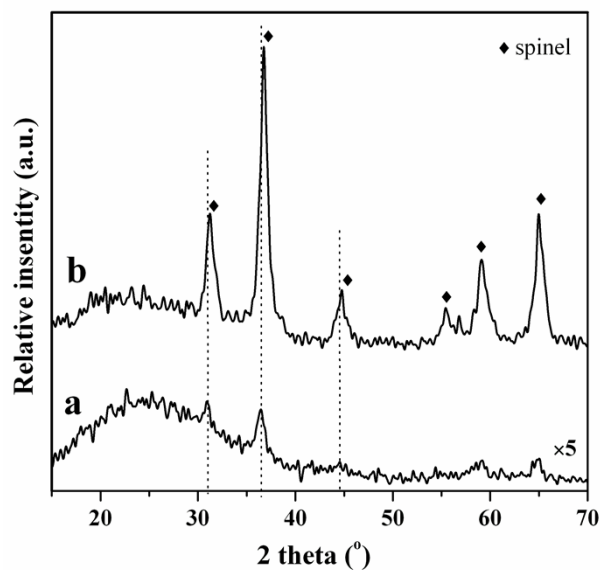


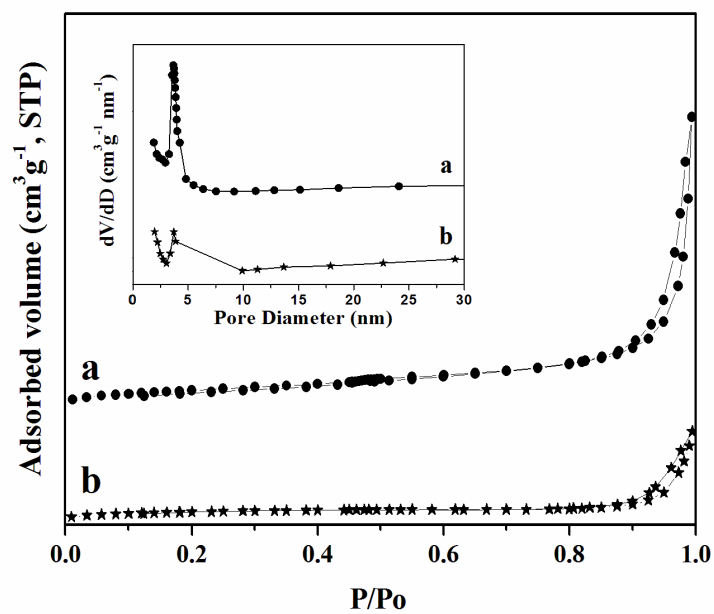
## Supplementary materials

### Solvent-free oxidation of ethylbenzene over hierarchical flower-like core-shell structured Co-based mixed metal oxides with significantly enhanced catalytic performance

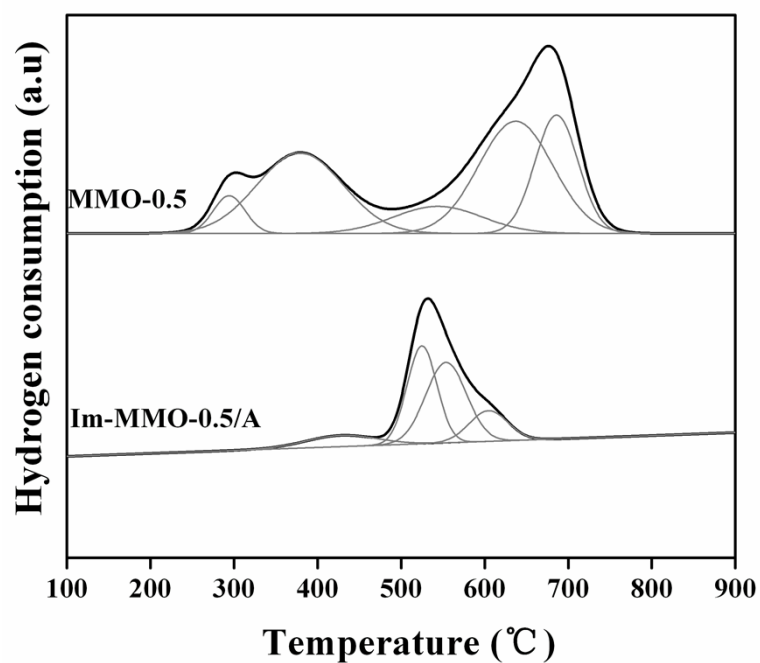
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**Fig.S1** XRD patterns of Im-MMO-0.5/A (a) and MMO-0.5 (b)



**Fig.S2** Nitrogen adsorption–desorption isotherms of MMO-0.5 (a) and Im-MMO-0.5/A (b). Inset shows the pore size distributions.



**Fig.S3** H<sub>2</sub>-TPR profiles of comparison samples.