

## *Supporting Material*

### **Carbon Nanostructure/Zeolite Y Composites as Supports for Monometallic and Bimetallic Hydrocracking Catalysts**

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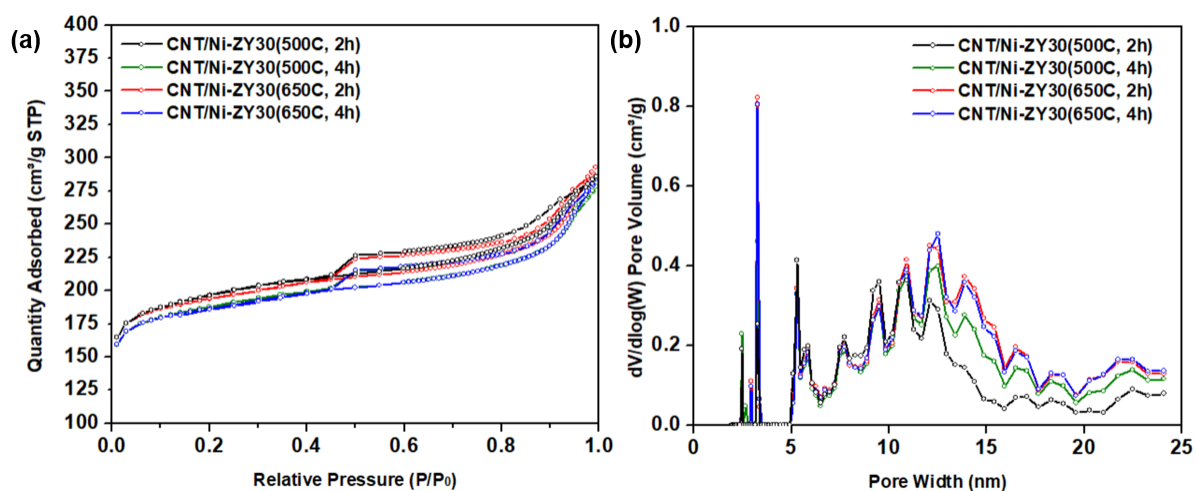
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## S1. Catalyst textural characterization

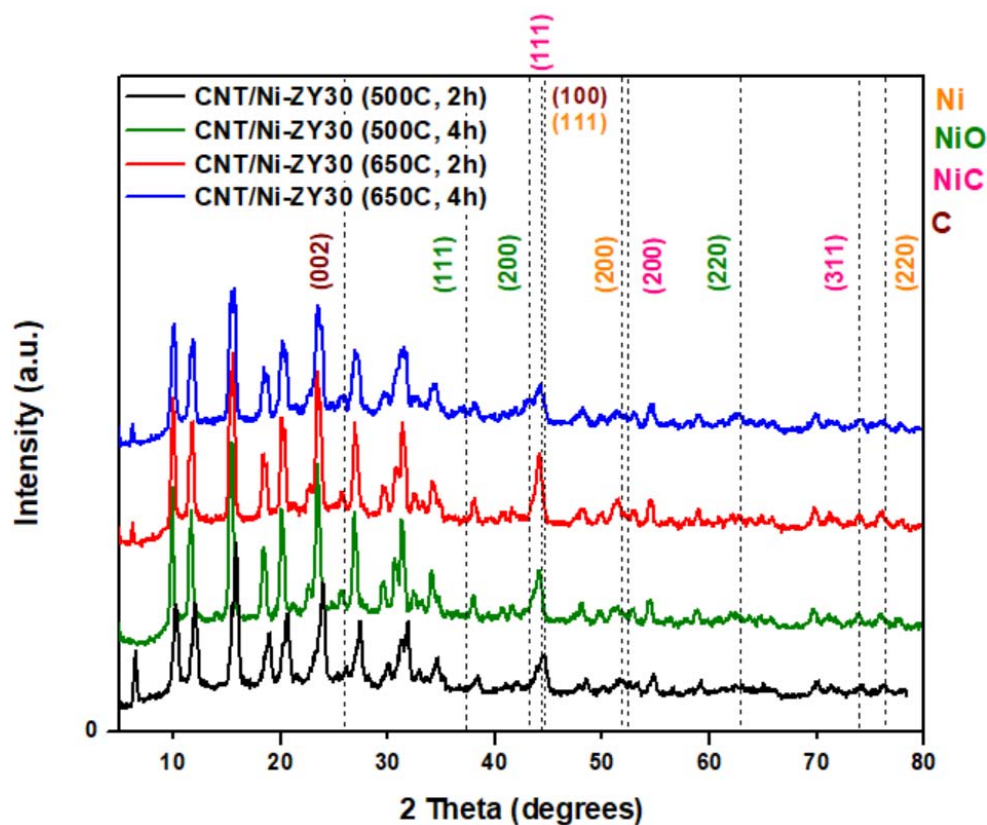
**Table S1:** Textural properties of the CNT/Ni-ZY30 catalysts prepared under varied conditions.

