sites on a Nickel-Based Hybrid Formed on a "Guilty" Covalent Triazine Framework

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Table S1. Textural properties of CTF^{ph} and Ni/CTF^{ph} at comparison.

Sample	Ni[a] (wt.%)	Materials textural properties[b]		
		surface area (m^2/g)	Micropore volume (cm^3/g)	total pore volume (cm^3/g)
CTF^{ph}	-	2046[c]	0.51	1.55[c]
Ni/CTF^{ph} (**1**)	9.2	1897	0.46	1.32

[a] determined by ICP-OES; [b] derived from N_2 physisorption isotherms recorded at the liquid N_2 temperature along with the respective pore-size distributions (BJH method) from isotherms desorption branches. [C] data recovered from ref. 1 and reported here for the sake of comparison.

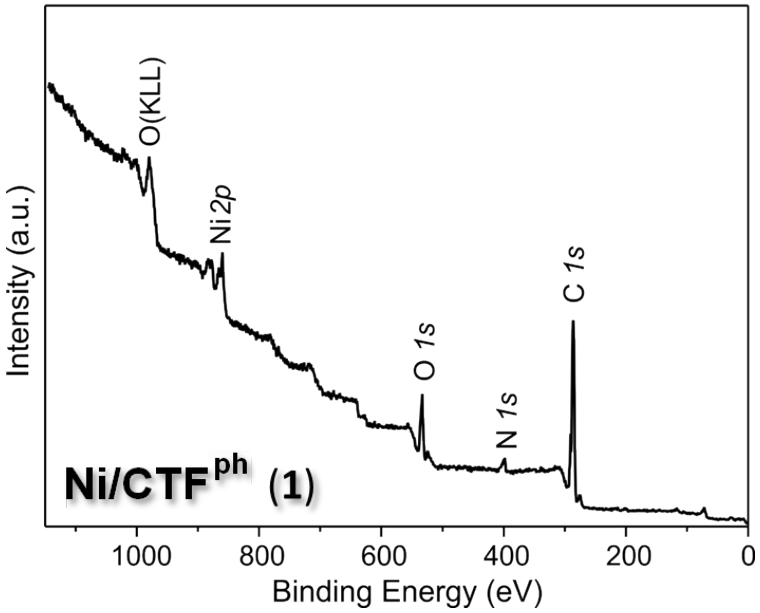

Fig. S1. XPS survey spectrum of Ni/CTF^{ph} (**1**).

