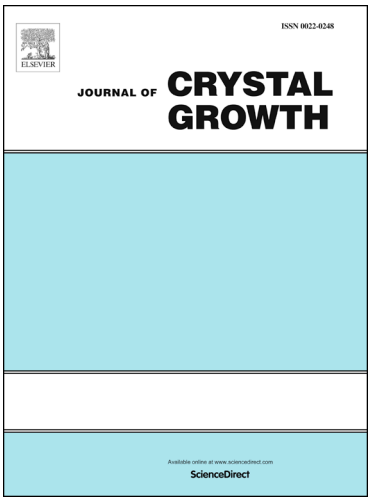


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# Crystal growth kinetics of unseeded high silica chabazite

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## Abstract

Crystal growth of high silica chabazite using N,N,N-1-adamantammoniumhydroxide (TMAdaOH) as structure directing agent (SDA) were studied at 140-170°C between 24 to 168 h using a direct method. Crystal growth rate increased when the temperature increased. The systems linear crystal growth rates were constant between 24 to 72 h at 150-160°C. This allowed crystal growth data to be fitted with an empirical method for solid state kinetic processes and subsequent calculation of the systems apparent crystal growth activation energy. The magnitude of the activation energy indicates that the systems crystal growth is controlled by surface kinetics. At 170°C the zeolite system displayed a non-constant linear crystal growth rate. The linear non-constant growth rate was attributed to surface processes resulting in transformation of spherical to cubic crystals as observed with scanning electron microscopy.