The Effect of Microwave Energy on Sintering

Raghunath Rao Thridandapani

Dissertation submitted to the Faculty of the
Virginia Polytechnic Institute and State University in partial fulfillment of the requirements for the
degree of

Doctor of Philosophy

In
Materials Science and Engineering

David E. Clark, Chair
Robert W. Hendricks
Guo-Quan Lu
Gary R. Pickrell

April 1st, 2011
Blacksburg, Virginia

Keywords: Microwaves, Sintering, Activation Energy, Zirconia

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Figure 2.2 [used with permission]

J. J. Moore, in: 2007 ANS/ENS International Meeting and Nuclear Technology Expo, Washington D.C; used with permission from Dr. Moore, letter attached.

Figure 2.6 [fair use]


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M. A. Janney, C. L. Calhoun, H. D. Kimrey, Journal of the American Ceramic Society 75

**Figure 2.17** [fair use]


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Subject: RE: NERI - ANS presentation
From: "John Moore" <jjmoore@mines.edu>
Date: Thu, 6 Mar 2008 07:52:58 -0700
To: "Raghu" <r4thrida@gmail.com>, <Jon.Carmack@inl.gov>
CC: "Diane Folz" <dfolz@mse.vt.edu>

Raghu,

I have attached the pdf version of the slides I presented at the Washington review meeting that coincided with the ANS meeting in DC.

Please let me know if you need any additional information.

Kind Regards,
John Moore

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From: Raghu [mailto:r4thrida@gmail.com]
Sent: Wednesday, March 05, 2008 1:53 PM
To: Jon.Carmack@inl.gov
Cc: jjmoore@mines.edu; Diane Folz
Subject: NERI - ANS presentation

Hello Mr. Carmack,

We have just received the CD on the talks that were presented for U.S. Department of Energy Fuel Research Initiative Overviews-Panel session held at “2007 ANS/ENS International Meeting and Nuclear Technology Expo” on 15th Nov 2007.

The presentation that we are interested in

“The Application of Self-Propagating-High-Temperature Synthesis (SHS) to the Fabrication of Actinide Bearing Nitride and Other Ceramic Nuclear Fuels” by Dr. John J. Moore (Colorado School of Mines)

is not there in your CD. It does have the SHS reaction videos files but does not have the presentation.

Is there any way we could get a copy of this presentation ?

I am also copying this email to Dr. Moore in case he is interested in sending us the presentation directly.

Signing off in positive anticipation

Raghu
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Description of item under review for fair use: Figure 2.2: Vapor pressure as a function of temperature for various actinide materials present in spent nuclear fuel

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Description of item under review for fair use: Figure 2.18: Normalized linear shrinkage of zirconia plotted as a function of temperature for (a) conventional and microwave-assisted sintering (b) different microwave powers


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Description of item under review for fair use: Figure 2.19 Elemental mapping of zinc oxide diffusion in single crystal alumina

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Description of item under review for fair use: Figure 2.20 Potassium ion diffusion in sodium-alumino silicate glasses


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Description of item under review for fair use: Figure 2.21 Polar plot of the relative diffusion coefficient (radial axis) for Y+3 diffusing into YbBa2 Cu3 O7–δ as a function of angle to microwave polarization: (a) conventional heating; (b) sample heated by microwaves polarized along 0-180° axis


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Description of item under review for fair use: Figure 2.22 The measured activation energy for diffusion of 18O in sapphire was lower for microwave firing as compared with conventional firing

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