



**Serbian Ceramic Society Conference  
ADVANCED CERAMICS AND APPLICATION IV  
New Frontiers in Multifunctional Material Science and Processing**

**Serbian Ceramic Society  
Institute for Testing of Materials  
Institute of Chemistry Technology and Metallurgy  
Institute for Technology of Nuclear and Other Raw Mineral Materials  
School of Electrical Engineering and Computer Science of Applied Studies**

**PROGRAM AND THE BOOK OF ABSTRACTS**

**Serbian Academy of Sciences and Arts, Knez Mihailova 35  
Serbia, Belgrade, 21-23. September 2015**

**Serbian Ceramic Society Conference**  
**ADVANCED CERAMICS AND APPLICATION IV**  
**New Frontiers in Multifunctional Material Science and Processing**

**Serbian Ceramic Society**  
**Institute for Testing of Materials**  
**Institute of Chemistry Technology and Metallurgy**  
**Institute for Technology of Nuclear and Other Raw Mineral Materials**  
**School of Electrical Engineering and Computer Science of Applied Studies**

**PROGRAM AND THE BOOK OF ABSTRACTS**

**Serbian Academy of Sciences and Arts, Knez Mihailova 35**  
**Serbia, Belgrade, 21-23. September 2015.**

**Book title:** Serbian Ceramic Society Conference - ADVANCED CERAMICS AND APPLICATION IV: Program and the Book of Abstracts

**Publisher:**

Serbian Ceramic Society

**Editors:**

Prof.dr Vojislav Mitić

Prof.dr.Olivera Milošević

Dr Lidija Mančić

Dr Nina Obradović

**Technical Editors:**

Dr Lidija Mančić

Dr Nina Obradović

**Printing:**

Serbian Academy of Sciences and Arts,  
*Knez Mihailova 35, Belgrade*

**Edition:**

140 copies

**Photos :** Jewelry - Zvonko Petković

Sculptures - Dragan Radenović

Ceramics - Ruža Nikolić

CIP

commercial product (GAMIT 4-EC) of herbicide clomazone (0.05 mM) in aqueous suspensions of synthesized and commercial (Degussa P25) TiO<sub>2</sub> were examined under UV radiation. In all experiments the concentration of the catalyst was 0.50 mg mL<sup>-1</sup>. BET measurements revealed that all synthesized catalyst had mesoporous structure, except the sample synthesized with 0.07 M (NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub> and at pH of solution 9 that had small amount of micropores. This sample had the best photocatalytic properties, even better than commercial Degussa P25, and the reason of that is rather the biggest porosity than the combination of micro- and mesoporosity.

## P23

### **Correlation between crystal structure and thermal stability of fire protection coating**

**Nina Obradović<sup>1</sup>, Nataša Đorđević<sup>2</sup>, Smilja Marković<sup>1</sup>, Marija Marković<sup>2</sup>,  
Miodrag Mitrić<sup>3</sup>**

<sup>1</sup>*Institute of Technical Sciences of SASA, Knez Mihailova 35/IV, 11000 Belgrade, Serbia*

<sup>2</sup>*Institute for Technology of Nuclear and Other Mineral Raw Materials,  
Bulevar Franse d'Eperea 86, 11000 Belgrade, Serbia*

<sup>3</sup>*Vinča Institute of Nuclear Sciences, University of Belgrade, Mike Alasa 12-14,  
11000 Belgrade, Serbia*

Fire protection coatings on steel constructions for outdoor conditions on the basis of organic solutions have been analyzed. The first layer of coating is corrosion protection, alkyd paint „PROTHERM STEEL PRIMEPOX“ manufacturer „ITALVIS PROTECT“ Italy. The second layer of coating is an expanding coat for outdoor conditions „PROTHERM STEEL (EXT)“ solvent-based, „AMONNFIRE“ Italy. The third layer is final colors for metal „AMOTHERM STEEL TOP PU SB“ „AMONNFIRE“ Italy. XRD, DTA/TG and FTIR methods were used for sample characterization. It was found that primary and outer layer had very good adhesion. The second layer, for fire protection possesses 2.5 mass % humidity, which resulted in decrease of adhesion. XRD and FTIR analysis showed that those materials are adequate materials for fire protection up to 1000 °C. Principles of fire protection are based on chemical reaction that are taking place in the temperature range 400-700 °C.

