Institutional Repositories in Serbia: a good practice example

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An INSTITUTIONAL REPOSITORY is

a DATABASE

where

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An institutional repository is a digital library.

Enabling open access to research outputs helps promote an institution and its researchers.

^{*} due to copyright issues and publishers' policies

Database

has to comply with certain technical standards regarding...

 metadata structure (usually based on Dublin Core Metadata Initiative)

formats and sizes of deposited files

metadata transfer in other systems (OAI-PMH)

Research outputs

- Journal articles
- Conference papers, abstracts and proceedings
- Books and books chapters
- Theses
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- Datasets / research data
- Software
- Presentations
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Are there any institutional repositories in Serbia?

Yes, but not many.



Institutional repositories in Serbia

- <u>Digital Repository of the University of Belgrade</u> (PHAIDRA, 2011)
- Digital Repository of the University of Niš (PHAIDRA)
- Digital Repository of the University of Kragujevac (PHAIDRA)
- CRIS UNS (University of Novi Sad)
- Digital Repository of the Institute of Technical Sciences of SASA (May 2013)
- <u>Digital Repository of the Institute for Philosophy and Social Theory, University of Belgrade</u> (January 2014)
- EBOOKS Repository (Institute of Economic Sciences, 2015)

Other types

- <u>National Library of Serbia Digital Object Identifier Repository</u> (doiSerbia)
- SCIndeks
- <u>eLibrary</u> (Faculty of Mathematics, University of Belgrade, Mathematical Institute of the Serbian Academy of Science and Art, Serbian Ministry of Science, National Center for Digitization)
- Nasi u FP
- NaRDuS National Repository of Dissertations in Serbia
- <u>Casa Nara</u> (National Repository of Agricultural Education)

In order to establish an institutional repository it is necessary to have...

- hardware (server or hosting)
- software (a whole array of open source solutions: Dspace, Eprints, Invenio, Fedora, etc.)
- someone to install the software
- someone to manage and curate the repository (preferably a librarian)
- researchers who wish to deposit (or have deposited on their behalf) their research outputs

A good practice example:

Digital Repository of the Institute of Technical Sciences of SASA

- established in May 2013
- hosted on a server owned by ITS SASA
- software platform: OPUS4 (http://www.kobv.de/entwicklung/software/opus-4/)
- installed by a (volunteer) system administrator
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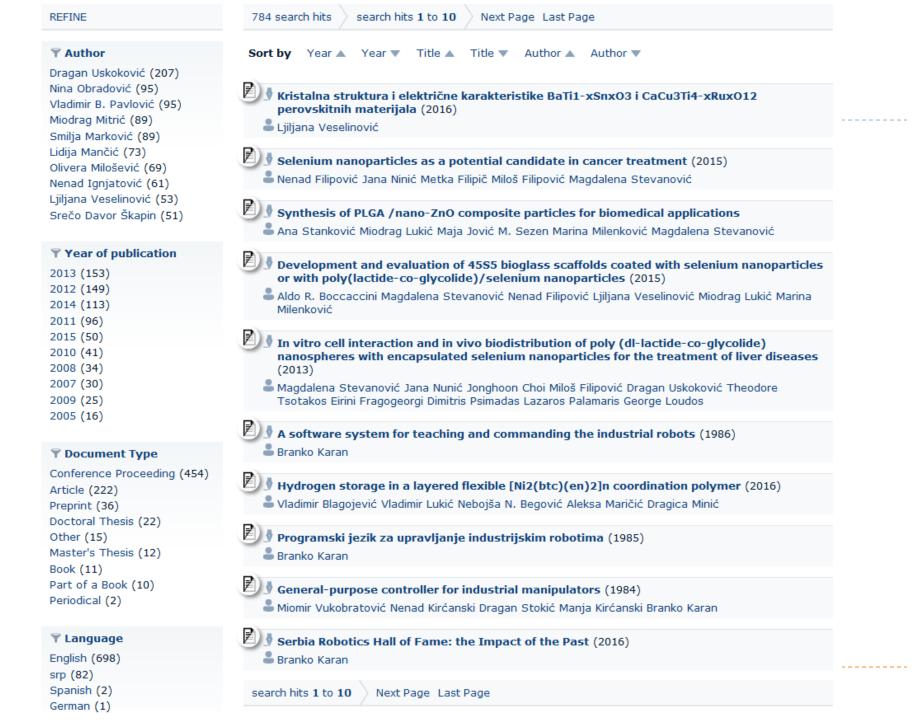
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What does it contain?

