

Influence of Oxide Coating Layers on the Stability of Gold Catalysts for Furfural Oxidative Esterification to Methyl Furoate

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Table S1. The crystallite size calculated by the Scherrer equation based on different crystal face.

Catalyst	Crystallite size (nm)	
	(010)	(002)
Au/ZA	11.0	17.5
Au@SiO ₂ /ZA-1	9.6	17.2
Au@SiO ₂ /ZA-2	10.6	13.2
Au@SiO ₂ /ZA-3	9.7	14.2
Au@SiO ₂ /ZA-4	11.4	16.8

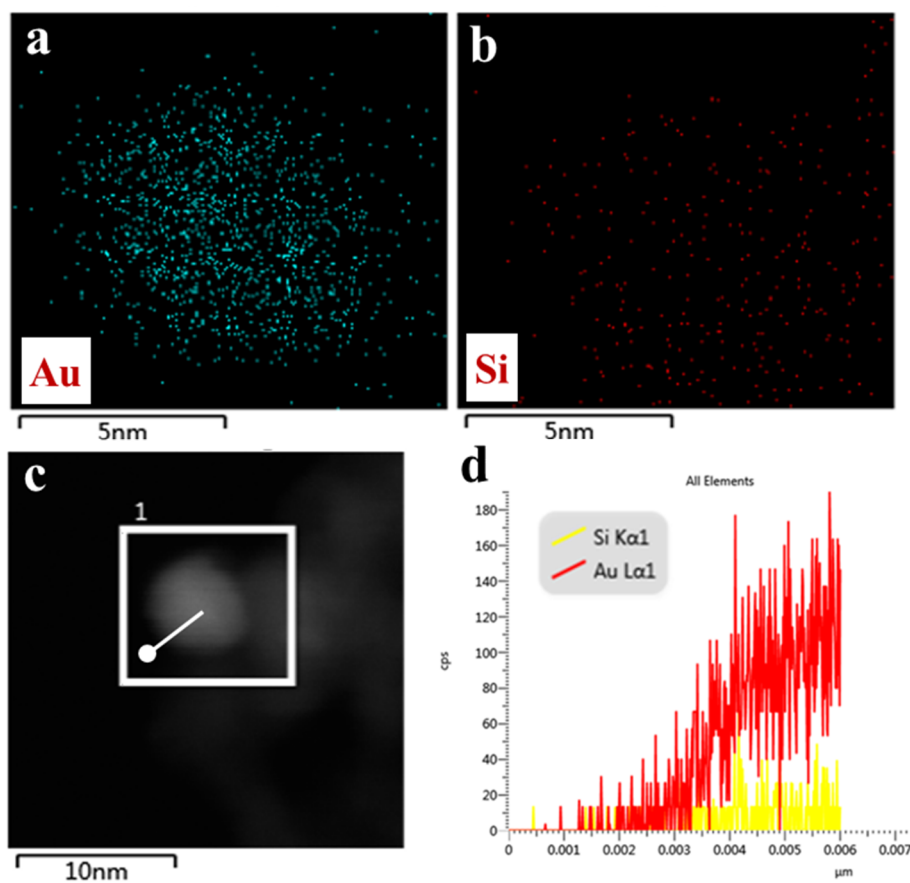


Figure S1. EDX-mapping of element distribution of (a) Au and (b) Si, and (c, d) the line analysis of particles in the Au@SiO₂/ZA-4 catalyst.

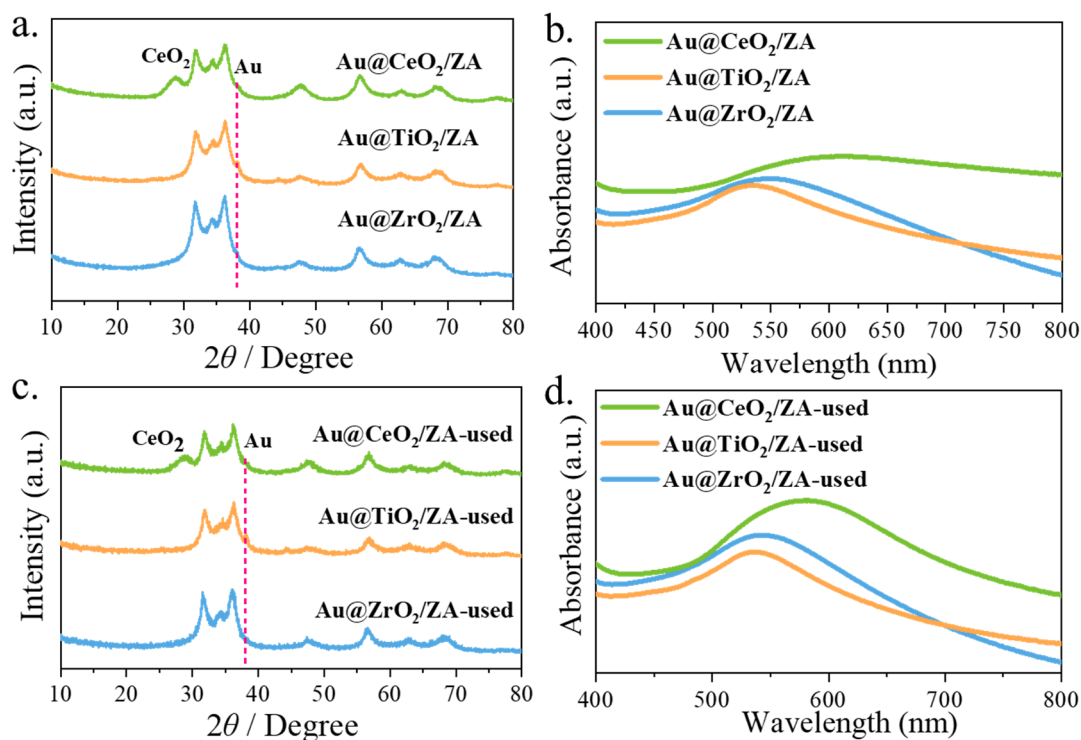


Figure S2. (a, c) XRD patterns and (b, d) UV-vis spectra of the (a, b) fresh and (c, d) spent Au@ZrO₂/ZA; Au@TiO₂/ZA and Au@CeO₂/ZA catalysts.

Table S2. Characterizations of the supported Au catalysts with different oxides coatings.

Entry	Catalysts	Au loadings (%) ^a	M (Zr/Ti/Ce) loadings (%) ^a	S _{BET} (m ² /g) ^b	Total Volume (cm ³ /g) ^b	Pore size (nm) ^b
1	Au@ZrO ₂ /ZA	1.1	7.5	68.7	0.30	3.7
2	Au@TiO ₂ /ZA	1.0	6.5	116.8	0.39	3.8
3	Au@CeO ₂ /ZA	0.9	8.3	121.9	0.31	3.4

^a Determined by ICP-OES; ^b Determined by N₂ physical absorption and desorption measurement.