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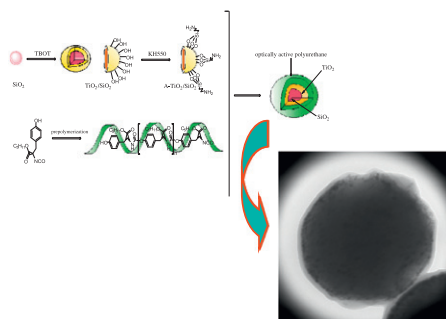
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Regular Articles

Preparation, characterization, and infrared emissivity property of optically active polyurethane/TiO₂/SiO₂ multilayered microspheres

Yong Yang, Yuming Zhou, Jianhua Ge, Yongjuan Wang and Yunxia Zhu

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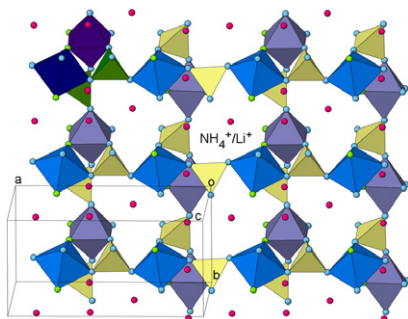


Optically active polyurethane/titania/silica (LPU/TiO₂/SiO₂) multi-layered core-shell composite microspheres were prepared by the combination of titania deposition on the surface of silica spheres and subsequent polymer grafting.

Mild hydrothermal synthesis, crystal structure, thermal behaviour, spectroscopic and magnetic properties of (NH₄)_{0.80}Li_{0.20}[Fe(AsO₄)F]

Teresa Berrocal, José L. Mesa, Edurne S. Larrea, Begoña Bazán, José L. Pizarro, Luis Lezama, Teófilo Rojo and María I. Arriortua

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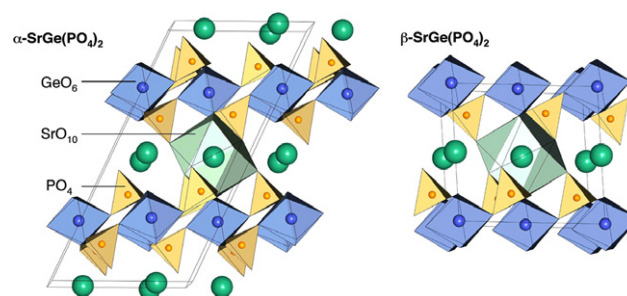
Three-dimensional structure of (NH₄)_{0.80}Li_{0.20}[Fe(AsO₄)F], a fluoroarsenate containing lithium and ammonium in the structural cavities.

Regular Articles—Continued

M^{II}Ge(PO₄)₂ (M = Ca, Sr, Ba): Crystal structure, phase transitions and thermal expansion

Karin Popa, Gilles Wallez, Damien Bregiroux and Pascal Loiseau

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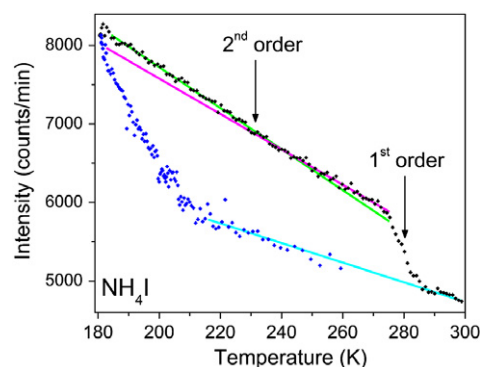


The superstructure of SrGe(PO₄)₂ at room temperature () results from the off-centering of cation Sr^{II}.

Detection of dynamical transitions in hydrogenous materials using transmission measurements with very cold neutrons

Nina Verdal, Terrence J. Udovic, John R.D. Copley and John J. Rush

page 2635



The transmission of very long wavelength neutrons is a highly sensitive probe of dynamical transitions in hydrogenous materials.

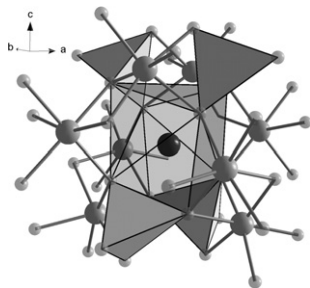
Continued

New phases in the system $\text{LiMnVO}_4\text{--Mn}_3(\text{VO}_4)_2$

Oliver Clemens, Robert Haberkorn and

Horst Philipp Beck

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The unusual coordination of Mn in the form of a stella quadrangula with the surrounding vanadate groups.

