

عنوان مقاله:

Ultrasonic and Microwave Pretreatment for Hydrothermal Synthesis of Nanosized SAPO-34s and their Catalytic Performance in MTO Reaction

محل انتشار:

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خلاصه مقاله:

In order to enhance the catalytic performance of SAPO-34 catalyst for the reaction of methanol to olefins (MTO), ultrasonic and microwave-assisted aging method was employed in static hydrothermal method to synthesize nano-sized SAPO-34. The effects of the application of this method on the chemical composition, morphology, surface area and total acidity of SAPO-34 were investigated by XRD, FE-SEM, nitrogen adsorption-desorption and NH₃-TPD techniques. The catalytic performance of synthesized SAPO-34 was investigated for MTO reaction in a fixed-bed reactor under the same operating conditions (T = 450 °C, P = 1 atm, and WHSV = 4 h⁻¹). Comparing with the SAPO-34 synthesized with conventional hydrothermal method, the sample synthesized with simultaneous use of US and MW-assisted aging methods possessed larger surface area and small crystal size and exhibited higher selectivity to light olefins (C₂ = C₃) and longer lifetime.

کلمات کلیدی:

SAPO-34 Nanocatalysts MTO Reaction Lifetime Light Olefins

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