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

A. Raghdi, M. Heraiz, F. Sahnoune
Physics and Chemistry of Materials Lab, Department of Physics, University of M'sila, 28000, M'sila, Algeria
raghdiamina@yahoo.fr

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 Ligero 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*108s-1.

Keywords: Halloysite; dehydroxylation; Activation energy.