Sustainable Resources Management Journal
2017, 1 (2) 09-19

Synthesis of Zeolites Prepared from Coal Bottom Ash: Influence of Time, Temperature and NaOH Concentration

J. V. Matsinhe[1,2], D. L.P. Macuvele[1,3], E.S.W. Santos[1], J. C. Moreira[1], M. M. Uamusse[2], L. Muller[1], G. J.M. Martins[1], H. G. Riella[1]

[1] *Universidade Federal de Santa Catarina, Centro de Tecnologia, Departamento de Engenharia Química e Engenharia de Alimentos*
[2] *Universidade Eduardo Mondlane, Faculdade de Engenharias, Departamento de Engenharia Química – Moçambique*
[3] *Universidade Pedagogica, Faculdade de Ciencias, Lichonga - Moçambique*
* Corresponding author email: jvmatsinhe@gmail.com

ABSTRACT

Nowadays, the main application of coal mine in the world is to produce energy through thermoelectric power plants. Energy generation is always associated with the production of enormous amounts of ashes, both bottom and fly ashes. The main objective of this work is to study the effect of time, temperate and concentration on Synthetic zeolites produced from utilizing minerals of coal bottom ash. However, for the factor significance analysis, factorial planning of two levels and three factors was used, where eight experiments were obtained, and the results of FTIR transmittance showed favorable variation in time and temperature, and the variation of the NaOH concentration was not significant. It was concluded that the concentration of NaOH only influences the zeolites formation when combined with the crystallization time.

Keywords: Coal bottom ash; synthesized zeolites; thermoelectric power plants