- Published versions of journal articles (not all of them are publicly available)
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- PhD theses
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- Periodicals



🔻 Kristalna struktura i električne karakteristike BaTi1-xSnxO3 i CaCu3Ti4-xRuxO12 perovskitnih materijala

Crystal structure and electrical properties of BaTi1-xSnxO3 and CaCu3Ti4-xRuxO12 perovskites materialas

Full text is available and can be downloaded



Ljiljana Veselinović



In order to establish a correlation of phase transformations with relative dielectric permitivity of the ABX3 perovskites and double AC3B4O12 perovskites, phase composition and crystal structure of the BaTi1-xSnxO3 and CaCu3Ti4-xRuxO12 materials, were examined in details. The influence of Sn for Ti substitution on the crystal structure of barium titanate stannate (BTS) BaTi1-xSnxO3 (x = 0, 0.025, 0.05, 0.07, 0.10, 0.12, 0.15 and 0.20) was investigated. The powders were prepared by conventional solid state reaction technique. The structural investigations of the BTS powders were done at room temperature by X-ray powder diffraction (XRD), transmission electron microscopy (TEM), high-resolution TEM (HRTEM), selected area electron diffraction (SAED), as well as Raman spectroscopy analyses. Rietveld refinement of XRD data indicates that gradual replacement of titanium by tin in BaTiO3 provokes phase transition from tetragonal for 0≤x≤07 to cubic for x= 0.12, 0.15 and 0.20. Coexistence of tetragonal (P4mm) and cubic (Pm3m) crystal phases was found in powder with BaTi0.9Sn0.1O3 nominal composition. The crystal phases determined by Rietveld refinement were confirmed by HRTEM and SAED analyses. The crystal structures of BTS powders at middle-range scale were studied by Raman spectroscopy which shows tetragonal (P4mm) and small fraction of orthorhombic (Pmm2) crystal phases for all the examined BTS powders, implying the lower local ordering when compared to average symmetry. In order to provide a more precise determination of BTS crystal structures the neuton powder difraction (NPD) was used. The room temperature phase composition and crystal structures of BTS samples with x = 0, 0.025, 0.05, 0.07, 0.10, 0.12, 0.15 and 0.20 were determined by Rietveld refinement of NPD data. The crystal structure of the barium titanate sample (x=0) crystallizes in the well-known tetragonal P4mm space group. The crystal structure of the samples with 0.025≤x≤ 0.07 were refined as mixtures of P4mm and Amm2 phases; those with x = 0.10 and 0.12 show the coexistence of rhombohedral R3m and cubic Pm3m phases, while the samples with x=0.15 and 0.20 crystallize in a single cubic Pm3m phase. Temperature-dependent NPD was used to characterize the BaTi0.95Sn0.05O3 sample at 0, 60, and 100 °C which was found to form single phase Amm2, P4mm, and Pm3m structures at these temperatures, respectively.



U cilju uspostavljanja korelacije faznih transformacija i relativne dielektrične permitivnosti perovskita ABX3 tipa i složenih perovskita AC3B4O12 tipa, detaljno su proučeni fazni sastav i kristalna struktura BaTi1-xSnxO3 i CaCu3Ti4-xRuxO12 materijala. Struktura barijum titanat stanatnih BaTi1-xSnxO3 (BTS) (x=0; 0,025; 0,05; 0,07; 0,10; 0,12; 0,15 i 0,20) prahova analizirana je na sobnoj temperaturi uz pomoć rendgenske difrakcione analize (XRD), transmisione elektronske mikroskopije (TEM), visoko rezolucione transmisione elektronske mikroskopije (HRTEM), elektronske difrakcije sa odabrane površine (SAED), kao i ramanske spektroskopske analize. Rezultati Ritveldove analize, primenjene na podatke prikupljene rendgenskom difrakcijom sa polikristalnih materijala, pokazali su da postepena zamena jona titanijuma jonima kalaja u BaTiO3 perovskitima, dovodi do faznih transformacija od tetragonalne za 0≤x≤0,07 do kubne za x= 0,12; 0,15 i 0,20. Koegzistencija tetragonalne (P4mm) i kubne (Pm3m) kristalne faze utvrđena je kod praha sa nominalnim sastavom BaTi0,9Sn0,1O3. Promene kristalne strukture određene na osnovu Ritveldovog utačnjavanja potvrđene su HRTEM i SAED analizom. Za analizu lokalnog uređenja proučavanih prahova

