

Studied the dehydroxylation of AlgeriaHalloysite (DD1), by thermogravimetric analysis

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Abstract

In this study the dehydroxylation of Algerian halloysite (DD1) was explored utilizing thermogravimetric analysis (TGA) were carried out on samples between room temperature and 1400°C, at different heating rates of 2, 5, 10, 15 and 20 °C min⁻¹. The activation energy ascertained by both nonisothermal utilizing Ozawa, Boswell and Kissinger methods and isothermal utilizing Johnson–Mehl–Avrami (JMA) and Ligeró methods treatments is 166.90 and 165.06Kj/mol respectively. The Avrami parameters of development morphology were observed to be around 1.16 but the numerical element m , relies on the dimensionality of crystal growth, is observed to be 1.17. Analysis of the outcomes demonstrated that bulk nucleation was predominant in halloysite transformation followed by three-dimensional growth of meta-halloysite with polyhedron-like morphology controlled by diffusion from a constant number of nuclei; the frequency factor intended by isothermal treatment is equal $9.74 \times 10^8 \text{s}^{-1}$.

Keywords: Halloysite; dehydroxylation; Activation energy.