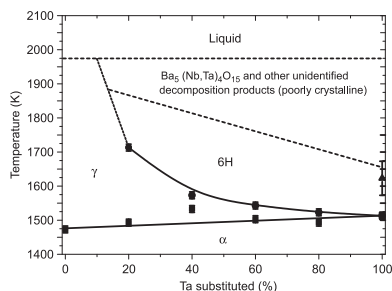
Phase diagram, chemical stability and physical properties of the solid-solution $\text{Ba}_4\text{Nb}_{2-x}\text{Ta}_x\text{O}_9$

Matthew T. Dunstan, Peter D. Southon, Cameron J.

Kepert, James Hester, Justin A. Kimpton and

Chris D. Ling

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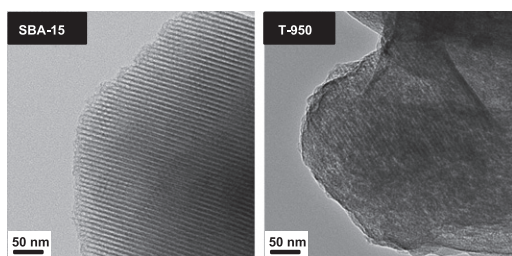


Thermodynamic phase diagram of $\text{Ba}_4\text{Nb}_{2-x}\text{Ta}_x\text{O}_9$.

Preparation and characterization of ordered porous carbons for increasing hydrogen storage behaviors

Seul-Yi Lee and Soo-Jin Park

page 2655



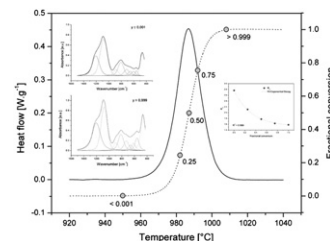
It is described that the considerable long-range ordering and the presence of mono-dimensional aligned channels between the two aligned nanorods of the porous framework from the SBA-15 was retained in the T-950 sample during the carbonization process.

Mid-infrared spectroscopic study of crystallization of cubic spinel phase from metakaolin

Petr Ptáček, František Šoukal, Tomáš Opravil,

Magdaléna Nosková, Jaromír Havlica and Jiří Brandštetr

page 2661



The thermal conversion of metakaolinite into spinel phase was investigated by mid-infrared spectroscopy to found relationship between bands features and fractional conversion.

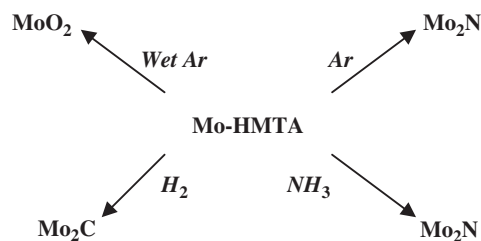
Decomposition of molybdate–hexamethylenetetramine complex: One single source route for different catalytic materials

Sandra Chouzier, Tivadar Czeri, Magalie Roy-Aubergier,

Christophe Pichon, Christophe Geantet, Michel Vrinat and

Pavel Afanasiev

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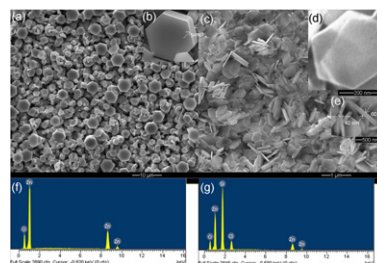


Depending on the conditions, decomposition of molybdate–HTMA complex yields highly dispersed molybdenum nitride, carbide or oxide.

Growth and characterization of Cl-doped ZnO hexagonal nanodisks

Ramin Yousefi, A.K. Zak and M.R. Mahmoudian

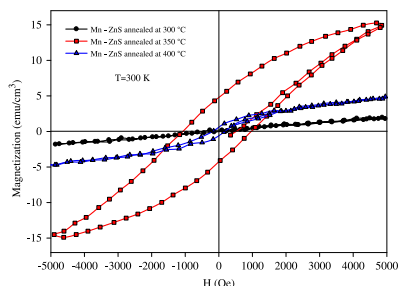
page 2678



Cl-doped ZnO nanodisks and undoped ZnO microdisks have been grown using a thermal evaporation method.

