World Academy of Science, Engineering and Technology
International Journal of Chemical and Molecular Engineering
Vol:10, No:08, 2016

Dissolution Leaching Kinetics of Ulexite in Sodium Dihydrogen Phosphate Solutions

Authors : Emine Teke, Soner Kuşlu, Sabri Çolak, Turan Çalban

Abstract : The aim of the present study was to investigate the dissolution kinetics of ulexite in sodium dihydrogen phosphate in a mechanical agitation system and also to declare an alternative reactant to produce the boric acid. Reaction temperature, concentration of sodium dihydrogen phosphate, stirring speed, solid-liquid ratio, and ulexite particle size were selected as parameters. The experimental results were successfully correlated by using linear regression and a statistical program. Dissolution curves were evaluated in order to test the shrinking core models for solid-fluid systems. It was observed that increase in the reaction temperature and decrease in the solid/liquid ratio causes an increase in the dissolution rate of ulexite. The activation energy was found to be 36.4 kJ/mol. The leaching of ulexite was controlled by diffusion through the ash (or product) layer.

Keywords : ulexite, sodium dihydrogen phosphate, leaching kinetics, boron
Conference Title : ICCMI 2016 : International Conference on Chemical and Molecular Imaging
Conference Location : Bangkok, Thailand
Conference Dates : August 30-31, 2016