

First International Conference

**PROCESSING, CHARACTERIZATION
AND APPLICATION OF
NANOSTRUCTURED MATERIALS AND
NANOTECHNOLOGY**

**PROGRAMME
&
BOOK of ABSTRACTS**

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**PROCESSING, CHARACTERIZATION AND APPLICATION OF
NANOSTRUCTURED MATERIALS AND NANOTECHNOLOGY**

First International Conference, NanoBelgrade 2012

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Izdavač:

Tehnološko-metalurški fakultet
Univerziteta u Beogradu
Beograd, Karnegijeva 4

Za izdavača:

Prof. dr Ivanka Popović, dekan

Glavni i odgovorni urednik:

Prof. dr Karlo Raić

Priredili:

Prof. dr Bojana Obradović,
Prof dr Petar Uskoković,
Prof dr Đorđe Janačković

Tiraž:

150 primeraka

Štampa:

Razvojno-istraživački centar grafičkog inženjerstva
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Beograd, Karnegijeva 4

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Molecular design of nanoparticles and functional materials by sintering

Dragan Uskoković, Smilja Marković, Miodrag Lukić

Institute of Technical Sciences of SASA, Belgrade, Serbia
dragan.uskokovic@itn.sanu.ac.rs

Nanosized powders present an excellent starting point for the formation of nonporous materials during the sintering process. Narrow particle size distributions and sufficiently small sizes of the precursor powders typically present prerequisites for a successful sintering process. Different wet methods for the synthesis of nanoparticles with controlled physicochemical and morphological properties, alongside the multistep sintering approach at relatively low temperatures applied to convert the nanoparticles to materials with density close to theoretical, will present the focus of this presentation. Special attention will be paid to the design of multifunctional nanoparticles composed of various coexisting components, metallic, ceramic and polymer ones, and the properties resulting from the symmetry of their ordering. Obtainment of dense nanostructured materials from nanosized powders and the corresponding sintering mechanisms will be discussed in light of the general knowledge in this area. The process of densification during sintering of functionally gradient materials, including barium titanates and calcium phosphates, and a detailed correlation between the synthesis parameters, the material structure and characteristics will be elucidated in the course of the lecture.