Electronic Supplementary Material (ESI) for Catalysis Science & Technology.

Selective Hydrodeoxygenation of Bio-Oil Derived Products: Ketones to Olefins

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Supporting information

Table S1 % Metal content and surface area of metal catalysts and supports

Catalyst	Metal content	BET surface area
	wt%	(m^2/g)
2%Cr/SiO_2	2.03	244
10%Cr/SiO_2	9.17	231
2%Fe/SiO_2	2.08	243
10%Fe/SiO_2	9.86	229
2%Co/SiO_2	1.81	245
2%Pd/SiO_2	1.70	238
2%Ni/SiO_2	2.12	239
5%Ni/SiO_2	5.01	234
8%Ni/SiO_2	8.05	212
20%Ni/SiO_2	20.3	208
40%Ni/SiO_2	42.0	137
2%Cu/SiO_2	2.05	242
5%Cu/SiO_2	5.08	240
10%Cu/SiO_2	10.7	220
15%Cu/SiO_2	16.4	214
40%Cu/SiO_2	36.1	144

Catalyst	Metal content	BET surface area
	wt%	(m^2/g)
2%NiCu/SiO_2 (25%Cu)	0.58(Cu);1.64(Ni)	240
2%NiCu/SiO_2 (50%Cu)	1.04(Cu);1.10(Ni)	241
2%NiCu/SiO_2 (70%Cu)	1.58(Cu);0.56(Ni)	238
2%NiCu/SiO_2 (80%Cu)	1.90(Cu);0.43(Ni)	238
SiO_2	-	246
5%Cu/HY (100)	5.08	568
HY (100)	-	713
5%Cu/HZSM-5 (250)	5.22	361
HZSM-5 (250)	-	376
H-β (14)	-	523

