Title: Desilication of MOR zeolite: Conventional versus microwave assisted heating

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Abstract: MOR zeolites were modified via desilication treatments with NaOH, under conventional and microwave heating. The samples were characterized by powder X-ray diffraction, (27)Al and (29)Si NMR spectroscopy. TEM and N(2) adsorption at -196 degrees C. The acidity of the samples and the space available inside the pores were evaluated through a catalytic model reaction, the isomerization of m-xylene, for which the profiles of the coke thermal decomposition were also analyzed. Powder X-ray diffraction and (29)Si and (27)Al MNR results show that in comparison with conventional heating, microwave irradiation (a less time consuming process) leads to identical amount of Si extraction from the zeolite framework. With this treatment. in addition to the customary mesopores development promoted by conventional heating, a partial conversion of the zeolite microporosity into larger micropores, is observed. The microwave irradiated and conventionally heated samples show different catalytic behavior in the m-xylene isomerization model reaction. It was observed that, by controlling the experimental conditions, it is possible to obtain samples with catalytic properties closer to the parent material, which is also confirmed by the respective coke analysis. (C) 2011 Elsevier B.V. All rights reserved.

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