



**Serbian Ceramic Society Conference  
ADVANCED CERAMICS AND APPLICATION**

Serbian Ceramic Society  
Institute of Technical Sciences of SASA

**PROGRAM AND THE BOOK OF ABSTRACTS**

Serbian Academy of Sciences and Arts, Knez Mihailova 35  
May 10-11th, 2012, Belgrade, Serbia

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Organized by  
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&  
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P08

### **Aerosol-assisted Processing of Dopamine-TiO<sub>2</sub> Colloidal Solution**

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Set of colloidal TiO<sub>2</sub> nanoparticles solutions (TiO<sub>2</sub> NPs) were surface modified with the different quantities of dopamine (DA) and then are used as precursors for the synthesis of DA modified submicronic TiO<sub>2</sub> particles (DA-TiO<sub>2</sub> SPs). Low temperature (150 °C) aerosol-assisted route (spray drying) is used for the generation of the un-agglomerated spherical particles with the mean size of 430 nm that are composited from much smaller crystalline sub-units. Detailed structural and morphological characterization of DA-TiO<sub>2</sub> NPs and SPs were performed by X-ray powder diffraction (XRPD) analysis, scanning and transmission electron microscopy (SEM/TEM) and laser particle size (LPS) analysis. Particles surface structure and optical properties were followed using FT-IR and UV-Vis spectroscopy. Observed optical characteristics of both DA-TiO<sub>2</sub> NPs and DA-TiO<sub>2</sub> SPs expose narrowing of effective band gap for the same value of 1.3 eV implicating the preservation of colloidal nanoparticles characteristics in submicronic powders.

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### **Structural Characterization of the Nickel Thin Film Deposited by GLAD Technique**

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In this work, a columnar structure of nickel thin film has been obtained using an advanced deposition technique known as Glancing Angle Deposition (GLAD). Nickel thin film was deposited on glass sample at the constant emission current of 100 mA. Glass sample was positioned 15 degrees with respect to the nickel vapor flux. The obtained nickel thin film was characterized by Atomic Force Microscopy (AFM) and by Scanning Electron Microscopy (SEM). The depth analysis of the structure was also examined by both AFM and SEM through a cross section imaging of the nickel thin film. Analysis indicated that the formation of the columnar structure occurred at the film thickness of 1 μm, which was achieved for the deposition time of 3 hours.