Electronic Supplementary Material (ESI) for RSC Advances.

Influence of surfactant alkyl length in functionalizing sol-gel derived microporous cobalt oxide silica

Gianni Olguin[1,2], Christelle Yacou[1], Simon Smart[1,*], João C. Diniz da Costa[1]

[1]The University of Queensland, FIMLab - Films and Inorganic Membrane Laboratory, School of Chemical Engineering, Brisbane, Qld, 4072, Australia

[2]Pontificia Universidad Católica de Valparaíso, Escuela de Ingeniería Química, Valparaíso, Chile

(*) corresponding author (s.smart@uq.edu.au)

Supplementary Information

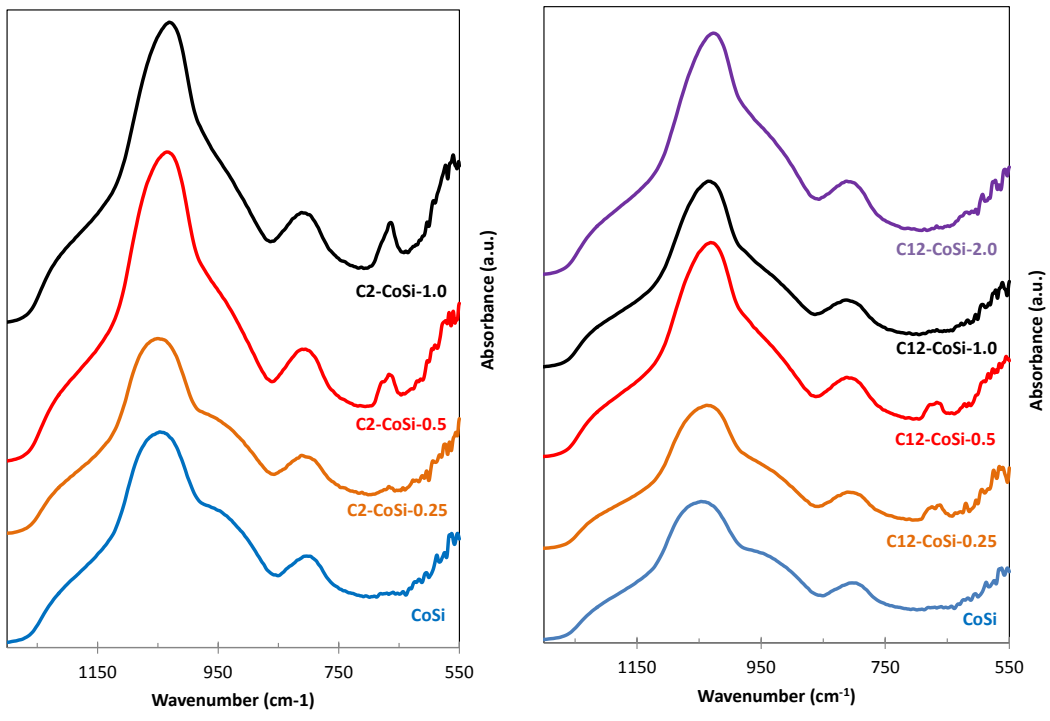


Figure S1: FTIR normalized spectra of calcined xerogels as a function of surfactant concentration. Left: C2-AB. Right: C12-AB. The alteration of the Co_3O_4 characteristic peak at 667 cm^{-1} (Co^{3+}-O vibration) can be observed as surfactant load increases.

