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APPENDICES

Appendix A Products Obtained from Hydrocracking of Different Feedstock Chain Length (n-C_{15}, n-C_{16}, n-C_{17}, and n-C_{18}) over 0.1 wt% Pt/HY Catalysts Prepared by IWI and IE

Table A1 Conversion and product yield of different carbon number (Reaction condition: 310 °C, 500 psig, LHSV of 1 h^{-1}, H_2/feed molar ratio of 30, and TOS of 6 h)

Catalysts		**IWI**				**IE**
Feedstocks		n-C_{15}	n-C_{16}	n-C_{17}	n-C_{18}	n-C_{16}
Conversion (wt. %)		92.72	94.50	97.94	99.30	99.41
Yield of gas products (wt. %)	C_1	0.00	0.00	0.00	0.00	0.00
	C_2	0.00	0.00	0.00	0.00	0.00
	C_3	0.18	0.15	0.18	0.18	0.49
	iso-C_4	0.45	0.41	0.59	0.49	1.31
	C_4	0.48	0.38	0.41	0.39	0.98
	iso-C_5	1.88	1.26	1.21	1.25	2.39
	C_5	1.26	0.87	1.16	0.76	1.71
	iso-C_6	0.96	0.98	0.95	1.32	1.70
	C_6	0.91	0.87	0.91	0.85	1.05
	iso-C_7	2.44	2.30	2.20	2.16	2.34
	C_7	1.36	1.22	1.28	1.15	0.93
	iso-C_8	3.70	3.45	3.33	3.87	2.10
	C_8	1.77	1.82	1.56	1.21	0.73
	iso-C_9	1.34	1.24	0.88	0.42	0.67
	C_9	0.43	0.38	0.43	0.00	0.00
Yield of liquid Products (wt. %)	iso-C_5	0.07	0.51	0.57	0.71	0.81
	n-C_5	0.25	0.23	0.26	0.29	0.41
	iso-C_6	1.94	2.34	2.67	2.47	3.67
	n-C_6	1.17	0.89	1.34	1.73	1.89
	iso-C_7	1.89	2.66	4.16	5.55	5.89
	n-C_7	1.17	1.30	1.53	2.58	2.57
	iso-C_8	5.19	5.65	6.71	11.70	11.70
	n-C_8	1.33	1.44	1.64	2.75	2.51
	iso-C_9	6.06	6.65	9.04	12.37	12.49
	n-C_9	1.21	1.37	1.54	2.20	1.97

Table A1 (Cont.) Conversion and product yield of different carbon number (Reaction condition: 310 °C, 500 psig, LHSV of 1 h^{-1}, H_2/feed molar ratio of 30, and TOS of 6 h)

Catalysts		**IWI**				**IE**
Feedstocks		***n*-C_{15}**	***n*-C_{16}**	***n*-C_{17}**	***n*-C_{18}**	***n*-C_{16}**
Conversion (wt. %)		92.72	94.50	97.94	99.30	99.41
Yield of liquid Products (wt. %)	iso-C_{10}	6.72	7.20	9.05	11.38	11.54
	n-C_{10}	0.95	1.08	1.22	1.43	1.27
	iso-C_{11}	5.46	6.66	8.44	9.05	9.78
	n-C_{11}	0.61	0.93	1.07	0.97	0.83
	iso-C_{12}	1.14	5.01	7.62	6.11	4.39
	n-C_{12}	0.05	0.54	0.88	0.61	0.67
	iso-C_{13}	0.29	0.87	4.76	3.91	0.17
	n-C_{13}	0.27	0.00	0.34	0.32	0.00
	iso-C_{14}	0.39	0.24	0.69	0.81	0.00
	n-C_{14}	0.37	0.11	0.12	0.09	0.00
	iso-C_{15}	39.10	0.36	0.30	0.34	0.21
	n-C_{15}	7.23	0.32	0.22	0.22	0.12
	iso-C_{16}	0.00	32.70	0.59	0.17	10.14
	n-C_{16}	0.00	5.61	0.36	0.29	0.59
	iso-C_{17}	0.00	0.00	18.13	0.00	0.00
	n-C_{17}	0.00	0.00	1.64	0.22	0.00
	iso-C_{18}	0.00	0.00	0.00	7.25	0.00
	n-C_{18}	0.00	0.00	0.00	0.42	0.00

