Supplementary Information for

Methyl N-phenyl carbamate synthesis over Zn/Al/Ce mixed oxide derived from hydrotalcite-like precursors

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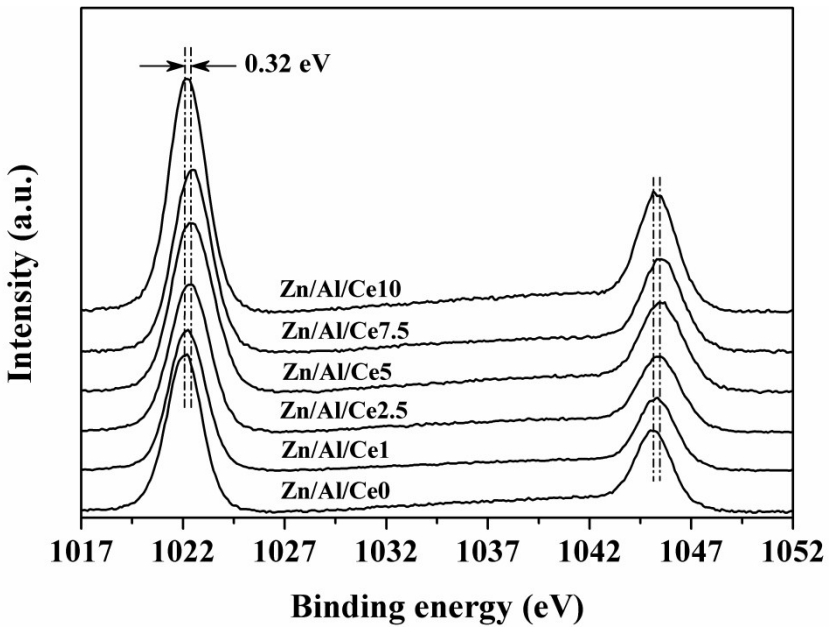

Fig. S1 XPS of Zn 2p core-level for the catalysts with different cerium content.

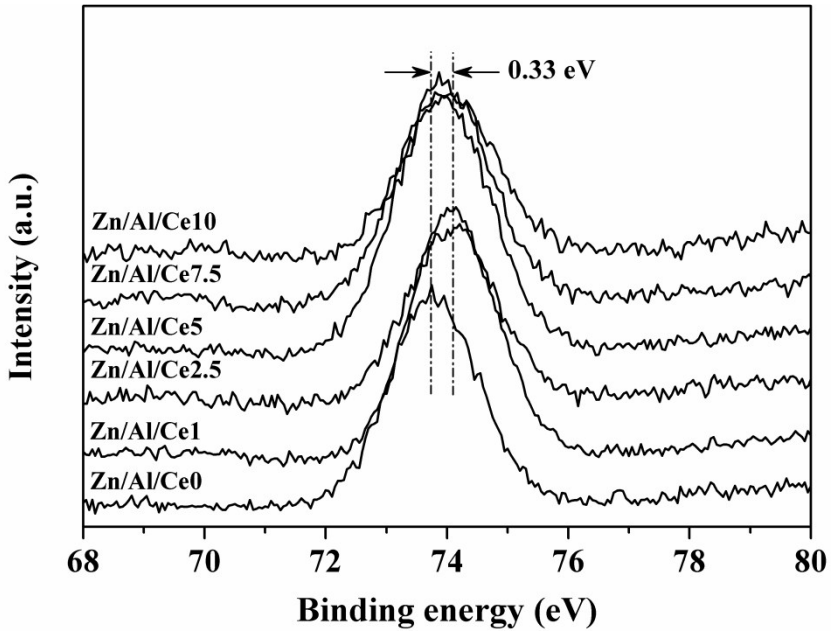

Fig. S2 XPS of Al 2p core-level for the catalysts with different cerium content.

