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Ionic liquid-supported 3DOM Silica for efficient heterogeneous oxidative desulfurization

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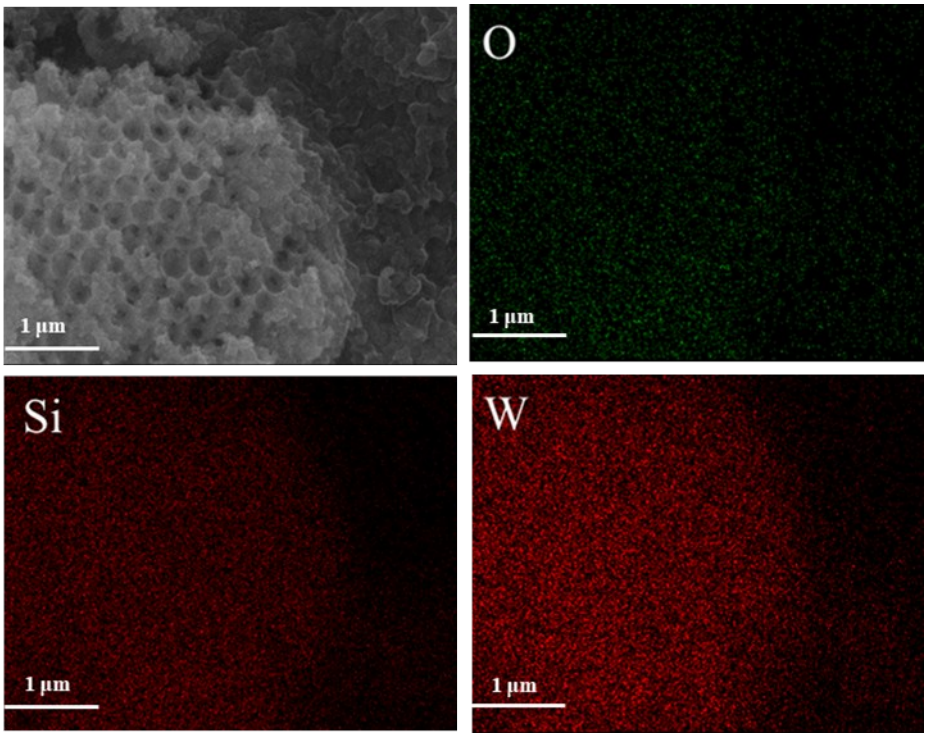

Fig. S1 EDS elemental mapping images of the IL-3DOM SiO_2 catalyst.

Table S1. Catalytic oxidative desulfurization performance of other tungsten-containing mesoporous silica systems reported.

Entry	Catalyst	O/S molar ratio	t/min	Sulfur removal/ %	Recycle times	Ref.
1	C_4-IL@OMS	3	60	99.5	7	1
2	Sw20-3.0	4	15	97.1	5	2
3	25wt% WO_3/SBA-15	10	20	99	5	3
4	15% HPW–SPC	3	120	96.3	4	4
5	PW^--H_3N^+-SBA-15	62	120	100	/	5
6	0.2W–SiO_2	3	30	100	9	6
7	$[Eu(PW_{11}O_{39})_2]^{11-}$@SBA-15	12	120	92	10	7
8	0.25W-CeO_2-400	5	50	99.2	3	8
9	550-WO_3-SiO_2	3	70	100	6	9
10	HPW/SiO_2 –Al_2O_3(50)	2	120	97	3	10
11	LaW_{10}/IL-SiO_2	5	25	>99	10	11
12	HPW–TiO_2–SiO_2 (1:3)	12	120	96	3	12
13	IL-3DOM SiO_2	3	40	100	17	This work

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The ionic liquid that prepared via ion exchange method. The content of C, H, N element in the precursor is determined through elemental analyzer. The results and the theoretical value are shown as follows (Table S2).

Table S2. Elemental composition of the $[C_{16}mim]_6H_2W_{12}O_{40}$ in wt%.

Element	C	H	N
Actual value/%	30.15	5.08	3.33
Theoretical value/%	30.71	5.07	3.55

Table S3. The theoretical and actual content of the IL in the hybrid materials.

Entry	Theoretical value (wt%)	Actual value [a] (wt%)
1	24.3	17.1

[a] IL content based on the tungsten content measured by ICP-OES.