Supporting Information

The role of platinum on the NO_x storage and desorption behavior of ceria: An online FT-IR study combined with *in situ* Raman and UV-Vis spectroscopy

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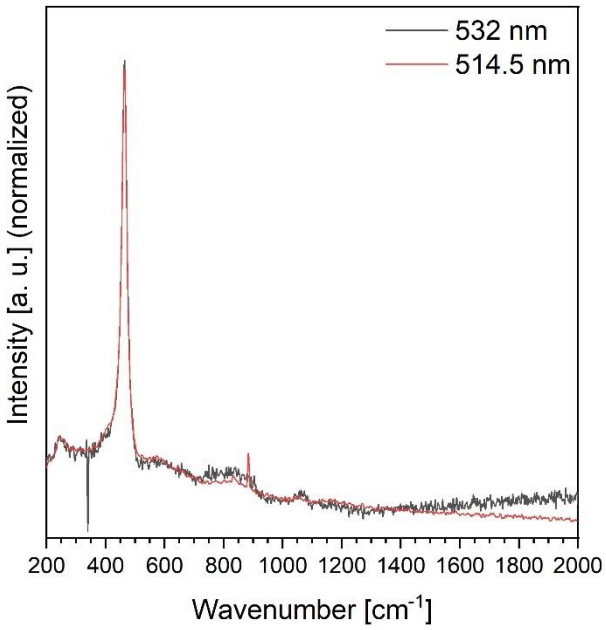

Fig. S1 Raman spectra of reductively pretreated Pt/CeO_2 at 514.5 and 532 nm laser excitation.

Table S1 Surface composition of Pt/CeO_2 samples after respective treatment determined by XPS analysis.

sample	Pt [at%]	C [at%]	O [at%]	Ce [at%]	O/Ce
Pt/CeO_2 as synthesized	0.24	14.3	56.6	28.9	1.96
Pt/CeO_2 ox.	0.17	7.2	61.3	31.3	1.96
Pt/CeO_2 red.	0.17	13.0	55.7	31.1	1.79

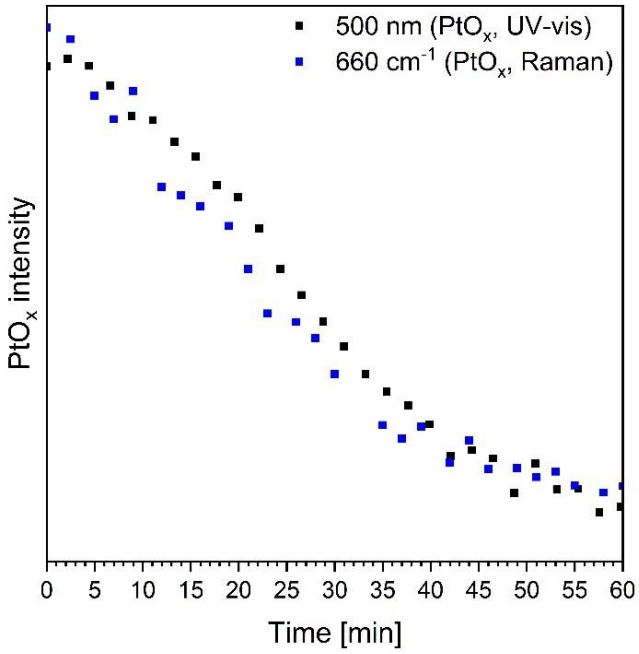

Fig. S2 Temporal behavior of PtO_x signals in UV-Vis (500 nm) and Raman spectra (660 cm^{-1}) during NO_x storage in oxidatively pretreated Pt/CeO_2 at 30°C.

