



Josip Juraj Strossmayer University of Osijek

in collaboration with

**International Federation of Environmental Health (IFEH)
and the network of academic institutions**

1st International Students' GREEN Conference

17-18 May 2018

**Faculty of Agriculture in Osijek
Osijek
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ISC GREEN 2018

**1st International Students' GREEN Conference
17-18 May 2018
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BOOK OF ABSTRACTS



Sveučilište Josipa Jurja Strossmayera u Osijeku

u suradnji s

**Međunarodnom federacijom za zdravstvenu ekologiju (IFEH)
i mrežom akademskih institucija**

1. međunarodna studentska GREEN konferencija

**17. i 18. svibnja 2018.
Poljoprivredni fakultet u Osijeku
Osijek
Hrvatska**



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Croatia**

KNJIGA SAŽETAKA

Osijek, 2018.

KNJIGA SAŽETAKA 1. međunarodna studentska GREEN konferencija
BOOK OF ABSTRACTS *1st International Students' GREEN Conference*

Izdavač Sveučilište Josipa Jurja Strossmayera u Osijeku,
Published by Prehrambeno-tehnološki fakultet Osijek
Josip Juraj Strossmayer University of Osijek,
Faculty of Food Technology Osijek

Glavna i izvršna urednica
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Tisak i uvez/Printing and Binding Studio HS internet d.o.o., Osijek, Croatia

Naklada/Number of Copies 100

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Varevac Damir, Včev Aleksandar, Vuletić Suzana

Osijek, 2018.

ISBN: 978-953-7005-56-6

CIP zapis dostupan je u računalnom katalogu Gradske i
sveučilišne knjižnice Osijek pod brojem 140914084

*A CIP catalogue record of this publication is available from the
City and University Library Osijek under 140914084*

Pokrovitelji:

Under the Auspice of:

**Pod visokim pokroviteljstvom Predsjednice Republike Hrvatske
gospođe Kolinde Grabar-Kitarović**

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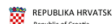
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Hrvatski liječnički zbor – podružnica Osijek/Croatian Medical Association – branch Osijek



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DEGRADATION OF CONGO RED (CR) CATALYZED BY NANOSTRUCTURED CERIA

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Nanostructured CeO_2 is a promising catalyst in many applications because it is one of the most reactive rare earth metal oxides. It plays a vital role in technologies for environmental and energy related applications, such as heterogeneous catalysis. Nanostructured ceria with various morphologies exhibits excellent physicochemical properties. In this thesis, nanostructured CeO_2 has been synthesized by previously published surfactant-assisted green chemical precipitation method. As a cationic surfactant CTAB (cetyltrimethylammonium bromide) was used and as a cerium precursor cerium chloride hexahydrate. Synthesized compounds were characterized by powder X-ray diffraction (PXRD), transmission electron microscopy (TEM), Fourier transform infrared spectroscopy (FTIR). The catalytic activity of the nanostructured CeO_2 was tested towards the degradation of Congo Red (CR) synthetic dye in different shapes (spherical, nanorods and mixture of both). The results show excellent removal capacity of this organic pollutant and therefore it can be a promising candidate for wastewater treatment.

Keywords: nanostructured ceria, congo red, catalysis