Supplementary Material

Aqueous-phase glycerol conversion over Ni-based catalysts synthesized by nanocasting

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1. FTIR of SBA-15 calcined at 850 ºC.

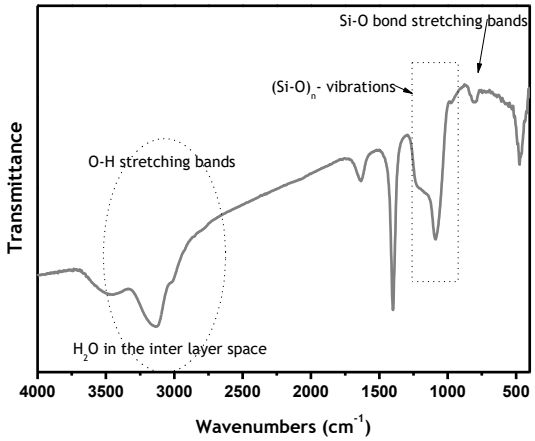

Figure S1. FTIR of SBA-15 calcined at 850 ºC

2. Reaction indices variation with TOS

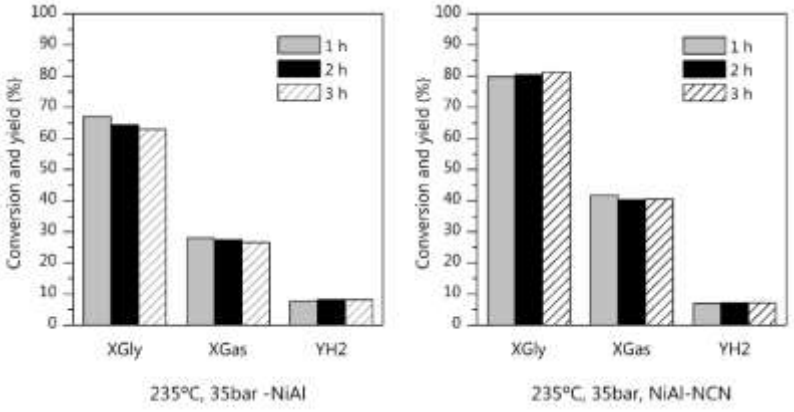

Figure S2. Variation of rection indices with TOS. (A) NiAl, (B) NiAl-NCN.

3. H_2-TPR of spent catalysts

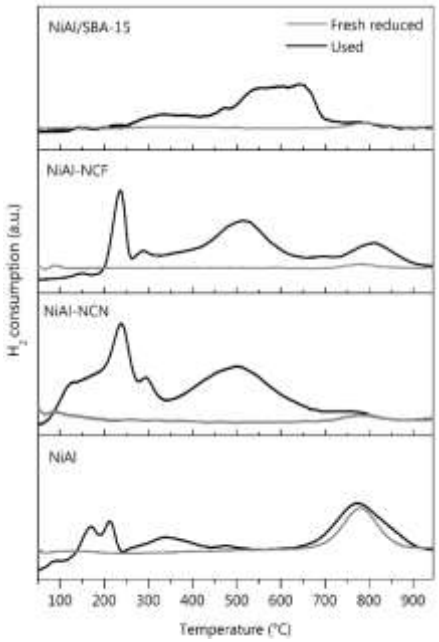

Figure S3. Reduction profiles of used catalysts in aqueous-phase reaction for 3 h.

