

Supporting Information (SI):

Electrocatalytic H₂ production from seawater over Co, N-codoped nanocarbons

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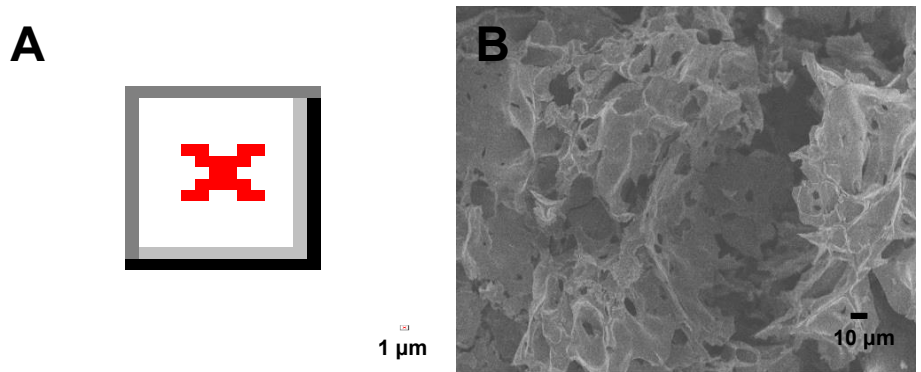


Figure S1 SEM images of the samples obtained at 500 °C (A) and 600 °C (B).

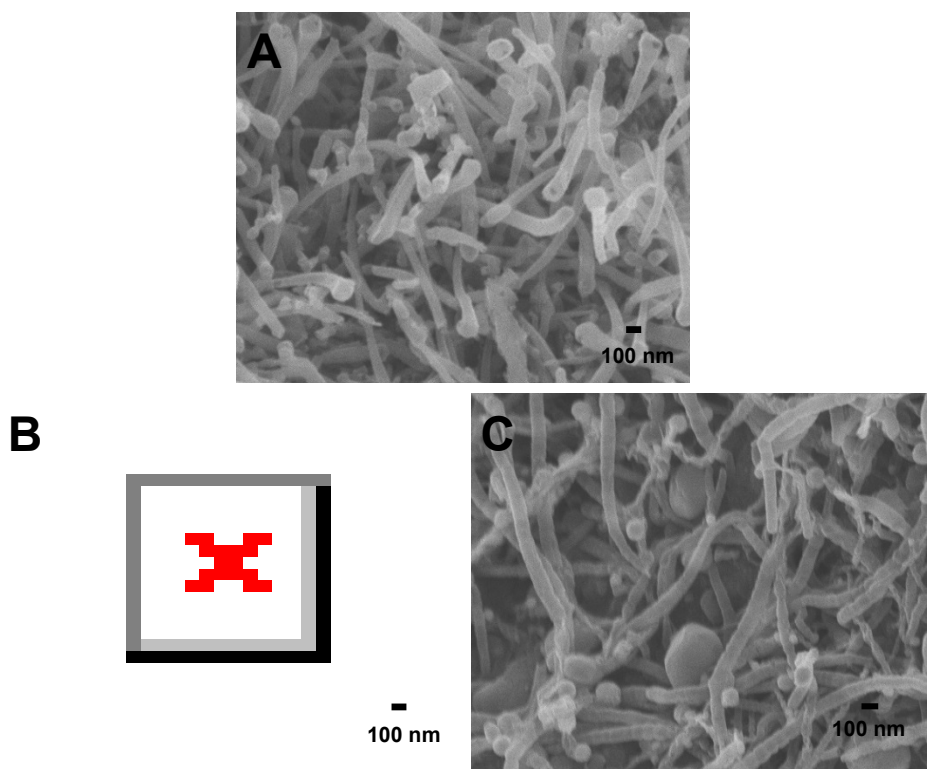


Figure S2 SEM images of the samples obtained at 700 (A), 800 (B) and 1000 (C).

