Supporting Information

Highly dispersed Fe-Ce Mixed Oxide Catalysts Confined in Mesochannels toward Low-Temperature Oxidation Formaldehyde

Jianwei Fan[a], Xufei Niu[a], Wei Teng[a], Peng Zhang[a], Wei-xian Zhang[a], Dongyuan Zhao[b]*

[a] State Key Laboratory for Pollution Control, School of Environmental Science and Engineering, Shanghai Institute of Pollution Control and Ecological Security, Tongji University, Shanghai 200092, P. R. China

[b] Department of Chemistry, State Key Laboratory of Molecular Engineering of Polymers, Shanghai Key Lab of Molecular Catalysis and Innovative Materials, Laboratory of Advanced Materials, *i*ChEM, Fudan University, Shanghai 200092, P. R. China

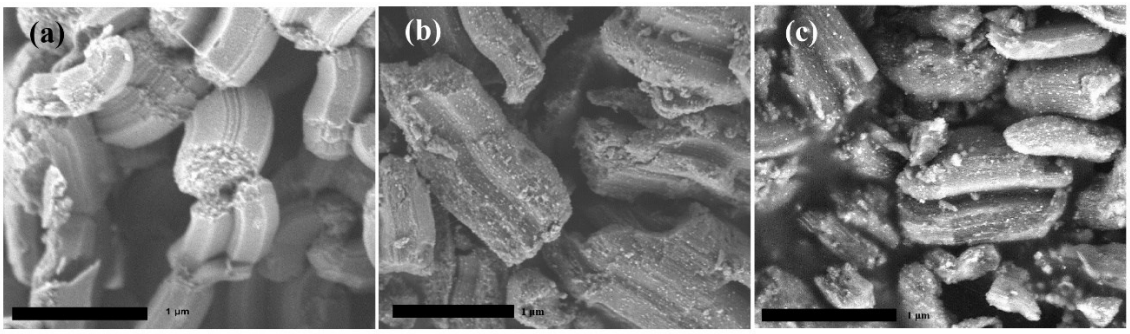

Fig. S1 SEM images of SBA-15 supported FeO_x-CeO_x catalysts with different contents and calcination temperatures: 10%FeO_x-CeO_x/SBA-15-350 (a), 30%FeO_x-CeO_x/SBA-15-350 (b) and 20%FeO_x-CeO_x/SBA-15-550 (c).

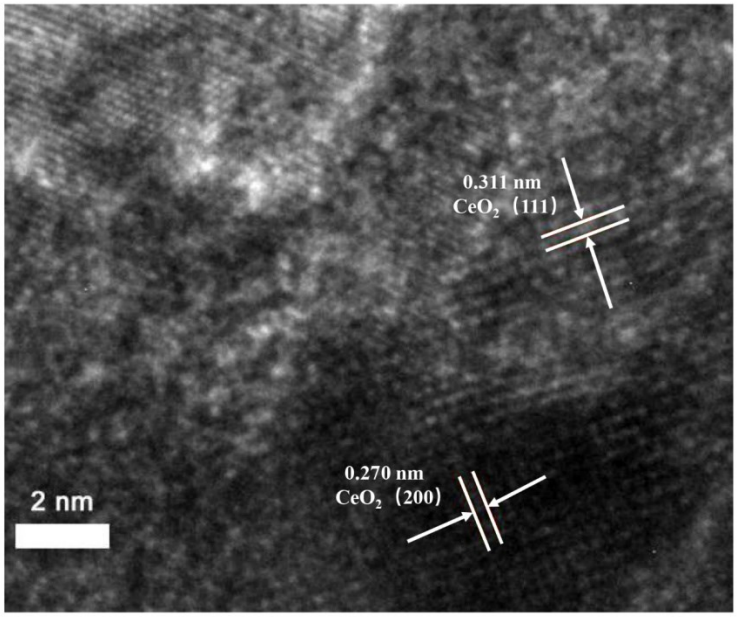

Fig. S2 HRTEM image of the 20%FeO_x-CeO_x/SBA-15-350 catalyst.

