Electronic Supplementary Information for

Highly efficient and selective hydrogenation of unsaturated carbonyl compounds using Ni-Sn alloy catalysts

Rodiansono,[a,b] Syahrul Khairi,[a] Takayoshi Hara,[a] Nobuyuki Ichikuni,[a] and Shogo Shimazu*[a]

[a]*Graduate School of Engineering, Chiba University, 1-33 Yayoi, Inage, Chiba 263-8522, Japan*
Tel.: +81 43 290 3379; fax: +81 43 290 3379.*E-mail address:* shimazu@faculty.chiba-u.jp (S. Shimazu).
[b]*Department of Chemistry, Lambung Mangkurat University, Jl. A. Yani Km 36Banjarbaru, Indonesia 70714.*

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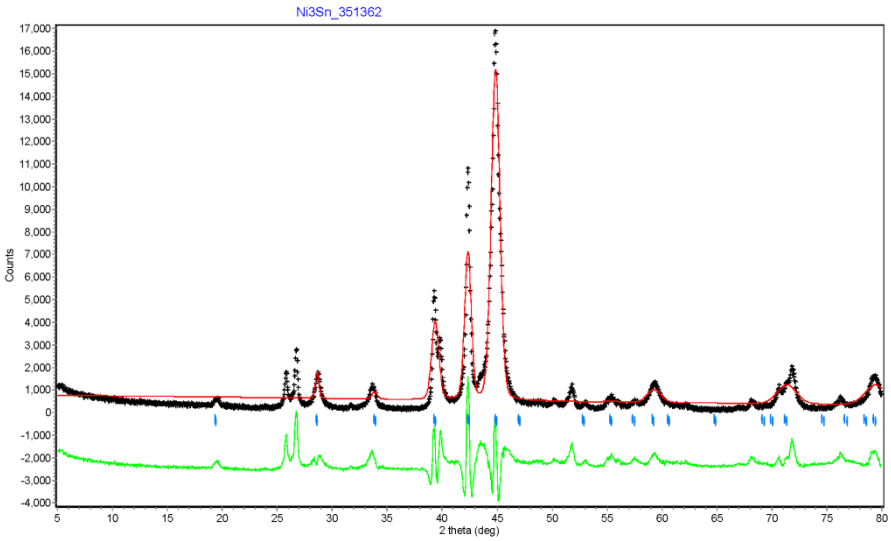

Fig. S1 Multi-Rietveld analysis program LH-Riet profiles of powder XRD data for Ni-Sn(3.0) alloy catalyst after H_2 treatment at 673 K (data extracted from Figure 1a). Data points (black line); calculated line (red line); difference line (green line); marker points (blue vertical line).

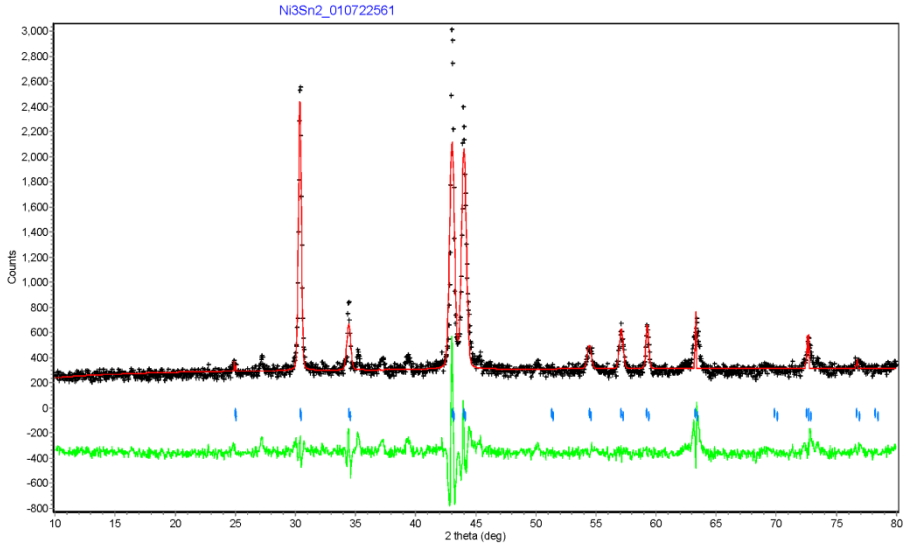

Fig. S2 Multi-Rietveld analysis program LH-Riet profiles of powder XRD data for Ni-Sn(1.5) alloy catalyst after H_2 treatment at 673 K (data extracted from Figure 1b). Data points (black line); calculation line (red line); difference line (green line); marker points (blue vertical line).

