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Abstract

A shape-selective catalyst comprises a synthetic porous crystalline material having the structure of ZSM-5 and a composition involving the molar relationship:



wherein X is a trivalent element, such as aluminum, boron, iron and/or gallium, preferably aluminum; Y is a tetravalent element such as silicon and/or germanium, preferably silicon; and n is greater than about 12, and wherein the crystals have a major dimension of at least about 0.5 micron and a surface  $YO_2/X_2O_3$  ratio which is no more than 20% less than the bulk  $YO_2/X_2O_3$  ratio of the crystal. The crystals have a diffusion-modifying surface coating of a refractory material such as silica or coke.

The catalyst is useful in a wide variety of selective hydrocarbon conversion processes, particularly the selective disproportionation of toluene to para-xylene.