catalysts

Assessment of Ag Nanoparticles Interaction over Low-Cost Mesoporous Silica in Deep Desulfurization of Diesel.

Rafael V. Sales[1], Heloise O. M. A. Moura[1], Anne B. F. Câmara[1], Enrique Rodríguez-Castellón[2], José A. B. Silva[1], Sibele B. C. Pergher[1], Leila M. A. Campos[3], Maritza M. Urbina[4], Tatiana C. Bicudo[1] and Luciene S. de Carvalho[1,*]

[1] Institute of Chemistry and School of Science and Technology, Federal University of Rio Grande do Norte, Energetic Technologies Research Group, 59078-900, Natal, Brazil.
[2] Dpto. de Química Inorgánica, Cristalografía y Mineralogía, Facultad de Ciencias, Universidad de Málaga, 29071, Málaga, Spain
[3] Chemical Engineering Post-Graduate Program, Salvador University (UNIFACS), 40140-110, Salvador/BA Brazil.
[4] Chemical Engineering, Center for Technology, Federal University of Alagoas, 57072-900, Maceió, AL, Brazil
* Correspondence: luciene_car@hotmail.com; Tel.: +55 84 9-8828-5261

SUPPLEMENTARY MATERIAL

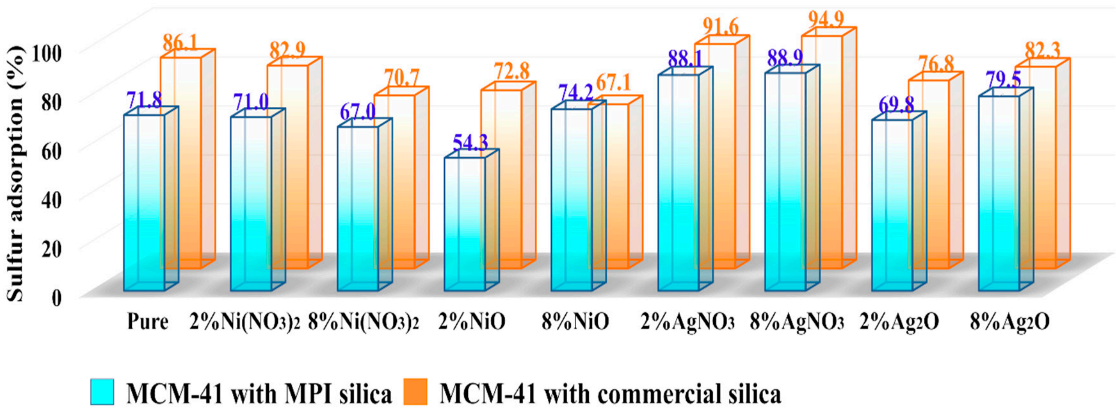

Fig. S1 Results for preliminary sulfur adsorption tests.

