catalysts

MDPI

Supporting Information

High Performance of Mn-Doped $MgAlO_x$ Mixed Oxides for Low Temperature NO_x Storage and Release

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Table S1. Summary of catalysts NO_x storage capacity and reaction conditions.

Catalysts	Calcination Temperature (°C)	S_{BET} ($m^2 \cdot g^{-1}$)	NSC ($mg \cdot g^{-1}$)			Refs
			150 °C	200 °C	250 °C	
$MnMgAlO_x$	600	133	9.6	12.8	10.1	This work
$Co_1Mg_2Al_1O_x$	400	243.3	9.3	-	13.5	[1]
CoMgFeAlO	800	23.8	2.4 (100°C)			[2]
Ag/MgAlO	500	180	7.3	6.6	6.1	[3]
Ca_2Co_1AlO	800	72	4.5 (100°C)	-	-	[4]
RuMgAlO	600	280	-	-	3.6	[5]
$Mn_{0.4}Sn_{0.3}Ce_{0.3}O$	500	120.9	8.7(100°C)	-	-	[6]
MnO_x–SnO_2	500	83.1	8.7(100°C)	-	-	[7]
$La_{0.7}Sr_{0.3}MnO_3$	700	-	-	4.9	-	[8]
$Pt/BaO/CeO_2/Al_2O_3$	500	93	-	7.4	-	[9]
$1\%Pt/BaO/Al_2O_3$	500	160	3.2	-	-	[10]

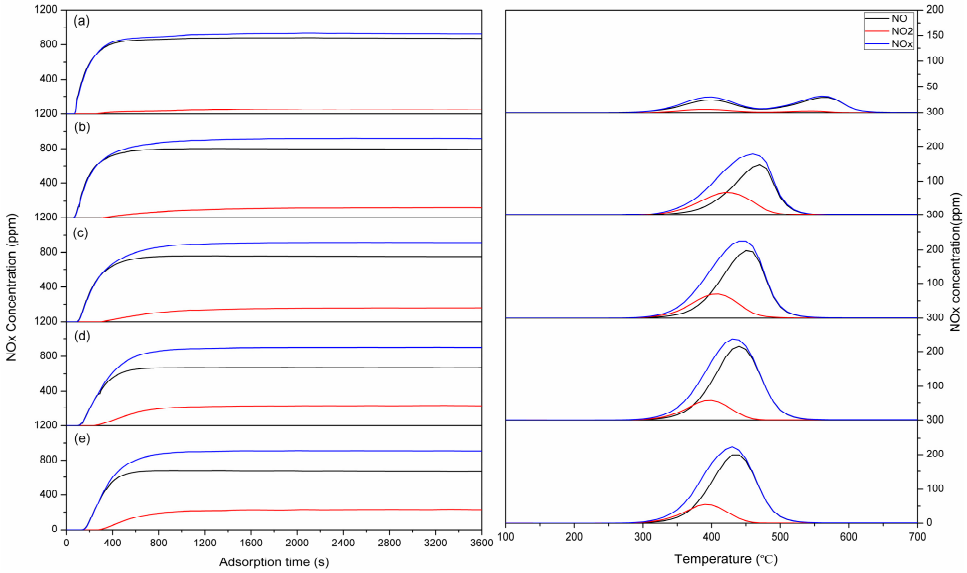


Figure S1. NO_x adsorption and desorption profiles of the samples: (a) Mn0, (b) Mn5, (c) Mn10, (d) Mn15, (e) Mn20 catalysts at 300 °C. (Reaction conditions: 1000 ppm NO, 5 vol.% O_2, balanced with He, 100 mL/min; STP = 0 °C, 1 atm).

