Trans Tech Publications Ltd

11th International Ceramics Congress 2006

Part of CIMTEC 2006
International Ceramics Congress and
4th Forum on New Materials

Advances in Science and Technology – Vol. 45

June 4 – 9, 2006
Acireale, Sicily, Italy

Volume 1 of 4

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571
www.proceedings.com

ISBN: 978-3908158-01-1

Some format issues inherent in the e-media version may also appear in this print version.

Copyright © 2006 Trans Tech Publications Ltd, Switzerland

Published by Trans Tech Publications Ltd., on behalf of Techna Group Srl, Italy

All rights reserved. No part of this book may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, recording, photocopying or otherwise, without the prior written permission of the Publisher.

No responsibility is assumed by the publisher for any injury and/or damage to persons or property as a matter of products liability, negligence or otherwise, or from any use or operation of any methods, products, instructions or ideas contained in the material herein.

Trans Tech Publications Ltd
Laubisrutistr. 24
CH-8712 Stafa-Zuerich
Switzerland
http://www.ttp.net

ISBN 3-908158-01-x
ISBN-13 978-3908158-01-1

Volume 45 of
Advances in Science and Technology
ISSN 1661-819X

Full text available online at http://www.scientific.net

The listing of the other Volumes (1 to 44) of the Series "Advances in Science and Technology" is available at TECHNA GROUP website: http://www.technagroup.it

***Distributed** worldwide by*

Trans Tech Publications Ltd
Laubisrutistr. 24
CH-8712 Stafa-Zuerich
Switzerland

Fax: +41 (44) 922 10 33
e-mail: sales@ttp.net

and in the Americas by

Trans Tech Publications Inc.
PO Box 699, May Street
Enfield, NH 03748
USA

Phone: +1 (603) 632-7377
Fax: +1 (603) 632-5611
e-mail: sales-usa@ttp.net

Trans Tech Publications Ltd

11th International Ceramics Congress
2006

Table of Contents

SECTION B - CORROSION AND TRIBOLOGY BEHAVIOUR OF CERAMICS

B-1 – Friction and Wear

B-2 – Oxidation and Corrosion

SECTION C - CERAMIC POWDERS SYNTHESIS AND PROCESSING

C-1 – Powder Synthesis and Characterization

C-2 – Powder Dispersion and Related Processes

C-3 – Shape Forming, Compaction Mechanisms and Green Body Characterization

SECTION D - SINTERING SCIENCE AND TECHNOLOGY

D-1 – Theory, Phenomenology and Modelling of Sintering

E-2 – Near-Net-Shape Techniques, Polymer Pyrolysis

E-3 – Hybrid Materials

E-4 – Porous Ceramics

E-5 – Microwave Processing

E-6 – Microgravitational Processing, Shock Synthesis and Dynamic Compaction, Superplasticity and Superplastic Forming

E-7 – Other Emerging Processing Directions and Materials

SPECIAL SESSION E-11 – SELF-PROPAGATING HIGH-TEMPERATURE SYNTHESIS OF CERAMICS

Endorsed by: SHS-AS – International Association on Self-Propagating High-Temperature Synthesis Member of the Institute of Topical Associations of the World Academy of Ceramics

E-11.1 – SHS of Ceramic Powders

E-11.2 – SHS of Ceramic Materials and Items

SPECIAL SESSION E-12 – LAYERED AND FUNCTIONALLY GRADED MATERIALS

Endorsed by: LGM-AS – International Association for Layered and Graded Materials Member of the Institute of Topical Associations of the World Academy of Ceramics

E-12.1 – Processing of Graded and Laminated Materials

E-12.2 – Properties of Graded and Laminated Materials

E-12.3 – FGM Materials & Applications

SECTION F - SURFACE ENGINEERING WITH CERAMICS

F-1 – Surface Processing Science

F-1.1 Fundamental Process Studies

F-1.2 Thin and Thick Films Deposition, Surface Treatments

SECTION G - CERAMIC COMPOSITES

G-1 – Processing and Fabrication

G-2 – Property and Behaviour

G-3 – Application Engineering

SECTION H - CERAMIC JOINING

H-1 – Wetting and Interfaces

H-2 – Joint Processing

SECTION I – STRUCTURAL CERAMIC

I-1 – Mechanical Behaviour

I-2 – Materials Processing

I-3 – Application Engineering

SECTION J - CERAMICS FOR ELECTROCHEMICAL, CHEMICAL, ENERGY, ENVIRONMENTAL AND REFRACTORY APPLICATIONS

J-1 – Ion Selective, Humidity and Gas Sensors

J-2 – Ceramics for Energy Conversion and Storage

J-2.1 Fuel Cells

J-2.2 Supercapacitors, Hydrogen Generation

J-5 – Catalysts and Catalysts Supports

J-5.1 Ceramic Catalysts

J-5.2 Catalysts Supports

J-6 – Environmental Issues in the Ceramics Industry

J-6.1 Environmental Saving Materials and Technologies

J-6.2 Recycling Wastes and By-Products

J-7 – Refractory Ceramics

J-7.1 Progress in Manufacturing

J-7.2 Materials and Products Characterization and Application

SECTION K - ELECTRICAL, MAGNETIC AND OPTICAL CERAMICS

K-1 – Dielectrics and Microwave Materials

K-2 – Thermistors, Varistors

K-3 – Ferroelectrics and Relaxors

K-4 – Piezoelectrics and Pyroelectrics

K-5 – Magnetic Ceramics

K-6 – Optic, Electro-Optic and Magneto-Optic Materials and Devices

K-7 – Integrated Electronics, Optics, Electro-Optics and Magneto-Optics

LATE PAPERS

SECTION F - SURFACE ENGINEERING WITH CERAMICS

F-1 – Surface Processing Science

F-1.2 Thin and Thick Films Deposition, Surface Treatments

SPECIAL SESSION E-11 – SELF-PROPAGATING HIGH-TEMPERATURE SYNTHESIS OF CERAMICS

E-11.1 SHS of Ceramic Powders