Supporting Information

Potassium associated manganese vacancy in birnessite-type manganese dioxide for airborne formaldehyde oxidation

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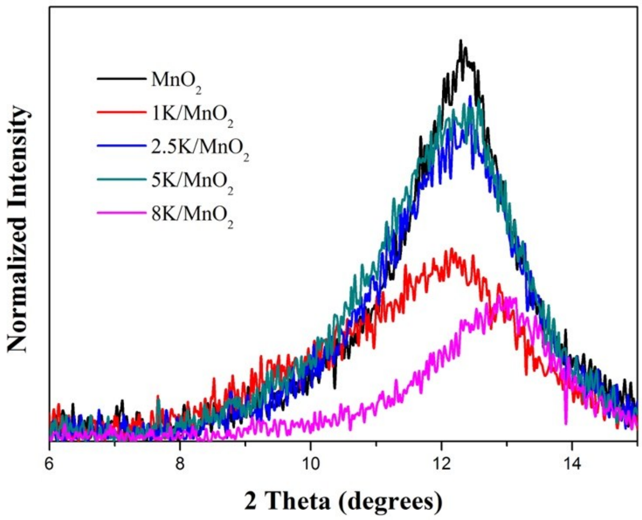

Figure S1. XRD analysis of different samples of the {001} diffraction peaks.

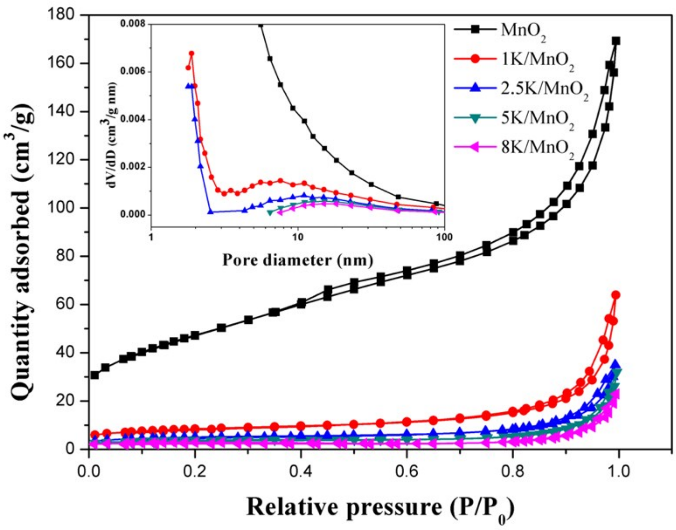

Figure S2. N_2 adsorption-desorption isotherm and pore size distributions of the catalysts.

Table S1. Survey of catalytic performance of MnO_2 catalysts for the oxidation of HCHO.

Catalysts	Test conditions	$T_{50\%}$ (℃)	Ref.
α-MnO_2	HCHO = 170 ppm; GHSV = 100 L/g h	90	[1]
β-MnO_2		140	
γ-MnO_2		125	
δ-MnO_2		58	
Birnessite	HCHO = 100 ppm; GHSV = 60 L/g h	93	[2]
Cryptomelane		85	
Ramsdellite		100	
MnOOH		105	
Pyrolusite	HCHO = 400 ppm; GHSV = 18 L/g h	150	[3]
Cryptomelane		110	
Todorokite		140	
MnO_x/SBA-15	HCHO = 150 ppm; GHSV = 30 L/g h	107	[4]
Porous Birnessite	HCHO = 460 ppm; GHSV = 30 L/g h	85	[5]
MnO_x-CeO_2	HCHO = 580 ppm; GHSV = 30 L/g h	>80	[6]
Honeycomb MnO_2	HCHO = 100 ppm; GHSV = 50 L/g h	~75	[7]
Hollow MnO_2		~58	
α-MnO_2	HCHO = 100 ppm; GHSV = 30 L/g h	100	[8]
β-MnO_2		150	
3D-MnO_2		90	
MnO_2	**HCHO = 100 ppm; GHSV = 90 L/g h**	**68**	**This work.**
1K/MnO_2		**56**	
2.5K/MnO_2		**61**	
5K/MnO_2		**78**	
8K/MnO_2		**86**	

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