

Supplementary Materials

Effect of Reduction of Pt-Sn/ α -Al₂O₃ on Catalytic Dehydrogenation of Mixed-paraffin Feed

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In The feed gases were analyzed in GC. Little quantity of isobutene was present in feed gas. But the quantity of isobutane formed in butane dehydrogenation and mixed feed dehydrogenation is comparatively high due to dehydrogenation reaction. n-butane, acetylene, C₄s and C₅s are the products formed during propane dehydrogenation.

The same propane gas only used in mixed feed but the product profile was different. Because of different reaction kinetics. The GC profile of feed gases (for mixed feed) was presented in Figure. S1. And concentration of feed gas (before reaction) and product gas (after reaction) were presented in Table. S1.

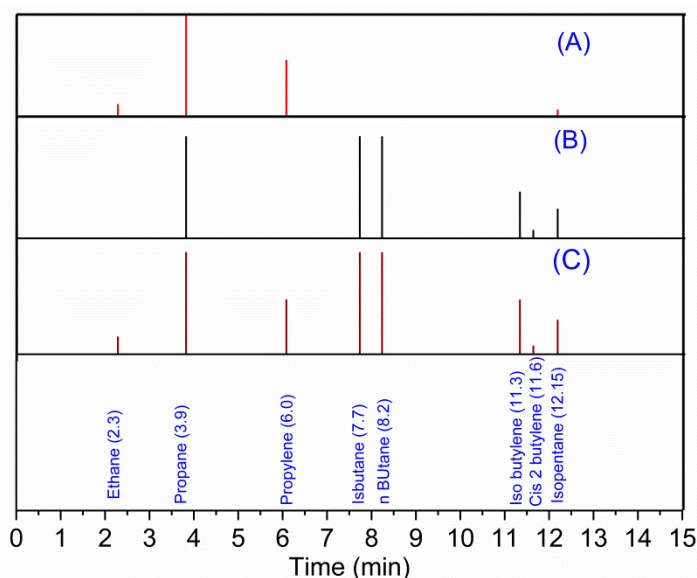


Figure S1. Fresh feed profiles obtained from GC-MS analysis: (A) Propane only, (B) Butane only, (C) Mixed feed

Table S1. GC-MS analysis result of Mixed feed

Compound	R time	Mixed Feed (Propane+Butane)			
		Feed		Product	
		(Before dehydrogenation)		(After dehydrogenation)	
		Area	ppm	Area	ppm
Methane	1.9	0	0	1506508	38822.83
Ethane	2.26	1668.7	41.73	110619.5	2850.67
Ethylene	2.7	0	0	3252833	83825.77
Propane	3.79	2.13E+07	533164.98	16777937	432368.79
cyclopropane	5.8	0	0	1465.8	37.77
propylene	6.05	5315.6	132.93	3871886	99778.80
Iso butane	7.7	58088.2	1452.6749	46553.4	1199.69

n butane	8.2	1.86E+07	464972.92	12958953	333953.26
propadine	8.3	0	0	0	0
Acetylene	8.9	0	0	0	0
iso butylene	11.3	5298.3	132.50	39692	1022.87
cis 2 butene	11.6	781.4	19.54	190659.6	4913.31
iso pentane	12.15	3307.6	82.72	9822.8	253.13
n pentane	12.6	0	0	31123.7	802.06
1 pentane	14.6	0	0	6637.1	171.04
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