The influence of diffusion temperature on the structural, optical and magnetic properties of manganese-doped zinc oxysulfide thin films

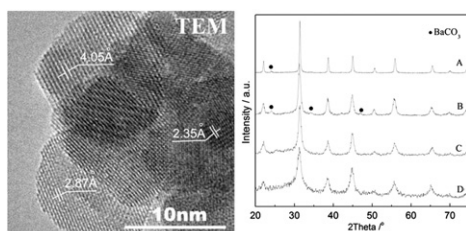
İ. Polat, S. Aksu, M. Altunbaş, S. Yılmaz and E. Bacaksız
page 2683



M-H variation of Mn diffusion-doped Zn(O,S) thin films measured at 300 K.

Grain size modulation on BaTiO₃ nanoparticles synthesized at room temperature

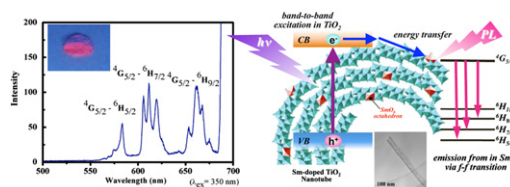
Jian Quan Qi, Li Sun, Xi Wei Qi, Yu Wang and Helen Lai Wah Chan
page 2690



This paper offers a direct facile approach to BaTiO₃ nanoparticles at room temperature with a large quantity. The grain size can be modulated purposefully.

Photoluminescence of samarium-doped TiO₂ nanotubes

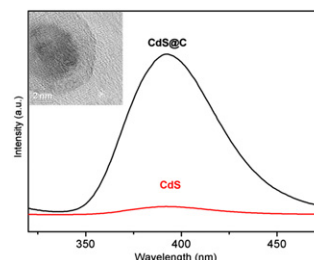
Dong Jin Park, Tohru Sekino, Satoshi Tsukuda, Asuka Hayashi, Takafumi Kusunose and Shun-Ichiro Tanaka
page 2695



Samarium-doped TiO₂ nanotubes (TNTs) having a nanotubular structure were synthesized by soft chemical route. It was revealed that the energy associated by the band-to-band excitation of TNT matrix transferred to the doped Sm³⁺ ions in the lattice, resulting in emission of strong and visible red fluorescence.

An improved pyrolysis route to synthesize carbon-coated CdS quantum dots with fluorescence enhancement effect

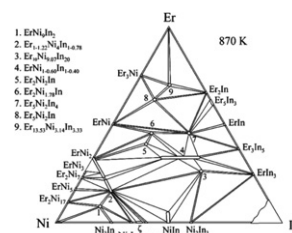
Kejie Zhang and Xiaoheng Liu
page 2701



We demonstrated a facile approach to synthesize well-dispersed carbon-coated CdS quantum dots. The as-prepared nanoparticles presented remarkable fluorescence enhancement effect.

Ternary system Er-Ni-In at *T*=870 K

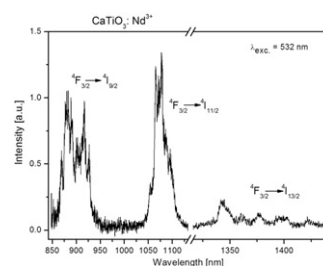
M. Dzevenko, Yu. Tyvanchuk, L. Bratash, V. Zaremba, L. Havela and Ya. Kalychak
page 2707



Phase relations in the ternary system Er-Ni-In have been established for the isothermal section at *T*=870 K based on X-ray phase and EDX-analyses. Nine ternary compounds were observed.

Spectroscopic properties of Nd³⁺ ions in nano-perovskite CaTiO₃

K. Lemański, A. Gągor, M. Kurnatowska, R. Pązik and P.J. Dereni
page 2713



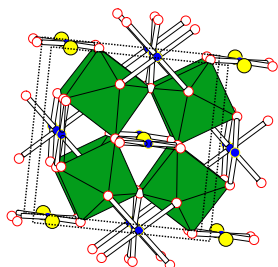
The 300 K emission spectrum of CaTiO₃: 1% Nd³⁺ annealed at 700 °C and measured at 300 K on InGaAs detector.

