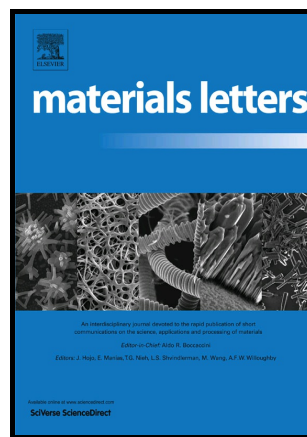


## Author's Accepted Manuscript

A facile method for preparation of floatable and permeable fly ash-based geopolymer block

Yi Liu, Chunjie Yan, Zuhua Zhang, Yansheng Gong, Hongquan Wang, Xiumei Qiu



PII: S0167-577X(16)31504-X  
DOI: <http://dx.doi.org/10.1016/j.matlet.2016.09.044>  
Reference: MLBLUE21482

To appear in: *Materials Letters*

Received date: 4 July 2016  
Revised date: 5 September 2016  
Accepted date: 11 September 2016

Cite this article as: Yi Liu, Chunjie Yan, Zuhua Zhang, Yansheng Gong, Hongquan Wang and Xiumei Qiu, A facile method for preparation of floatable and permeable fly ash-based geopolymer block, *Materials Letters* <http://dx.doi.org/10.1016/j.matlet.2016.09.044>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting galley proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain

# A facile method for preparation of floatable and permeable fly ash-based geopolymer block

Yi Liu<sup>a, b, c</sup>, Chunjie Yan<sup>a, b\*</sup>, Zuhua Zhang<sup>c\*</sup>, Yansheng Gong<sup>a</sup>, Hongquan Wang<sup>a, b</sup>, Xiumei Qiu<sup>d</sup>

<sup>a</sup> Faculty of Material science and Chemistry, China University of Geosciences, Wuhan 430074, China

<sup>b</sup> Engineering Research Center of Nano-Geomaterials of Education Ministry, China University of Geosciences, Wuhan 430074, China

<sup>c</sup> Centre for Future Materials, University of Southern Queensland, Toowoomba, QLD, 4350, Australia

<sup>d</sup> Hubei province geological experimental testing center, Wuhan 430034, China

\*Corresponding author: 1. Chunjie Yan Tel.: +86-27-67885098 E-mail: chjyan2005@126.com

2. Zuhua Zhang Tel.: +61 7 4631 1330 E-mail: Zuhua.Zhang@usq.edu.au

**Abstract:** We present a process of fabricating water floatable and permeable geopolymer block from industrial by-product fly ash. By adding oleic acid and H<sub>2</sub>O<sub>2</sub> solution during the geopolymer manufacture process, a foamed geopolymer block with highly interconnected pores can be manufactured. The compressive strength of those foamed geopolymer block are  $0.55 \pm 0.08$  MPa at dry density of  $0.37 \text{ g/cm}^3$ , and its permeability to water coefficient is  $0.35 \text{ cm/s}$  and the BET surface area is  $67.62 \text{ m}^2/\text{g}$ . In addition, the porous geopolymer block possesses a high adsorption capacity for methylene blue,  $50.7 \pm 0.7 \text{ mg/g}$ , and shows the potential of being employed as low cost replacement for zeolites in applications such as waste water treatment at high mass transport rate.

**Keywords:** Geopolymer foams; Open cell; Floatable; Adsorbent; Fly ash

Download English Version:

<https://daneshyari.com/en/article/8016057>

Download Persian Version:

<https://daneshyari.com/article/8016057>

[Daneshyari.com](https://daneshyari.com)