Table A2 Overall mass balance of hydrocracking over 0.1 wt.% Pt/HY (Reaction condition: 310 ºC, 500 psig, LHSV of 1 h^{-1}, H_2/feed molar ratio of 30, and TOS of 6 h)

Catalysts	**IWI**				**IE**
Feedstocks	n-C_{15}	n-C_{16}	n-C_{17}	n-C_{18}	n-C_{16}
HC feed flow rate (g/h)	2.31	2.32	2.33	2.33	2.32
H_2 feed flow rate (g/h)	0.71	0.67	0.63	0.60	0.67
Gas Product (g/h)	0.37	0.35	0.33	0.33	0.35
Light Products (<C5) (g/h)	0.03	0.02-	0.03	0.02	0.07
Liquid Products (g/h)	1.71	1.79	1.93	1.91	1.79
Gasoline Products (C5-C8) (g/h)	0.71	0.63	0.72	0.98	0.99
Jet Products (C9-C14) (g/h)	0.51	0.73	0.96	1.05	0.87
Diesel Products (C15-C18) (g/h)	0.84	0.75	0.54	0.19	0.21
Remaining Feed (RF) (g/h)	0.15	0.13	0.05	0.01	0.01
Liquid Product + RF (g/h)	1.87	1.91	1.97	1.92	1.80
Gas + Liquid Products (g/h)	2.08	2.13	2.26	2.24	2.14
Total Products + RF (g/h)	2.24	2.26	2.31	2.26	2.15
Remaining H_2 (RH) (g/h)	0.73	0.68	0.65	0.66	0.69
Total Products + RF + RH (g/h)	2.97	2.94	2.96	2.91	2.84

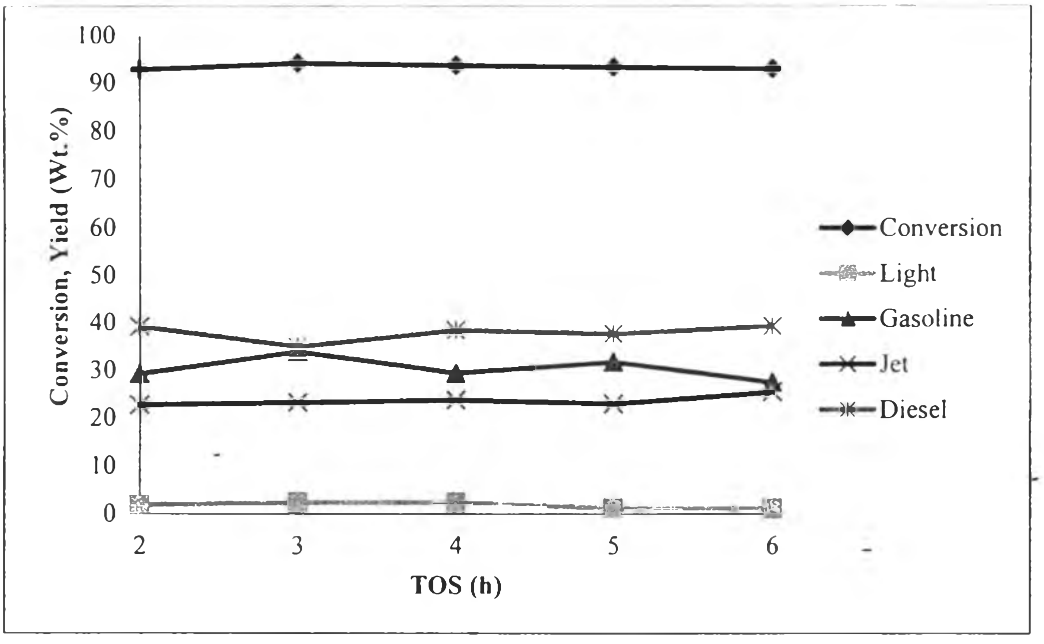

Figure A1 Conversion and yield of products obtained from hydrocracking of n-C_{15} over 0.1 wt.% Pt/HY prepared by IWI (Reaction condition: 310 °C, 500 psig, LHSV of 1.0 h^{-1}, H_2/feed molar ratio of 30).