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koegzistenciju romboedarske R3m i kubne Pm3m faze. Prahovi kod kojih je x=0,15 i 0,20 kristališu u pravilnoj kubnoj strukturi. Neutronska difrakcija sa polikristalnih uzoraka na temperaturama od 110, 60 i 0 °C korišćena je za karakterizaciju praha BaTi0,95Sn0,5O3, kao karakterističnog uzorka. Prikupljeni podaci utačnjeni su uz pomoć Ritveldove metode. Dobijeni rezultati pokazali su prisustvo faznih transformacija od kubne Pm3m na 110 °C preko tetragonalne P4mm na 60 °C do ortorombične Amm2 na 0 °C. Ovi rezultati u saglasnosti su sa rezultatima dobijenim metodom diferencijalne skenirajuće kalorimetrije (DSC) i merenjima relativne dielektrične konstante, a pokazuju paraelektrik/feroelektrik faznu transformaciju (posledica strukturnih transformacija) od kubne Pm3m do tetragonalne P4mm na oko 80 °C praćenu faznom transformacijom od P4mm do Amm2 na oko 30 °C. Složeni perovskiti CaCu3Ti4-xRuxO12 (x= 0; 2; 4) sintetisani su mehanohemijski. Fazni sastav kao i strukturne karakteristike određeni su na osnovu podataka prikupljenih rendgenskom difrakcionom analizom. Dobijeni rezultati Ritveldovog utačnjavanja pokazali su da ovi materijali zadržavaju kubnu 3 lm kristalnu strukturu bez obzira da li je u kristalografskom položaju B u strukturi ovih materijala, smešten titanijum ili rutenijum. Dobijeni rezultati potvrđeni su TEM, HRTEM i SAED metodama. Sa druge strane, električna merenja su pokazala da promena stehiometrije utiče na promenu električnih svojstava ovih materijala.

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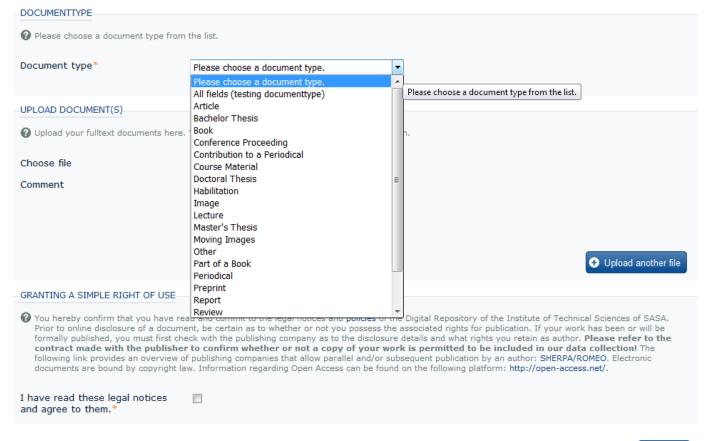
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Author: Filipović, Suzana; Obradović, Nina; Pavlović, Vladimir B.; Petrović, V.; Mitrić, Miodrag

Description: The aim of this work was to analyze the influence of mechanical activation on the MgCO3-TiO2 system. Mixtures of MgCO3-TiO2 were mechanically activated for 15, 30, 60 and 120

> minutes in a planetary ball mill and after that sintered at 1100°C for 1h. XRD analyses were performed in order to give information about the phase composition and to determine a variety of microstructure parameters using Scherrer's method. Also, the effect of tribophysical activation and sintering process on microstructure was investigated by scanning electron microscopy. Electrical measurements were performed in order to determine electrical properties of sintered samples. Our conclusions are that the sample activated for 120

min showed the best electrical properties (ε r=23.86, Q=233, p=0.38) and exhibited the best sinterability.

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Publisher: Belgrade: International Institute for the Science of Sintering

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Type: Conference Proceeding, Language: English, Date of Publication (online):

18.03.2014. Year of first Publication: 2007. Tag: DLPLG; ascorbic ...

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Determination of particle size distributions by laser diffraction Zoran Stojanović, Smilja Marković, Dragan Uskoković Датум објављивања The paper deals with the main principles of determination of particle size distribution using Mastersizer 2000, Malvern Instruments Ltd., UK. On the example of several problems we have demonstrated that the method is not a routine one and that the measurement procedure is not limited to entering a sample into the dispersion unit and pressing the button. Furthermore, we have shown that the sample preparation method and, therefore, the accuracy of results conclusively depend on physical and chemical properties of the ... Укупан број 40 пута наведен навода 2013 2014 2015 2016 Determination of particle size distributions by laser diffraction Академика 2 Stojanović, S Marković, D Uskoković - 2012 40 пута наведен - Сродни чланци - Све верзије (2) Optimization of the ball mill prodessing parameters in the fat filling production IPDFI nb.rs IS Lončarević, AZ Fišteš, DZ Rakić... - Chemical Industry ..., 2016 - doiserbia.nb.rs The aim of this study was to determine the effect of main milling variables, ie agitator shaft speed (50%, 75%, and 100%, which is 25 rpm, 37.5 rpm, and 50 rpm) and milling time (30, 45, and 60 minutes) on physical and selectly properties of fat filling, as well as on energy ... 1 пута наведен Цитирај Сачувај Mars Atmosphere Resource Verification INsitu (MARVIN)-In Situ Resource [PDF] nasa.gov Demonstration for the Mars 2020 Mission GB Sanders, K Araghi, KM Ess, LM Valencia... - American Institute of ..., 2014 - arc.aiaa.org Abstract The making of oxygen from resources in the Martian atmosphere, known as In Situ Resource Utilization (ISRU), has the potential to provide substantial benefits for future robotic and human exploration. In particular, the ability to produce oxygen on Mars for use ... 1 пута наведен Сродни чланци Све верзије (2) Цитирај Сачувај Estudo da sinterização de vidros aluminossilicatos por calorimetria exploratória [PDF] usp.br diferencial JP de Souza - 2015 - teses.usp.br Neste trabalho foi investigada uma mudança na linha base observada em curvas de

