The Superior Performance of Sol-Gel Made Ce-O-P Catalyst for Selective Catalytic Reduction of NO with NH_3

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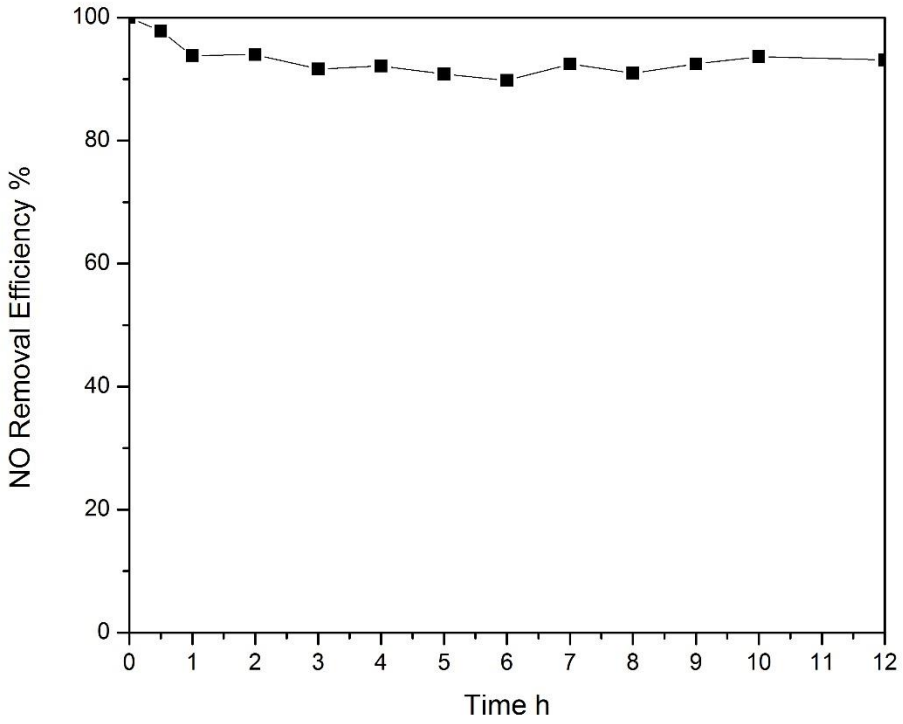
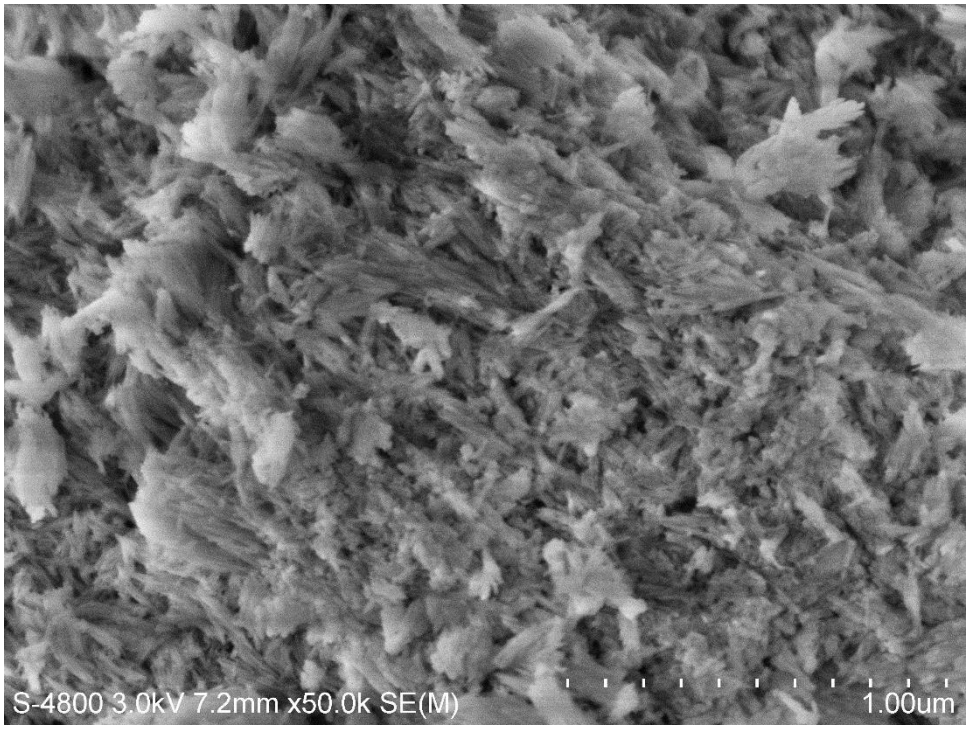
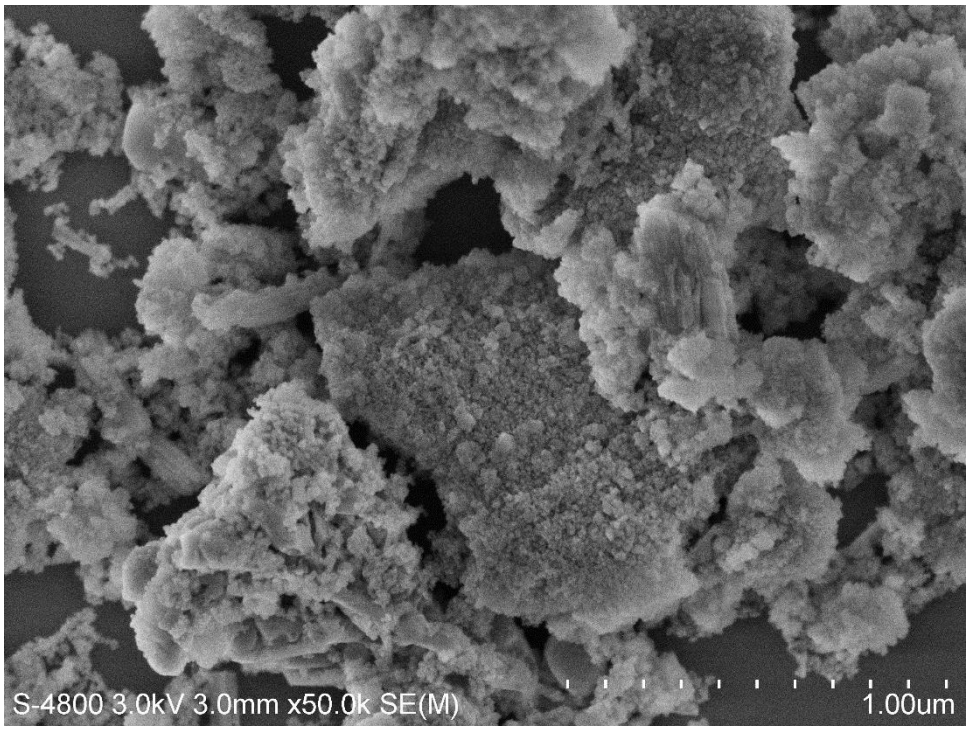


