عنوان مقاله:

Sulphated Zirconia Catalyst Prepared from Solid Sulphates by Non-aqueous Method

محل انتشار:

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خلاصه مقاله:

Non-crystallinesulphated zirconia catalysts were synthesised by a non-aqueous and non-conventional method. The effect of varying the molar ratio of sulphating agent to zirconium source was also investigated. The samples were characterized by X-ray diffraction, Energy Dispersive X-ray (EDX), Infra-red Spectroscopy (IR),X-ray Photoelectron Spectroscopy (XPS). The surface acidity was measured by the Pyridine-DRIFTS (Diffuse Reflectance Infrared Fourier Transform Spectroscopy) technique. The structural and textural properties of the sulphated zirconia were studied. The EDX and XPS profiles suggested that both sulphated zirconia catalysts have similar zirconia and sulphate structures; however, both catalysts were amorphous. Deconvolution of their XPS O 1s spectra showed that the samples contained both oxide oxygen of zirconium and sulphate oxygen, which sample I showed a higher amount of sulphate oxygen. Adsorption of pyridine into the samples indicated that the higher amounts of Brönsted acid sites are presented in sample I with lower amount of sulphate during preparation. This opens up the possibility of controlling the degree and type of active sites on a catalyst by the amount of sulphate used for preparation. Sulphated zirconia catalyst with higher activity properties was achieved via a non-aqueous, environmentalfriendly method. The zirconia catalyst has great contribution towards energy production which is used for preparation and transesterification of fatty acids for production of biodiesel

کلمات کلیدی:

Non-conventional method,Sulphated zirconia,Calcinations,Characterization,Acidity