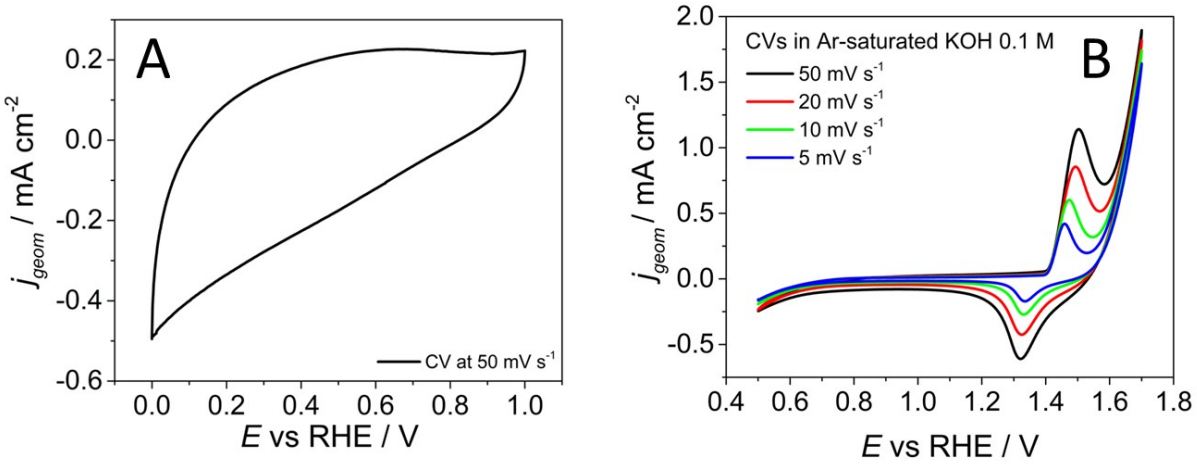

Fig. S2. (**A**) CV of Ni-CTF^{ph} at 50 mV s^{-1} in Ar-saturated KOH 0.1 M solution and in a narrow range of potentials. (**B**) CVs of Ni-CTF^{ph} in Ar-saturated KOH 0.1 M at different scanning speed: 50 mV s^{-1} (black), 20 mV s^{-1} (red), 10 mV s^{-1}(green) and 5 mV s^{-1} (blue) and in the 0.4-1.8 range of potentials *vs*. RHE. Potentials were corrected for the ohmic drop taking into consideration the resistance of the system (pH = 13), while the current intensity was normalized for the geometric area of the electrode (j_{geom}).

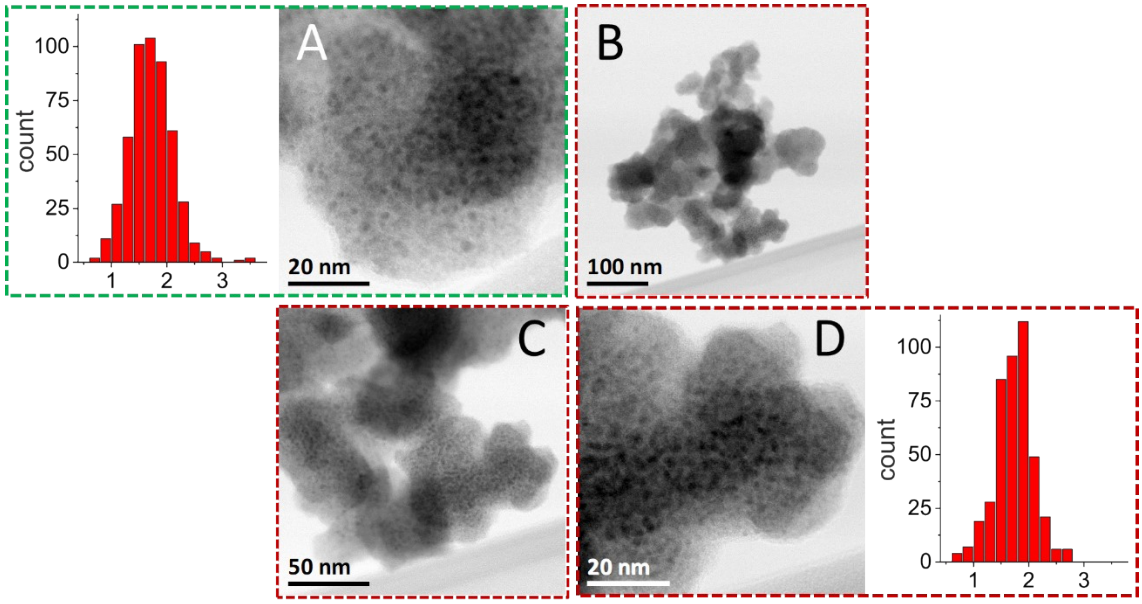

Fig. S3. HR-TEM images of the freshly prepared Ni/CTF^{ph} (**1**) and its used counterpart at different magnifications. Red histograms refer to the nickel particle size distribution as measured over more than 100 NPs on both pristine and used samples.

References

1. M. Moro, G. Tuci, A. Rossin, C. Salvatici, E. Verlato, C. Evangelisti, F. Paolucci, G. Valenti, Y. Liu and G. Giambastiani, An ad-hoc Pyrolized Phoenix-like Covalent Triazine Framework for the Selective CO_2-to-Formate Electroreduction, *ACS Mater. Lett*., 2024, **6**, 583-589. DOI: 10.1021/acsmaterialslett.3c01316