

Accepted Manuscript

Effect of the sintering method on microstructure and thermal and mechanical properties of zirconium oxophosphate ceramics $\text{Zr}_2\text{O}(\text{PO}_4)_2$

Damien Bregiroux, Julie Cedelle, Isabelle Ranc, Céline Barreateau, Gustavo Mata Osoro, Gilles Wallez

PII: S0022-3697(17)30912-5

DOI: [10.1016/j.jpcs.2017.08.008](https://doi.org/10.1016/j.jpcs.2017.08.008)

Reference: PCS 8162

To appear in: *Journal of Physics and Chemistry of Solids*

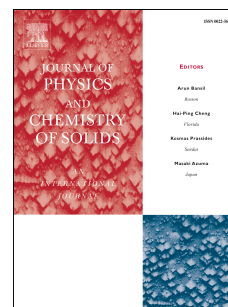
Received Date: 24 May 2017

Revised Date: 27 June 2017

Accepted Date: 3 August 2017

Please cite this article as: D. Bregiroux, J. Cedelle, I. Ranc, Cé. Barreateau, G.M. Osoro, G. Wallez, Effect of the sintering method on microstructure and thermal and mechanical properties of zirconium oxophosphate ceramics $\text{Zr}_2\text{O}(\text{PO}_4)_2$, *Journal of Physics and Chemistry of Solids* (2017), doi: 10.1016/j.jpcs.2017.08.008.

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.



**Effect of the sintering method on microstructure and thermal and mechanical properties
of zirconium oxophosphate ceramics $\text{Zr}_2\text{O}(\text{PO}_4)_2$**

Damien Bregiroux^{1,*}, Julie Cedelle², Isabelle Ranc², Céline Barreteau^{3,4}, Gustavo Mata Osoro^{3,4} and Gilles Wallez^{3,4}

¹ Sorbonne Universités, UPMC Univ Paris 06, CNRS, Collège de France, Laboratoire de Chimie de la Matière Condensée de Paris, 4 place Jussieu, 75005 Paris, France

² Laboratoire LEME, UPL, Univ Paris Nanterre, 50 rue de Sèvres, 92410 Ville d'Avray, France

³ Chimie Paris-Tech, PSL Research University, Institut de Recherche de Chimie-Paris, 11 Rue Pierre et Marie Curie, 75005, Paris, France

⁴ Sorbonne Universités, UPMC, 4 place Jussieu, 75005 Paris, France

* Corresponding author. Tel.: + 331 442 75679

E-mail address: damien.bregiroux@upmc.fr (D. Bregiroux)

Abstract

Due to an ultra-low thermal expansion, $\text{Zr}_2\text{O}(\text{PO}_4)_2$ could find many applications as a thermal shock resistant material. To this end, ceramic processing is a key step in order to reach best properties. In this work, $\text{Zr}_2\text{O}(\text{PO}_4)_2$ was sintered by conventional sintering and by the spark plasma sintering technique (SPS) with and without additive. Samples made by conventional sintering with ZnO as sintering aid have a maximum relative density of around 92 %.

Microstructure is composed of large grains and microcracks can be observed. When doped

Download English Version:

<https://daneshyari.com/en/article/5447334>

Download Persian Version:

<https://daneshyari.com/article/5447334>

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