

عنوان مقاله:

A Comprehensive Review on Advantages and Issues of Nanotechnology in the Oxidative Desulfurization Method for the Production of Ultra-Clean Fuels

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خلاصه مقاله:

Today, producing clean fuel oil is one of the major challenges in the world. One of the factors that causes environmental pollution is the sulfur compounds in crude oil. In today's world, there are strict rules for reducing the amount of sulfur in fuel. There are several ways to remove sulfur compounds from fuels, such as hydrodesulfurization (HDS), extractive distillation, biodesulfurization, adsorption desulfurization, and oxidative desulfurization (ODS). Some refractory sulfur compounds that are not removed from the fuel oil by the HDS can be easily removed by oxidation method. Nowadays, the ODS method is known as a complement to the HDS method. In the oxidation method, sulfur compounds are converted to the corresponding sulfonates by catalysts and oxidants and then separated from the feed by polar solutions or adsorbents. Various researches have been done on the Catalysts and oxidants of the ODS method. In this study, a comprehensive review has been carried out on the application of nanotechnology in the oxidative desulfurization method. Based on previous researches and available articles, nanocatalysts used in the oxidation process can be classified into five groups; polyoxometalates, transition metal oxide, carbon materials, ionic liquids and metal-organic frameworks (MOF). Also, different nanocatalysts and oxidants and optimal conditions to achieve the highest conversion percentage for the removal of sulfur compounds were investigated.

کلمات کلیدی:

نانوکاتالیست، گوگردزدایی اکسایشی، نفت کوره

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