

Electronic Supplementary Information

**Template-free synthesis of hierarchical γ -Al₂O₃
nanostructures and their adsorption affinity toward phenol
and CO₂**

Weiquan Cai,^{*a} Yuzhen Hu,^a Jiaguo Yu,^b Wenguang Wang,^b Jiabin Zhou^c and Mietek Jaroniec^d

^aState Key Laboratory of Silicate Materials for Architectures, School of Chemical Engineering,
Wuhan University of Technology, 205 Luoshi Road, Wuhan 430070, P. R. China

^bState Key Laboratory of Advanced Technology for Material Synthesis and Processing, Wuhan
University of Technology, 205 Luoshi Road, Wuhan 430070, P. R. China

^cSchool of Resources and Environmental Engineering, Wuhan University of Technology, 122
Luoshi Road, Wuhan 430070, P. R. China

^dDepartment of Chemistry and Biochemistry, Kent State University, Kent 44242, Ohio, USA

E-mail: caiwq@whut.edu.cn (W. Q. Cai).

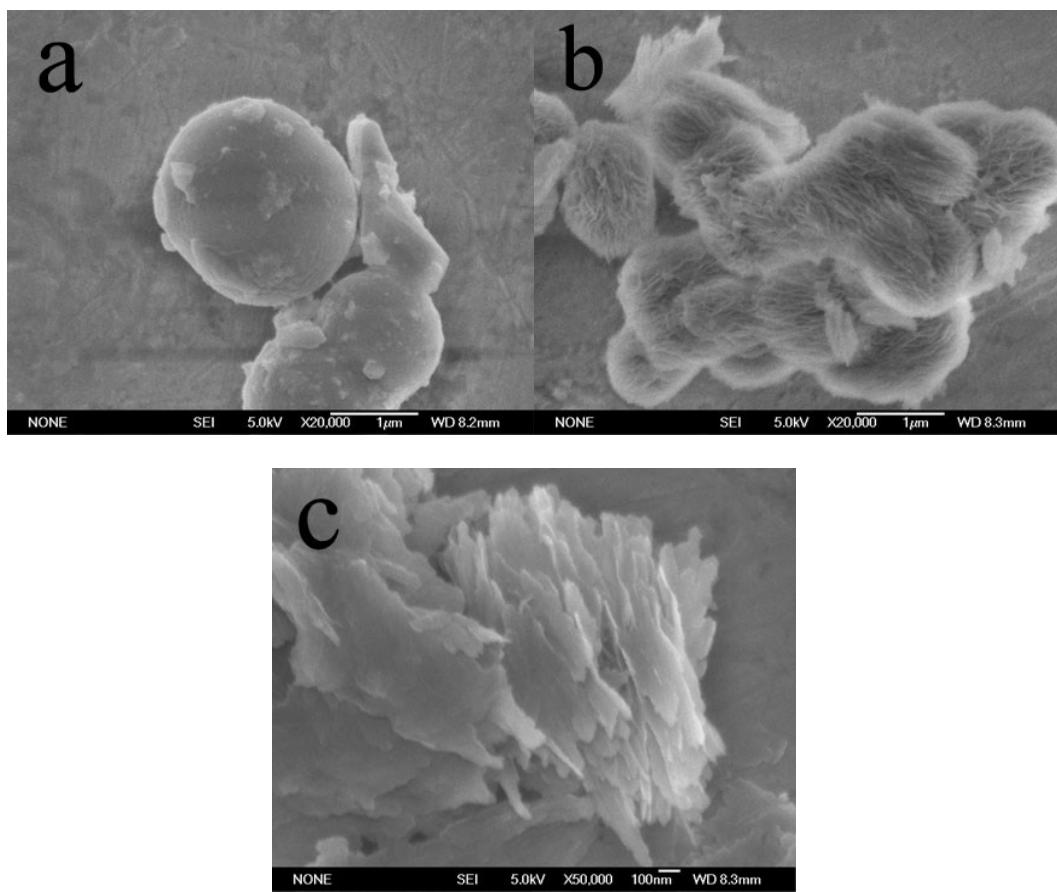


Fig. S1 SEM images of the hierarchical alumina samples obtained from different precursors at Rs=2: (a) A-s-2, (b) A-c-2, (c) A-n-2.