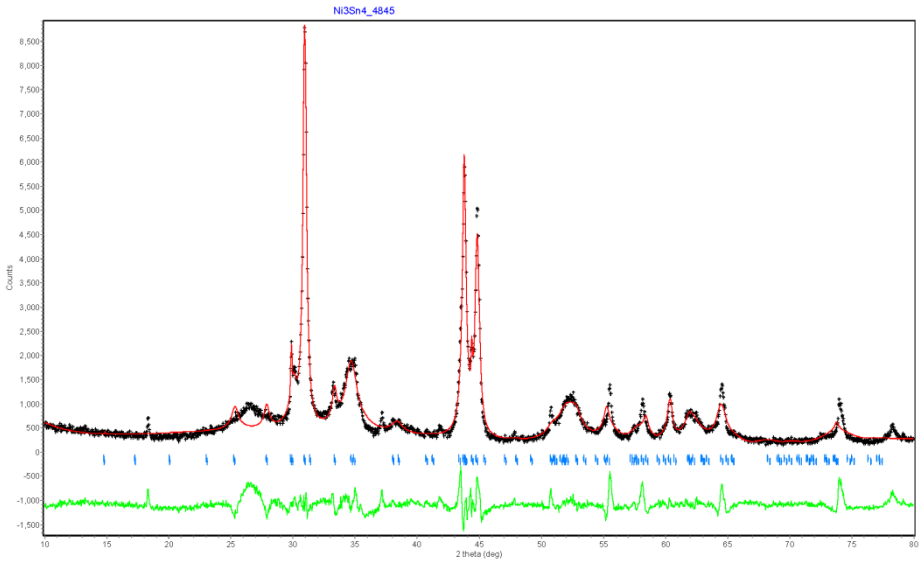

Fig. S3 Multi-Rietveld analysis program LH-Riet profiles of powder XRD data for Ni-Sn(0.75) alloy catalyst after H_2 treatment at 673 K (data extracted from Figure 1c). Data points (black line); calculation line (red line); difference line (green line); marker points (blue vertical line).

Table S1 Results of support screening for Ni-Sn(1.5) alloy catalysts

Entry	Support	Conv./%	Yield[a]/%	Select.[b]/%
1	MCM-41	20	20	100 (0)
2	ZnO	62	61	99(1)
3	ZrO_2	32	32	100
4	MgO	8	0	0

Reaction conditions: FFald, 1.1 mmol (FFald/Ni ratio = 15); *iso*-PrOH (3 mL); H_2, 3.0 MPa, 383 K, 75 min. [a] Yield of FFalc, determined by GC using an internal standard technique. [b] Selectivity to FFalc. The value in the parenthesis is the selectivity to THFalc.

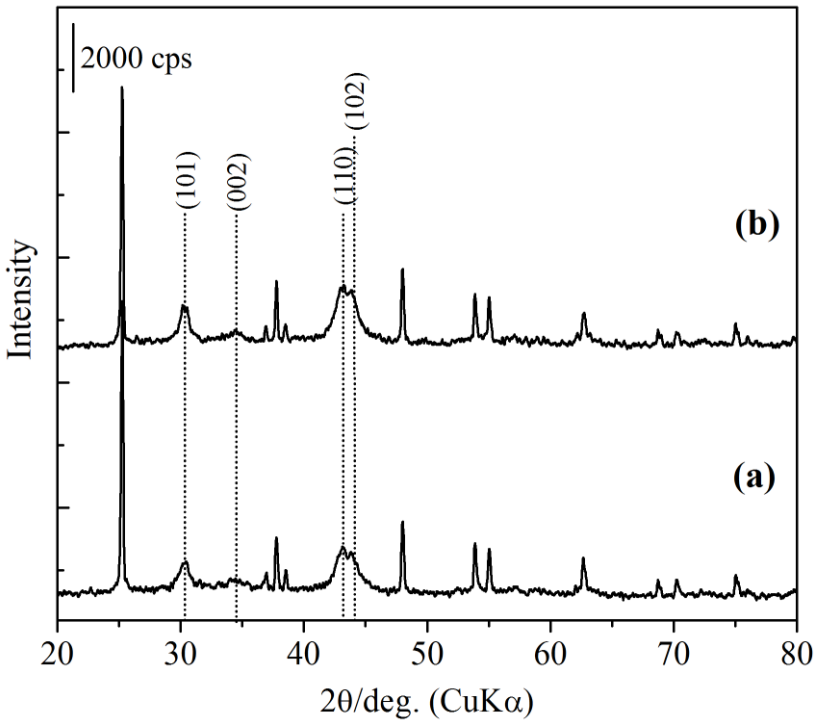

Fig. S4 XRD patterns for the recovered Ni-Sn(1.5)/TiO_2 before and after H_2 treatment at 673 K for 1 h.