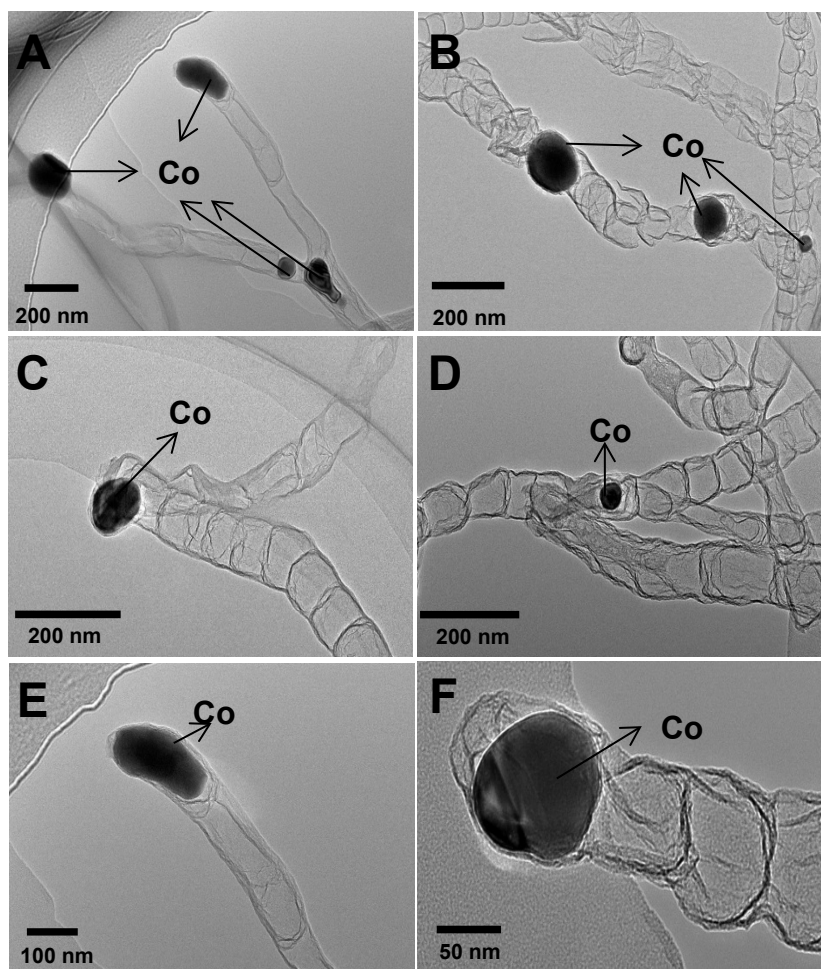


Figure S3 TEM images of the sample obtained at 900 °C (*i.e.*, U-CNT-900).

