Supporting information

tert-Butylation of naphthalene by tertiary butanol over HY zeolite and cerium-modified HY catalysts

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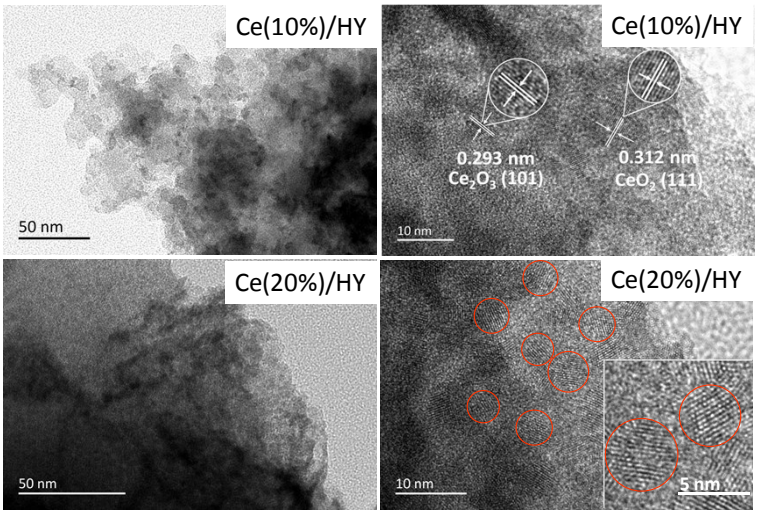

Fig. S1 HRTEM images of cerium modified HY catalysts.

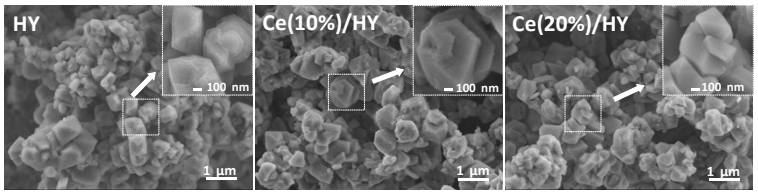

Fig. S2 SEM images of the parent HY and cerium modified HY catalysts.

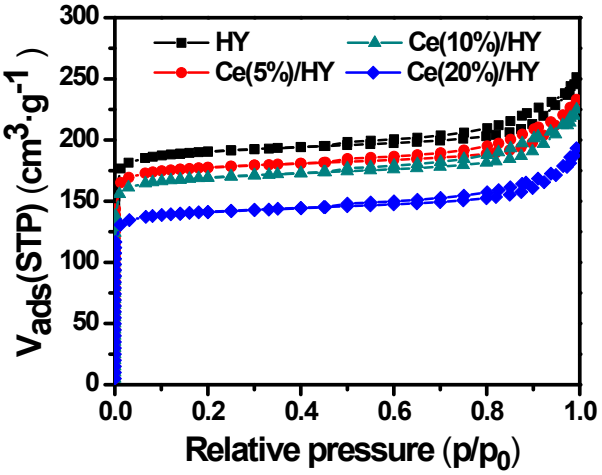

Fig. S3 N_2 adsorption-desorption isotherms of the parent and cerium modified HY catalysts.

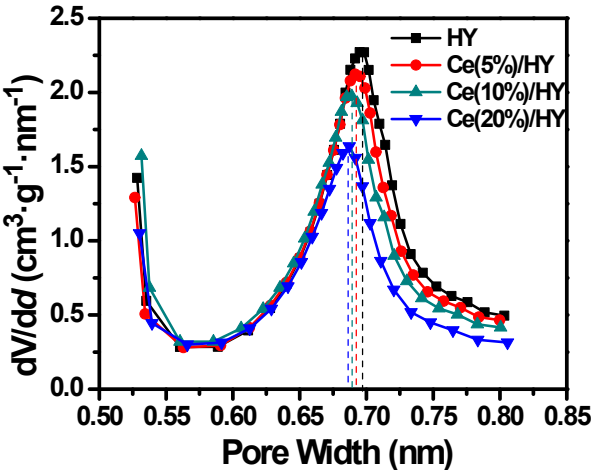

Fig. S4 The Horvath-Kawazoe micropore distribution of the parent and cerium modified HY catalysts.

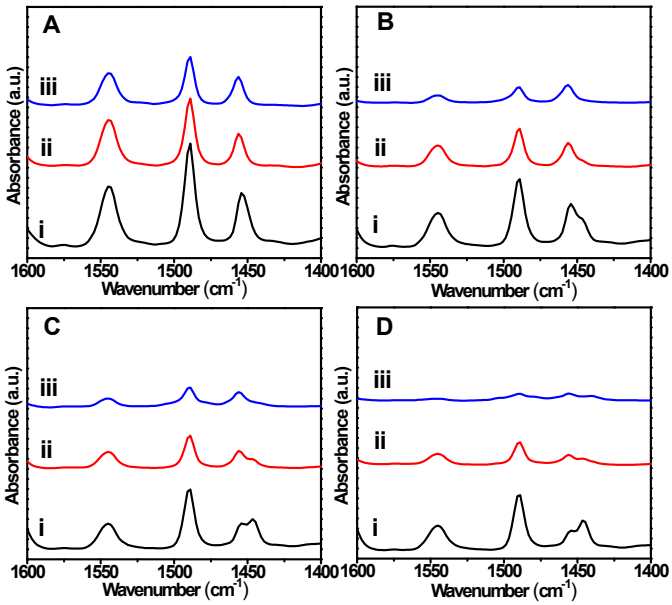

Fig. S5 IR spectra in the pyridine vibration region of HY (A), Ce(5%)/HY (B), Ce(10%)/HY (C), Ce(20%)/HY (D) catalysts after pyridine adsorption and then desorption at 150 °C (i), 350 °C (ii), 450 °C (iii) for 1 h, respectively.

