

Abstract

A solvothermal synthesis process of the SAPO molecular sieves and catalysts prepared thereby are provided. The synthesis process comprises the following steps: a) an organic amine, an aluminum source, a phosphorus source, a silicon source, and water are mixed in a molar ratio of 6-30 : 1 : 0.5-5 : 0.01-1.0 : 0.1-15, to obtain an initial mixture for preparing the SAPO molecular sieves, wherein the molar ratio of water to the organic amine is less than 2.0; b) the initial mixture obtained in the step a) is maintained at 30-60 °C and aged with stirring for not more than 24 hours, to obtain an initial gel; c) the initial gel obtain in the step b) is crystallized at 150-250 °C for 0.5-15 days. The SAPO molecular sieves prepared thereby are used, after being calcined at 400 - 700 °C in air, as catalysts for acid-catalyzed reactions or for conversion reactions of oxygen-containing compounds to olefins.



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