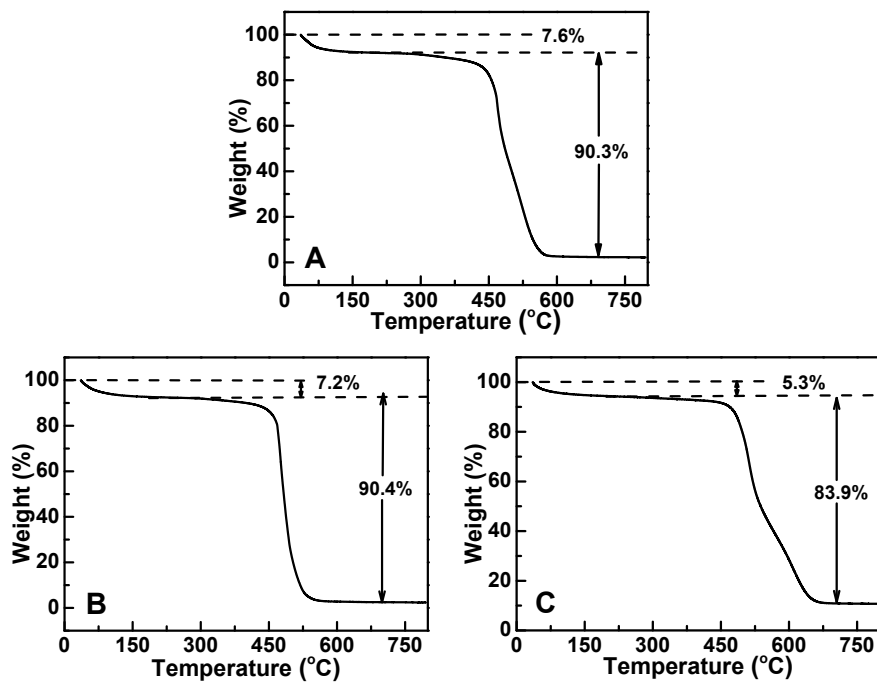
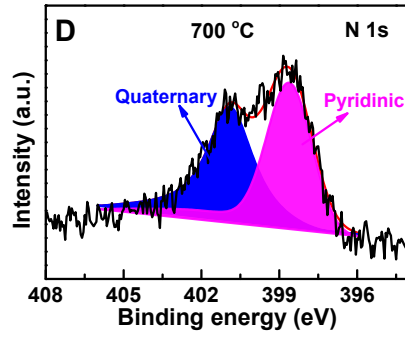
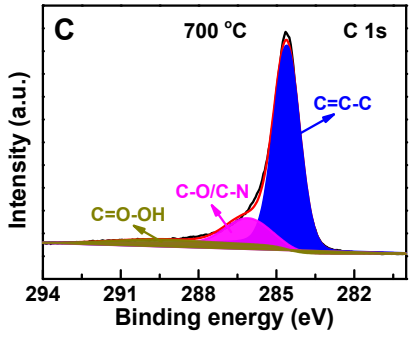
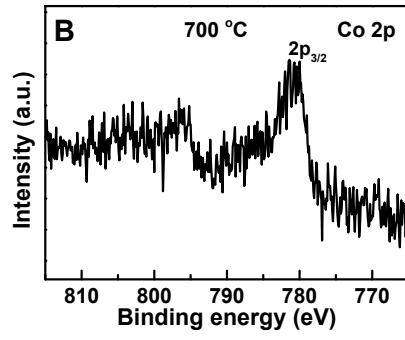
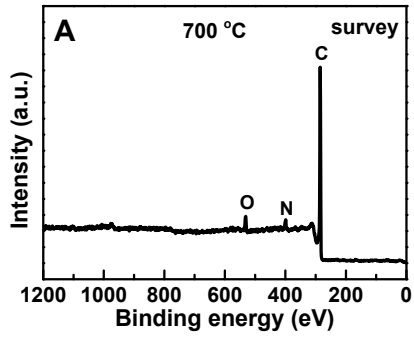
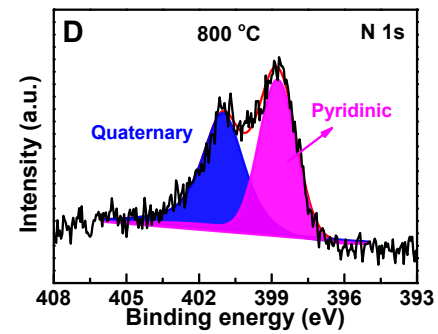
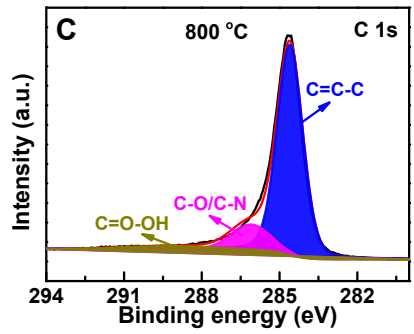
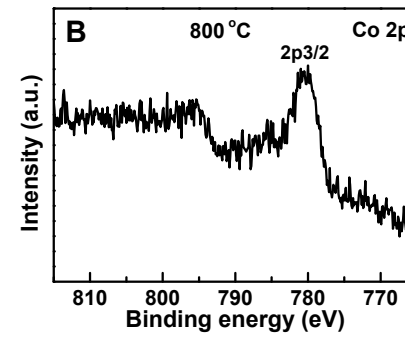
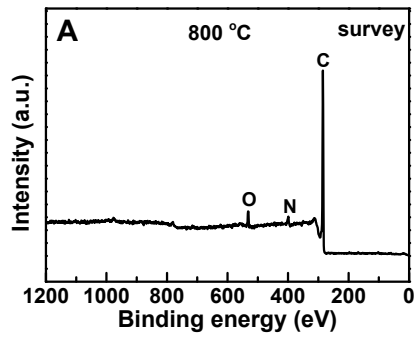


