Supplementary data

Hydrogenation of Lignin-derived Phenolic Compounds over Step by

Step Precipitated Ni/SiO₂

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Catalysts ^a	H ₂ uptake ^b (umol/g)	Nickel dispersion (%)	
20% SP-Ni/SiO ₂	137.1	9.5	
20% CP-Ni/SiO ₂	150.1	11.0	
20% SS-Ni/SiO ₂	360.2	29.8	
15% SS-Ni/SiO ₂	284.6	31.4	
10% SS-Ni/SiO ₂	217.3	35.9	
5% SS-Ni/SiO ₂	137.7	45.5	

Table S1 The Ni dispersion of the different reduced Ni/SiO_2 catalysts.

^a SP, supported; CP, co-precipitated; SS, step by step precipitated.

^b Calculated from peak area of H₂-TPD profiles.



Fig. S1 N₂ adsorption/desorption isotherms of different Ni/SiO₂ catalysts and SiO₂ support (a) and their corresponding pore size distributions (b).



Fig. S2 H_2 -TPD profiles of the different Ni/SiO₂ catalysts.



Fig. S3 FT-IR spectrum of the different Ni/SiO_2 catalysts.



Fig. S4 H_2 -TPD profiles of the different SS-Ni/SiO₂ catalysts.



Fig. S5 The recyclability of the SS-Ni/SiO₂ catalyst.

*: the catalyst was recovered from the fourth run, calcined at 500 °C for 6 h and reduced at 550 °C for 6 h at the flow of hydrogen.



(a) fresh SS-Ni/SiO₂ catalyst

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and standing and standing	Element	Weight%	Atomic%
	С	19.74	29.34
	0	47.89	53.43
	Si	22.28	14.16
and the state of the	Ni	10.08	3.06
500 nm	Totals	100.00	100.00

(b) recovered SS-Ni/SiO₂ catalyst

Fig. S6 SEM images of the fresh and recovered catalyst after 4 runs and the corresponding EDS



(a) fresh SS-Ni/SiO $_2$ catalyst



(b) recovered SS-Ni/SiO $_2$ catalyst

Fig. S7 TEM, STEM and EDS (Ni) images of the fresh and recovered catalyst after 4 runs



Fig. S8 FT-IR spectrum of (a) fresh catalyst and (b) recovered catalyst after 4 runs