Catalyst composition	BET surface area (m <sup>2</sup> /g)	Pore volume (cm <sup>3</sup> /g)		
		Micropore	Mesopore	Total
CNT/Ni-ZY30 (500C, 2h)	612	0.22	0.22	0.44
CNT/Ni-ZY30 (500C, 4h)	584	0.21	0.22	0.43
CNT/Ni-ZY30 (650C, 2h)	601	0.23	0.22	0.45
CNT/Ni-ZY30 (650C, 4h)	576	0.22	0.22	0.44



**Figure S1:** (a) N<sub>2</sub> adsorption-desorption isotherms at 77 K, and (b) DFT pore size distributions (PSD) for the CNT/Ni-ZY30 catalysts prepared under varied conditions.

## S2. Catalyst structural characterization

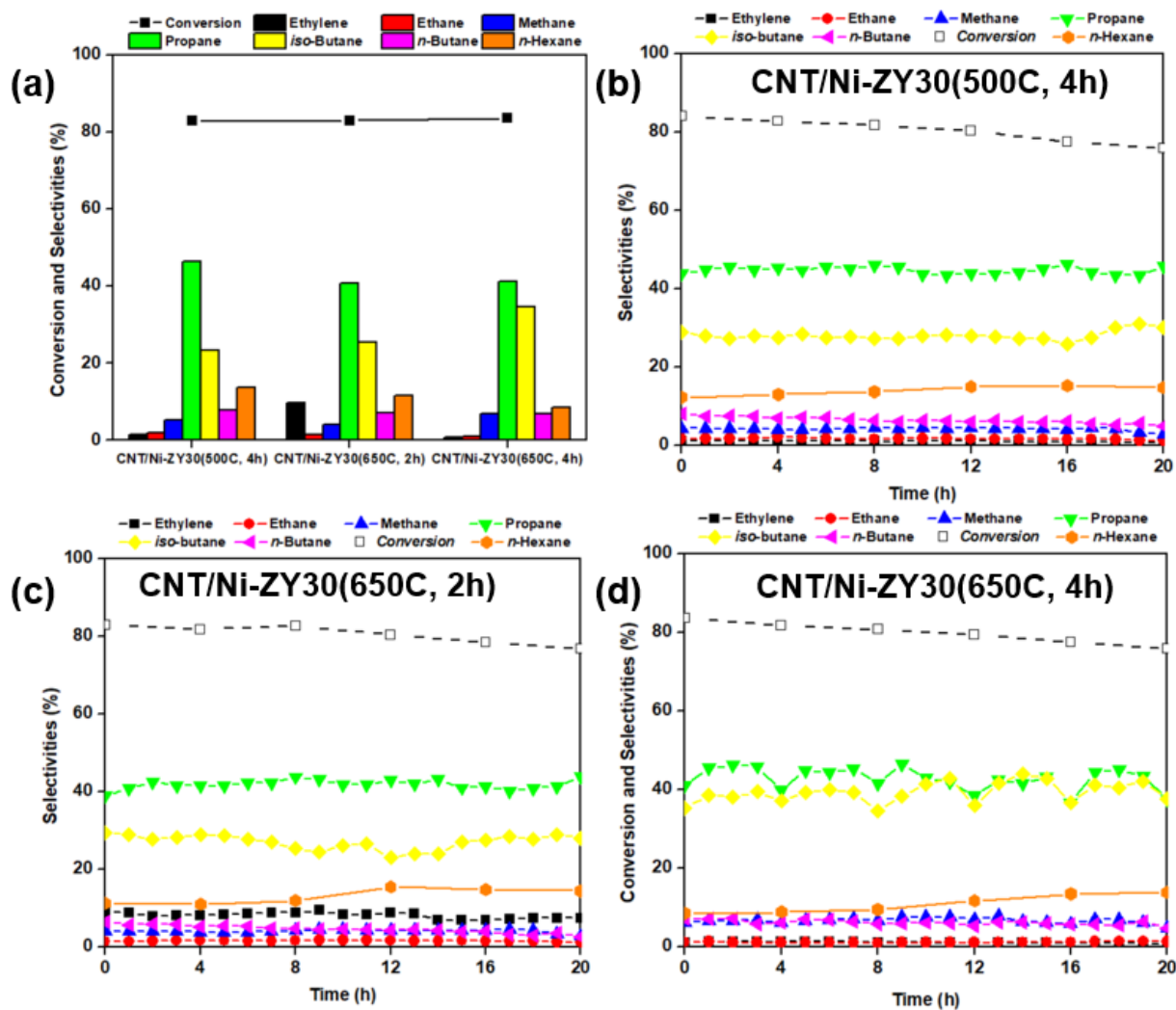


**Figure S2:** XRD patterns of the CNT/Ni-ZY30 catalysts prepared under varied conditions.

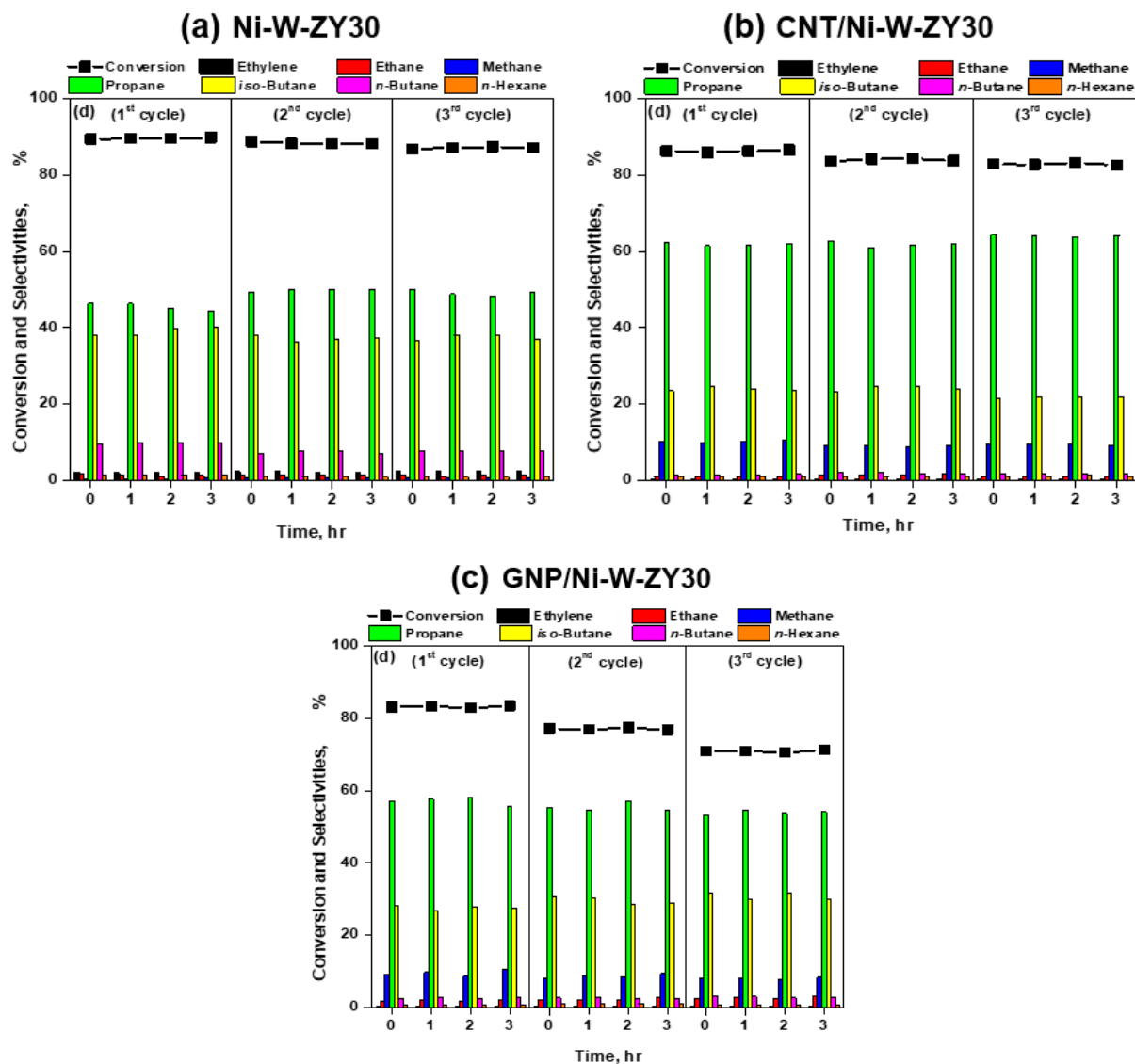
**Table S2:** EDX-TEM elemental composition of Ni-W-ZY30.

	O K	Al K	Si K	Ni K	W L	Si/Al	nominal Si/Al (atomic ratio)
Weight %	56.1	2.2	34.8	1.7	5.2	15.7	15.8
Atomic %	71.8	1.7	25.4	0.6	0.6	15.1	15.0

### S3. Catalytic performance studies



**Figure S3:** (a) Conversion and selectivity percentages of the main products for the CNT/Ni-ZY30 catalysts prepared under varied conditions, as well as (b-d) conversion and selectivity results over 20 h time-on-stream.



**Figure S4:** Conversion and selectivity percentages of the main products for (a) Ni-W-ZY30, (b) CNT/Ni-W-ZY30, and (c) GNP/Ni-W-ZY30 catalysts after regenerating them for three cycles.