

# **SYNTHESIS AND KINETIC STUDY OF ZEOLITE FROM LOPBURI PERLITE**

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*Received: Jan 16, 2004; Revised: Oct 18, 2004; Accepted: Nov 15, 2004*

## **Abstract**

**This work was an intensive study on synthesis and crystallization kinetics of zeolite from an economically viable Lopburi perlite. Hydrothermal process was carried out to survey the zeolite crystallization under various conditions. At 100°C and atmospheric pressure the product was zeolite Na-P<sub>1</sub>. At 100-140°C and 20-50 psi the major product obtained was analcime. Under the influence of 3 M NaOH and 1:5 solid/liquid ratio at 140°C for 24 h, perlite was mainly converted to analcime. When the solid/liquid ratio was changed to 1:20 cancrinite was formed. Kinetics of analcime crystallization were determined at different temperatures. It was found that the activation energy was 11.2 kcal/mol. The Avrami exponent (n) obtained was in the range of 3.4 to 6.4 indicating that crystallization of an amorphous phase took place in the autocatalytic stage of the crystallization process.**

**Keywords:** Perlite, synthesis, kinetic, analcimes, Arrhenius, Avrami