Figure S1. H_2O duration of Ce−O−P-SG catalyst in SCR process. ([NH_3] = [NO] = 600 ppm, [O_2] = 3 %, [H_2O] = 5 vol %, N_2 balance, GHSV = 40000 h^{-1})


S-4800 3.0kV 7.2mm x50.0k SE(M)
1.00um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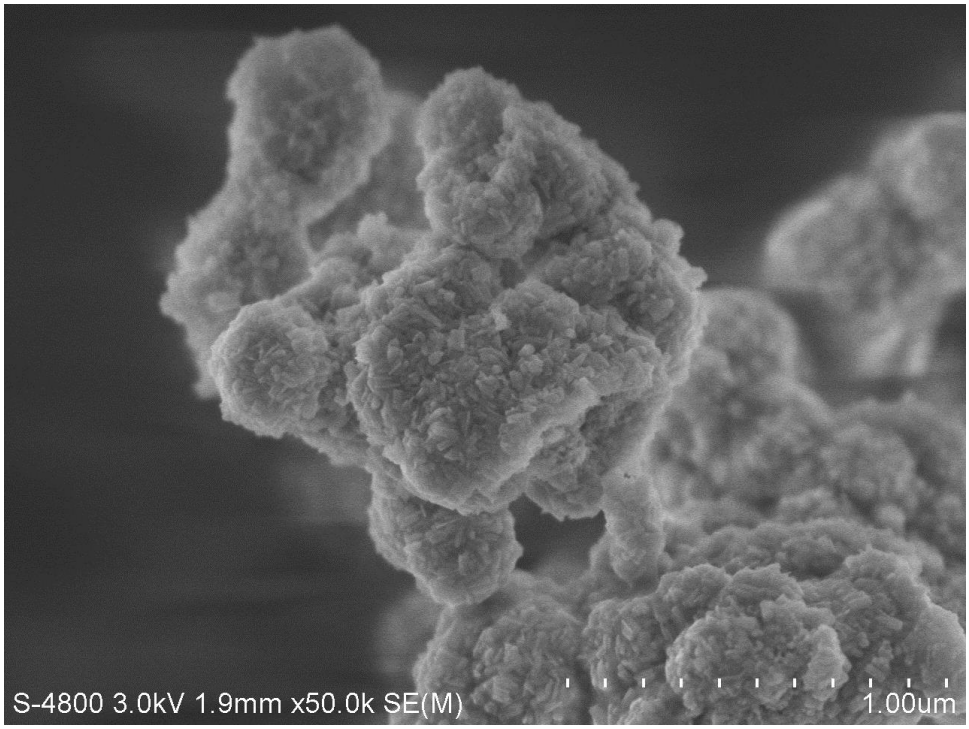