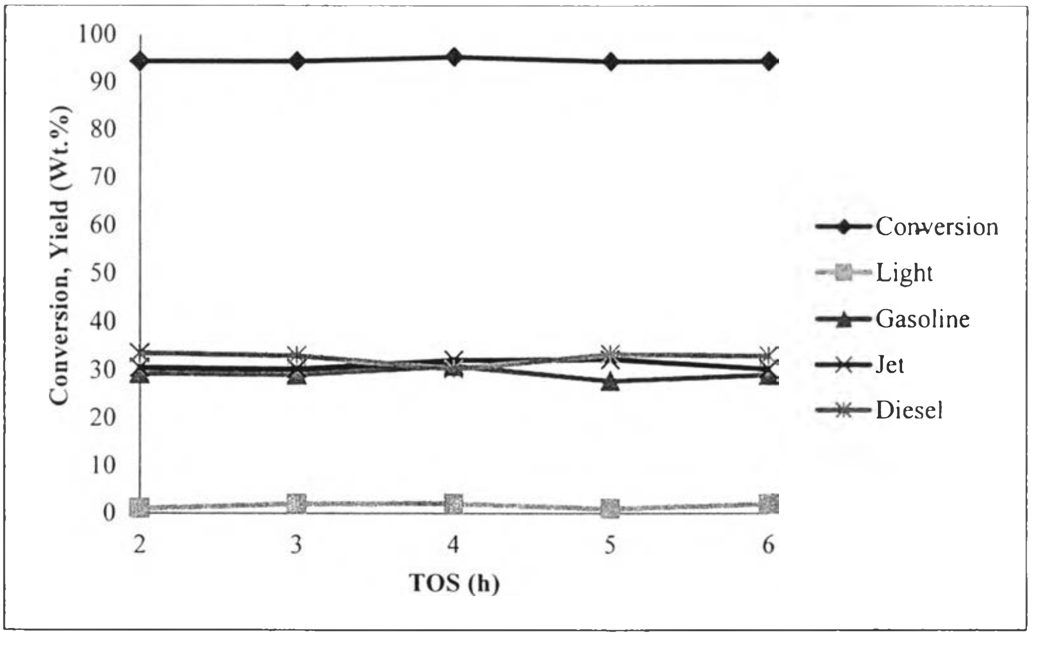

Figure A2 Conversion and yield of products obtained from hydrocracking of n-C_{16} over 0.1 wt.% Pt/HY prepared by IWI (Reaction condition: 310 °C, 500 psig, LHSV of 1.0 h^{-1}, H_2/feed molar ratio of 30).

