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Additional NMR data

Figure S1. (a) Reaction scheme of cyclopropane hydrogenation with p-H₂ over Rh/TiO₂ catalyst. (b) ¹H NMR spectrum acquired in PASADENA hydrogenation of cyclopropane with 50% enriched p-H₂ at 40 °C over 1 wt.% Rh/TiO₂ catalyst in CD₃OD. Spectrum was acquired directly after rapid interruption of gas flow (15 sccm of cyclopropane and 20 sccm of H₂ at 90 psig total pressure).

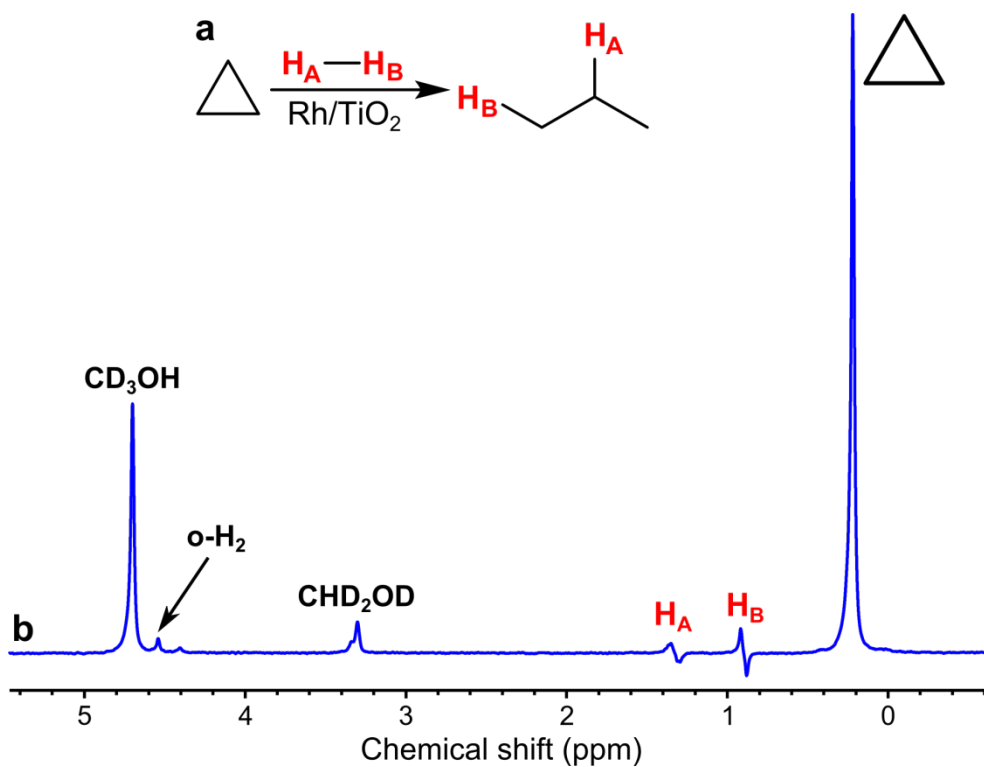


Figure S2. Dependence of ALTADENA signal of HP propane produced by hydrogenation of cyclopropane with 82% enriched p-H₂ at 135 °C and 90 psig total pressure over 118 mg of 1 wt.% Rh/TiO₂ catalyst on gas flow rate. The ratio of cyclopropane and H₂ was 1 : 2.