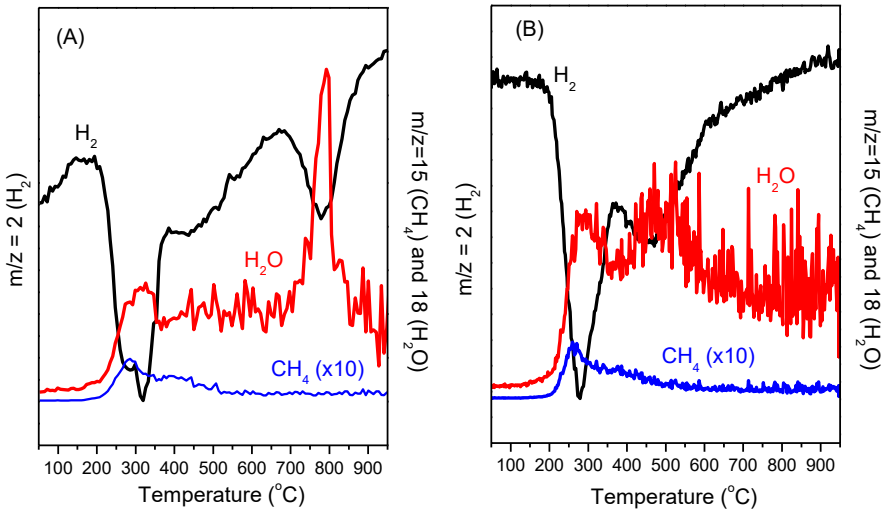

Figure S4. TPR-MS of used catalysts in aqueous-phase reaction for 3 h. (A) NiAl, (B) NiAl-NCN.

4. Diffusion control analysis

Table S1. Parameters of mass transfer limitations for supported (NiAl/SBA-15) and nanocasted catalysts.

Parameter	NiAl	NiAl/SBA-15	NiAl-NCF	NiAl-NCN
r_{obs} ($mol_{Gly} \cdot s^{-1} \cdot kg_{cat}^{-1}$)	9.74×10^{-4}	4.06×10^{-4}	1.38×10^{-3}	5.73×10^{-3}
ρ_{cat} ($kg \cdot m^{-3}$)	2283	6490	2797	6490
$C_{Gly,S}$ ($mol_{Gly} \cdot m^{-3}$)	1136	1016	1033	1046
$\Phi_{WP}<0.6$	0.01	1.4×10^{-2}	2.0×10^{-2}	1.9×10^{-1}
ρ_{bed} ($kg \cdot m^{-3}$)	1212	788	788	788
Re	0.19	0.19	0.19	0.19
Sc	11.61	11.13	11.13	11.13
Sh	4.36	2.20	4.37	2.20
K_c ($m \cdot s^{-1}$)	3.26×10^{-4}	1.64×10^{-4}	3.26×10^{-4}	1.64×10^{-4}
MR<0.15	2.56×10^{-4}	1.5×10^{-4}	2.6×10^{-4}	2.0×10^{-3}

4. Comparison with other works of Ni-based catalysts in literature

Table S2. Comparison with other works in the literature.

Catalyst	Reactor type	T/P (ºC/bar)	Feed, WHSV or Gly/cat	X_{Gly} (%)	X_{Gas} (%)	SH_2 (%)	YH_2 (%)	S_{Gas} (%)	Ref.
5%Ni/Al_2O_3	Fixed-bed	250/50	10 wt.% Gly/H_2O, 2.45 h^{-1}	67	87	-	-	43	[1]
10%Ni/Al_2O_3	Fixed-bed	250/50	10 wt.% Gly/H_2O, 2.6 h^{-1}	40	10	-	-	25	[2]
15%Ni/$LaAlO_3$	Fixed-bed	250/20	15 wt.% Gly/H_2O, 5.2 h^{-1}	23	-	61	-	-	[3]
6%Ni/3%CeO_2/Al_2O_3	Fixed-bed	240/40	1 wt.% Gly/H_2O, 12 h^{-1}	26	-	49	12	-	[4]
20%Ni/HTLC Al/Al+Mg= 0.24	Fixed-bed	250/35	10 wt.% Gly/H_2O, 5.1 h^{-1}	30	16	31	10	18	[5]
1%Cu-12%Ni/MWNT	Fixed-bed	250/40	1 wt% Gly/H_2O, 20 h^{-1}	84	-	86	65	-	[6]
10%Ni/$Ce_{0.3}Zr_{0.7}O_2$	Fixed-bed	250/25	10 wt.% Gly/H_2O, 2.5 h^{-1}	90	99	-	-	37	[7]
NiAl-NCN	Fixed bed	235/35	10 wt.% Gly/H_2O, 24.5 h^{-1}	80	40	35	9	50	This work

Gly/cat: glycerol to catalyst weight ratio in the feed, batch reactor
HTLC: hydrotalcite-like compound
MWNT: multiwalled carbon nanotubes

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