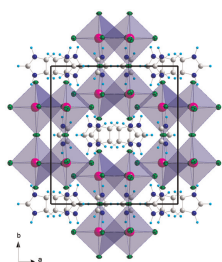


Abstracted/indexed in BioEngineering Abstracts, Chemical Abstracts, Coal Abstracts, Current Contents/Physics, Chemical, & Earth Sciences, Engineering Index, Research Alert, SCISEARCH, Science Abstracts, and Science Citation Index. Also covered in the abstract and citation database SCOPUS[®]. Full text available on ScienceDirect[®].

Regular Articles

Structural characterization, thermal, dielectric, vibrational properties and molecular motions in $[\text{C}_3\text{N}_2\text{H}_5]_6[\text{Bi}_4\text{Br}_{18}]$

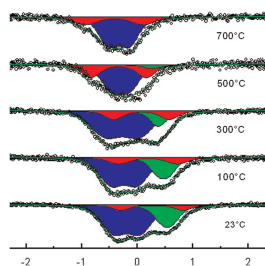
A. Piecha, R. Jakubas, A. Pietraszko, J. Baran, W. Medycki and D. Kruk
Page 2949



$[\text{C}_3\text{N}_2\text{H}_5]_6[\text{Bi}_4\text{Br}_{18}]$ has been synthesized and characterized by the X-ray (at 293 and 110 K), calorimetric, dilatometric and dielectric measurements. A crystal structure consists of disordered imidazolium cations and ordered discrete tetramers of $[\text{Bi}_4\text{Br}_{18}]^{6-}$.

Spin-state transition of iron in $(\text{Ba}_{0.5}\text{Sr}_{0.5})(\text{Fe}_{0.8}\text{Zn}_{0.2})\text{O}_{3-\delta}$ perovskite

Armin Feldhoff, Julia Martynczuk, Mirko Arnold, Maxym Myndyk, Ingo Bergmann, Vladimir Šepelák, Wolfgang Gruner, Ulrich Vogt, Angelika Hähnel and Jörg Woltersdorf
Page 2961

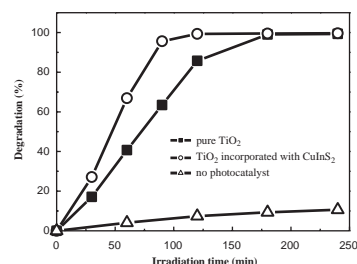


At room temperature, the iron in a high-performance perovskite for ceramic oxygen separation membranes is in a mixed valence state of 75% Fe^{4+} in the high-spin state and 25% Fe^{3+} predominantly in the low-spin state. When heated to 900 °C, a slight reduction of iron is observed that increases the quantity of Fe^{3+} species. However, the dominant occurrence is a gradual transition in the spin-state of trivalent iron from a mixed low-spin/high-spin to a pure high-spin configuration.

Regular Articles—Continued

TiO_2 nanoparticles incorporated with CuInS_2 clusters: preparation and photocatalytic activity for degradation of 4-nitrophenol

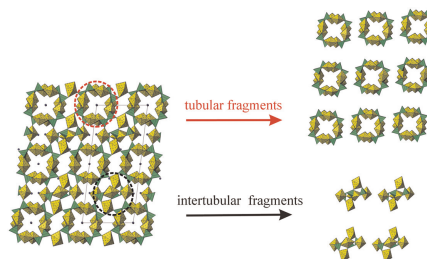
Shi-Zhao Kang, Yi-Kai Yang, Wenbo Bu and Jin Mu
Page 2972



Kinetic curves of 4-nitrophenol ($1.44 \times 10^{-4} \text{ mol L}^{-1}$) degradation under UV irradiation.

