

MATERIALS RESEARCH SOCIETY OF SERBIA  
INSTITUTE OF TECHNICAL SCIENCES OF SASA



*Programme and the Book of Abstracts*

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

Belgrade, December 4–6, 2019

<http://www.mrs-serbia.org.rs/index.php/young-researchers-conference>

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

**November 2019, Belgrade, Serbia**

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## **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

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### **Nickel doped titanate catalysts for photocatalytic hydrogen generation**

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Decrease of fossil fuels reserves coupled with their harmful environmental impact have moved the interest toward new, environment friendly energy sources. During the past decades the interest in hydrogen as a green and sustainable fuel has increased. Photocatalytic water splitting has been considered as a promising method for storing and converting solar energy into clean, renewable hydrogen fuel. Among various used photocatalysts, one-dimensional titanate nanomaterials attracted considerable attention, due to their favorable physicochemical properties (excellent ion-exchange activity, high specific surface area, high surface charge density, etc.).

This study will focus on investigation of photocatalytic hydrogen production activity over low cost Ni modified titanates, as alternatives for highly cost and low-abundance noble metal based catalysts. The catalysts with different nickel loading were synthesized by deposition of predetermined amount of nickel on hydrothermally prepared titanate support, followed by hydrogen temperature programmed reduction (TPR). The final catalysts were characterized using various methods, such as N<sub>2</sub> physisorption, XRD, TPR. The study showed that adequate selection of synthesis parameters results in catalyst with improved textural, morphological and structural properties. The investigation on the effect of the nickel content on the photocatalytic hydrogen production allowed us to define the optimal metal content in the synthesized catalysts.

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