



CATL 487: Materials based on halloysite nanotubes with structured mesoporous silica for sulfur reduction in fluid catalytic cracking

Authors

[Boris Anikushin \(/acsnola2018/speaker/6789d0e3126156dd1e219bd6e6a327f1\)](#)

[Aleksandr Pavlovich Glotov \(/acsnola2018/speaker/e34dc8e07c65cdddb10083e82fd06310\)](#)

[Evgenii Ivanov \(/acsnola2018/speaker/ee74ac71b5ae2e339b8e7e82bbd89502\)](#)

[Nikolai Levshakov \(/acsnola2018/speaker/6789d0e3126156dd1e219bd6e6a373c1\)](#)

[Yuri M Lvov \(/acsnola2018/speaker/1646715dad62c25eb44d3d6093c225f6\)](#)

[Sergei Lysenko \(/acsnola2018/speaker/6789d0e3126156dd1e219bd6e6a31008\)](#)

[Vladimir Vinokurov \(/acsnola2018/speaker/ee74ac71b5ae2e339b8e7e82bb09c2c2\)](#)

[Anna Vutolkina \(/acsnola2018/speaker/6789d0e3126156dd1e219bd6e6a31d75\)](#)

Body

Aleksandr Pavlovich Glotov², Nikolai Levshakov¹, Boris Anikushin², Anna Vutolkina¹, Sergei Lysenko¹, Evgenii Ivanov², Vladimir Vinokurov², Yuri M Lvov³

1. Chemistry, Moscow State University, Moscow, Russian Federation
2. Gubkin Russian State University of Oil and Gas (National Research University), Moscow, Russian Federation
3. Louisiana Tech University, Ruston, Louisiana, United States

Fluid catalytic cracking is a large-capacity secondary processing of oil. Its products occupy a key role in the production of trade fuels. In some countries its share in the final product is up to 90% sulfur. One way to reduce sulfur content in liquids products is using of sulfur reduction additives. In our opinion, structured mesoporous oxides are valuable carrier components of sulfur reduction additives. Depending on the synthesis conditions it is possible to control pore size, specific surface area, pore volume, acidity and other parameters. Halloysite – is a 50-nm diameter natural aluminosilicate multiwall tube. This clay is a cheap, stable and biocompatible material. The purpose of this work is to test structured mesoporous silica with halloysite nanotubes as parts of sulfur reduction additives for commercial cracking catalysts. Materials with halloysite nanotubes La/SBA-15/Halloysite and La/HMS/Halloysite based on carriers SBA-15/Halloysite and HMS/Halloysite with metal loading of 5 %wt. to industrial FCC catalyst were synthesized. These samples were characterized by TEM, XRD, low-temperature nitrogen adsorption/desorption, TPD of ammonia and IR. Catalytic tests of the above additives in mixtures with a commercial cracking catalyst were performed in a MAT laboratory system. As a feed vacuum gas oil with 18600

ppm of sulfur was used. It was shown, that additives La/SBA-15/Halloysite and La/HMS/Halloysite are active in desulfurization liquid cracking products of vacuum gas oil. Addition of La/HMS/Halloysite to industrial catalyst in an amount of 10% by weight reduce sulfur content up to 30% in liquid cracking products of vacuum gas oil, compared to the values obtained without additive.

Sessions



CATL 487: Materials based on halloysite nanotubes with structured mesoporous silica for sulfur reduction in fluid catalytic cracking

Thursday, Mar 22 8:00 AM

Fulton, Hampton Inn & Suites Convention Center

(/acsnola2018/event/5798c3350071bad611b42052e646b113)