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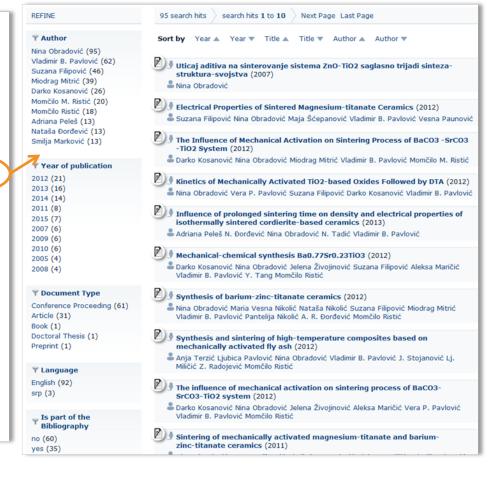


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Crystal structure analysis and first principle investigation of F doping in LiFePO₄

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Abstract

This work presents the synthesis of F-doped LiFePO₄/C composite by the specific modification of the recently suggested synthesis procedure based on an aqueous precipitation of precursor material in molten stearic acid, followed by a high temperature treatment. Besides the lattice parameters and the primitive cell volume reductions, compared to the undoped sample synthesized under the same conditions, the Rietveld refinement also shows that fluorine ions preferably occupy specific oxygen sites. Particularly, the best refinement is accomplished when fluorine ions occupy O(2) sites exclusively. By means of up-to-date electronic structure and total

₱ Hydrogen storage in a layered flexible [Ni2(btc)(en)2]n coordination polymer

Vladimir Blagojević, Vladimir Lukić, Nebojša N. Begović, Aleksa Maričić, Dragica Minić



[Ni2(btc)(en)2]n coordination polymer exhibits a layered two-dimensional structure with weak interaction between the layers. Correlation of experimental measurements, DFT calculations and molecular simulations demonstrated that its structural features, primarily the inherent flexibility of the layered polymeric structure, lead to improved hydrogen storage performance at room temperature, due to significant enhancement in isosteric heats of hydrogen adsorption. Volumetric measurements of hydrogen adsorption at room temperature show up to 0.3 wt.% hydrogen absorbed at 303 K and 2.63 bar of hydrogen pressure, with isosteric heats of adsorption of about 12.5 kJ mol-1. Predicted performance at room temperature is 1.8 wt.% at 48 bar and 3.5 wt.% at 100 bar, better than both MOF-5 and NU-100, with calculated values of isosteric heats for adsorption of hydrogen in 8-13 kJ mol-1 range at both 77 K and 303 K. Grand canonical Monte Carlo calculations show that this material, at 77 K, exhibits gravimetric hydrogen densities of more than 10 wt.% (up to 8.3 wt.% excess) with the corresponding volumetric density of at least 66 gL-1, which is comparable to MOF-5, but achieved with considerably smaller surface area of about 2500 m2 q-1. This study shows that layered two-dimensional MOFs could be a step towards MOF systems with significantly higher isosteric heats of adsorption, which could provide better room temperature hydrogen storage capabilities.

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DFT calculations; coordination polymers; hydrogen storage; metal-organic frameworks; molecular simulations

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Structural study of monoclinic Li 2 FeSiO 4 by X-ray diffraction and Mössbauer spectroscopy

<u>D Jugović</u>, M Milović, VN Ivanovski, <u>M Avdeev...</u> - Journal of Power ..., 2014 Elsevier
Abstract A composite powder Li 2 FeSiO 4/C is synthesized through a solid state reaction at
750 C. The Rietveld crystal structure refinement is done in the monoclinic P2 1/n space
group. It is found that the crystal structure is prone to "antisite" defect where small part of ...
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Conclusion

- It is possible to establish a fully operational institutional repository in Serbia.
- Institutional repositories make it possible to present the research outputs of an institution in a systematic way.
- Institutional repositories help enhance the visibility of a research institute, its researchers and their research results.

Limitations

- Not all research institutions can afford a server or hosting.
- No funds are allocated specifically for this purpose.
- The lack of IT professionals in research institutions.
- The lack of librarians in research institutions.
- With the exception of PhD theses, there are no OA mandates in Serbia.
- Most researchers are not aware of the benefits of IRs.