

Highly efficient selective hydrogenation of levulinic acid to γ -valerolactone over Cu-Re/TiO₂ bimetallic catalyst

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Table S1 Copper-based catalysts for the hydrogenation of LA to GVL

Catalysts	LA conversion (%)	GVL selectivity (%)	Solvent	H donor	Temp, time	Catalyst Recyclability	Reference
Cu/SiO ₂	48	80					
Cu/TiO ₂	8	25	Water	Formic acid	250 °C, 10 h	-	[1]
Cu/ZSM-5	38	4					
Cu-WO ₃ /ZrO ₂	100	94	Ethanol			5	
Cu/ZSM-5	100	99	Water	50 bar H ₂	200 °C, 6 h	-	[2]
Cu-TiO ₂ /ZrO ₂	100	78	Ethanol			-	
Cu/Al ₂ O ₃	75	88	Water	65 bar H ₂	250 °C, 6 h	-	[3]
Cu/ZrO ₂	60	100	Water	Formic acid	180 °C, 5 h	-	[4]
Ni-Cu/Al ₂ O ₃	100	96	Water	65 bar H ₂	250 °C, 2h	-	[3]
Cu/Fe	98.7	90.1	Water	70 bar H ₂	200 °C, 10 h	3	[5]
Cu-Re/TiO ₂	98.9	98.6	1,4-dioxane	40 bar H ₂	180 °C, 3h	6	This work

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