

Accepted Manuscript

Study on flame retarded flexible polyurethane foam/alumina aerogel composites with improved fire safety

Hongyan Xie, Wei Yang, Anthony Chun Yin Yuen, Chang Xie, Jinsong Xie, Hongdian Lu, Guan Heng Yeoh

PII: S1385-8947(16)31672-2
DOI: <http://dx.doi.org/10.1016/j.cej.2016.11.110>
Reference: CEJ 16111

To appear in: *Chemical Engineering Journal*

Received Date: 25 August 2016
Revised Date: 13 October 2016
Accepted Date: 15 November 2016

Please cite this article as: H. Xie, W. Yang, A. Chun Yin Yuen, C. Xie, J. Xie, H. Lu, G. Heng Yeoh, Study on flame retarded flexible polyurethane foam/alumina aerogel composites with improved fire safety, *Chemical Engineering Journal* (2016), doi: <http://dx.doi.org/10.1016/j.cej.2016.11.110>

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 proof before it is published in its final 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.



**Study on flame retarded flexible polyurethane foam/alumina aerogel composites
with improved fire safety**

Hongyan Xie^a, Wei Yang^a, Anthony Chun Yin Yuen^b, Chang Xie^a, Jinsong Xie^a,

Hongdian Lu^{a,*}, Guan Heng Yeoh^b

^aDepartment of Chemical and Materials Engineering, Hefei University, Hefei, Anhui
230601, People's Republic of China

^bSchool of Mechanical and Manufacturing Engineering, University of New South
Wales, Sydney, NSW 2052, Australia

*Correspondence to: Hongdian Lu (E-mail: hdlu@ustc.edu.cn, Tel: 86-551-62158393)

ABSTRACT

In this article, a novel strategy has been proposed for the preparation of polyurethane/alumina aerogel (FPU/Alag) composites with homogeneous dispersion of alumina aerogel. The FPU/Alag composites have been prepared via immersing FPU foams into alumina sols followed by a freeze-drying method. Fire safety performance of the FPU composites with various Alag compositions in terms of thermal properties and flammability performance were evaluated. The composites demonstrated an earlier thermal degradation but higher thermal stability with increasing temperature and greater char yields than pure FPU. Total heat and smoke release, and rate of smoke emission of the FPU/Alag composites were found to be greatly reduced in comparison with those of FPU. Morphology and thermal

Download English Version:

<https://daneshyari.com/en/article/4763439>

Download Persian Version:

<https://daneshyari.com/article/4763439>

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