

**FOURTEENTH YOUNG RESEARCHERS' CONFERENCE  
MATERIALS SCIENCE AND ENGINEERING**

**December 9-11, 2015, Belgrade, Serbia  
Serbian Academy of Sciences and Arts, Knez Mihailova 36**

**Program and the Book of Abstracts**

**Materials Research Society of Serbia  
&  
Institute of Technical Sciences of SASA**

**December 2015, Belgrade, Serbia**

Book title:

Fourteenth Young Researchers' Conference - Materials Science and Engineering:  
Program and the Book of Abstracts

Publisher:

Institute of Technical Sciences of SASA  
Knez Mihailova 35/IV, 11000 Belgrade, Serbia  
Tel: +381-11-2636994, fax: 2185263  
<http://www.itn.sanu.ac.rs>

Editor:

Dr. Smilja Marković

Technical Editor:

Aleksandra Stojičić

Cover page: Aleksandra Stojičić and Milica Ševkušić

Cover: modified photo *Belgrade bridges* by mcveja; Flickr  
(<https://www.flickr.com/photos/mcveja/2428406067/>); CC-BY 2.0 Generic

Printer:

Gama digital centar  
Autoput No. 6, 11070 Belgrade, Serbia  
Tel: +381-11-6306992, 6306962  
<http://www.gdc.rs>

Edition:

100 copies

CIP - Каталогизacija у публикацији  
Народна библиотека Србије, Београд

66.017/.018(048)

YOUNG Researchers Conference Materials Sciences and Engineering (14th ;  
2015 ; Beograd)

Program ; and the Book of Abstracts / Fourteenth Young Researchers'  
Conference Materials Sciences and Engineering, December 9-11, 2015,  
Belgrade, Serbia ; [organized by] Materials Research Society of Serbia  
& Institute of Technical Sciences of SASA ; [editor Smilja Marković]. -  
Belgrade : Institute of Technical Sciences of SASA, 2015 (Beograd :  
Gama digital centar). - XVI, 58 str. ; 23 cm

Tiraž 100. - Registar.

ISBN 978-86-80321-31-8

1. Materials Research Society of Serbia (Beograd)

a) Наука о материјалима - Апстракти b) Технички материјали - Апстракти  
COBISS.SR-ID 219496972

11-2

**Preparation of calcium containing mixed oxides as solid base catalysts  
for the application in biodiesel synthesis**

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Biodiesel (fatty acid methyl esters - FAME) has been found suitable for using as an alternative fuel in diesel engine. The conventional method for biodiesel production is transesterification of vegetable oils or animal fats with short-chain alcohols in the presence of catalysts. From an economic point of view, calcium oxide (CaO) is the most widely used and exhibits good catalytic properties for transesterification of triglycerides to biodiesel.

In order to study the effect of solid base catalysts for biodiesel production, transesterification of edible sunflower oil with methanol was carried out in the presence of series of CaO-based oxides, obtained by mechanochemical treatment of CaO or CaCO<sub>3</sub> with other metal oxides, followed by calcination.

Mechanochemical treatment of starting powders mixtures was performed in a planetary ball mill using two different milling media, hardened steel or zirconia vials and balls. The prepared catalysts were characterized by X-ray diffraction (XRD), base strength using Hammett indicator method and the particle size using laser diffraction distribution (PSLD). All the experiments were carried out at different reaction conditions in 300 cm<sup>3</sup> batch autoclave equipped with a heater and mixer. The calcium containing mechanochemically prepared catalysts were found to have enhanced activity compared to conventionally prepared catalysts.