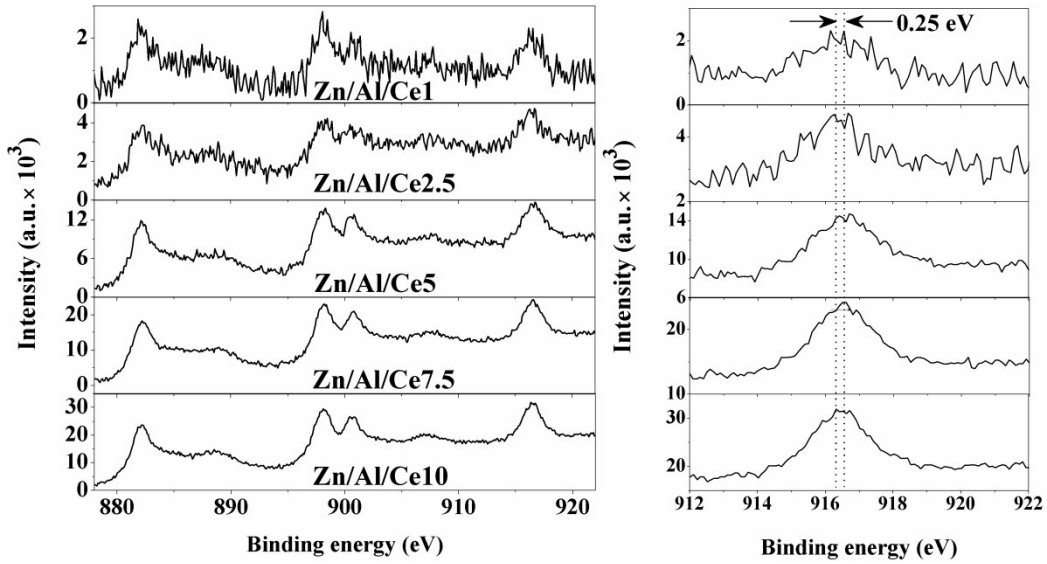

Fig. S3 XPS of Ce 3d core-level for the catalysts with different cerium content.