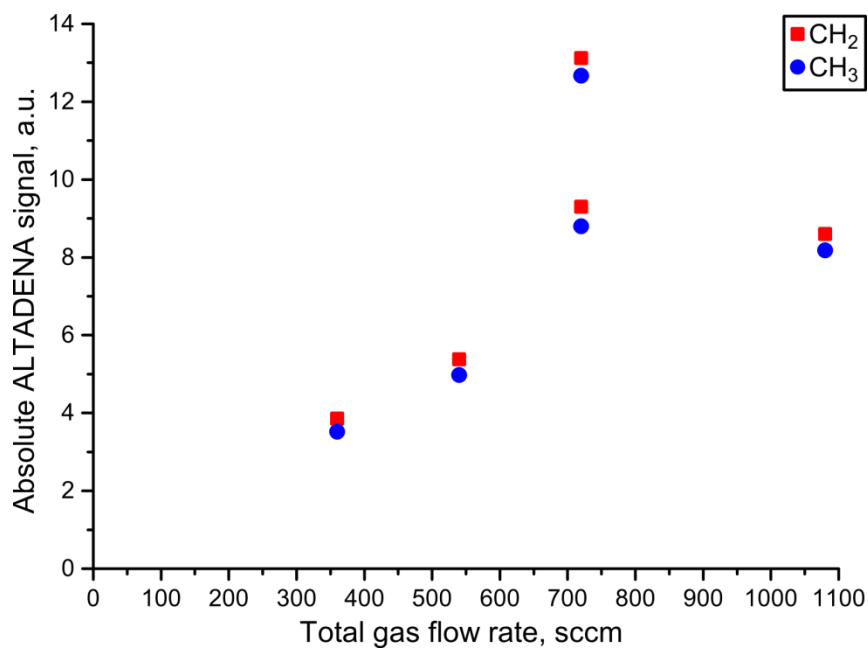
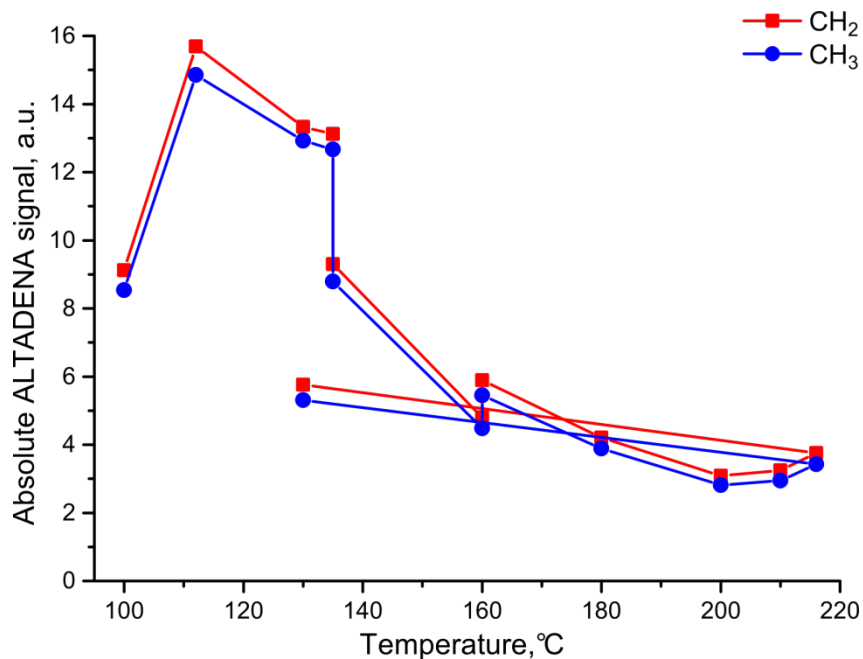


Table S1. Results obtained in ALTADENA hydrogenation of cyclopropane with 82% enriched p-H₂ at various temperatures and gas flow rates at 90 psig total pressure over 118 mg of 1 wt.% Rh/TiO₂ catalyst. The ratio of cyclopropane and H₂ was 1 : 2.

Entry # ^[a]	Temperature, °C	Total gas flow rate, sccm	Cyclopropane conversion, %	NMR signal enhancement (CH ₂)	NMR signal enhancement (CH ₃)	Polarization (CH ₂), %	Polarization (CH ₃), %
1	100	720	0.22	390	350	1.2	1.1
2	100	720	0.21	240	250	0.76	0.79
3	112	720	0.30	260	270	0.85	0.87
4	130	720	0.18	360	360	1.2	1.1
5	135	720	0.20	400	400	1.3	1.3
6	135	360	0.27	310	310	0.98	0.99
7	135	1080	0.17	430	420	1.4	1.4
8	135	540	0.19	280	270	0.90	0.88
9	135	720	0.18	480	460	1.6	1.5
10	160	720	0.21	220	230	0.71	0.73
11	160	720	0.18	250	260	0.81	0.84
12	180	720	0.19	220	230	0.72	0.76
13	200	720	0.21	250	250	0.80	0.82
14	210	720	0.24	270	270	0.87	0.87
15	216	720	0.28	280	270	0.89	0.88
16	130	720	0.18	280	280	0.90	0.90

[a] In chronological order.

Figure S3. Dependence of ALTADENA signal of HP propane produced by hydrogenation of cyclopropane with 82% enriched p-H₂ at 90 psig total pressure over 118 mg of 1 wt.% Rh/TiO₂ catalyst on reaction temperature. The gas flow rates of cyclopropane and H₂ were 240 and 480 sccm, respectively. Data points are connected with lines based on the order of entries (see Table S1).



Author Contributions

K.V.K. and E.Y.C. proposed the idea. O.G.S., K.V.K. and E.Y.C. carried out NMR experiments, O.G.S. and E.Y.C. performed MRI experiments, P.N. and E.Y.C. constructed the HET-PHIP polarizer setup used for ALTADENA experiments, L.M.K. and V.I.B. prepared heterogeneous catalysts, O.G.S. carried out NMR data processing and analysis, E.Y.C. processed MR images. O.G.S., K.V.K., E.Y.C. and I.V.K. discussed the results, O.G.S. wrote the original draft, which was edited mainly by E.Y.C., K.V.K. and I.V.K.