BERKELEY CATALYSIS CENTER

Seminar

Friday, October 7, 2005 2 pm
The McCollum Room
775A&B Tan Hall

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Reactivity of promoted sulfated zirconia isomerization catalysts

ABSTRACT:

More than two decades ago, two publications by Hino and Arata [1,2] directed attention towards sulfated zirconia as a low-temperature alkane isomerization catalyst. The catalytic performance of this material can be improved through addition of transition metal cations [3]. Initially it was believed that these promoters, e.g. manganese or iron, enhance the acidity of sulfated zirconia [4], but this claim could not be substantiated. The nature of the active sites in these catalysts and the function of the promoters remained unresolved. Based on investigations on the preparation, characterization, and reactivity of these materials, this presentation creates a picture of the active phase. Specifically, the following issues will be addressed, using X-ray diffraction, EPR, and X-ray absorption, ion scattering, IR and UV-vis spectroscopies [5-9]:

1)Calcination

2)Interaction between promoters and zirconia

3)Metastability of active phase

4)Reactivity of surface functions

5)n-Butane activation (in situ methods).

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[4] C.-H. Lin, C.-Y. Hsu, J. Chem. Soc. Chem. Comm. (1992) 1479-1480.
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