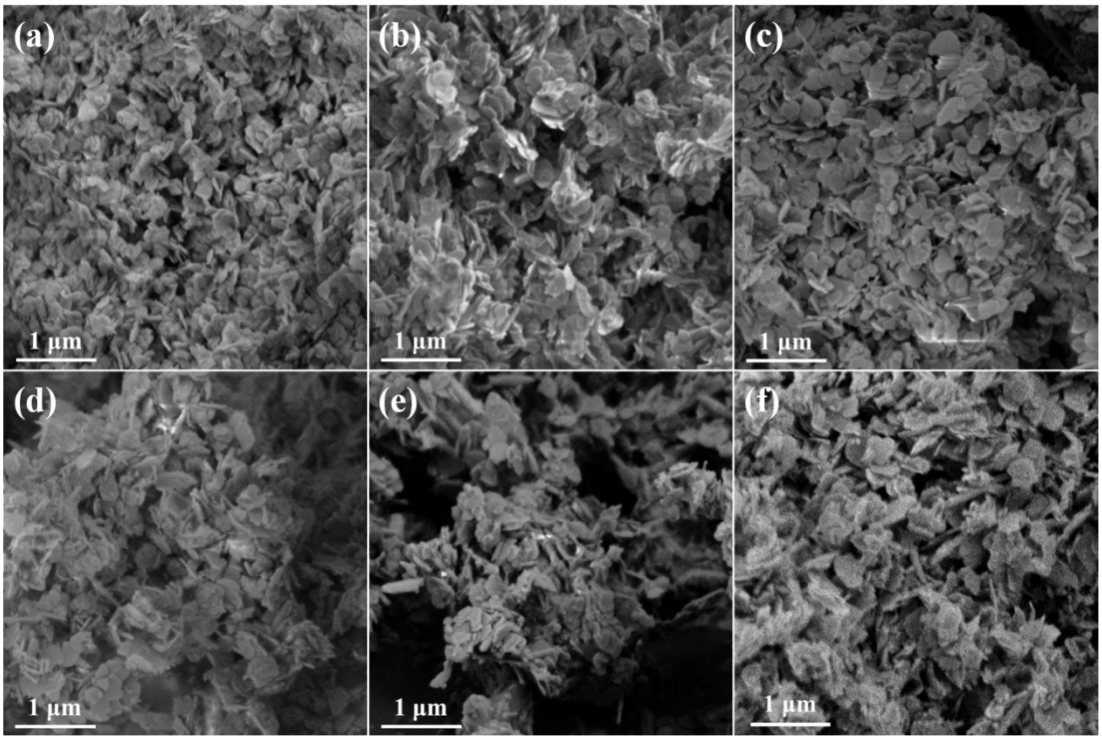

Fig. S4 SEM images of the uncalcined Zn/Al/Ce HTlcs precursors (a) Zn/Al/Ce0, (b) Zn/Al/Ce1, (c) Zn/Al/Ce2.5, (d) Zn/Al/Ce5, (e) Zn/Al/Ce7.5and (f) Zn/Al/Ce10.

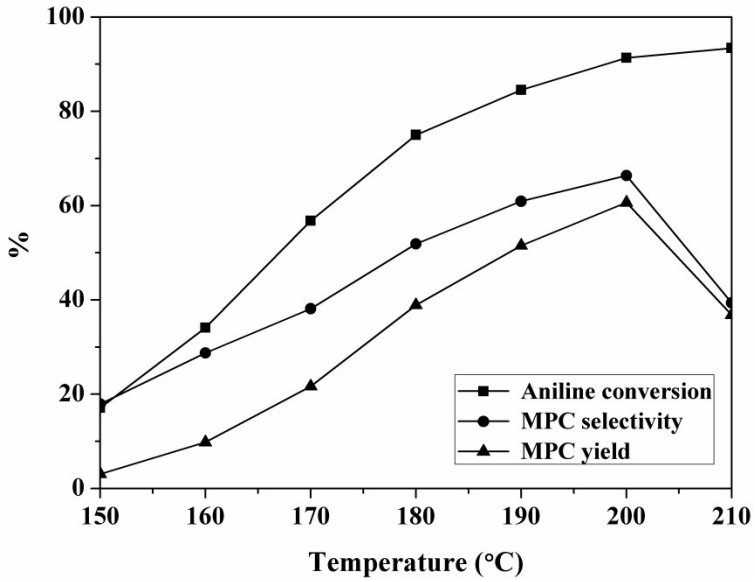

Fig. S5 Effect of reaction temperature on aniline conversion, MPC selectivity and MPC yield. Reaction conditions: DMC 19.35 g, aniline 1 g (molar ratio of DMC to aniline is 20), catalyst 0.253 g, reaction time 7 h.

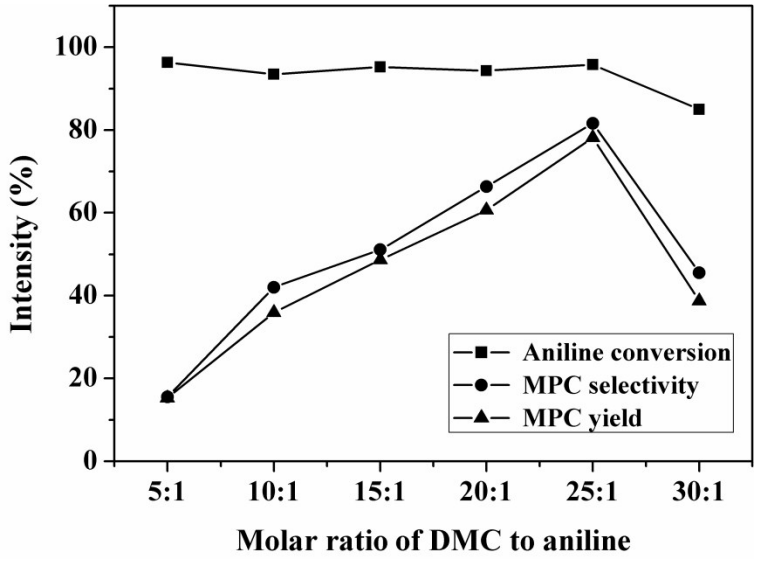

Fig. S6 Effect of the molar ratio of DMC to aniline on aniline conversion, MPC selectivity and MPC yield. Reaction conditions: DMC 19.35 g, catalyst 0.253 g, reaction temperature 200 ℃, reaction time7 h.

