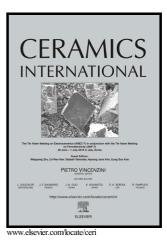
Author's Accepted Manuscript

Control of aluminum phosphate coating on mullite fibers by surface modification with polyethylenimine

Chao Chen, Bo Feng, Shujuan Hu, Yue Zhang, Song Li, Longfei Gao, Xuemei Zhang, Kun Yu



 PII:
 S0272-8842(17)32089-8

 DOI:
 http://dx.doi.org/10.1016/j.ceramint.2017.09.161

 Reference:
 CERI16332

To appear in: Ceramics International

Received date: 1 August 2017 Revised date: 4 September 2017 Accepted date: 20 September 2017

Cite this article as: Chao Chen, Bo Feng, Shujuan Hu, Yue Zhang, Song Li, Longfei Gao, Xuemei Zhang and Kun Yu, Control of aluminum phosphate coating on mullite fibers by surface modification with polyethylenimine, *Ceramics International*, http://dx.doi.org/10.1016/j.ceramint.2017.09.161

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.

Control of aluminum phosphate coating on mullite fibers by surface modification with polyethylenimine

Chao Chen^a, Bo Feng^a, Shujuan Hu^a, Yue Zhang^{a,*}, Song Li^b, Longfei Gao^b, Xuemei

Zhang^b, Kun Yu^b

^a Key Laboratory of Aerospace Advanced Materials and Performance, Ministry of

Education, School of Materials Science and Engineering, Beihang University, Beijing

100191, China

^b State Key Laboratory of Advanced Fiber composites, Beijing composite Materials Co.,

Ltd., Beijing 102101, China

Abstract: Aluminum phosphate (AlPO₄) is a promising oxidation-resistant and weak interface for ceramic-matrix composites. In this research, AlPO₄ coating was deposited on mullite fibers by an improved liquid-phase method based on electrostatic attraction. A cationic polyelectrolyte, polyethylenimine (PEI), was used for surface modification of mullite fibers. The formation process, phase evolution and microstructure of the coating were studied. The zeta potential of AlPO₄ particles, PEI-adsorbed AlPO₄ particles, and PEI-adsorbed mullite particles was characterized to find the proper pH value for improving electrostatic attraction. The obtained AlPO₄ coating was porous and continuous, whose thickness could be controlled by multiple coating cycles. The

^{*}Corresponding author at: School of Materials Science and Engineering, Beihang University, 37 Xueyuan Rd., 100191 Beijing, China.

Tel./fax: +86 10 82316976.

E-mail address: zhangy@buaa.edu.cn (Y. Zhang).

Download English Version:

https://daneshyari.com/en/article/7888872

Download Persian Version:

https://daneshyari.com/article/7888872

Daneshyari.com