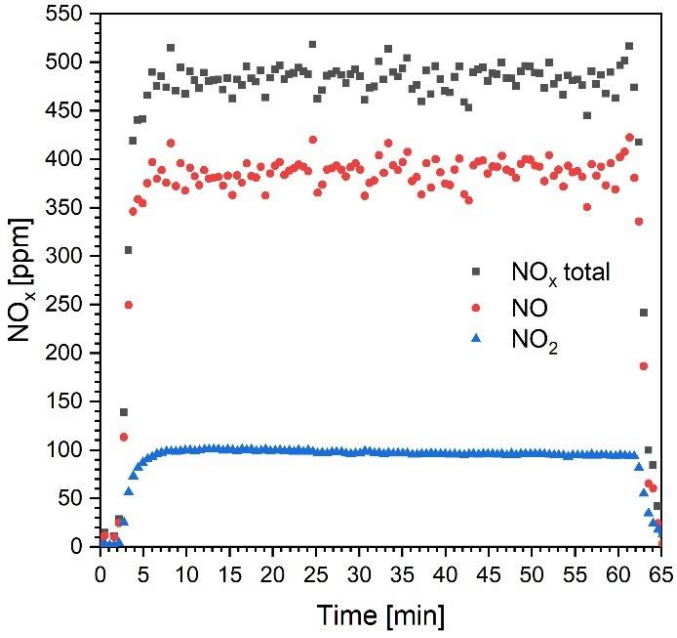

Fig. S3 NO_x breakthrough of the empty cell measured at 30°C by gas phase FT-IR spectroscopy.

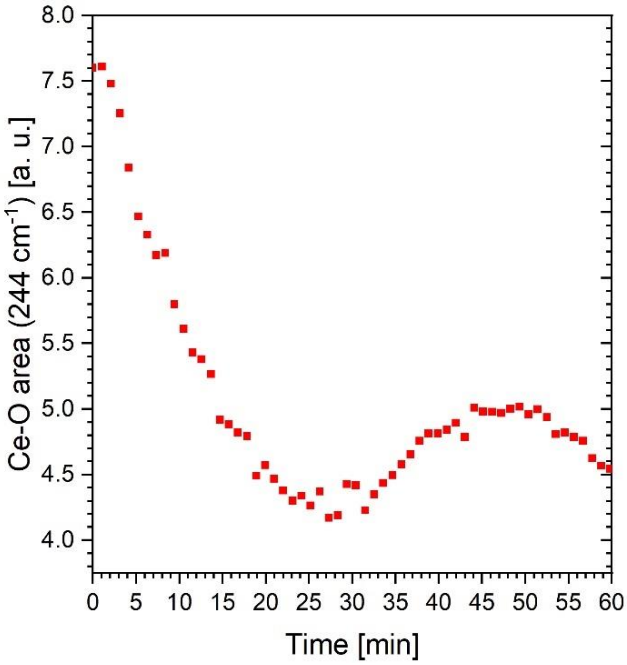

Fig. S4 Temporal behavior of Ce-O area during NO_x storage with oxygen at 30°C in oxidatively pretreated ceria.

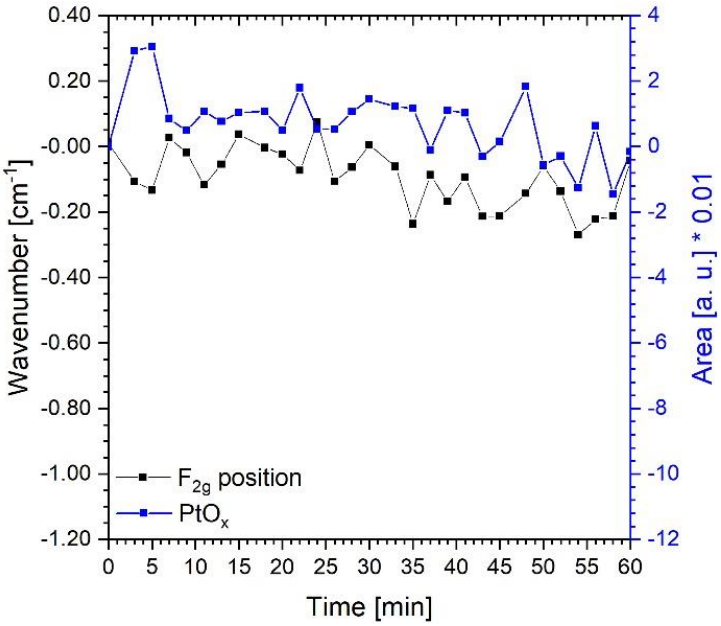

Fig. S5 Temporal behavior of Pt-O and F_{2g} position during NO_x storage without oxygen at 30°C in oxidatively pretreated Pt/CeO_2.

