

A non-sintering fabrication method for porous Si_3N_4 ceramics via sol hydrothermal process

Shujuan Hu, Ang Li, Bo Feng, Xiaoxia Tang, Yue Zhang



www.elsevier.com/locate/ceri

PII: S0272-8842(18)31964-3
DOI: <https://doi.org/10.1016/j.ceramint.2018.07.223>
Reference: CERI18945

To appear in: *Ceramics International*

Received date: 4 June 2018
Revised date: 24 July 2018
Accepted date: 25 July 2018

Cite this article as: Shujuan Hu, Ang Li, Bo Feng, Xiaoxia Tang and Yue Zhang, A non-sintering fabrication method for porous Si_3N_4 ceramics via sol hydrothermal process, *Ceramics International*, <https://doi.org/10.1016/j.ceramint.2018.07.223>

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 non-sintering fabrication method for porous Si_3N_4 ceramics via sol hydrothermal process

Shujuan Hu^a, Ang Li^b, Bo Feng^a, Xiaoxia Tang^a, Yue Zhang^{a*}

*^aKey Laboratory of Aerospace Materials and Performance (Ministry of Education),
School of Materials Science and Engineering, Beihang University, Beijing 100191,
China*

*^bResearch institute of physical and chemical engineering of nuclear industry, Tianjin
200180, China*

*Corresponding author. Tel./fax: +86-10-82316976. zhangy@buaa.edu.cn (Y. Zhang).

Abstract

A non-sintering fabrication method for porous Si_3N_4 ceramics with high porosity and high mechanical strength was proposed. Strength of the porous ceramics can be obtained by silica sol mass transfer process in hydrothermal conditions rather than a traditionally controlled high temperature sintering process. Under hydrothermal circumstances, silica sol is continuously transferred to the necks of Si_3N_4 powder compact, depositing there and thus consolidating the ceramic skeleton. The key of the method to obtain homogeneous microstructure and mechanical strength is how to keep the silica sol from gelatin during hydrothermal procedure. The stabilization of silica sol and its affecting factors were studied. The results indicated that ultrasonic treatment

Download English Version:

<https://daneshyari.com/en/article/10155443>

Download Persian Version:

<https://daneshyari.com/article/10155443>

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