Table S1 Characteristics of raw materials

Items	TS(%)[a]	VS(%)[a]	TC(%)[b]	TN(%)[b]	H(%)[b]	S(%)[b]	C/N	Cellulose (%)[b]	Hemicellulose (%)[b]	Lignin (%)[b]
Corn stover	93.12±0.0	86.27±0.1	39.1±0.2	0.9±0.0	5.2±0.1	0.1±0.0	43.4±1.8	37.09±0.3	26.71±0.1	3.91±0.0
Inoculumn	7.5±0.2	3.5±0.0	35.1±0.2	5.1±0.2	2.6±0.0	0.4±0.1	13.7±0.1	-	-	-

Values are the mean value of the three tests.

[a] Content of fresh matter, [b] Content of dry matter.

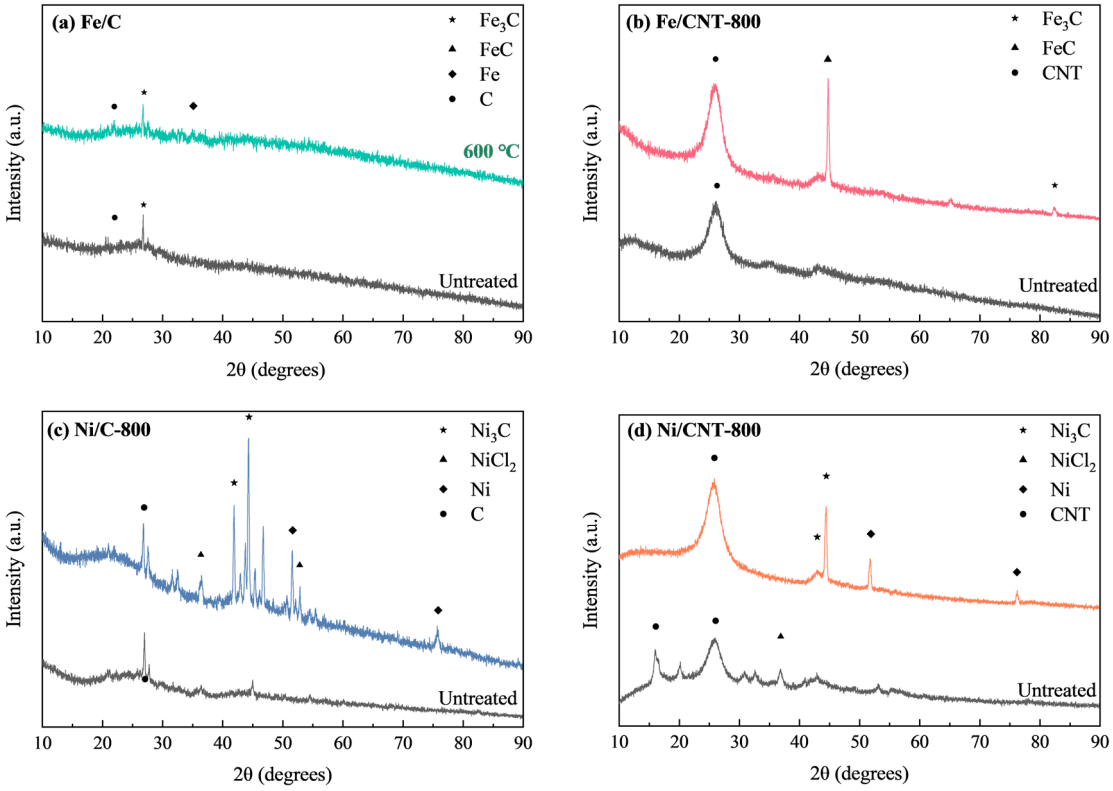

Figure. S1 XRD results of Fe/C (a), Fe/CNT (b), Ni/C (c) and Ni/CNT (d) prepared at different carbothermal reduction temperatures

