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Propylene production via catalytic cracking of light diesel over Au/ZSM-5 catalyst

The catalytic cracking of light diesel oil (235-337 °C) over gold modified ZSM-5 was investigated in a small confined fluidized bed at 450 °C and the ambient pressure. The Au-ZSM-5 catalysts were prepared by a modified deposition-precipitation method via changing the preparation procedure and nominal Au loading and characterized by means of XRD, N₂ adsorption-desorption, NH₃-TPD, TEM and ICP. It was found that small amount of gold can play a positive contribution in the catalytic cracking of light diesel oil for increasing propylene production at relative lower temperature. The maintenance of ZSM-5 MFI structure, pore size distribution and the density of weak and strong acid sites of the Au-ZSM-5 catalysts vary with the preparation parameters and Au loadings. Simultaneous enhancement in micro-activity and propylene production relies on a synergy between pore size distribution and the relative intensity in weak and strong acid sites. A significant improvement with an increase of 4.5 units in the micro-activity index and 23.2 units in propylene selectivity was obtained over the Au-ZSM-5 catalyst with actual Au loading of 0.17 wt %.

Biography:

Caixia Qi is the Director/Professor at Shandong Applied Research Centre of Gold Nanotechnology (Au-SDARC), Yantai University, China and engaged in the research of gold catalysis and populating industrial applications of gold nanotechnology. She received her Ph. D degree from Lanzhou Institute of Chemical Physics of Chinese Academy of Sciences in 1996 and served as a STA fellow, an associated researcher and a guest researcher in Osaka National Research Institute of Japan, Royal Military College of Canada and Tokyo Metropolitan University, respectively. She has published more than 50 papers in the reputed journals in the field of heterogeneous catalysis.

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