

Electronic Supporting Information

Steric Effects of Mesoporous Silica Supported Bimetallic Au-Pt Catalysts on the Selective Aerobic Oxidation of Aromatic Alcohols

Jun Yan ¹, Longlong Shan ^{1,*}, Xiaoli Gu ^{1,*}, Xingguang Zhang ^{1,2,*} and Junmeng Cai ³

¹ College of Chemical Engineering, Nanjing Forestry University, No. 159 Longpan Road, Nanjing 210037, China; junyan@njfu.edu.cn

² Department of Chemistry, School of Science, University of Shanghai for Science and Technology, 516 Jungong Road, Shanghai 200093, China

³ Biomass Energy Engineering Research Center, School of Agriculture and Biology, Shanghai Jiao Tong University, 800 Dongchuan Road, Shanghai 200240, China; jmcai@sjtu.edu.cn

* Correspondence: shanlonglong@njfu.edu.cn (L.S.); guxiaoli@njfu.edu.cn (X.G.); x.g.zhang@usst.edu.cn (X.Z.)

Section 1. Powder XRD patterns and UV-Vis spectra of silica supports

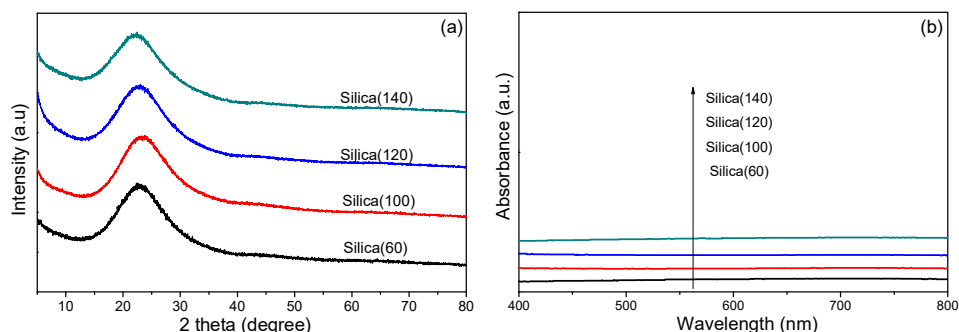


Figure S1. (a) Powder XRD patterns and (b) UV-Vis spectra (the visible light region) of silica supports.

Section 2 N₂ porosimetry of silica supports

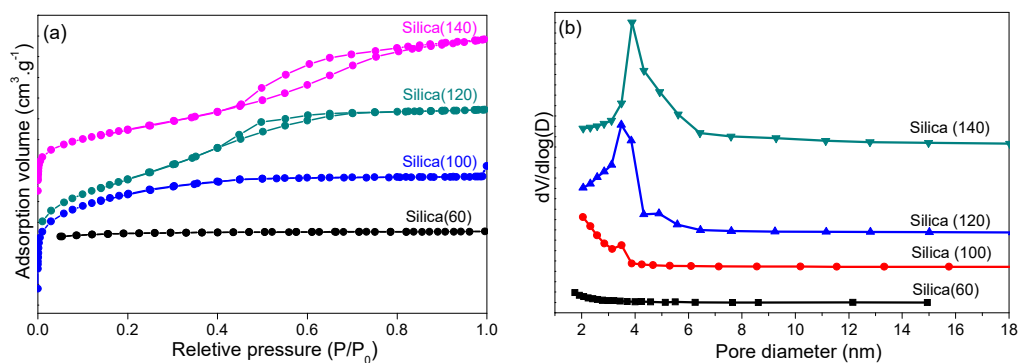


Figure S2. (a) N₂ adsorption–desorption isotherms and (b) pore size distribution curves of silica supports.

Table S1. Physical properties of SBA-15.

Samples	$S_{\text{BET}}^{\text{a}}$ (m ² g ⁻¹)	V_{t}^{b} (cm ³ g ⁻¹)	D_{p}^{c} (nm)
Silica(60)	304.4	0.038	--
Silica(100)	821.9	0.272	3.0
Silica(120)	831.7	0.609	3.1
Silica(140)	536.8	0.605	4.1

^a BET surface area.

^b BJH desorption pore volume.

^c BJH desorption mean pore size.

Section 3. XPS analyses and ICP-MS detection

Table S2. The surface content of different Au and Pt chemical states in the catalysts (from the XPS results).

Catalyst	Au ⁰ (%)	Au ^{δ+} (%)	Pt ⁰ (%)	Pt ^{δ+} (%)	Au loading ^a (wt.%)	Pt loading ^a (wt.%)
Au/Silica(60)	100	0	--	--	0.4	--
Au/Silica(100)	68	32	--	--	2.5	--
Au/Silica(120)	91	9	--	--	2.4	--
Au/Silica(140)	91	9	--	--	2.3	--
Pt/Silica(60)	--	--	86	14	--	0.2
Pt/Silica(100)	--	--	97	3	--	1.8
Pt/Silica(120)	--	--	90	10	--	1.7
Pt/Silica(140)	--	--	91	9	--	1.6
Au-Pt/Silica(60)	100	0	78	22	0.2	0.2
Au-Pt/Silica(100)	100	0	93	7	1.0	1.4
Au-Pt/Silica(120)	100	0	84	16	1.4	1.1
Au-Pt/Silica(140)	100	0	87	13	1.1	1.5

^a metal loading determined by ICP-MS.