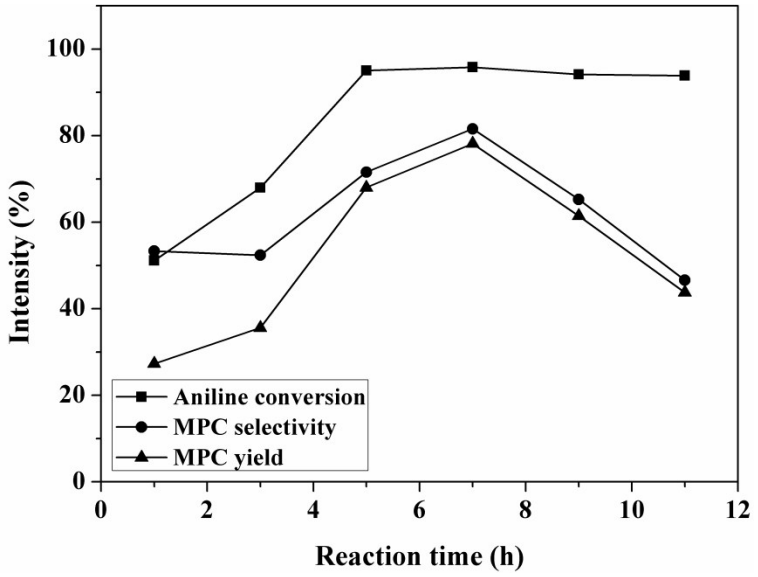

Fig. S7 Effect of reaction time on aniline conversion, MPC selectivity and MPC yield. Reaction conditions: DMC 19.35 g, aniline 0.8 g (molar ratio of DMC to aniline is 25), catalyst 0.253 g, reaction temperature 200 ℃.

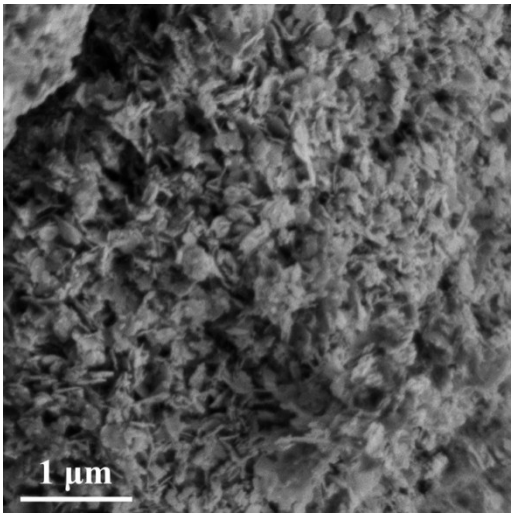

Fig. S8 SEM image of Zn/Al/Ce2.5 after 5 times cyclic test.

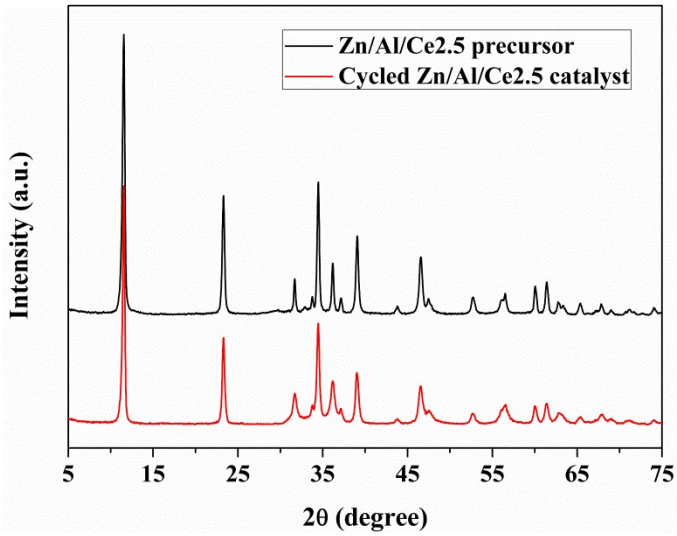

Fig. S9 XRD pattern of Zn/Al/Ce2.5 after the cyclic test. For comparison, the XRD pattern of Zn/Al/Ce2.5 precursor is also presented.