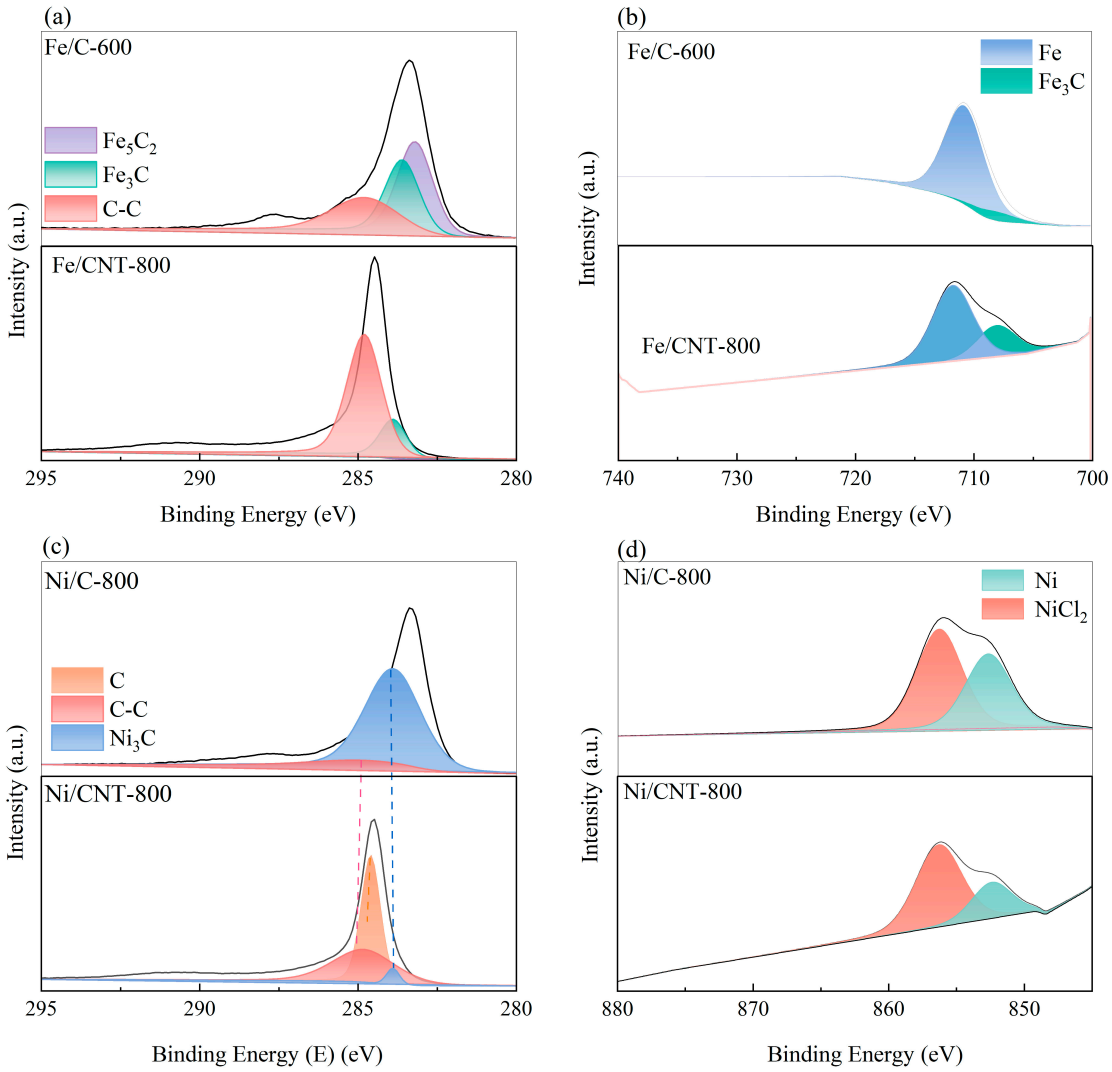

Figure. S2 XPS results: Fe/C-600 and Fe/CNT-800 (a) C1s, (b) Fe 2p; Ni/C-800 and Ni/CNT-800 (c) C1s, (d) Fe 2p

Table S2 Depolymerization test design

	Solvent	Type	Add/%	Calcination temperature/°C
E-Fe/C	Ethanol	Fe/C	4	600
E-Ni/C		Ni/C	4	800
E-Fe/CNT		Fe/CNT	4	800
E-Ni/CNT		Ni/CNT	4	800
E-HP		-	-	-
Fe/C	Water/ethanol 9/1, v/v	Fe/C	4	600
Ni/C		Ni/C	4	800
Fe/CNT		Fe/CNT	4	800
Ni/CNT		Ni/CNT	4	800
HP		-	-	-