Desalination and Water Treatment
www.deswater.com
22 (2010) 87–90
October
1944-3994 / 1944-3986 © 2010 Desalination Publications. All rights reserved.
doi: 10/5004/dwt.2010.1596

Synthesis and characterization of zeolite 4A from soft kaolin

Weiwei Li[a], Chunjie Yan[b], Wenbin Hu[a]*

[a]*State Key Laboratory of Metal Matrix Composites, Shanghai Jiaotong University, Shanghai, China*
Tel. +86 (21) 34202554; Fax +86 (21) 34202749; email: material_hu@163.com
[b]*China University of Geosciences, Wuhan, China*

Received 13 October 2009; Accepted 28 March 2010

ABSTRACT

The synthesis of zeolite 4A from soft kaolin has been studied. Kaolin was converted to metakaolin by firing at 550°C for 2 h, which was then added to NaOH solutions of appropriate concentration. The optimum molar ratios for the main constituents in the starting gel were $SiO_2/Al_2O_3 = 1.7$, $Na_2O/SiO_2 = 2.8$ and $H_2O/Na_2O = 61.7$. The gels were vigorously stirred at 70°C for 2 h and aged under the room temperature for 24 h, then stirred again with intermediate speed at 90°C. After 4 h, the product was centrifugated and washed till pH 10–11. Examination with XRD, IR and SEM proved that the product was zeolite 4A.

Keywords: Zeolite 4A; Soft kaolin; Hydrothermal synthesis of zeolites; XRD; IR; Metakaolin

* Corresponding author.