

**NINTH ANNUAL CONFERENCE OF THE YUGOSLAV MATERIALS  
RESEARCH SOCIETY**

# **YUCOMAT 2007**

Hotel "Plaža", Herceg Novi, Montenegro, September 10-14, 2007  
<http://www.yu-mrs.org.yu>

## **Programme and The Book of Abstracts**

Organised by:  
**Yugoslav Materials Research Society,  
Faculty of Metallurgy and Technology, Podgorica  
and  
Institute of Technical Sciences of the  
Serbian Academy of Sciences and Arts, Belgrade**

**Title:** THE NINTH YUGOSLAV MATERIALS RESEARCH SOCIETY CONFERENCE  
“YUCOMAT 2007”  
Programme  
and  
The Book of Abstracts

**Publisher:** Institute of Technical Sciences of SASA  
Knez Mihailova 35/IV; P.O. Box 377, 11000 Belgrade, Serbia  
Phone: +381 11 2185-437; Fax: + 381 11 2185-263  
<http://www.itn.sanu.ac.yu>

**Editor:** Prof. Dr. Dragan P. Uskoković

**Technical editor:** Aleksandra Stojičić

**Cover page:** Aleksandra Stojičić

**Copyright** © 2007 Institute of Technical Sciences of the Serbian Academy of Sciences & Arts

**Acknowledgment:** The editor of the book of abstracts is grateful to the Ministry of Science of the Republic of Serbia for its financial support of this book and The Ninth Yugoslav Materials Research Society Conference “YUCOMAT 2007” held in Herceg Novi.



**Printed in:** Printing office “Čigoja”  
Studentski trg 15, 11000 Belgrade  
Phones: + 381 11 2186-725; + 381 11 625-954  
Circulation: 300 copies. The end of printing: July 2007.

ISBN 978-86-80321-11-0



CIP – Каталогизација у публикацији  
Народна библиотека Србије, Београд

66.017/.018(048)

YUGOSLAV Materials Research Society  
(Beograd). Conference (9 ; 2007 ; Herceg  
Novi)

Programme and the Book of Abstracts /  
Ninth Annual Conference of the Yugoslav  
Materials Research Society YUCOMAT 2007,  
Herceg Novi, September 10-14, 2007 ;  
organized by Yugoslav Materials Research  
Society, Faculty of Metallurgy and Tehnology,  
Podgorica and Institute of Technical Sciences  
of the Serbian Academy of Sciences and Arts,  
Belgrade ; [editor Dragan R. Uskoković]. -  
Belgrade : Institute of Technical Sciences  
of SASA, 2007 (Belgrade : Čigoja). - LI,  
202 str. : table ; 30 cm

Tiraž 300. - Registar.

ISBN 978-86-80321-11-0

1. Yugoslav Materials Research Society  
(Beograd) 2. Faculty of Metallurgy and  
Tehnology (Podgorica) 3. Institute of  
Technical Sciences of SASA (Beograd)  
а) Наука о материјалима - Апстракти б)  
Технички материјали - Апстракти  
COBISS.SR-ID 141931788

P.S.D.10

### NONWOVEN GEOTEXTILE COMPOSITES WITH BENTONITE

J. Dostanić<sup>1</sup>, A. Milutinović-Nikolić<sup>1</sup>, V. Rizmanoski<sup>1</sup>, S. Lukić<sup>2</sup>, D. Jovanović<sup>1</sup>

<sup>1</sup>Institute of Chemistry, Technology and Metallurgy-Department of Catalysis and Chemical Engineering, Belgrade, Serbia, <sup>2</sup>Faculty of Technology and Metallurgy, Belgrade, Serbia

Commercial geotextile composites that contain bentonite as a sorption layer are made by binding dry bentonite in powder or granular form between two woven and/or nonwoven (NW) layers. Binding can be performed by sandwiching bentonite between textile layers by needling and/or stitching or adhering bentonite layers to textile surfaces by water-based adhesive. In this paper, the possibility of synthesizing composite by embedding bentonite particles into NW structures was investigated. The composites were synthesized from commercial needlepunched polypropylene and polyester NW and domestic bentonite clays with previously defined physical-chemical and textural properties. Bentonite was applied on NW in the form of suspensions in water solution of adhesive based on modified cellulose soluble in water. Suspensions of bentonite with particle size less than 75 µm were used in synthesis. Composite structure was microscopically examined and image analysis was performed. The absorption capacity and liquid retention ability of starting NW and final composites were measured according to EDANA (European Disposables and Nonwovens Association) recommendations. The mechanical properties of obtained composites were tested according to JUS regulations. The composite materials have improved mechanical properties in comparison with starting nonwovens.

*Acknowledgements:* This work was supported by the Ministry of Science & Environmental Protection of the Republic of Serbia (Project TR6712B).

P.S.D.11

### ELECTRODEPOSITION OF NiMo ALLOY COATINGS AND THEIR CHARACTERIZATION AS CATHODES FOR HYDROGEN EVOLUTION IN SODIUM HYDROXIDE SOLUTION

Lj. Gajić-Krstajić<sup>1</sup>, N.V. Krstajić<sup>2</sup>, V.D. Jović<sup>3</sup>, B.M. Jović<sup>3</sup>

<sup>1</sup>Institute of Technical Sciences SASA, Belgrade, Serbia

<sup>2</sup>Faculty of Technology and Metallurgy University of Belgrade, Belgrade, Serbia

<sup>3</sup>Center for Multidisciplinary Studies University of Belgrade, Belgrade, Serbia

The hydrogen evolution reaction on electrodeposited NiMo alloy coatings, as well as their electrochemical properties in NaOH solutions have been investigated by polarization measurements, cyclic voltammetry and EIS technique. It is shown that NiMo alloy coatings electrodeposited from pyrophosphate-sodium bicarbonate bath possess high catalytic activity for hydrogen evolution in NaOH solutions. Their stability in 1M NaOH at 25 °C under the condition of reverse polarization is shown to be very good, while in 33% NaOH at 85°C (conditions of industrial electrolysis) electrodeposited NiMo alloy coatings exhibit also high catalytic activity, but low stability, as a consequence of massive dissolution of alloy coatings under the condition of reverse polarization.