Figure S2. SEM results of the Ce−O−P catalysts: (a) Ce−O−P-SG, (b) Ce−O−P-HT, (c) Ce−O−P-CP.

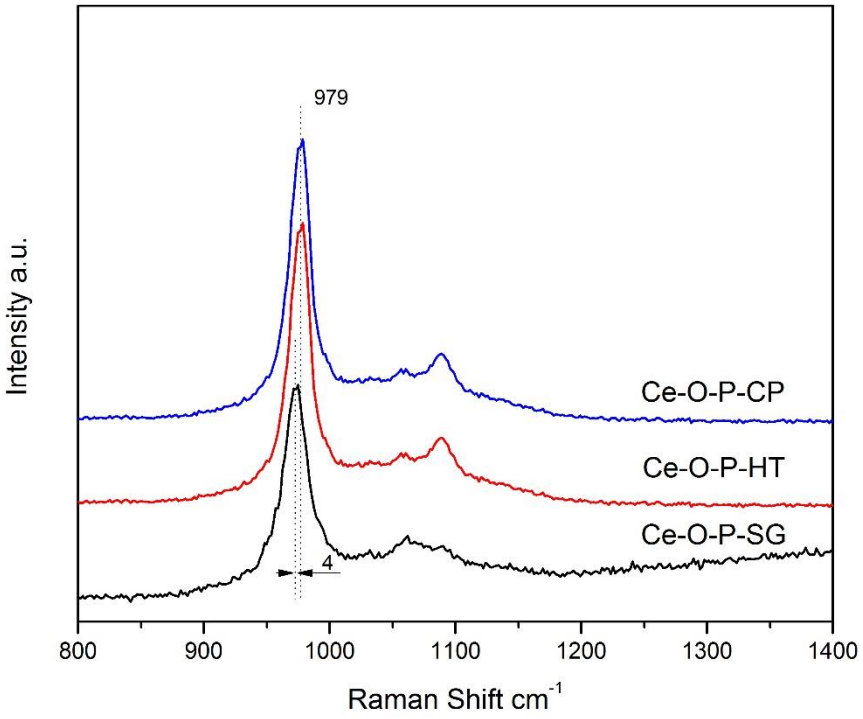

Figure S3. Raman spectra (n = 514 nm) of Ce−O−P-SG, Ce−O−P-HT and Ce−O−P-CP catalysts.