Crystal chemistry of anhydrous Li uranyl phosphates and arsenates. II. Tubular fragments and cation–cation interactions in the 3D framework structures of $\text{Li}_6[(\text{UO}_2)_{12}(\text{PO}_4)_8(\text{P}_4\text{O}_{13})]$, $\text{Li}_5[(\text{UO}_2)_{13}(\text{AsO}_4)_9(\text{As}_2\text{O}_7)]$, $\text{Li}[(\text{UO}_2)_4(\text{AsO}_4)_3]$ and $\text{Li}_3[(\text{UO}_2)_7(\text{AsO}_4)_5\text{O}]$

Evgeny V. Alekseev, Sergey V. Krivovichev and Wulf Depmeier
Page 2977

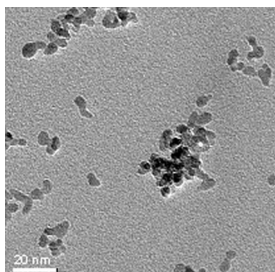


The crystal structures of $\text{Li}_5[(\text{UO}_2)_{13}(\text{AsO}_4)_9(\text{As}_2\text{O}_7)]$ separated into tubular units and intertubular complexes.

Hydrothermal synthesis of yttria stabilized ZrO₂ nanoparticles in subcritical and supercritical water using a flow reaction system

Hirromichi Hayashi, Akiko Ueda, Atsuko Suino, Kyoko Hiro and Yukiya Hakuta

Page 2985

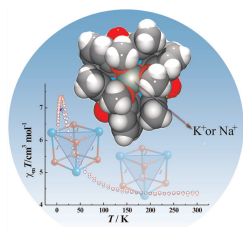


Nanoparticles of YSZ can be synthesized in subcritical and supercritical water using a hydrothermal flow reaction system. Given is the TEM image of YSZ nanoparticles.

Heterometallic clusters arising from cubic Ni₃M'O₄ (M' = K and Na) entity: Solvothermal synthesis with/without the assistance of microwave

Shu-Hua Zhang, Yan-Ling Zhou, Xiao-Jun Sun, Lian-Qiang Wei, Ming-Hua Zeng and Hong Liang

Page 2991

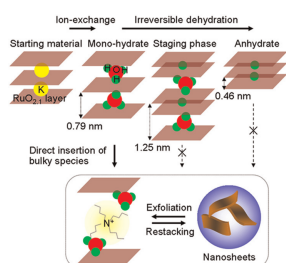


Solvothermal reaction assisted with microwave leads to two heterometallic cubic clusters with 6-metallacrown-3 structure [Ni₃O₃(OH)]⁻ acting as a host for a K⁺ or Na⁺ ion. The {Ni₃M'O₄} (M' = K, Na) cores display dominant ferromagnetic interactions.

Swelling, intercalation, and exfoliation behavior of layered ruthenate derived from layered potassium ruthenate

Katsutoshi Fukuda, Hisato Kato, Jun Sato, Wataru Sugimoto and Yoshio Takasu

Page 2997

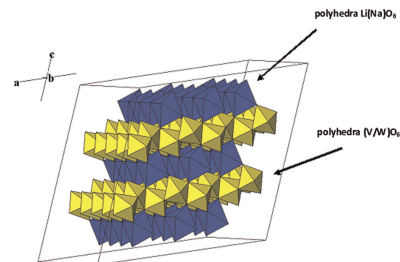


Layered protonic ruthenate derived from a potassium form was directly reacted with bulky tetrabutylammonium ions to trigger exfoliation into nanosheets as long as it is highly hydrated.

Crystal structure, spectroscopy and thermodynamic properties of M'VWO₆ (M' = Li, Na)

Aleksandr V. Knyazev, Mirosław Mączka, Nataliya N. Smirnova, Lucyna Macalik, Nataliya Yu. Kuznetsova and Irene A. Letyanina

Page 3003

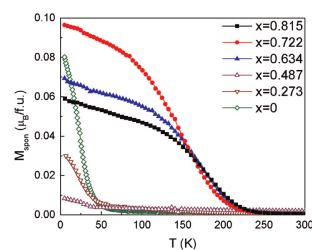


Fragment of the structure of Li(Na)VWO₆.

