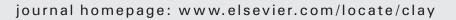


Contents lists available at ScienceDirect

## Applied Clay Science





## Preparation and characterization of Ti and V modified analcime from local kaolin

Eman Z. Hegazy a,b, Islam Hamdy Abd El Maksod a,b,\*, R.M.M. Abo El Enin a

## ARTICLE INFO

Article history:

Received 2 November 2009 Received in revised form 26 April 2010 Accepted 28 April 2010 Available online 7 May 2010

Keywords:

Analcime

Kaolin

Surface properties

**ESR** 

EDX

SEM

Ion exchange

## ABSTRACT

A synthetic analcime was modified by incorporation of Ti or V. Egyptian kaolin was selected as a starting material. The modified zeolite was tested for the removal of Cu<sup>2+</sup>, Ni<sup>2+</sup> and Pb<sup>2+</sup>. XRD (X-ray diffraction), SEM (scanning electron microscope), EDX (energy dispersive X-ray), ESR(electron spin resonance), TGA (thermal gravimetric analysis) and DSC (differential scanning calorimetry) were used to characterize the modified analcime. The modified analcime showed a good removal of ions. The preference towards various heavy metal ions under investigation was dependent on the amount of incorporated Ti or V. The size of the analcime crystal decreased as the amount of Ti or V increased.

© 2010 Elsevier B.V. All rights reserved.

<sup>&</sup>lt;sup>a</sup> Physical Chemistry Department, National Research Center, 33 El Bohouth street, 12622, Dokki, Cairo, Egypt

<sup>&</sup>lt;sup>b</sup> Chemistry Department, Faculty of Science, King Abdulaziz University, Jeddah 21569, Saudi Arabia