Innovation Center of Faculty of Mechanical Engineering

Faculty of Mechanical Engineering, University of Belgrade

Center for Business Trainings

CNN TECH

„International Conference of Experimental and Numerical Investigations and New Technologies“

Sponsored by:

MINISTRY OF EDUCATION OF THE REPUBLIC OF SERBIA

Programme

and

The Book of Abstracts

04 – 07 July 2023

Zlatibor, Serbia

„International Conference of Experimental and Numerical Investigations and New Technologies“

CNN TECH 2023

04 – 07 July 2023

Hotel Mona, Miladina Pecinara 26, Zlatibor, Serbia

http://cnntechno.com

Programme

and

The Book of Abstracts

Organised by:

Innovation Center of Faculty of Mechanical Engineering

Faculty of Mechanical Engineering, University of Belgrade

Center for Business Trainings

Sponsored by:

Ministry of Education of the Republic of Serbia

Title:	International Conference of Experimental and Numerical Investigations and New Technologies – **CNN TECH 2023** **PROGRAMME AND THE BOOK OF ABSTRACTS**
Publisher:	University of Belgrade - Faculty of Mechanical Engineering Kraljice Marije 16, 11120 Belgrade 35 tel: (+381 11) 3302-346, fax 3370364 e-mail: cnntechno@gmail.com web site: http://cnntechno.com, http://www.inovacionicentar.rs
Editors:	Dr Goran Mladenovic, Associate Professor Dr Martina Balac, Senior Scientific Researcher Dr Aleksandra Dragicevic, Scientific Researcher
Technical editor	Dr Goran Mladenovic, Associate Professor
Cover page:	Ivana Jevtic, Junior Researcher
Printed in:	Innovation Center of Faculty of Mechanical Engineering Kraljice Marije 16 11120 Belgrade 35 tel: (+381 11) 3302-346
Circulation:	150 copies. The end of printing: June 2023.

ISBN: 978-86-6060-155-3

“International Conference of Experimental and Numerical Investigations and New Technologies”

CNN TECH 2023

SCIENTIFIC COMMITTEE:

Nenad Mitrovic, Serbia (chairman)
Milos Milosevic, Serbia (co-chairman)
Aleksandar Sedmak, Serbia
Hloch Sergej, Slovakia
Drazan Kozak, Croatia
Nenad Gubeljak Slovenia
Monka Peter, Slovakia
Snezana Kirin, Serbia
Samardzic Ivan, Croatia
Martina Balac, Serbia
Mládková Ludmila, Czech Republic
Johanyák Zsolt Csaba, Hungary
Igor Svetel, Serbia
Aleksandra Mitrovic, Serbia
Valentin Birdeanu, Romania
Danilo Nikolic, Montenegro
Goran Mladenovic, Serbia
Bajic Darko, Montenegro
Tasko Maneski, Srbija
Luis Reis, Portugal
Zarko Miskovic, Serbia
Tozan Hakan, Turkey
Nikola Momcilovic, Serbia
Traussnigg Udo, Austria
Gordana Bakic, Serbia
Katarina Colic, Serbia
Peter Horňak, Slovakia
Róbert Huňady, Slovakia
Martin Hagara, Slovakia
Jovan Tanaskovic, Serbia
Marija Djurkovic, Serbia
Tsanka Dikova, Bulgaria
Ján Danko, Slovakia
Ognjen Pekovic, Serbia
Jelena Svorcan, Serbia
Suzana Filipovic, Serbia
Darko Kosanovic, Serbia
Nebojsa Manic, Serbia
Zorana Golubovic, Serbia
Vera Pavlovic, Serbia
Aleksandra Dragicevic, Serbia
Dragan Milkovic, Serbia
Bojan Cudic, Bosnia and Herzegovina
Vesna Miletic, Australia
Natasa Obradovic, Serbia
Branislav Sredanovic, Bosnia and Herzegovina

