Supporting Information

Hierarchically Porous Zeolite Featuring an Alveolus-Like Microsphere for Efficient Oxidative Desulfurization

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Supporting Figures and Tables



Figure S1. SEM image of (a) PS spheres and an assembly of (b) PS spheres.



Figure S2. SEM images of a sample prepared with a crystallization under 120°C for 5d.



Figure S3. SEM images of a sample prepared with a crystallization under 120°C for 6d.



Figure S4. SEM images of a sample prepared with precursor composition of Si: TPAOH = 1: 0.2.



Figure S5. SEM images of a sample prepared with precursor composition of Si: TPAOH = 1: 0.3.



Figure S6. XRD patterns of different samples.



Figure S7. SEM images of the HMS-TS-1.



Figure S8. (a, b) SEM images and (c-e) TEM images of the S-TS-1.



Figure S9. SEM images of the C-TS-1.



Figure S10. FT-IR spectra of different samples.



Figure S11. Fitting results of the reaction rates of different catalysts for oxidative desulfurization of (a) BT, (b) DBT, and (c) DMDBT.



Figure S12. SEM images showing the surface pore windows of HAS-TS-1.



Figure S13. (a, b) SEM images and (c) XRD patterns of the regenerated HAS-TS-1.

| Sample | Si/Ti ^a | S _{BET} (m²/g) | S _{micro} (m²/g) | S_{exter} (m ² /g) | V _{tol} (cm ³ /g) | V _{micro} (cm ³ /g) | V _{meso} (cm ³ /g) |
|----------|--------------------|----------------------------|------------------------------|------------------------------------|--|--|---|
| S-TS-1 | 42 | 421 | 236 | 185 | 0.40 | 0.10 | 0.30 |
| HAS-TS-1 | 45 | 484 | 341 | 143 | 0.64 | 0.14 | 0.50 |
| HMS-TS-1 | 40 | 346 | 232 | 114 | 0.32 | 0.10 | 0.22 |

^a determined by ICP-OES.