Supporting information

Dehydrogenation of the liquid organic hydrogen carrier perhydrodibenzyltoluene – reaction pathway over Pt/Al_2O_3

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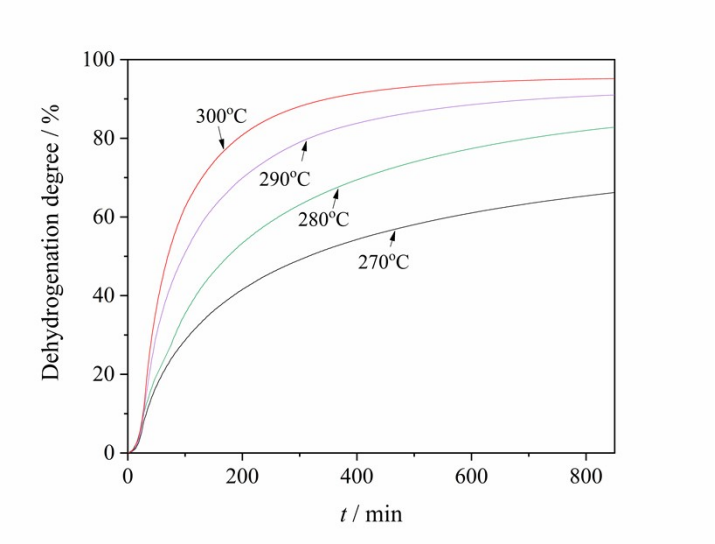

Fig. S1 Dehydrogenation of H18-DBT at different temperature

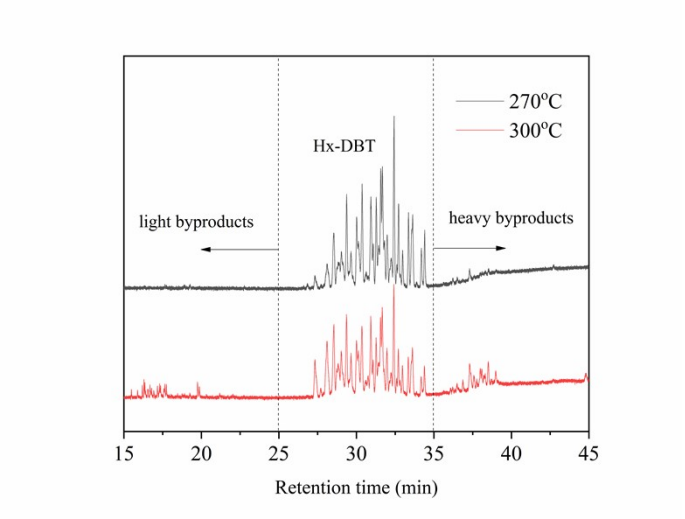

Fig. S2 GC-MS results of dehydrogenation products at 270 ℃ and 300 ℃

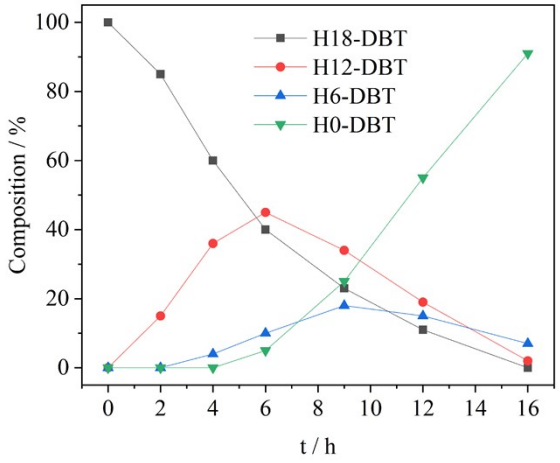

Fig. S3 Hx-DBT species from GC-MS results: composition change during dehydrogenation reaction for H18-DBT species to H12-, H6-, and H0-DBT species versus time.

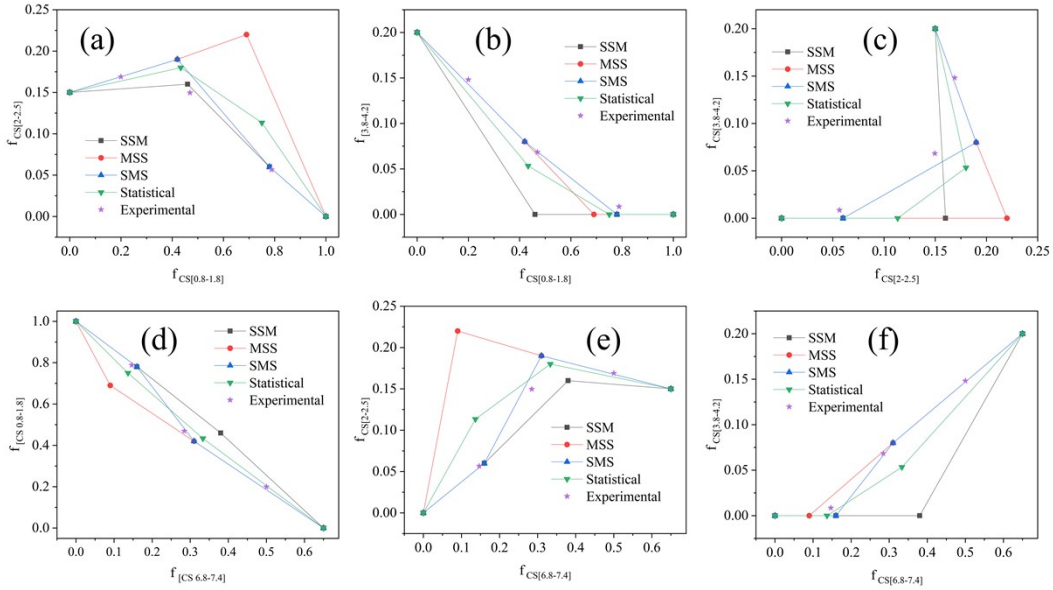

Fig. S4. The experimental ^{1}H NMR results of dehydrogenation products of Pt/Mo-Al_2O_3 catalysts (five-pointed stars) and the different dehydrogenation pathways (solid lines)

Table S1 The average residual between each experimental point and each dehydrogenation pathway over Pt/Mo-Al_2O_3

Plots	Average residual			
	SSM	MSS	SMS	Statistical
$f_{CS[0.8\text{-}1.8]}$~$f_{CS[2\text{-}2.5]}$	0.016	0.089	0.021	0.043
$f_{CS[0.8\text{-}1.8]}$~$f_{CS[3.8\text{-}4.2]}$	0.074	0.010	0.010	0.031
$f_{CS[2\text{-}2.5]}$~$f_{CS[3.8\text{-}4.2]}$	0.020	0.043	0.014	0.029
$f_{CS[6.8\text{-}7.4]}$~$f_{CS[0.8\text{-}1.8]}$	0.079	0.083	0.012	0.035
$f_{CS[6.8\text{-}7.4]}$~$f_{CS[2\text{-}2.5]}$	0.033	0.122	0.014	0.052
$f_{CS[6.8\text{-}7.4]}$~$f_{CS[3.8\text{-}4.2]}$	0.122	0.012	0.009	0.032