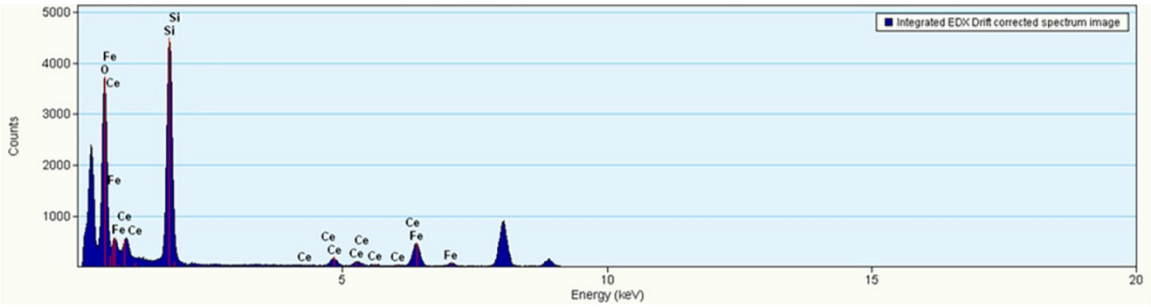

Fig. S3 EDS spectrum of the 20%FeO_x-CeO_x/SBA-15-350 catalyst.

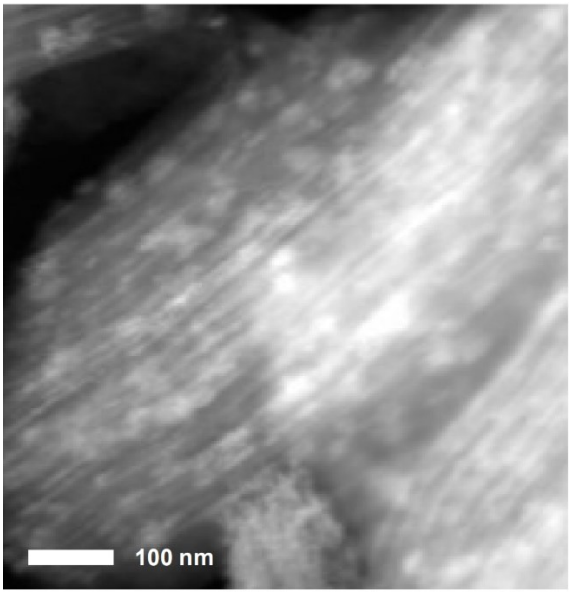

Fig. S4 HAADF-STEM image of 30% FeO_x-CeO_x/SBA-15-350.

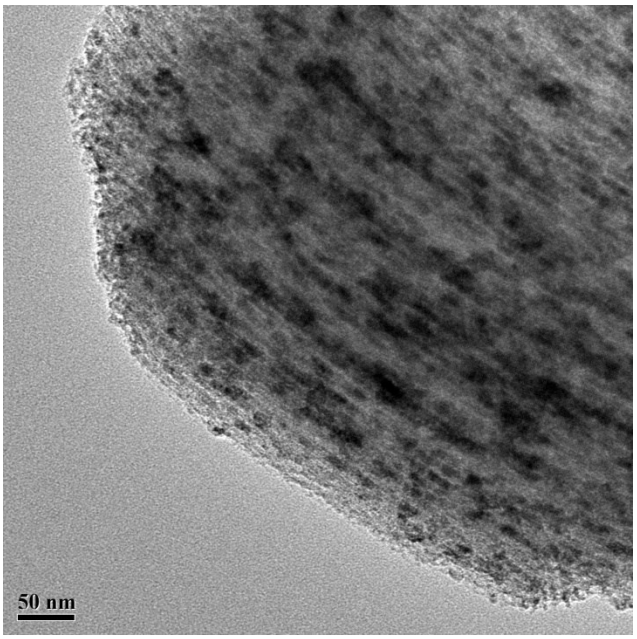

Fig. S5 TEM image of the 20%FeO_x-CeO_x/SBA-15-350-one pot catalyst prepared by one-pot method with the addition of Fe and Ce precursors at the same time.

