

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

**December 4-6, 2019, Belgrade, Serbia**

**Program and the Book of Abstracts**

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

**November 2019, Belgrade, Serbia**

Book title:  
Eighteenth 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, 2185263, <http://www.itn.sanu.ac.rs>

Editor:  
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Technical Editor:  
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Cover page: Aleksandra Stojičić and Milica Ševkušić  
Cover: Modified Photo by Miloš Stošić; Wikimedia Commons  
(<https://commons.wikimedia.org/wiki/File:Бедџи - поглед на Ушће.jpg>); Creative Commons Attribution-Share Alike 3.0 Unported license

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

Edition:  
130 copies

CIP - Каталогизација у публикацији  
Народна библиотека Србије, Београд  
66.017/.018(048)

**YOUNG Researchers Conference Materials Sciences and Engineering (18 ; 2019 ; Beograd)**

Program ; and the Book of abstracts / Eighteenth Young Researchers' Conference Materials Sciences and Engineering, December 4-6, 2019, 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, 2019 (Belgrade : Gama digital centar). - XX, 102 str. : ilustr. ; 23 cm

Tiraž 130. - Registar.

ISBN 978-86-80321-35-6 (ITSSASA)

a) Наука о материјалима -- Апстракти б) Технички материјали -- Апстракти

COBISS.SR-ID 281006348

## Aim of the Conference

Main aim of the conference is to enable young researchers (post-graduate, master or doctoral student, or a PhD holder younger than 35) working in the field of materials science and engineering, to meet their colleagues and exchange experiences about their research.

## Topics

Biomaterials  
Environmental science  
Materials for high-technology applications  
Materials for new generation solar cells  
Nanostructured materials  
New synthesis and processing methods  
Theoretical modelling of materials

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**Results of the Conference**

Beside printed «Program and the Book of Abstracts», which is disseminated to all conference participants, selected and awarded peer-reviewed papers will be published in journal “Tehnika – Novi Materijali”. The best presented papers, suggested by Session Chairpersons and selected by Awards Committee, will be proclaimed at the Closing Ceremony. Part of the award is free-of-charge conference fee at YUCOMAT 2020.

**Sponsors**



**ANALYSIS**  
LABORATORY EQUIPMENT

**Acknowledgement**

The editor and the publisher of the Book of abstracts are grateful to the Ministry of Education, Sciences and Technological Development of the Republic of Serbia for its financial support of this book and The Eighteenth Young Researchers' Conference - Materials Sciences and Engineering, held in Belgrade, Serbia.

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The Briggs-Rauscher reaction as an unusual detector for a different type of bronzes

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The Briggs-Rauscher (BR) reaction is an oscillating reaction in which the oxidation of malonic acid ( $\text{CH}_2(\text{COOH})_2$ ) in the presence of hydrogen peroxide ( $\text{H}_2\text{O}_2$ ) and potassium iodate ( $\text{KIO}_3$ ) is catalyzed with a metal ion (usually manganese ion ( $\text{Mn}^{2+}$ )) in an acid solution ( $\text{HClO}_4$ ). It is well known that the BR reaction represents a chemical system that is extremely sensitive to the addition of different types of analytes. Every change in oscillatory dynamics, caused by analyte addition, can be used for the assessment of analyte concentration, as well as its potential antiradical activities.

The basic idea of this work is to use the oscillatory reaction, as an unusual and novel system for distinguishing different types of insoluble materials such as bronzes, specifically phosphate tungsten bronze (PWB) and phosphate molybdenum bronze (PMoB). Regarding the results obtained, the increasing mass of PWB leads to a significant decrease of BR oscillatory time, while the addition of PMoB has not affected the BR reaction dynamics. The obtained different behavior of PWB and PMoB introduced the BR reaction as a system-detector for these two types of bronzes. In order to investigate the mechanism of bronzes action in BR oscillatory reaction, the pH and electric conductivity measurements, as well as inductively coupled plasma and the cyclic voltammetry measurements were done. This work extends the practical aspect of the BR reaction for the examination of solid materials. Furthermore, the obtained results open a new section of oscillatory reaction usage in material science and catalysis in general.

Acknowledgment: This work was supported by the Ministry of Education, Science and Technological Development of the Republic of Serbia (Projects OI 172016, III 45001 and OI 172015).