Supplementary Information

Contributions of Oxide Support Reducibility for Selective Oxidation of 5-Hydroxymethylfurfural over Ag-Based Catalysts

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Section 1. Comparison of catalytic performance under different Ag-based catalytic systems

Table S1 Comparison of HMF oxidation under different Ag-based catalytic system.

Catalyst	Temperature (℃)	Time (h)	Conversion (%)	Selectivity (%)				Ref
				DFF	HMFCA	FFCA	FDCA	
Ag_2O	90	1	100	/	98	/	/	[1]
Ag_2O- $CaCO_3$	70	16	31	/	96	/	/	[2]
3% Ag/AC-SO_3H	150	18	100	77.9	/	/	/	[3]
Ag-TiO_2	80	32	70	/	97	/	/	[4]
Ag/MnO_2	120	5	75.4	0.8	27.3	30.3	41.6	This work

Section 2. Comparison of reaction rates based on ICP tests

Table S2 Reaction rate of catalysts for the oxidation of HMF.

Catalyst	Actual Ag loading [a] /wt %	Reaction rate [b] /$mol_{HMF}·g_{Ag}^{-1}·h^{-1}$
Ag/MnO_2	0.74	3214.5
Ag/ZrO_2	0.63	2062.3
Ag/SiO_2	0.53	1394.4

[a] Determined by ICP-OES. [b] **Reaction conditions:** catalyst (0.05 g), reactant (0.1 mmol), $NaHCO_3$ (0.2 mmol), solvent: H_2O (10 mL), 0.5 MPa O_2, 120 °C, 5 h, 600 rpm.

Section 3. Interaction mechanism of Ag with oxide supports

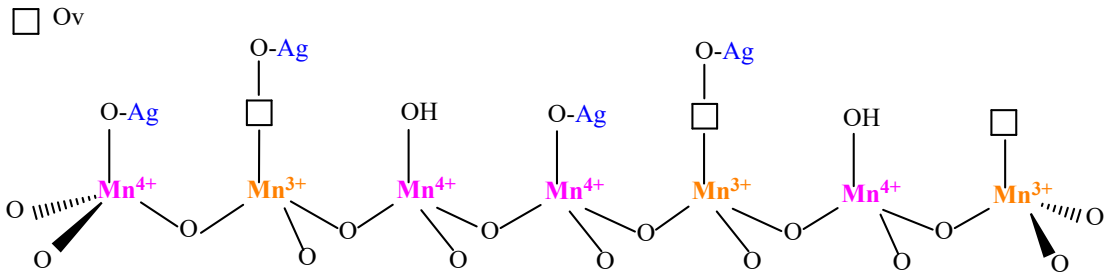


Figure S1. Schematic of Ov and OH formation on reducible MnO_2 for Ag anchoring[5], [6].

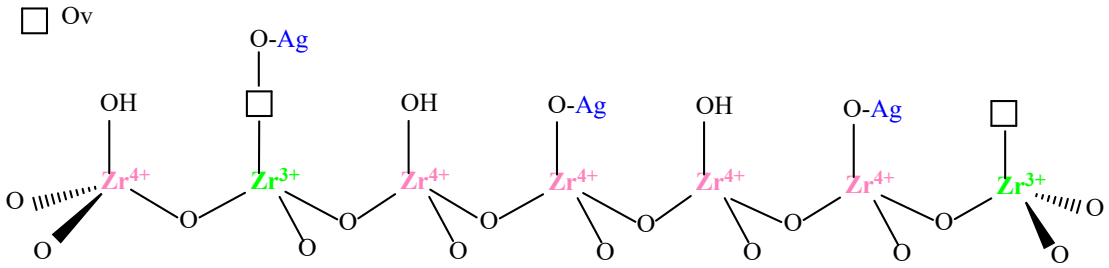


Figure S2. Schematic of Ov and OH formation on partially-reducible ZrO_2 for Ag anchoring[7], [4].

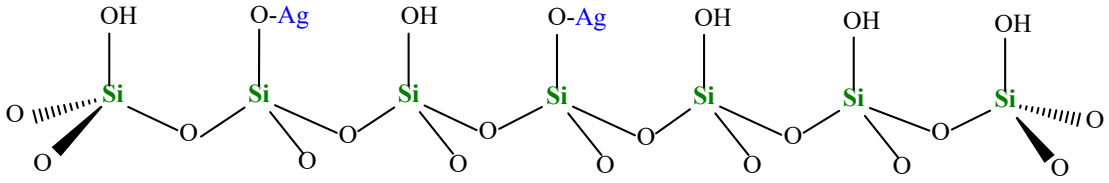


Figure S3. Schematic of OH formation on non-reducible SiO_2 for Ag anchoring[8], [9], [10].

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