

**SIXTEENTH ANNUAL CONFERENCE**

# **YUCOMAT 2014**

Hunguest Hotel Sun Resort Herceg Novi, Montenegro,  
September 1-5, 2014  
<http://www.mrs-serbia.org.rs>

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

Organised by:  
**Materials Research Society of Serbia**

Endorsed by:  
**Federation of European Material Societies  
and  
Materials Research Society**

**Title:** THE SIXTEENTH ANNUAL CONFERENCE  
**YUCOMAT 2014**  
Programme and The Book of Abstracts

**Publisher:** Materials Research Society of Serbia  
Knez Mihailova 35/IV, 11000 Belgrade, Serbia  
Phone: +381 11 2185-437; Fax: + 381 11 2185-263  
<http://www.mrs-serbia.org.rs>

**Editors:** Prof. Dr. Dragan P. Uskoković and Prof. Dr. Velimir Radmilović

**Technical editor:** Aleksandra Stojičić

**Cover page:** Aleksandra Stojičić and Milica Ševkušić  
Back cover photo: Author: Rudolf Getel  
Source: Flickr ([www.flickr.com/photos/rudolfgetel/4280176487](http://www.flickr.com/photos/rudolfgetel/4280176487))  
Licence: CC BY 2.0

**Copyright** © 2014 Materials Research Society of Serbia

**Acknowledgments:** This conference is held in honour of Prof. Dragan Uskoković's 70<sup>th</sup> birthday.



**Materials  
Research  
Society**

**Printed in:** Biro Konto  
Sutorina bb, Igalo – Herceg Novi, Montenegro  
Phones: +382-31-670123, 670025, E-mail: [bkonto@t-com.me](mailto:bkonto@t-com.me)  
Circulation: 220 copies. The end of printing: August 2014

P.S.A.9

**TALLOIL DIETHYLENTRIAMINE IMIDAZOLINE AS A CORROSION INHIBITOR FOR MILD STEEL IN CHLORIDE SOLUTION SATURATED WITH CARBON DIOXIDE**

Ivana Jevremović<sup>1</sup>, Marc Singer<sup>2</sup>, Srdjan Nešić<sup>2</sup>, Vesna Mišković-Stanković<sup>1</sup>  
<sup>1</sup>*Faculty of Technology and Metallurgy, Belgrade, Serbia,* <sup>2</sup>*Institute for Corrosion and Multiphase Technology, Ohio University, Athens, USA*

The effect of talloil diethylenetriamine imidazoline (TOFA/DETA imidazoline) on corrosion of mild steel in 3 wt. % NaCl solution saturated with CO<sub>2</sub> was investigated by weight loss measurements (WL) and atomic force microscopy (AFM). Adsorption mechanism was studied using the quartz crystal microbalance measurements (QCM). WL measurements shown that the addition of TOFA/DETA imidazoline inhibitor to 3 wt. % NaCl solution significantly reduced the corrosion rate, while the inhibition efficiency was calculated to be around 95 %. AFM results demonstrated that TOFA/DETA imidazoline decreases the steel surface roughness and effectively protects mild steel from corrosion due to the formation of the inhibitor film. QCM measurements confirmed that TOFA/DETA imidazoline forms self-assembled monolayers on gold coated quartz crystals. The obtained values of standard Gibbs free energy of adsorption,  $\Delta G_{ads}^0$  at different temperatures indicate that adsorption of TOFA/DETA imidazoline on the gold surface is spontaneous and favorable.

P.S.A.10

**THE HYDROTHERMAL SYNTHESIS OF 1D BIOMEDICAL HYDROXYAPATITE NANOSTRUCTURES**

Zoran Stojanović<sup>1</sup>, Ljiljana Veselinović<sup>1</sup>, Nenad Ignjatović<sup>1</sup>,  
Miroslav Miljković<sup>2</sup>, Dragan Uskoković<sup>1</sup>  
<sup>1</sup>*Institute of Technical Sciences of SASA, Belgrade, Serbia,* <sup>2</sup>*Laboratory for Electronic Microscopy, Faculty of Medicine, University of Nis, Niš, Serbia*

1D hydroxyapatite nanostructures such as nanotubes, ultra long nanowires and other morphological varieties have been promising material for bone reconstruction and therapy. Advantages like high specific surface, packing properties and mechanical properties make those nanostructures excellent candidates for scaffolds. This work is focused on soft hydrothermal routes for preparing different 1D nanostructures. Using hydroxyapatite formation mechanisms in hydrothermal and solvothermal systems, various chemical parameters, i.e. precursor chemical composition, are investigated for obtaining these 1D materials on gram scale. The synthesized materials are characterized by X – ray diffraction, scanning electron microscopy and laser diffraction methods.