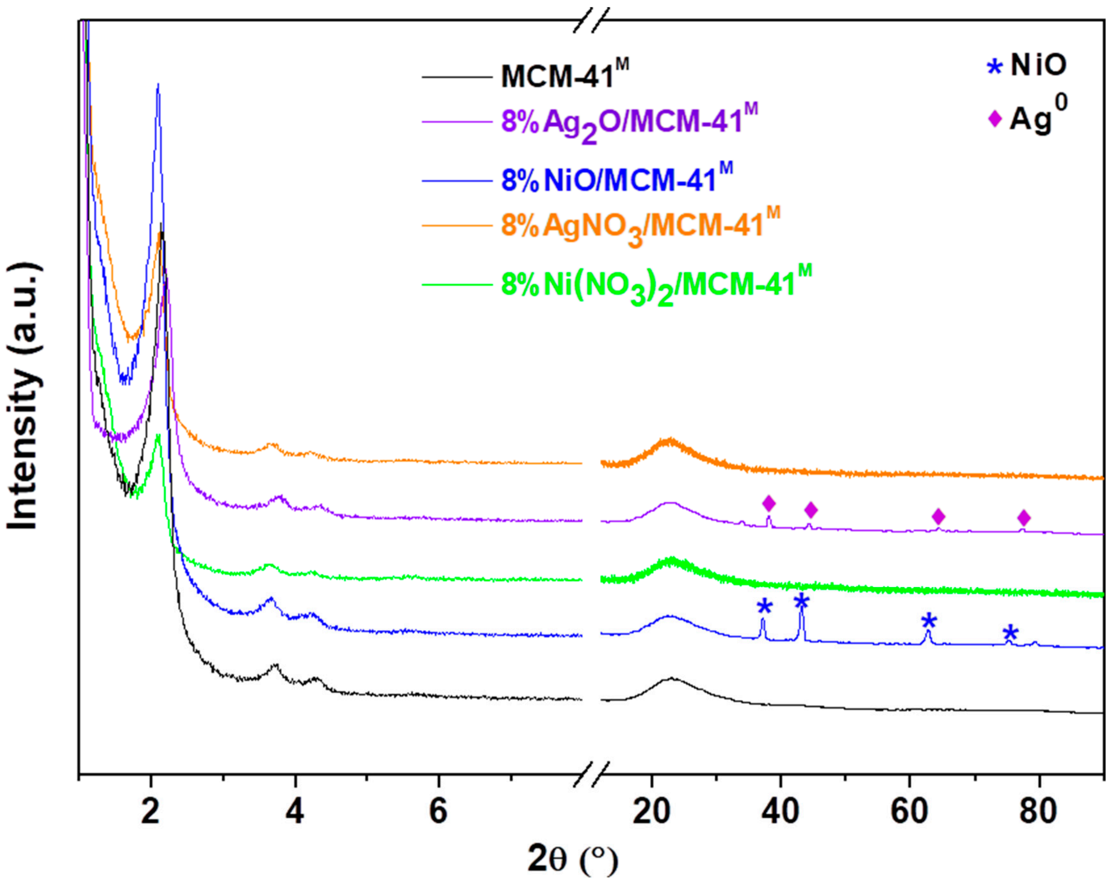

Fig. S2 XRD results for the adsorbents with 8% metal.