## P24

### **Characterization and current–voltage characteristics of solar cells based on the composite of synthesized Sb<sub>2</sub>S<sub>3</sub> powder with small band gap and natural dye**

**Ivana Lj. Validžić, Valentina Janošević, Miodrag Mitrić**

*Vinča Institute of Nuclear Sciences, P.O. Box 522, 11001 Belgrade, University of Belgrade,  
Serbia*

Recently, we have reported the synthesis and optical and electronic properties of Sb<sub>2</sub>S<sub>3</sub> nanowires with small band gap. In order to prove that the synthesized nanowires can be considered as a candidate material for solar cells and in order to obtain *I-V* characteristics, two very simple cells based on synthesized Sb<sub>2</sub>S<sub>3</sub> nanowires/natural dye composite were fabricated. Exponential growth of the *I-V* curves after illumination revealed that the cells could work as electricity generators. A better current response was observed for the cell made

of synthesized powder with smaller band gap. The efficiency of the cells is quite low, but this was an attempt to create a solar cell in order to better understand the properties of the synthesized  $\text{Sb}_2\text{S}_3$  semiconductor and the processes that occur in the cell.

## **P25**

### **Dependence of the kinetic energy of association reactions for alkali metal ions with DXE**

**N. Romčević, M. Petrović, M. Gilić, V. Stojanović, Ž. Nikitović, Z. Raspopović**  
*Institute of Physics University of Belgrade, Pregrevica 118, 11080 Belgrade, Serbia*

In this work we select most probable reactions of alkali metal ions ( $\text{Li}^+$ ,  $\text{Na}^+$ ,  $\text{K}^+$ ) with dimethoxyethane (DXE) molecule. Appropriate gas phase enthalpies of formation for the products were used to calculate scattering cross section as a function of kinetic energy with Denpoh-Nanbu theory. Calculated cross sections were compared with existing experimental results obtained by guided ion beam tandem mass spectrometry. Three body association reaction of ions with DXE for three different pressures is studied and compared to experimental results. Calculated cross sections can be used to obtain transport parameters for alkali metal ions in DXE gas.

## **P26**

### **CERAMICS IN ARCHITECTURE AS AN ELEMENT OF SUSTAINABLE DEVELOPMENT**

**Gordana Topličić-Ćurčić<sup>1</sup>, Nenad Ristić<sup>2</sup>, Zoran Grdić<sup>3</sup>, Vojislav V. Mitić<sup>4</sup>,  
Dušan Grdić<sup>5</sup>**

<sup>1</sup> *PhD associate . prof., University of Nis, The Faculty of Civil Engineering and Architecture, Aleksandra Medvedeva 14 street, 18000 Nis, Serbia*

<sup>2</sup> *PhD ass., University of Nis, The Faculty of Civil Engineering and Architecture, Aleksandra Medvedeva 14 street, 18000 Nis, Serbia*

<sup>3</sup> *PhD full. prof., University of Nis, The Faculty of Civil Engineering and Architecture, Aleksandra Medvedeva 14 street, 18000 Nis, Serbia*

<sup>4</sup> *PhD full. prof., University of Nis, Faculty of Electronic Engineering, 18000 Nis, Serbia  
Serbian Academy of Science and Art, Institute of Technical Sciences, 11000 Belgrade, Serbia,*

<sup>5</sup> *MscCe, University of Nis, The Faculty of Civil Engineering and Architecture, Aleksandra Medvedeva 14 street, 18000 Nis, Serbia*

One of the most challenging issues of 21<sup>st</sup> century is to provide better living conditions for entire population of the Earth, with simultaneous decrease of human activities (anthropogenic impacts) on natural ecosystems and global environment. The best solution for achievement of this goal is a universal concept of Environmental Sustainability and the correlated concept of Sustainable Development).

As for sustainable architecture, we can meet the requirements of sustainability of structures by implementing sustainable materials in construction of such structures. The more