ORGANIZING COMMITTEE:

Milos Milosevic (chairman)
Nenad Mitrovic (co-chairman)
Aleksandar Sedmak
Martina Balac
Igor Svetel
Goran Mladenovic
Aleksandra Mitrovic
Aleksandra Lj. Dragicevic
Zarko Miskovic
Katarina Colic
Milan Travica
Aleksandra D. Dragicevic
Isaak Trajkovic
Toni Ivanov
Snezana Kirin
Igor Stankovic
Ivana Vasovic Maksimovic
Nina Obradovic
Ivana Jevtic
Jasmina Milenkovic
Mina Volic

enterprise europe network
Business Support on Your Doorstep

CHARACTERIZATION OF MECHANICALLY ACTIVATED ZRO_2-C POWDER MIXTURES

N. Obradovic[1,2*], L. Feng[2], S. Filipovic[1,2], M. Mirkovic[3], D. Kosanovic[1,2], J. Zivojinovic[1], J. Rogan[4], W. G. Fahrenholtz[2]

[1]Institute of Technical Sciences of the Serbian Academy of Sciences and Arts,

Knez Mihailova 35/IV, 11000 Belgrade, Serbia

[2]Department of Materials Science and Engineering, Missouri University of Science and Technology, Rolla, MO 65409, USA

[3]University of Belgrade, "Vinca" Institute of Nuclear Sciences - National Institute of

the Republic of Serbia, Department of Material Science, 11000 Belgrade, Serbia

[4]Department of General and Inorganic Chemistry, Faculty of Technology and Metallurgy, University of Belgrade, 11120 Belgrade, Serbia

**Corresponding author e-mail: nina.obradovic@itn.sanu.ac.rs*

Abstract

Mechanical activation represents a very useful technique for powder processing prior to sintering process. First of all, it makes powders homogenized, leads to attrition of powder particles, and makes powder mixtures more reactive. Secondly, it can lead to mechano-chemical reaction, and finally, lowering of sintering time and temperature. Mixtures of ZrO_2 and C were mechanically activated by high-energy ball milling. Powders were milled for times from 0 to 120 minutes in air atmosphere. Mechanically activated powder mixtures were characterized by various techniques, such as particle size analysis (PSA), X-ray powder diffraction (XRPD), scanning electron microscopy (SEM), Fourier-transform infrared (FTIR) spectroscopy, Raman spectroscopy, and diffraction scanning calorimetry along with thermo gravimetry (DSC-TGA). As milling time increased, surface area of powders increased, indicating significant particle size reduction. Mechanical activation for 15 minutes provides the best balance between particle size reduction and reactivity for the powders.

Keywords

ZrO_2-C, mechanical activation, SEM, XRD.

CIP - Каталогизација у публикацији Народна библиотека Србије, Београд

621(048)(0.034.2)
62:519.6(048)(0.034.2)

INTERNATIONAL conference of experimental and numerical investigations and new technologies (2023 ; Zlatibor)
Programme [Elektronski izvor] ; and The Book of Abstracts / International Conference of Experimental and Numerical Investigations and New Technologies - CNN TECH 2023, 04 – 07 July 2023, Zlatibor, Serbia ; organized by Innovation Center of Faculty of Mechanical Engineering [and] University of Belgrade, Faculty of Mechanical Engineering, Center for Business Trainings ; [editors Goran Mladenovic, Martina Balac, Aleksandra Dragicevic]. - Belgrade : University, Faculty of Mechanical Engineering, 2022 (Belgrade : Innovation Center of Faculty of Mechanical Engineering). - 1 USB fleš memorija ; 1 x 2 x 5 cm

Sistemski zahtevi: Nisu navedeni. - Nasl. sa naslovne strane dokumenta. - Tiraž 150.

ISBN 978-86-6060-155-3

a) Машинство -- Апстракти b) Техника -- Нумерички методи -- Апстракти

COBISS.SR-ID 119652617