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Novel heterogeneous iron-based redox ionic liquid supported on SBA-15 for deep oxidative desulfurization of fuels

Wenjing Ding, Wenshuai Zhu, Jun Xiong, Lei Yang, Aimin Wei, Ming Zhang, Huaming Li

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1 **Novel heterogeneous iron-based redox ionic liquid supported on**
2 **SBA-15 for deep oxidative desulfurization of fuels**

3 Wenjing Ding^a, Wenshuai Zhu^{a,*}, Jun Xiong^a, Lei Yang^a, Aimin Wei^a, Ming Zhang^b, and
4 Huaming Li^{a,*}

5
6 ^a *School of Chemistry and Chemical Engineering, Jiangsu University, Zhenjiang 212013, P. R.*
7 *China*

8 ^b *Energy and Powder Engineering, Jiangsu University, Zhenjiang 212013, P. R. China*
9

10 ***Corresponding author:** Tel.:+86-511-88791800; Fax: +86-511-88791708;
11 E-mail address: lihm@ujs.edu.cn (H. M. Li), zhuws@ujs.edu.cn (W. S. Zhu)

12
13 **Abstract**

14 A novel catalyst, based on iron-based redox ionic liquid modified mesoporous SBA-15
15 material was successfully prepared and applied to the removal of sulfur compounds in model oil.
16 Sample structures were extensively studied by XRD, N₂ adsorption-desorption, TEM, FTIR, DRS,
17 and XPS analysis. This strategy provided a catalyst system with high surface area, high
18 accessibility for substrate and oxidant. In the process of extractive catalytic oxidative
19 desulfurization (ECODS) of model oil, [Omim]BF₄ served as not only the extractant and the
20 reaction media but also co-catalyst. Under the optimal conditions, the sulfur removal could reach
21 94.3%. The mechanism of the ECODS system was also proposed.

22
23 **Keywords:** ionic liquid, supported catalyst, mesoporous silica SBA-15, oxidative desulfurization,
24 dibenzothiophene

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