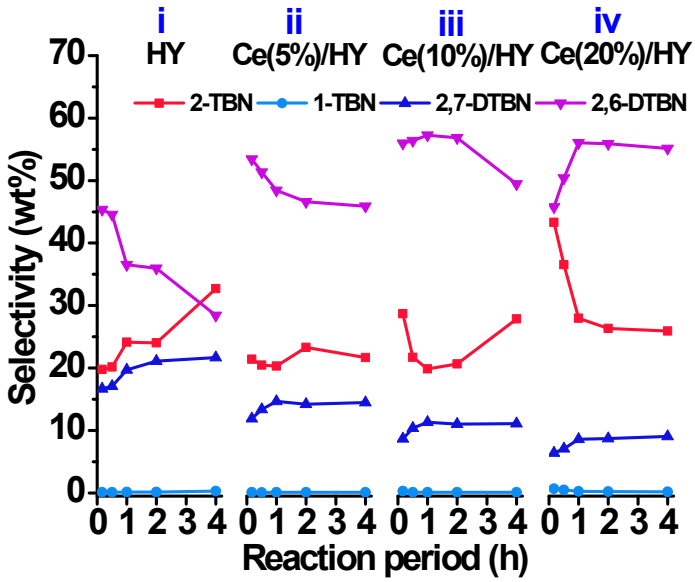

Fig. S6 TBN and DTBN isomers distribution for naphthalene *tert*-butylation over HY and cerium modified HY catalysts.

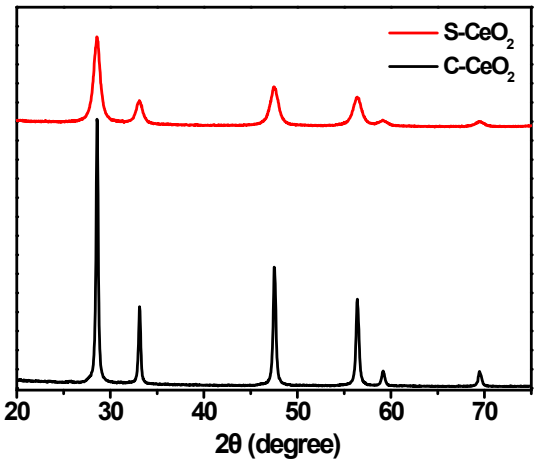

Fig. S7 XRD patterns of synthetic CeO_2 (S-CeO_2) and commercial CeO_2 (C-CeO_2).
(CeO_2 was synthesized with cerium nitrate according to the calcination heating procedure that was adopted in the process of preparing modified catalysts)

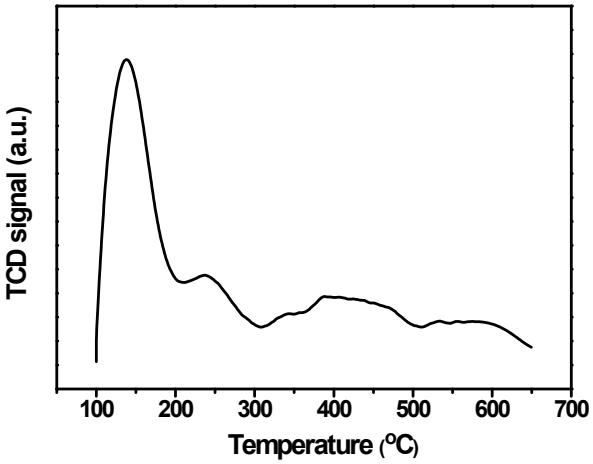

Fig. S8 NH_3-TPD profile of synthetic CeO_2.

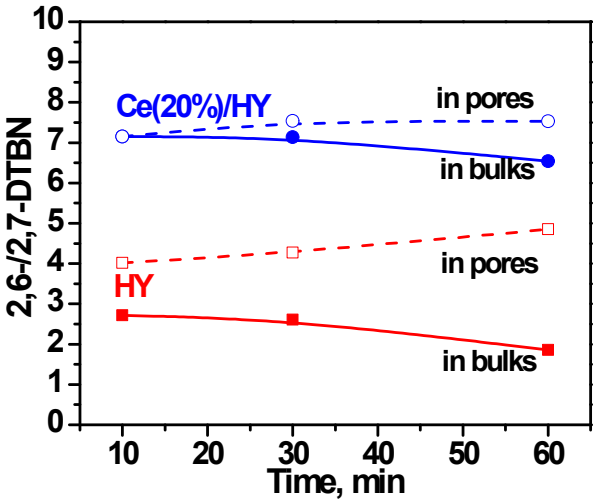

Fig. S9 Comparison of 2,6-/2,7-DTBN in products encapsulated in the pores and that in the bulk products with reaction periods.

(Reaction temperature = 160 ^{o}C, Catalyst weight = 200 mg.)