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Dehydrogenation catalysts of higher normal paraffins supported on a nanocrystalline gamma alumina

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The selection of a carrier plays a key role in catalyst performance. In general, it is desirable to design the catalyst for the highest possible surface area to obtain the maximum concentration of catalytic sites. In this research a nanocrystalline gamma alumina synthesized and employed for Pt-based dehydrogenation catalysts containing tin, indium, iron and litium as promotors. Several catalysts were prepared with changes in Pt loading (0.1, 0.3, 0.5) and employed in the dehydrogenation reaction of higher normal paraffins. The samples prepared were characterized by X-ray diffraction (XRD), N_2 adsorption (BET), temperature programmed reduction (TPR) and inductive coupled plasma atomic emission spectroscopy (ICP-AES) techniques. The catalytic testing of the prepared catalysts was carried out in a fixed bed reactor in dehydrogenation reaction of a mixture of higher normal paraffins. Catalysts containing 0.1 and 0.5 wt.% platinum showed almost the same specific activity in the dehydrogenation reaction. However, the catalyst selectivity relative to monoolefin formation was higher for sample 1 with the lowest platinum content. The obtained results revealed that it is possible to obtain a higher conversion and selectivity using less content of expensive component (platinum).

Biography

Mandana Akia has completed her PhD from Iran University of Science & Technology. She has more than 12 years experience in both industrial and academia. She has published 30 papers in reputed journals and conferences. She has been working as an Assistant Professor in Petroleum Department of Chemistry and Chemical Engineering Research Center of Iran.

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