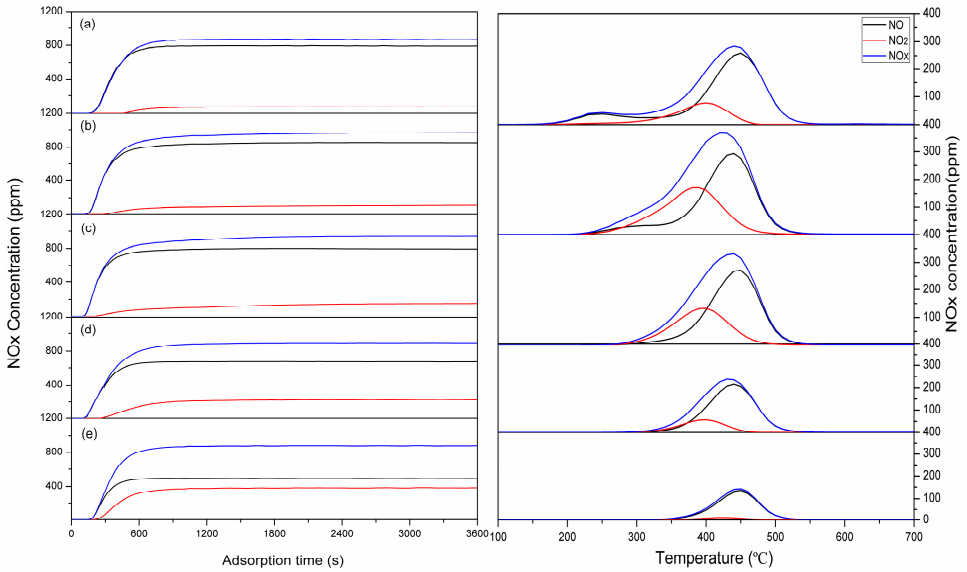
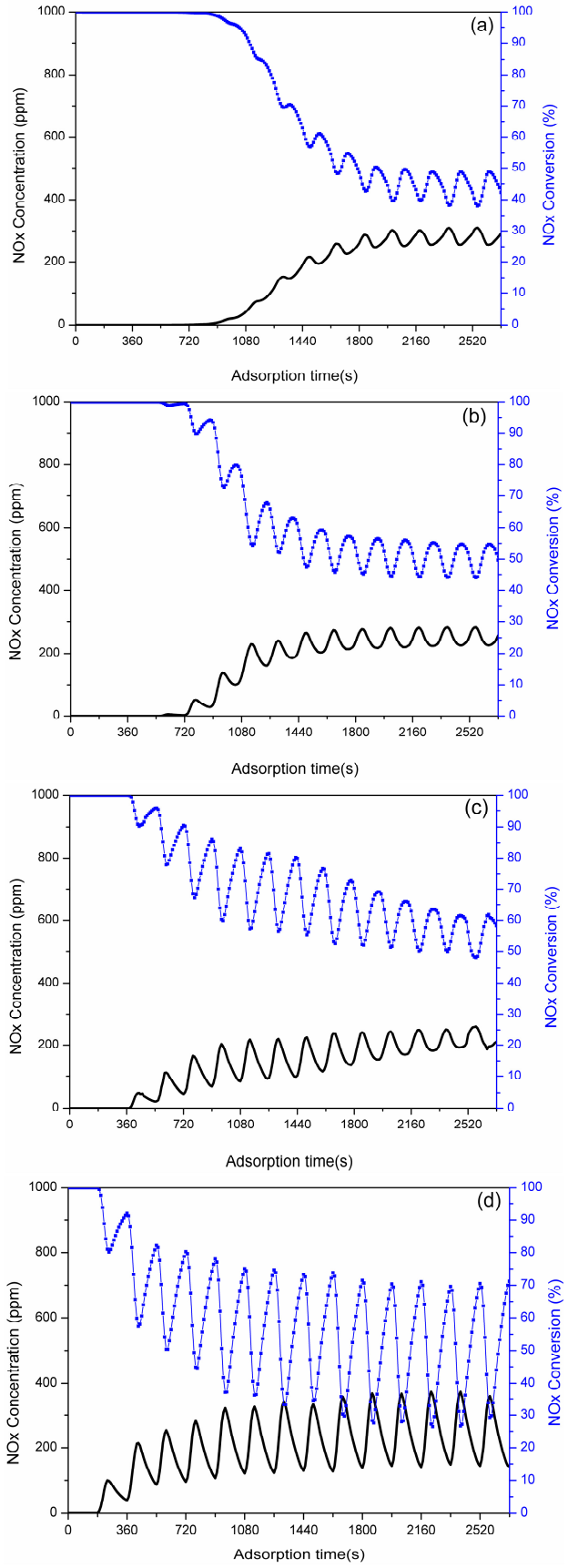


Figure S2. NO_x adsorption and desorption profiles of Mn15 catalyst at different temperatures: (a) 150 °C, (b) 200 °C, (c) 250 °C, (d) 300 °C, (e) 350 °C. (Reaction conditions: 1000 ppm NO, 5 vol.% O_2, balanced with He, 100 mL/min; STP = 0 °C, 1 atm).


(a)
NOx Concentration (ppm)
NOx Conversion (%)
Adsorption time(s)
(b)
NOx Concentration (ppm)
NOx Conversion (%)
Adsorption time(s)
(c)
NOx Concentration (ppm)
NOx Conversion (%)
Adsorption time(s)
(d)
NOx Concentration (ppm)
NOx Conversion (%)
Adsorption time(s)

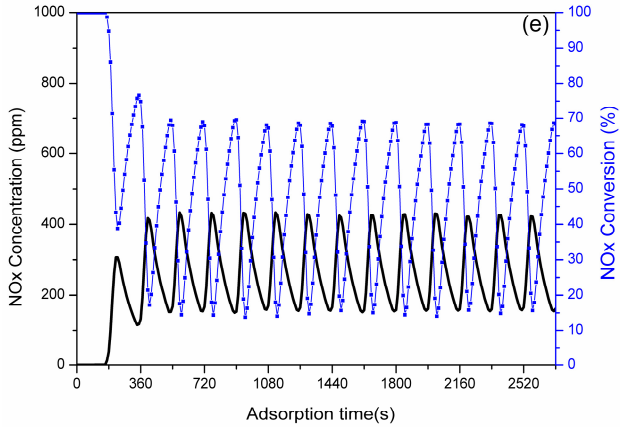


Figure S3. lean-rich cycling performance of Mn15 sample at different temperatures: (a) 150°C, (b) 200 °C, (c) 250 °C, (d) 300 °C, (e) 350 °C. (lean condition: 500 ppm NO, 7.5 vol.% O_2 , balanced with He, 50 mL/min; rich condition: 5 vol.% H_2, balanced with N_2, 50 mL/min; STP = 0 °C, 1 atm).

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