Supporting Information for:

MoO$_3$ Subnanoclusters on Ultrasmall Mesoporous Silica Nanoparticles: An Efficient Catalyst for Oxidative Desulfurization

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**Figure S1.** (a) The JCPDS card of MoO$_3$; (b) the XRD pattern of subnano-MoO$_3$/UMSN.

**Figure S2.** N$_2$ adsorption-desorption isotherms of catalyst (a) C-1, (b) C-2, and (c) C-3.
Figure S3. N$_2$ adsorption-desorption isotherm and pore size distribution of meso-SiO$_2$.

$^1$H NMR (500 MHz, Chloroform-$d$) δ7.82 (dd, $J$= 14.7, 7.6 Hz, 4H), 7.65 (td, $J$= 7.6, 1.2 Hz, 2H), 7.54 (td, $J$= 7.6, 1.0 Hz, 2H).

Figure S4. The $^1$H NMR spectrum of DBTO$_2$. 
**Table S1.** ODS conversion of different substrates catalyzed by C-1.\(^a\)

<table>
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<tr>
<th>Entry</th>
<th>Substrate</th>
<th>DBT conversion%</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1</td>
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<td>99.2</td>
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<tr>
<td>S2</td>
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<td>99.6</td>
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<tr>
<td>S3</td>
<td><img src="image3.png" alt="Substrate S3" /></td>
<td>100</td>
</tr>
</tbody>
</table>

\(^a\): [cat.]/[S] = 0.075, [O]/[S] = 6, 70 °C, 15 min.

**Figure S5.** The variation of DBT conversion with runtimes for C-2 and C-3.