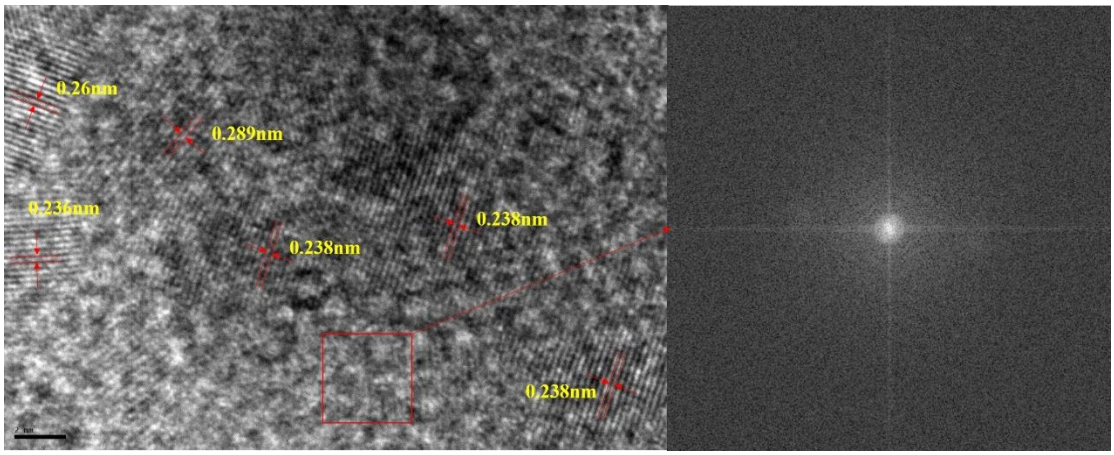

Figure S4. HR-TEM image of Ce−O−P-SG catalyst, the image in right is the FFT pattern of region in red square and reveals no crystal in the region.