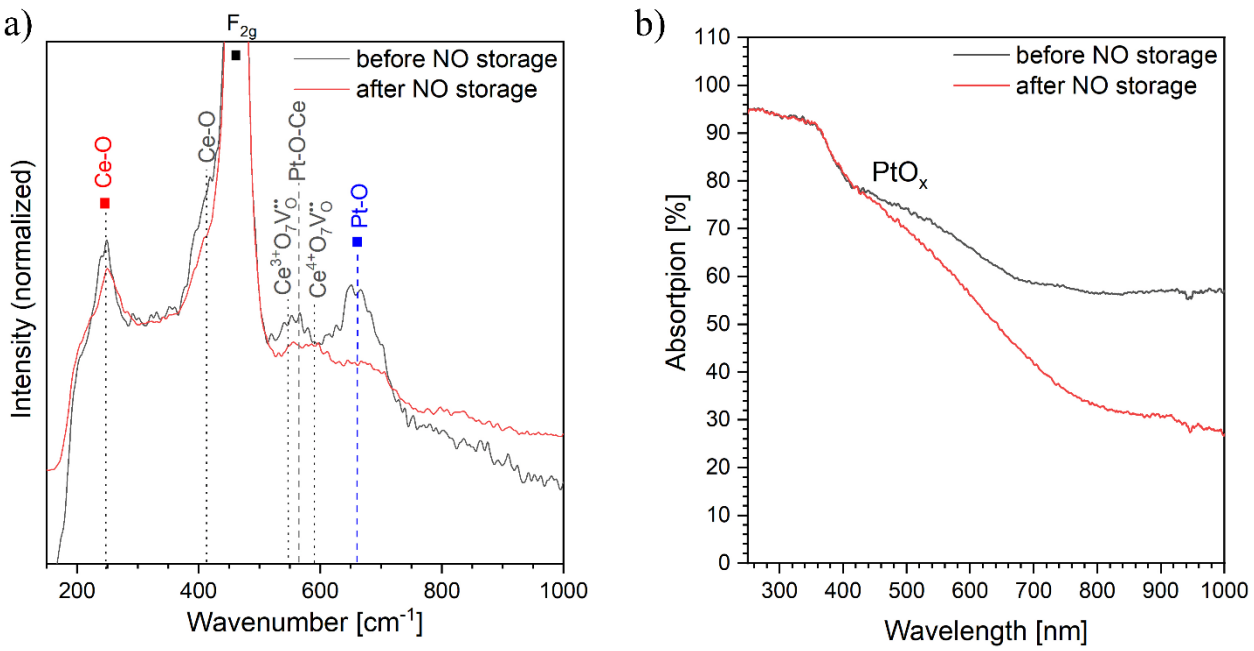

Fig. S6 a) Raman spectra within the range 150-1000 cm^{-1} and b) UV-vis spectra before (black) and after (red) NO_x storage at 30°C with oxygen in oxidatively pretreated Pt/CeO_2.

Table S2 Percentage of stored NO_x released and NO/NO_2 ratio of desorbed NO_x at the respective temperature ranges as determined by FT-IR gas-phase analysis.

sample	30-100°C		100-200°C		200-300°C		300-400°C		400-500°C		
	NO_x [%]	NO/NO_2	NO_x [%]	NO/NO_2	NO_x [%]	NO/NO_2	NO_x [%]	NO/NO_2	NO_x [%]	NO/NO_2	NO_x total [%]
CeO_2 ox.	2.4	3.3	1.3	0.4	17.1	0.1	48.9	0.2	20.9	1.3	90.6
Pt/CeO_2 ox.	9.3	3.4	18.5	0.2	28.3	0	21.6	0.3	11.5	1.2	89.2
CeO_2 red.	31.5	3.0	26.6	2.1	3.0	0.6	10.5	0.4	14.3	1.4	85.9
Pt/CeO_2 red.	39.8	2.9	15.7	2.5	1.8	0	13.1	0.4	10.8	1.5	81.2