Continued

Synthesis and microstructural TEM investigation of $\text{CaCu}_3\text{Ru}_4\text{O}_{12}$ ceramic and thin film

Virginie Brizé, Cécile Autret-Lambert, Jérôme Wolfman, Monique Gervais and François Gervais

page 2719

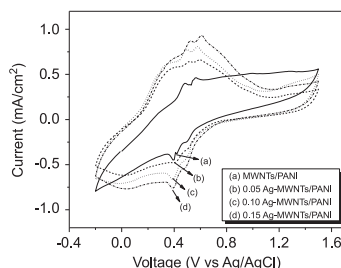


Structure of $\text{CaCu}_3\text{Ru}_4\text{O}_{12}$ showing the RuO_6 octahedra and the square planar environment for Cu^{2+} .

Influence of silver-decorated multi-walled carbon nanotubes on electrochemical performance of polyaniline-based electrodes

Ki-Seok Kim and Soo-Jin Park

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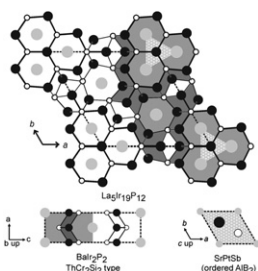


The current density of MWNTs/PANI increased with increasing the Ag concentration due to the bridge effect of Ag nanoparticles incorporated between MWNTs and PANI.

Metal-rich phosphides $\text{RE}_5\text{Ir}_{19}\text{P}_{12}$ with $\text{Sc}_5\text{Co}_{19}\text{P}_{12}$ type structure

Ulrike Pfannenschmidt, Ute Ch. Rodewald, Rolf-Dieter Hoffmann and Rainer Pöttgen

page 2731

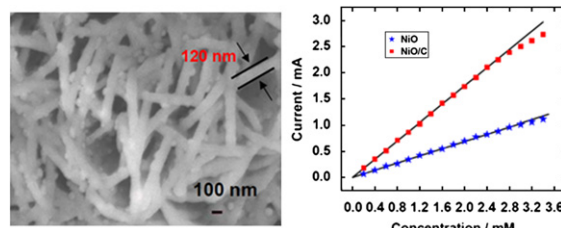


The intergrowth structure $\text{La}_5\text{Ir}_{19}\text{P}_{12}$.

Preparation of nickel oxide and carbon nanosheet array and its application in glucose sensing

Xin Li, Anzheng Hu, Jian Jiang, Ruimin Ding, Jinping Liu and Xintang Huang

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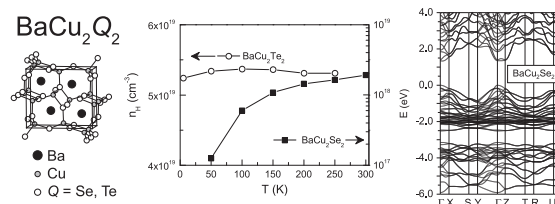


The thickness of nanosheets is about 90–120 nm. They are decorated with small particles. In glucose sensing, NiO and carbon composite exhibits higher response current than pure NiO.

Transport and optical properties of heavily hole-doped semiconductors BaCu_2Se_2 and BaCu_2Te_2

Michael A. McGuire, Andrew F. May, David J. Singh, Mao-Hua Du and Gerald E. Jellison

page 2744

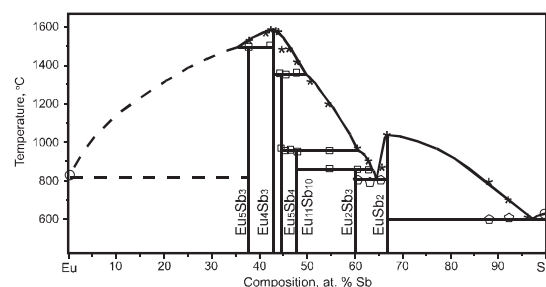


Combined experimental and theoretical study of orthorhombic BaCu_2Se_2 and BaCu_2Te_2 to assess potential for photovoltaic and thermoelectric applications.

Phase equilibrium and intermediate phases in the Eu–Sb system

M.N. Abdusalyamova and I.G. Vasilyeva

page 2751

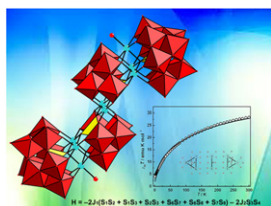


The high-temperature range of the T – x phase diagram for the Eu–Sb system.