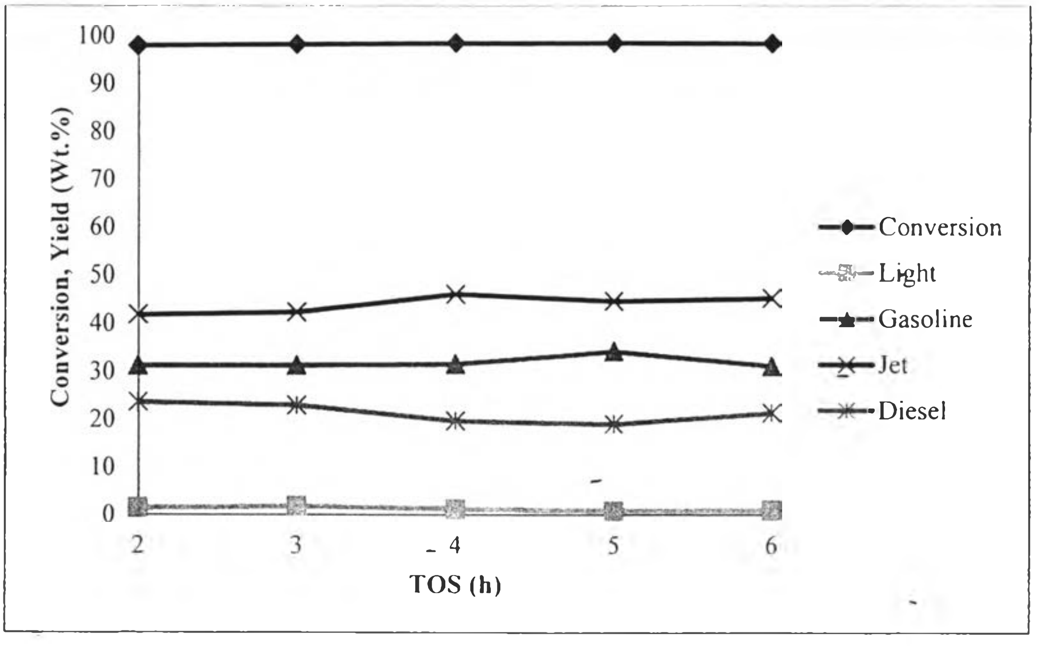

Figure A3 Conversion and yield of products obtained from hydrocracking of n-C_{17} over 0.1 wt.% Pt/HY prepared by IWI (Reaction condition: 310 °C, 500 psig, LHSV of 1.0 h^{-1}, H_2/feed molar ratio of 30).

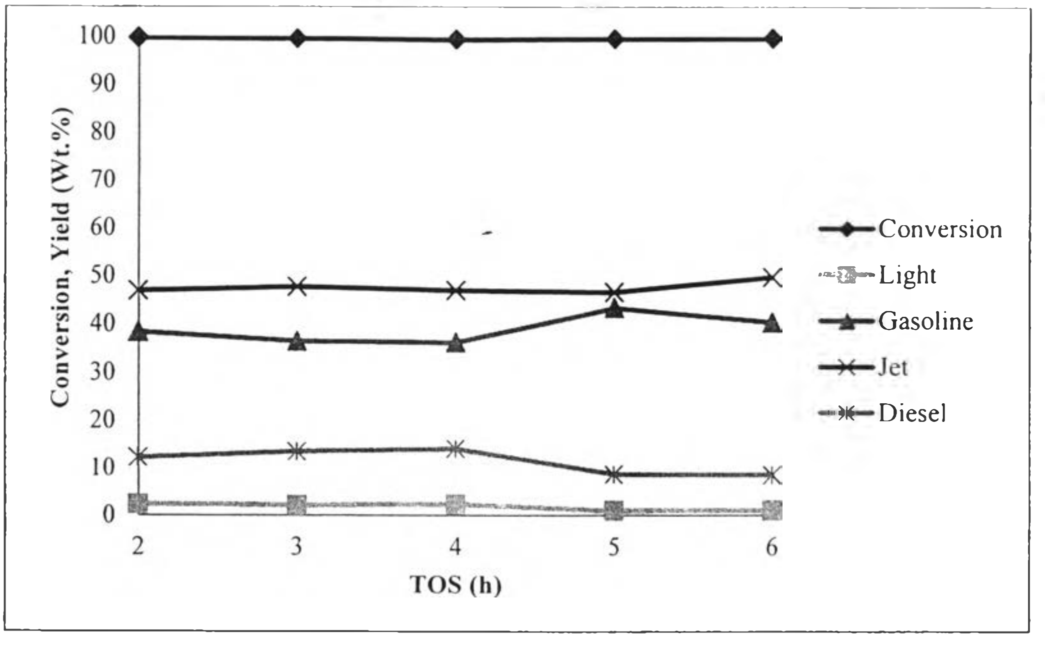

Figure A4 Conversion and yield of products obtained from hydrocracking of n-C_{18} over 0.1 wt.% Pt/HY prepared by IWI (Reaction condition: 310 °C, 500 psig, LHSV of 1.0 h^{-1}, H_2/feed molar ratio of 30).