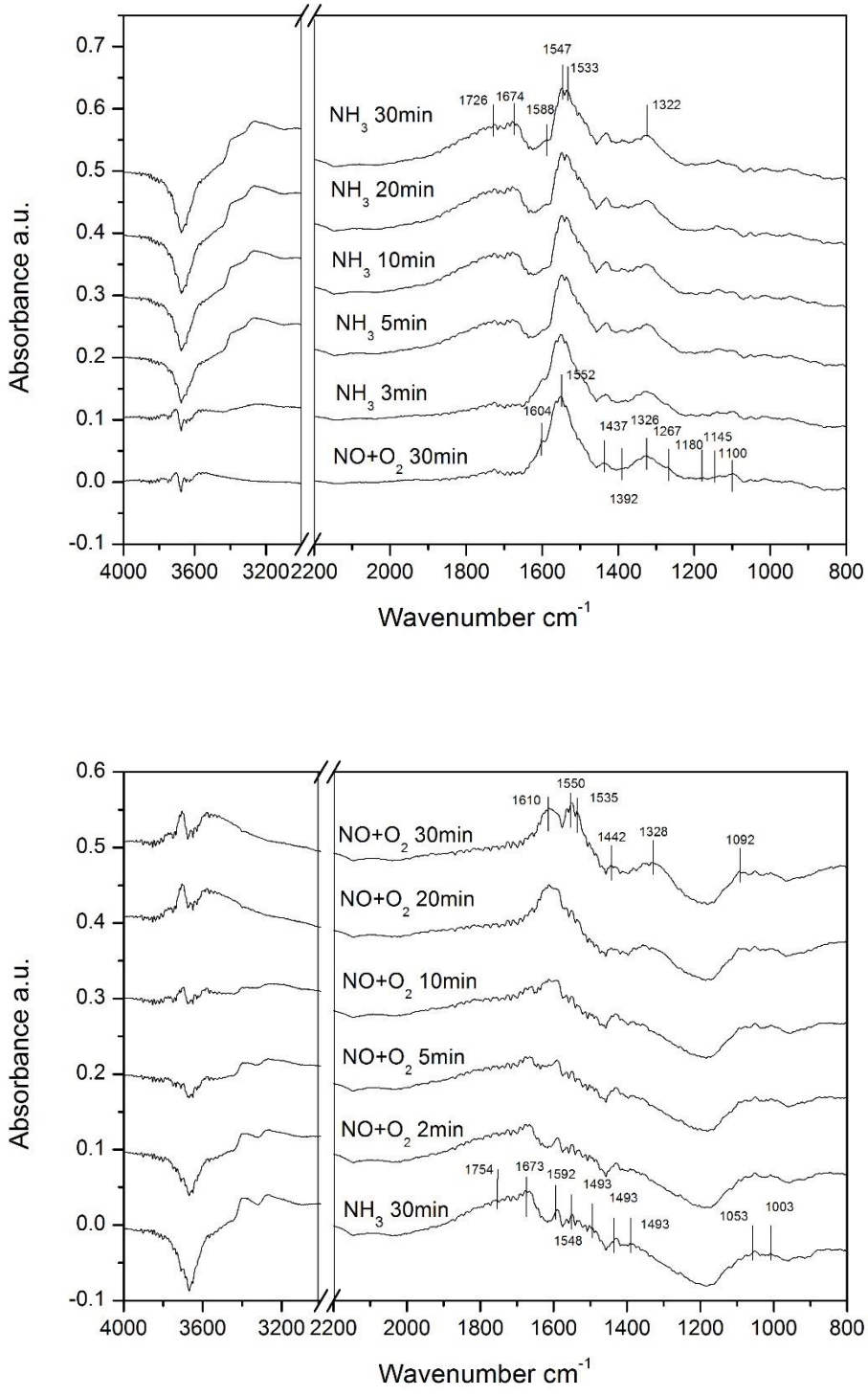

Figure S5. (a) DRIFT spectra taken at 250 °C upon passing 1000 ppm of NH_3 + 3 % O_2/He over the NO + O_2 pre-sorbed on Ce−O−P-SG catalyst at different time; (b) DRIFT spectra taken at 250 °C upon passing 1000 ppm of NO_2 + 3 % O_2/He over the NH_3 pre-sorbed on Ce−O−P-SG catalyst at different time.

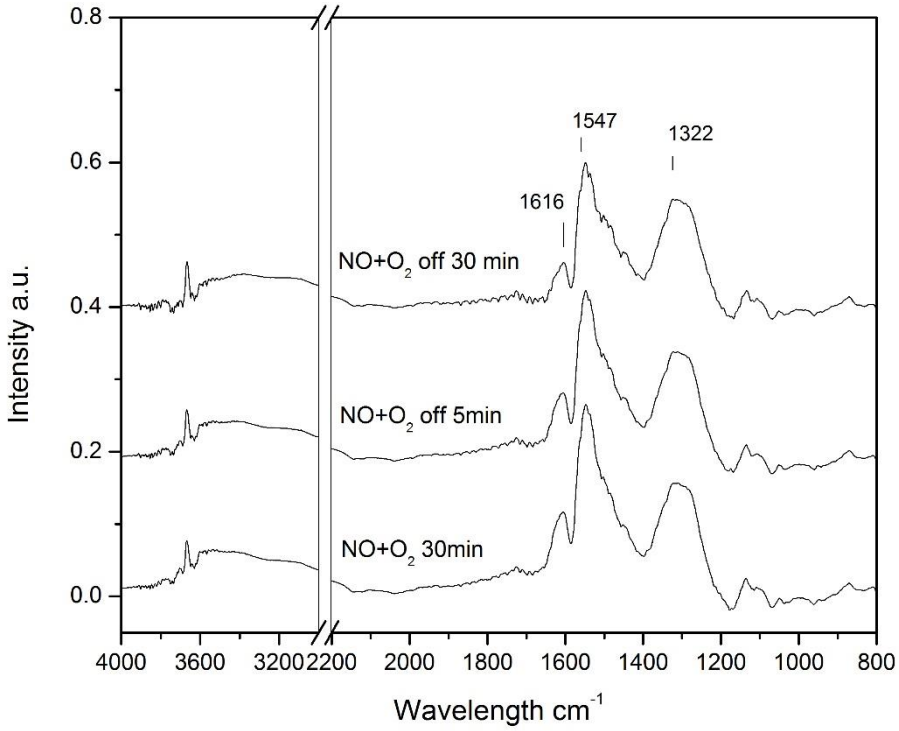

Figure S6. DRIFT spectra taken at 250 °C upon passing pure He over 1000 ppm of NO + 3 % O_2 pre-sorbed on Ce−O−P-SG catalyst at different time.

Table S1 Bulk atomic concentration of the Ce-O-P catalysts.

Catalysts	Ce %	P %	Ce/P	O %
Ce-O-P-SG	16.7	18.7	0.89	64.6
Ce-O-P-HT	17.5	19.6	0.89	63.0
Ce-O-P-CP	19.2	21.7	0.88	59.1

Table S2 S deposition on the Ce-O-P catalysts which were pretreated in SCR process at the presence of 100 ppm SO_2 and 5 vol. % H_2O for 10 h

Catalysts	EDX %	XPS %
Ce-O-P-SG	1.56	1.37
Ce-O-P-HT	0.65	0.87
Ce-O-P-CP	0.59	0.58