Synthesis, structure and magnetism of a S-shaped multi-iron substituted arsenotungstate containing a trivacant Keggin [B- α -As^VW₉O₃₄]⁹⁻ and a hexavacant Keggin [α -As^VW₆O₂₆]¹¹⁻ fragments

Junwei Zhao, Qiuxia Han, Dongying Shi, Lijuan Chen, Pengtao Ma, Jingping Wang and Jingyang Niu

page 2756

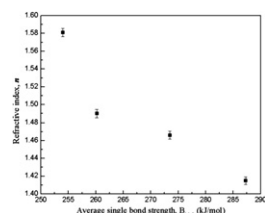


S-shaped multi-iron substituted arsenotungstate consisting of two asymmetric sandwich-type subunits has been hydrothermally synthesized and structurally characterized. Its magnetic properties have been investigated.

Role of oxygen on the optical properties of borate glass doped with ZnO

Manal Abdel-Baki and Fouad El-Diasty

page 2762

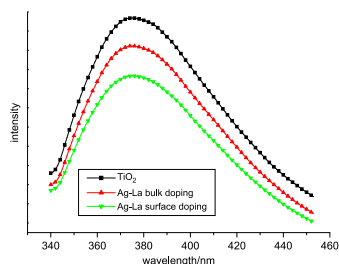


OIs, Yamashita–Kurosawa's parameter and average single bond strength of charge overlapping between electronic shells are used to explain enhanced oxide ion 2p electron density, which increases refractive index of glasses.

Microstructures and photocatalytic properties of Ag⁺ and La³⁺ surface codoped TiO₂ films prepared by sol-gel method

Nan Zhao, Ming-ming Yao, Fang Li and Fei-peng Lou

page 2770

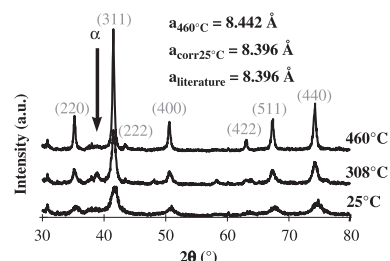


The PL intensity of Ag⁺ and La³⁺ surface codoped TiO₂ was the lowest among all samples, indicating the recombination of electron and hole was effectively prohibited compared with pure TiO₂, Ag⁺ and La³⁺ bulk codoped TiO₂.

Oxygen stoichiometry control of nanometric oxide compounds: The case of titanium ferrites

N. Millot and P. Perriat

page 2776

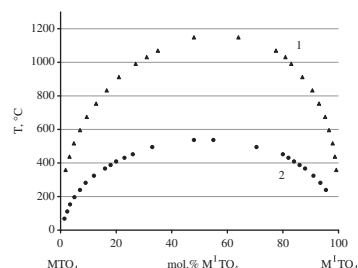


XRD patterns of Fe_{3(1- δ)}O₄ nanometric powders obtained *in situ* during a reducing treatment. The stoichiometric compound was obtained by a thermal annealing at 460 °C under $p_{O_2} = 3 \times 10^{-26}$ Pa ($\Phi_{DRX} = 100$ nm). In inset, data of the experimental lattice parameter compared to the theoretical one. α represents the rhomboedrical phase which precipitates during this thermal treatment, then disappeared.

Analysis of solid solutions stability in scheelite-type molybdates and tungstates

V.D. Zhuravlev, O.G. Reznitskikh, Yu.A. Velikodnyi, T.A. Patrusheva and O.V. Sivtsova

page 2785

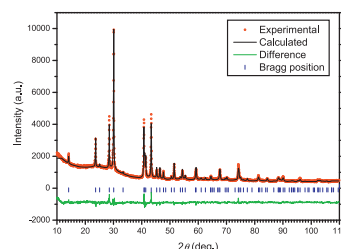


Calculated boundaries of solid solutions in BaWO₄–CaWO₄ (1) and PbMoO₄–CaMoO₄ (2) systems.