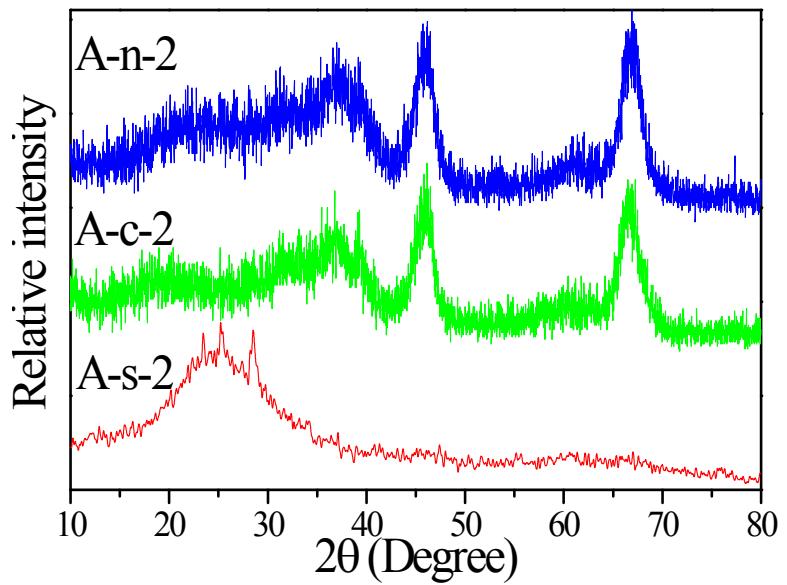


Fig. S2 XRD patterns of the hierarchical alumina samples after calcination obtained from different aluminum precursors at $R_s=2$.

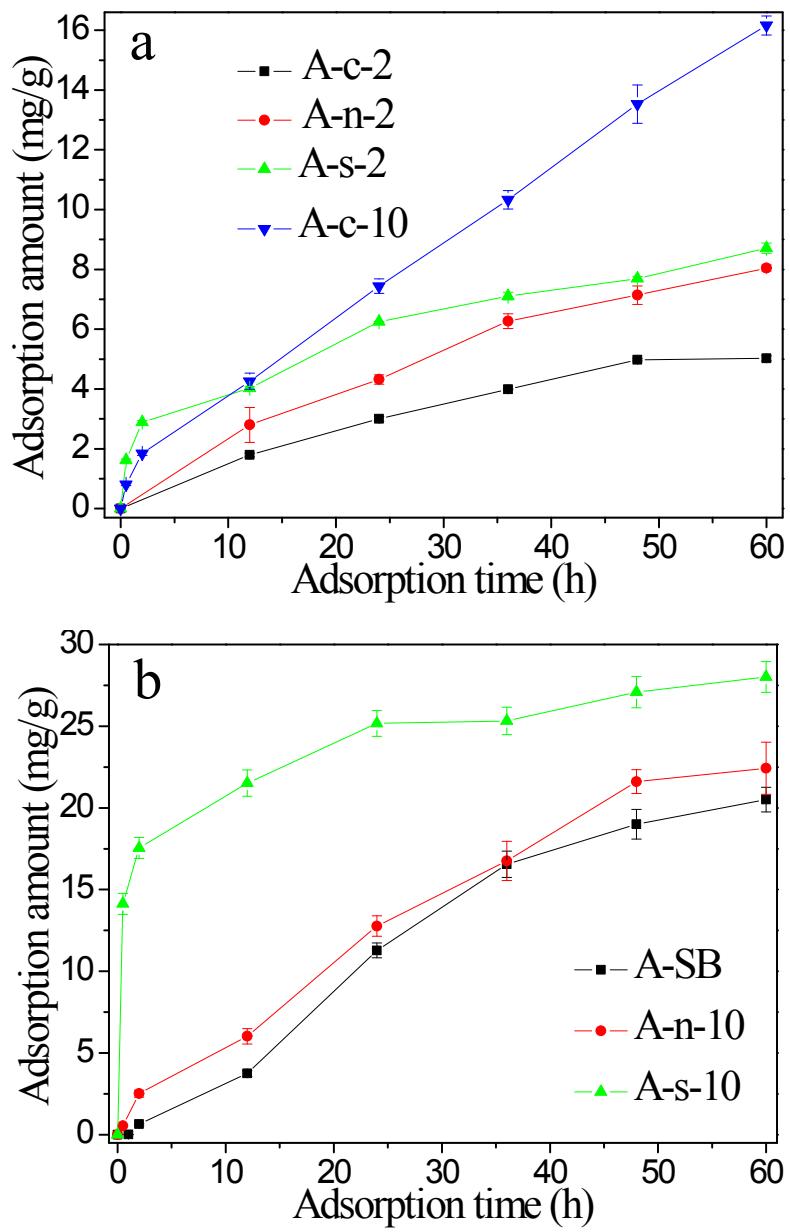


Fig. S3 Adsorption amounts of phenol with error bars on the hierarchical aluminas prepared from different aluminum precursors at different molar ratio of thiourea to Al^{3+} .