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TI Surface and bulk investigation of ZSM5 and Al-MCM-41 using synchrotron XPS, XANES, and hexane cracking

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AB We present a comparative study of ZSM5 and Al-MCM-41 catalysts using spectroscopic and chemical techniques. The analysis of conventional and synchrotron XPS spectra of these catalysts reveals the presence of a topmost surface-related Si peak in addition to the bulk peak. XANES results suggest structural modification upon heating Al-MCM-41 at 500 degrees C. Depth-resolved XPS data show Al depletion from the surface of Al-MCM-41 in contrast to surface enrichment of Al in ZSM5. These surface modifications could be one of the reasons for the weak acidity of Al-MCM-41 in chemical reactions such as hexane cracking at different temperatures. (c) 2005 Elsevier B.V. All rights reserved.

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