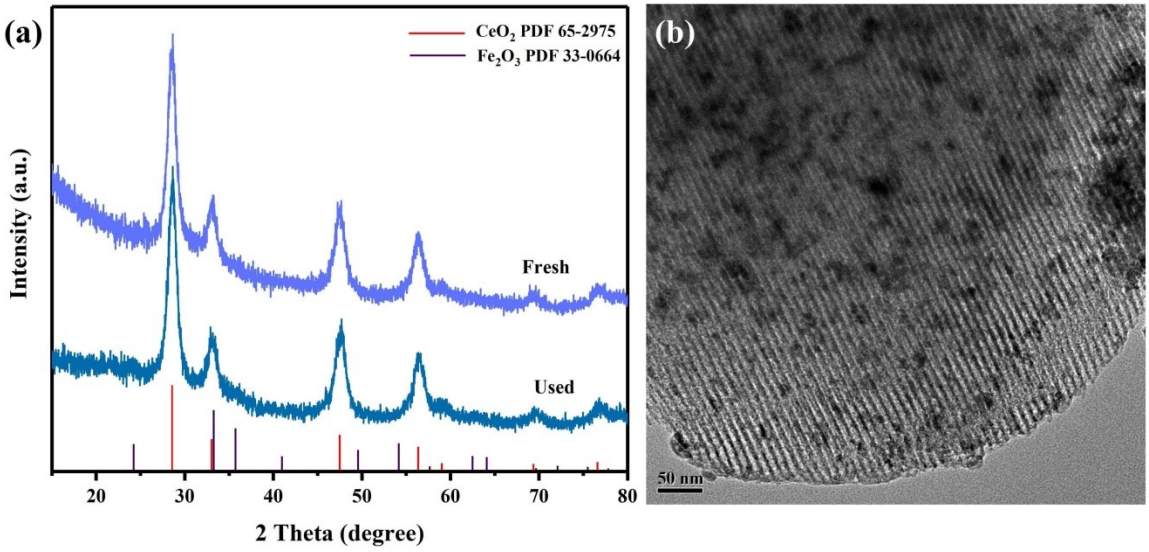

Fig. S6 XRD patterns and TEM image of the used 20%FeO_x-CeO_x/SBA-15-350 catalyst.

Table S1 The ratio of Ce^{3+} and $Ce4^{+}$ of the catalysts based on XPS results.

Catalyst	Ce^{3+}/ (Ce^{3+}+Ce^{4+})
CeO_2/SBA-15-350	6.30%
10% FeO_x-CeO_x/SBA-15-350	13.91%
20% FeO_x-CeO_x/SBA-15-350	18.02%
30% FeO_x-CeO_x/SBA-15-350	15.60%
20% FeO_x-CeO_x/SBA-15-550	12.12%

Table S2 Comparison of HCHO catalytic oxidation performance of FeO_x-CeO_x/SBA-15 with other catalysts reported in relevant literature.

Catalyst	HCHO concentration	Conversion	T (°C)	Ref.
FeO_x-CeO_x/SBA	9.8 μg/L	65% 94.9%	30 60	This work This work
Au-Pd/CeO_2	8 ppm	50% 86%	30 40	[1]
Au/FeO_x	6.25 mg/m^3	20% 52%	20 40	[2]
Au/CeO_2(3DOM)	8 ppm	32% 70%	20 40	[3]
OMS-2/SiO_2	15 ppm	52.3	25	[4]
NH_2-Pt/TiO_2	10 ppm	26%	30	[5]

Table S3 IR bands of the adsorption of HCHO on the 20% FeO_x-CeO_x/SBA-15-350 catalyst.

IR band wavenumber（cm^{-1}）								
-OH	C-H			HCOO-		DOM		Carbonat-es
υ(OH)	υ_{as}(CH)	υ_s(CH)	δ(CH)	υ_{as}(OCO)	υ_s(OCO)	δ(CH_2)	υ(CO)	υ(CO_3)
~3743	~2889	~2937	~2969	~1600	~1510	~1469	~1128	~1390
~3413								~1310

Supporting References

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