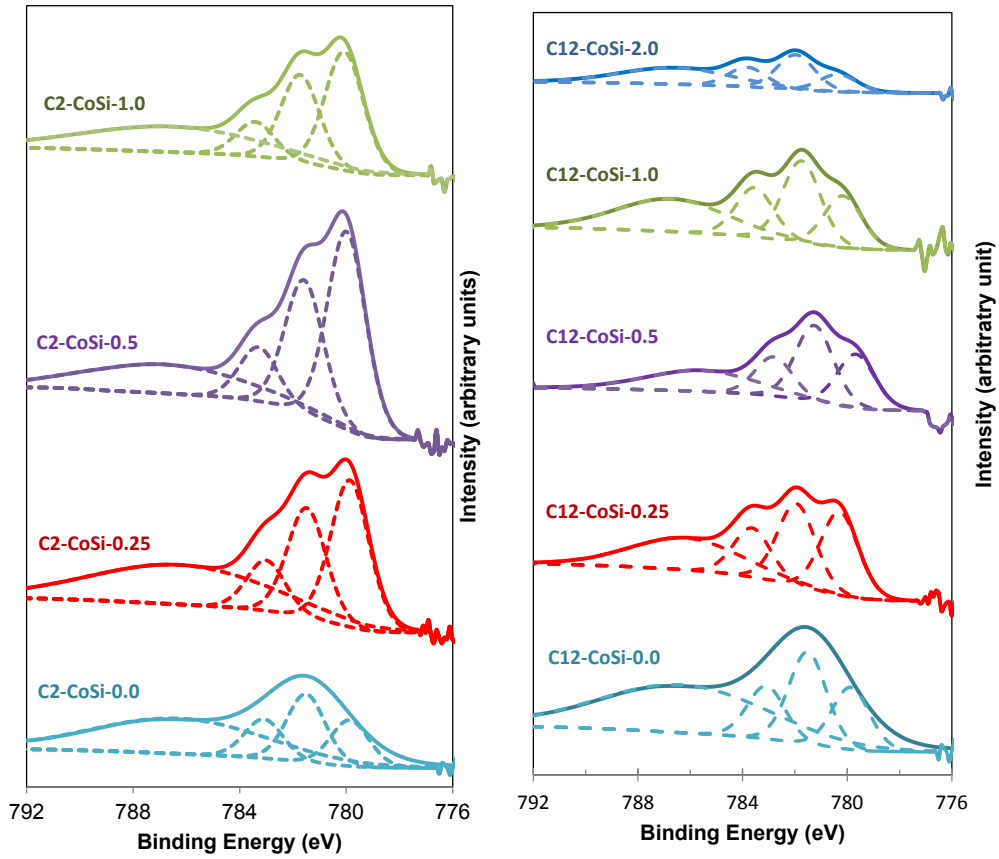
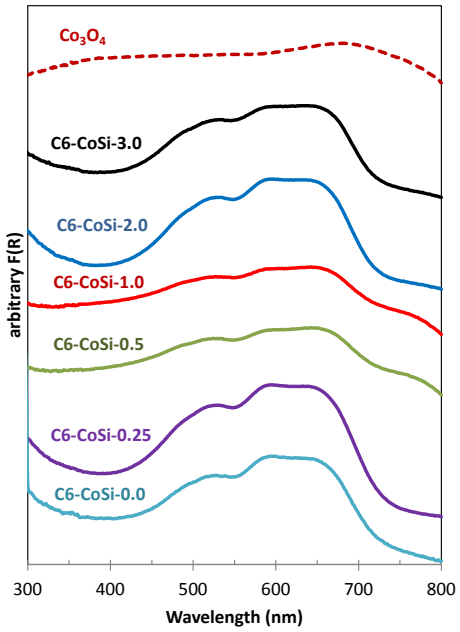


Figure S2: Evolution of XPS spectra near Co2p region for calcined xerogels as function of surfactant concentration. Left: C2-AB. Right: C12-AB. The alteration of the characteristic low energy peak at 779.9 eV which is connected with a high valence state of cobalt, can be observed as surfactant load increases.

Table S1: XPS peak deconvolution data. Peaks position (eV), width, area and goodness of fit for each sample displayed in Figure S2.

Sample	Co^{+3} ($2p_{3/2}$) (fwhm 1.7 eV)		Co^{+2} ($2p_{3/2}$) (fwhm 1.7 eV)		Co^{+2} ($2p_{3/2}$) (fwhm 1.7 eV)		Satellite ($2p_{3/2}$) (fwhm 5-8 eV)		Chi square STD residual
	Position	Area	Position	Area	Position	Area	Position	Area	
CoSi	779.9	757.5	781.6	1126.3	783.2	644.7	786.4	2619.6	0.804
C2-CoSi-0.25	779.9	2420.6	781.5	1808	783.1	831.2	786.3	3070	0.969
C2-CoSi-0.5	779.9	3263.4	781.6	2181.8	783.3	891.1	786.8	2025	0.892
C2-CoSi-1.0	780.0	1957.8	781.7	1441.8	783.4	571.3	786.6	1987	0.756
C12-CoSi-0.25	780.1	265.4	781.8	260.6	783.5	155.8	785.3	375.1	0.795
C12-CoSi-0.5	779.7	170.4	781.3	242.7	782.9	124.1	785.5	195.5	0.864
C12-CoSi-1.0	780.1	632.5	781.7	996	783.5	601.8	786.76	1171.6	0.907
C12-CoSi-2.0	780.1	55.4	781.8	110.4	783.5	62.15	786.4	40.3	0.796



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2 Figure S3: DR-UV Visible spectrum as function of surfactant load for the calcined C6-AB samples and pure
3 Co_3O_4.

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