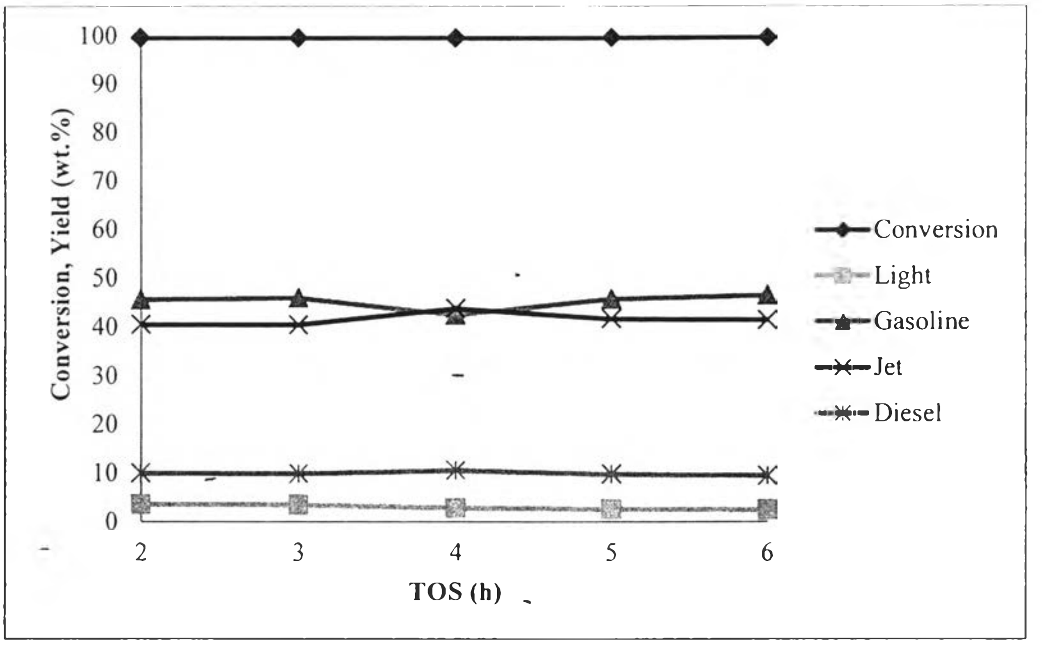

Figure A5 Conversion and yield of products obtained from hydrocracking of n-C_{16} over 0.1 wt.% Pt/HY prepared by IE (Reaction condition: 310 °C, 500 psig, LHSV of 1.0 h^{-1}, H_2/feed molar ratio of 30).

Appendix B Products Obtained from Hydrocracking of *n*-C16 over 0.1 wt% Pt/HY Catalysts Prepared by IWI and IE at Different LHSV

Table B1 Yield of cracked and isomerized products at different contact time (Reaction condition: 310 °C, 500 psig, LHSV of 0.5 – 2.5 h^{-1}, H_2/feed molar ratio of 30)

Catalysts		IWI			IE		
Contact time (h)	LHSV (h^{-1})	Cracked Product	Monobranch	multibranch	Cracked Product	Monobranch	multibranch
2.00	0.50	92.73	2.08	3.56	94.14	1.33	2.81
1.33	0.75	81.23	5.65	8.79	88.10	3.38	4.77
1.00	1.00	71.29	8.72	12.59	79.42	5.71	7.55
0.80	1.25	59.86	12.10	17.10	73.79	7.14	8.82
0.67	1.50	44.91	16.97	22.64	68.85	8.53	10.34
0.57	1.75	32.85	20.56	26.46	65.09	9.46	11.41
0.50	2.00	25.20	22.98	28.37	60.00	10.74	13.12
0.44	2.25	19.39	24.58	29.48	55.35	12.03	14.51
0.40	2.50	16.99	24.72	29.29	49.73	13.60	16.09

CURRICULUM VITAE

Name: Mr. Chettapong Wijakkul

Date of Birth: August 10, 1990

Nationality: Thai

University Education:

2008 – 2011 Bachelor Degree of Chemical Engineering, Faculty of Engineering, Prince of Songkla University, Songkhla, Thailand

Work Experience:

2011	Position:	Trainee Engineer
	Company name:	Rayong Purifier Public Company Limited

Presentations:

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