

Electronic Supplementary Information

Competition between reactive adsorption desulfurization and olefins hydrogenation over NiO/ZnO-Al₂O₃-SiO₂ adsorbent

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Table S1. Boiling range of the FCC gasoline

*IBP: Initial boiling point; FBP: Final boiling point.

Wt% off	IBP	10%	20%	30%	40%	50%	60%	70%	80%	90%	FBP
Temperature /°C	37.6	53.9	61.8	71.2	83.9	99.2	116.3	135	157.1	178.6	192.0

Table S2. Properties of the FCC gasoline

	Density(20°C)	Sulfur content	Nitrogen content
	g/cm ³	µg/g	µg/g
FCC gasoline	0.734	302.2	43.5

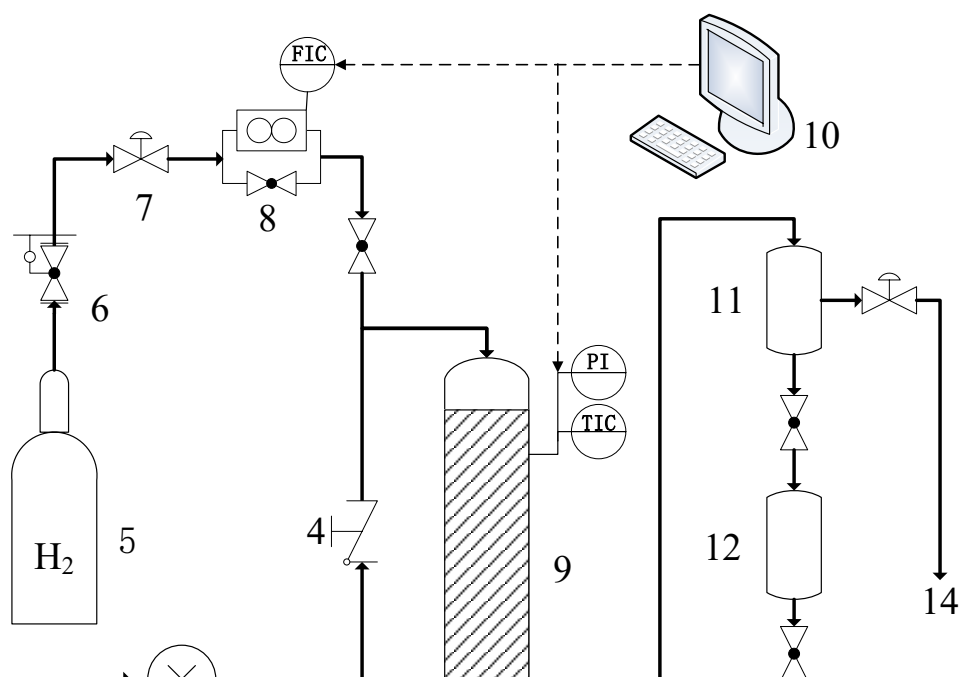


Fig. S1. Schematic of fixed-bed micro-reactor. 1. FCC gasoline; 2. Pump; 3. Exhaust valve; 4.

Single globe valve; 5. Carrier gas; 6. Pressure reducer; 7. Safety valve; 8. Volume flow meter; 9. Fixed bed reactor; 10. Workstation; 11. Gas-liquid separation tank; 12. Liquid storage tank; 13. Liquid product port; 14. Gas product port; (FIC, flow instruction and control; PI, pressure instruction; TIC, temperature instruction and control)

The sulfur removal efficiency of adsorbent is defined according to the following equation:

Table S3. Hydrocarbon compositions of the FCC gasoline

Hydrocarbon group composition (wt%)	n-Paraffin	isoparaffin	Olefin	Naphthenic	Aromatic	Total
C4	0.878	0.811	3.134	-	-	4.823
C5	1.366	9.389	6.261	0.171	-	18.187
C6	1.132	9.509	5.948	2.142	0.701	19.432
C7	0.751	6.269	2.785	2.064	3.775	15.644
C8	0.461	2.683	1.836	2.452	8.009	15.441
C9	0.308	1.886	1.586	1.951	8.084	13.815
C10	0.267	2.253	0.083	0.352	5.140	8.095
C11	0.094	1.354	0.065	0.214	2.387	4.114
C12	0.148	0.152	-	0.108	1.042	1.45
Total	5.40	34.30	21.70	9.46	29.14	100