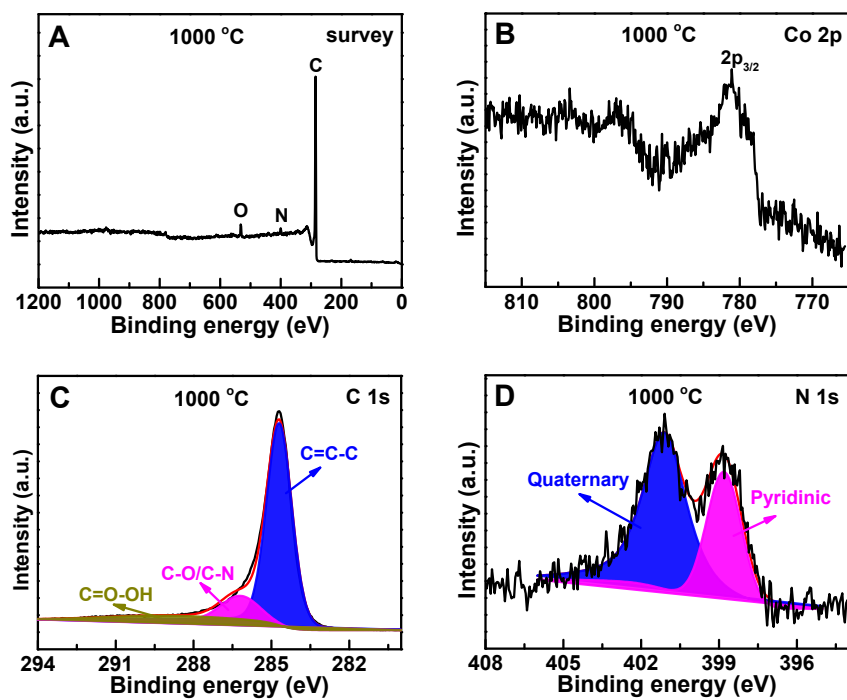
Figure S4 TG curves of the samples obtained at 700 (A), 800 (B) and 1000 (C).



700 °C



800 °C



1000 °C

Figure S5 XPS spectra of the samples obtained at 700, 800 and 1000 °C.

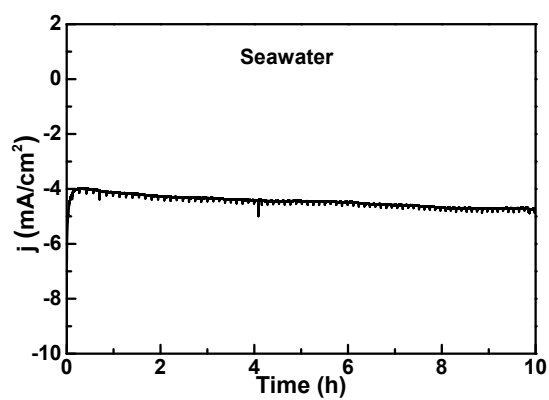


Figure S6 A current-time (I-t) curve obtained for HER in seawater with U-CNT-900 at $\eta = 580$ mV.

Table S1 Comparison of the price of urea, dicyandiamide and pyridine (Sigma-Aldrich).

Chemicals	price (per gram)
Urea	\$ 0.27
Dicyandiamide	\$ 1.98
Pyridine	\$ 2.13

Table S2 Comparison of the electrocatalytic activity of U-CNT-900 with some representative solid-state HER catalysts recently reported for neutral solutions.

Catalyst	Current density (<i>j</i>)	Overpotential at the corresponding <i>j</i>	Reference
U-CNT-900	1 mA/cm² 2 mA/cm² 10 mA/cm²	180 mV 220 mV 340 mV	this work
Fe, Co, or Ni-doped amorphous MoS ₂	1 mA/cm ²	200-300 mV	<i>Chem. Sci.</i> 2012 , 3, 2515.
Amorphous MoS ₂	2 mA/cm ²	280 mV	<i>Chem. Sci.</i> 2011 , 2, 1262
Cobalt embedded nitrogen-rich carbon nanotubes	1 mA/cm ² 10 mA/cm ²	330 mV 540 mV	<i>Angew. Chem. Int. Ed.</i> 2014 , 53, 4372.
Metallic cobalt@cobalt-oxo/hydroxo phosphate	2 mA/cm ²	385 mV	<i>Nature Mater.</i> 2012 , 11, 802
Mo ₂ C	1 mA/cm ²	200 mV	<i>Angew. Chem. Int. Ed.</i> 2012 , 51, 12703.
MoB	1 mA/cm ²	250 mV	<i>Angew. Chem. Int. Ed.</i> 2012 , 51, 12703.