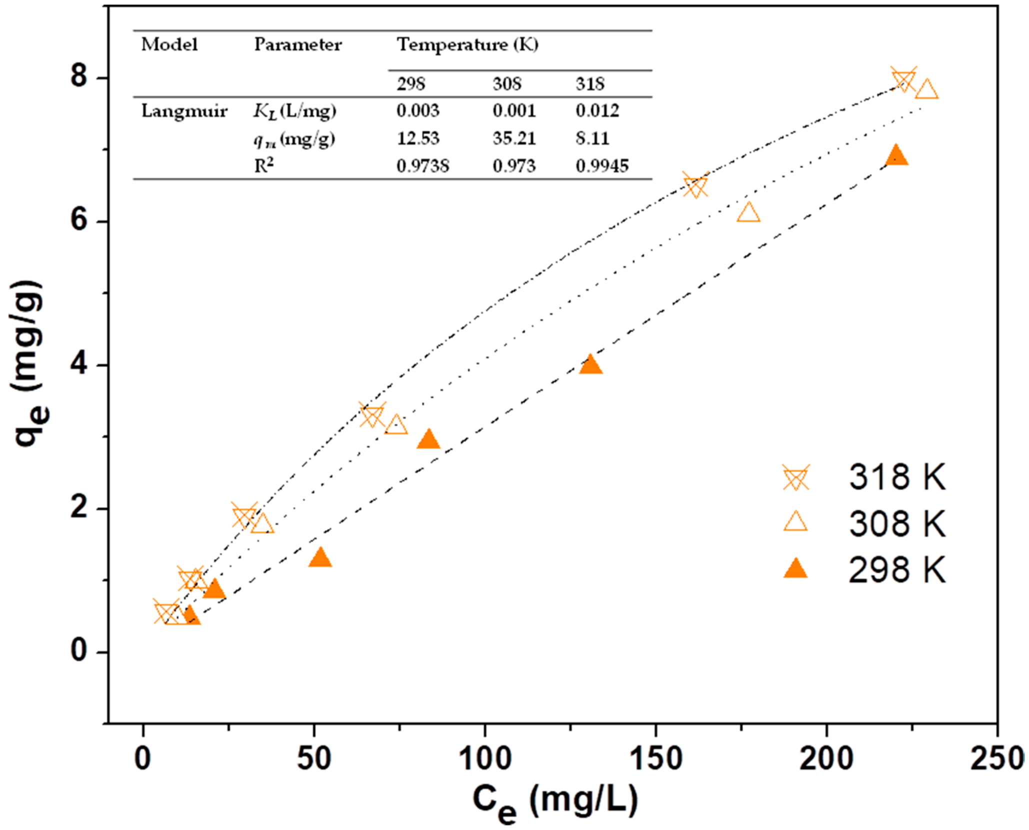

Fig. S3 Langmuir model fitting for sulfur adsorption results over $AgNO_3$/MCM-41^M material at different temperatures.

Table S1 Sulfur compound distribution in a straight run diesel oil sample (Hua et al. 2003).

Sulfur compound group	Content (mg/Kg)
DBTs	37.3
4-MeDBTs	71.9
2-MeDBTs	50.8
3-MeDBTs	1.2
1-MeDBTs	38.9
4-EtDBTs	15.4
4,6-DMeDBTs	38.0
Alkyl S + TPs	550
Group BTs	1900
Group DBTs	2900
Group BNTs	20
Total S	5400

Alkyl S: thiols + sulfides + disulfides; TPs: thiophenes; BTs: benzothiophenes; DBTs: dibenzothiophenes; BNTs: benzonaphthothiophenes.

Table S2 Critical diameter data for the main aromatic organosulfurs in real diesel.

Organosulfur	**Critical diameter (Å)**	**Reference**
Thiophene	5.3	(Van der Voorde et al. 2015)
Benzothiophene	6.0	(Van der Voorde et al. 2015)
Dibenzothiophene	8.0	(Van der Voorde et al. 2015)
4,6-Dimethylbenzothiophene	9.0	(Jayne et al. 2005)
Ethyl mercaptan	5.1	(SIGMA-ALDRICH®)

Table S3 Sulfur adsorption performance of some materials studied in literature for comparison.

Adsorbent	**Feedstock**	**Conditions**	**q_m (mg g^{-1})**	**Reference**
Cu(I)/SBA-15(30)	Tiophene	30 °C, 6.27 % de Cu (wt%)	21.85	Kong et al. 2017
10Cu/SBA-15	Tiophene	Ambient conditions	14.33	Subhan et al. 2018a
AC/Ce/Fe	Tiophene, BT, DBT		0.33; 2.48; 3.70	Danmaliki et al. 2017
Activated boron nitride (BN)	DBT	25 °C, atmospheric pressure	42.2	Luo et al. 2018
Zn / Co @ C-800; Zn @ C-800; Co @ C-800	DBT	Room temperature	43.47; 37.93; 17.9	Huo et al. 2019
MMZ; 5Ni / MMZ; 10Ni / MMZ; UR.10Ni / MMZ; 15Ni / MMZ	Tiophene	Ambient conditions	16.96; 21.37; 23.98; 9.095; 10.87	Subhan et al. 2018b
P-4	DBT	Room temperature	52.41	Zhang et al. 2018
MCM-41^{M}	Diesel fuel	25 °C	3.06	This study
$AgNO_3$/MCM-41^{M}	Diesel fuel	25 °C, 2% Ag	31.25	This study
MCM-41^{C}	Diesel fuel	25 °C	7.25	This study
$AgNO_3$/MCM-41^{C}	Diesel fuel	25 °C, 2% Ag	15.41	This study

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