Superstructure and stacking faults in hydrothermal-grown KBe₂BO₃F₂ crystals

Jinqiu Yu, Lijuan Liu, Shifeng Jin, Haitao Zhou, Xiaoling He, Changlong Zhang, Weining Zhou, Xiaoyang Wang, Xiaolong Chen and Chuangtian Chen

page 2790

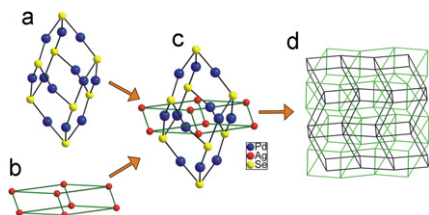


A new structure of the $R\bar{3}c$ space group with cell parameters of $a = 4.422(1)$ Å and $c = 37.524(3)$ Å was obtained from hydrothermal-grown KBe₂BO₃F₂ crystals by powder XRD and Rietveld refinement.

Continued

Crystal and electronic structure study of AgPd₃Se

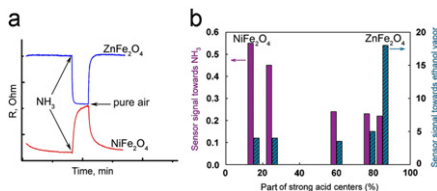
F. Laufek, A. Vymazalová, D.A. Chareev, A.V. Kristavchuk, Q. Lin, J. Drahokoupil and T.M. Vasilchikova
page 2794



(a) Prolate rhombohedron formed by Pd and Se atoms, (b) oblate rhombohedron formed by Ag atoms and (c) their interpenetration at unit cell level. (d) 3D network of prolate and oblate rhombohedra.

Nanocrystalline ferrites Ni_xZn_{1-x}Fe₂O₄: Influence of cation distribution on acidic and gas sensing properties

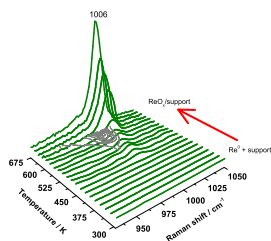
A.P. Kazin, M.N. Rumyantseva, V.E. Prusakov, I.P. Suzdalev and A.M. Gaskov
page 2799



(a) *n*- and *p*-types change in electrical resistance and (b) sensor signal of Ni_xZn_{1-x}Fe₂O₄ towards NH₃ and ethanol vapor *vs.* the part of strong acid sites.

Supported oxorhenate catalysts prepared by thermal spreading of metal Re⁰ for methanol conversion to methylal

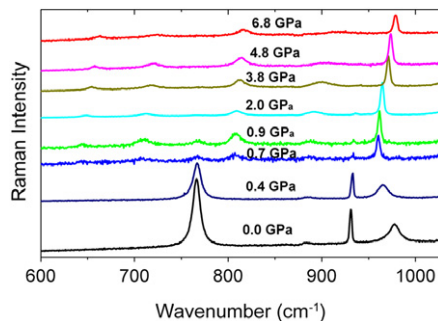
Xavier Sécordel, Anthony Yoboué, Sylvain Cristol, Christine Lancelot, Mickaël Capron, Jean-François Paul and Elise Berrier
page 2806



Evolution of the 900–1000 cm⁻¹ region of the Raman spectrum of a mixture of metal rhenium with anatase TiO₂ K03 upon heating in pure O₂.

Pressure-induced phase transitions in multiferroic RbFe(MoO₄)₂—Raman scattering study

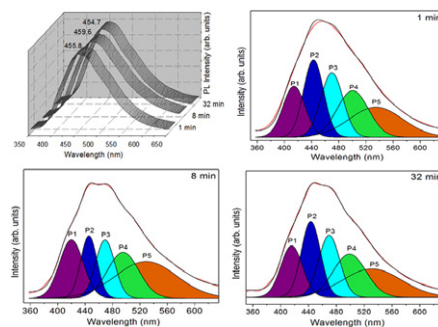
M. Mączka, M. Ptak, C. Luz-Lima, P.T.C. Freire, W. Paraguassu, S. Guerini and J. Hanuza
page 2812



Raman spectra of RbFe(MoO₄)₂ crystal in the high wavenumber region recorded at different pressures during compression experiment.

Formation of β-nickel hydroxide plate-like structures under mild conditions and their optical properties

A.P. de Moura, R.C. Lima, E.C. Paris, M.S. Li, J.A. Varela and E. Longo
page 2818



Nanostructural β-Ni(OH)₂ crystalline powders were prepared by rapid microwave-hydrothermal method for 1, 8 and 32 min. The hexagonal-shaped nanoplates obtained presented PL emission in the blue-green region and each decomposed component represents a different type of electronic transition, which can be linked to the structural arrangement or surface defects.

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