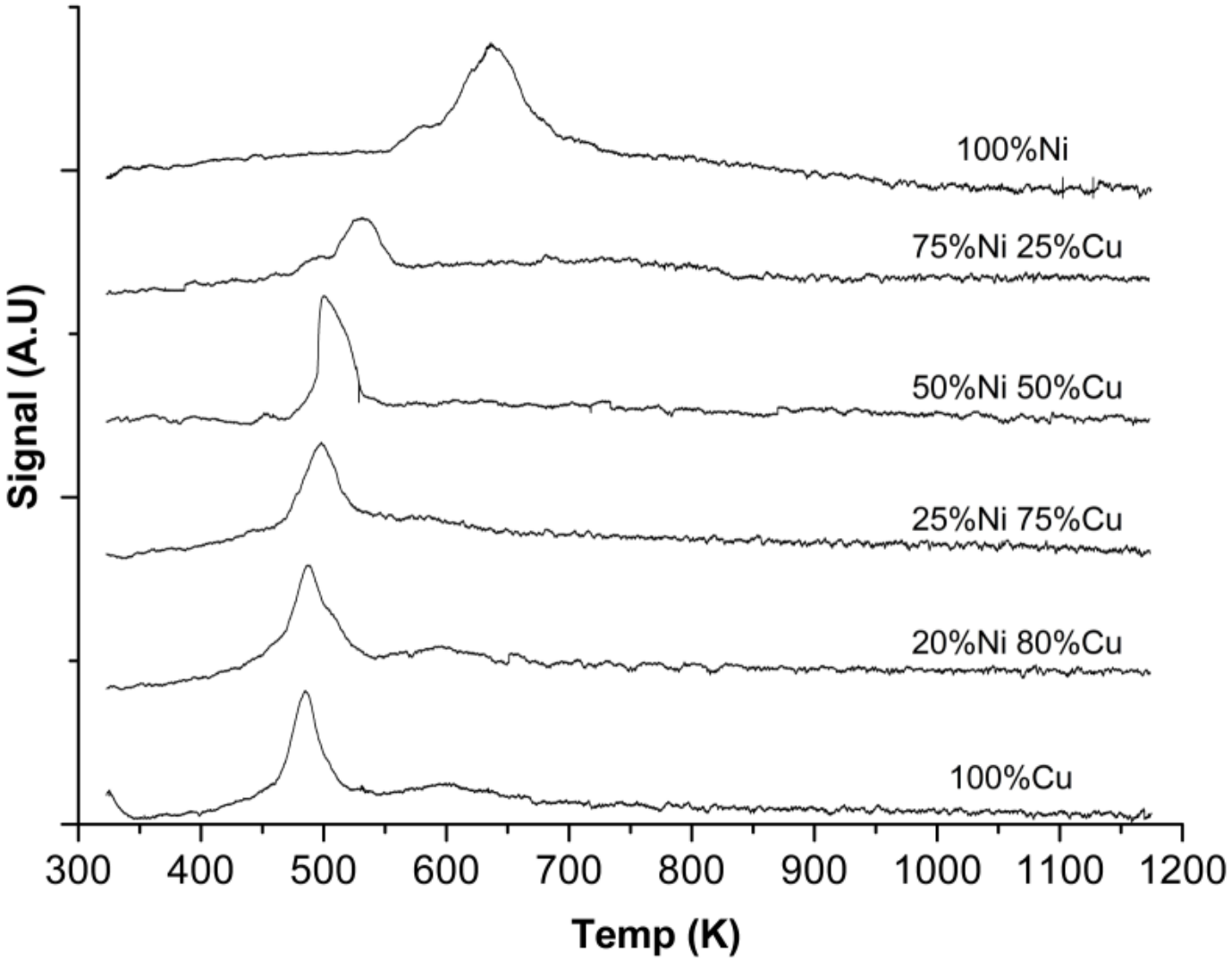

Figure S1 Temperature program reduction of 2% Ni-Cu alloy on SiO_2

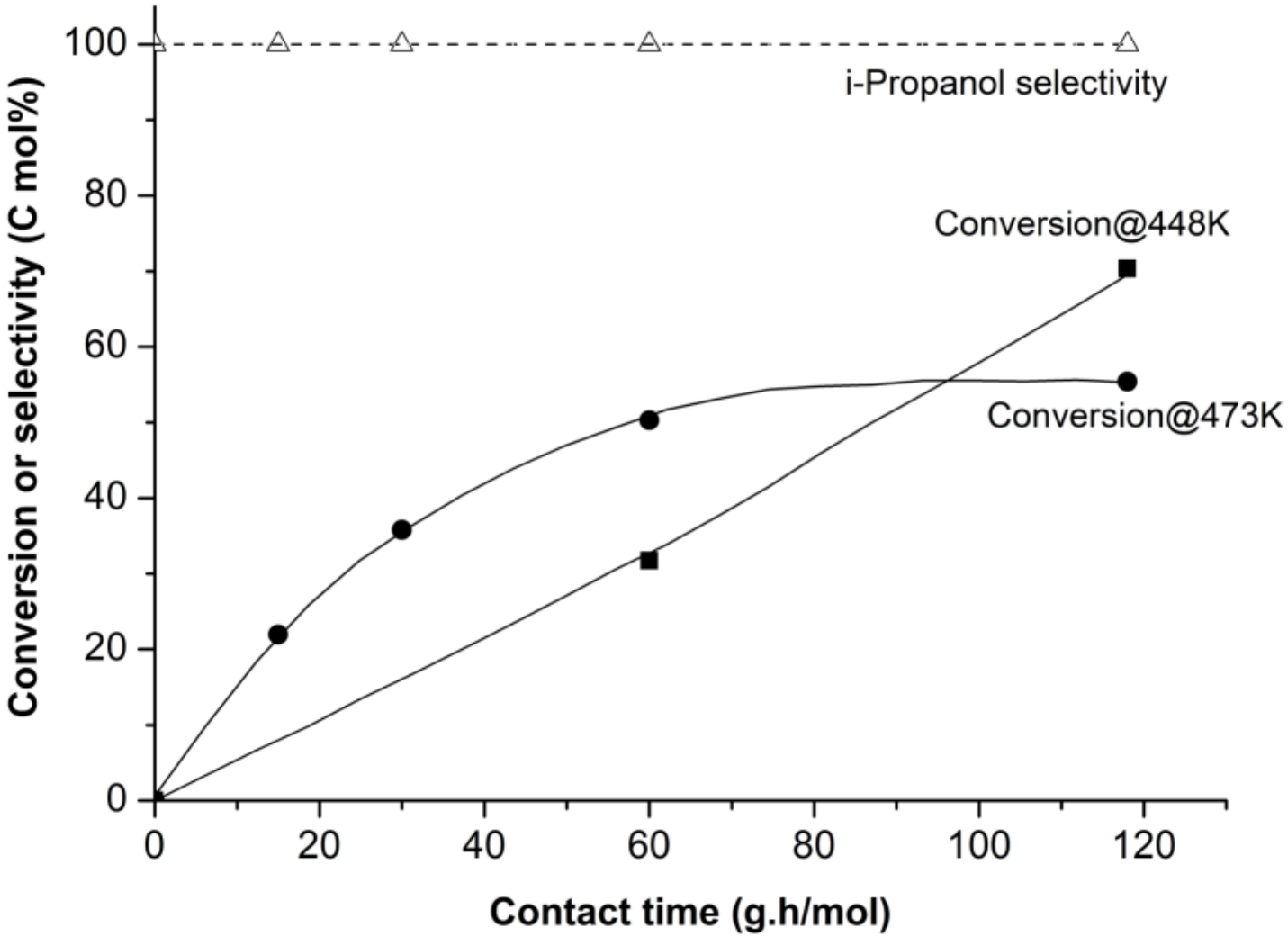

Figure S2 Effect of contact time for acetone hydrogenation on 2%Cu/SiO_2 at 448 and 473 K; H_2 as carrier 30 m/min

Table S2 Copper surface area and turnover frequency for acetone conversion

Catalyst	H_2 consumption mmol.g^{-1}_{Cu})	Cu area (m^2.g^{-1}_{Cu})	Contact time (g.h.mol^{-1})	TOF x10^{-3} (h^{-1})
2%Cu/SiO_2	0.51	257	30	n/a
5%Cu/SiO_2	1.6	646	30	2.5
10%Cu/SiO_2	3.3	437	30	2.1
15%Cu/SiO_2	7.1	220	30	2.7
5%Cu/HY (100)	1.7	499	19	7.2
5%Cu/HZSM-5 (250)	1.7	414	19	4.9

[a]*Hydrogenation at 473 K*

[b]*Hydrodeoxygenation at 473 K*