Synthesis, thermal stability and magnetic properties of the Lu_{1-x}La_xMn₂O₅ solid solution

C. Ma, J.-Q. Yan, K.W. Dennis, R.W. McCallum and X. Tan

Page 3013

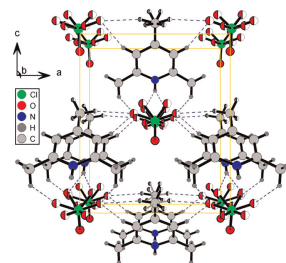


Lu_{1-x}La_xMn₂O₅ samples with x up to 0.815 were synthesized and a magnetic phase with an onset transition temperature ~ 200 K was found in the La-rich compositions.

2,4,6-Trimethylpyridinium perchlorate: Polar properties and correlations with molecular structure of organic-inorganic hybrid crystal

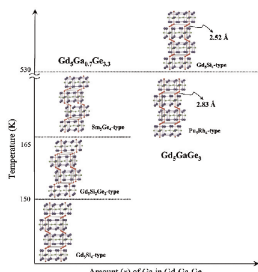
M. Wojtaś, A. Gągor, O. Czupiński, A. Pietraszko and R. Jakubas

Page 3021



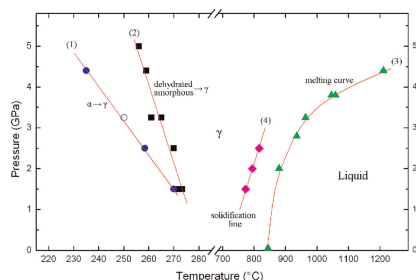
A novel organic-inorganic hybrid material, simple ionic salt: 2,4,6-trimethylpyridinium perchlorate, [(CH₃)₃C₅H₅NH][ClO₄] has been synthesized. In this paper we report singlecrystal X-ray, powder X-ray, calorimetric, dilatometric, dielectric and pyroelectric studies of this compound over a wide temperature range. A possible mechanism of the structural phase transitions in [(CH₃)₃C₅H₅NH][ClO₄] is discussed with particular attention focused on unusually strong pyroelectric properties.

Structural, magnetic, and thermal characteristics of the phase transitions in $Gd_5Ga_xGe_{4-x}$ magnetocaloric materials
 Sumohan Misra, Yuriy Mozharivskiy,
 Alexandra O. Tsokol, Deborah L. Schlage,
 Thomas A. Lograsso and Gordon J. Miller
Page 3031



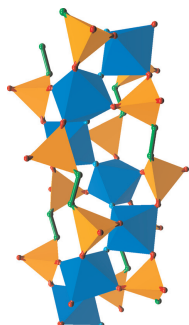
Phase transformations in $Gd_5Ga_xGe_{4-x}$ magnetocaloric materials as a function of temperature.

Pressure-induced coordination changes in $LiBO_2$
 Li Lei, Duanwei He, Kai He, Jiaqian Qin and
 Shanmin Wang
Page 3041



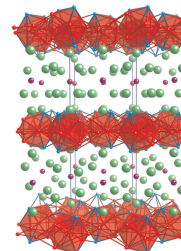
Constructing the pressure-temperature phase diagram for $LiBO_2$.

Formation of helix-containing rods in a hybrid inorganic-organic material
 Zhanhui Yuan, William Clegg and Martin P. Attfield
Page 3049



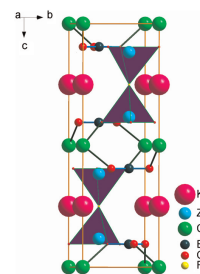
Helical chains of corner-shared *cis*- AlO_4F_2 octahedra form the core of well-separated anionic $[Al_2(O_3PCH_2CH_2PO_3)_2F_2]^{4-}$ rods in the novel hybrid aluminum diphosphonate material, $(H_4tren)[Al_2(O_3PCH_2CH_2PO_3)_2F_2] \cdot (H_2O)$. The incorporation of the organic components into this hybrid material has aided the adoption of a uni-dimensional structure and a specific structural aspect, the helical pitch, within the resulting material, which indicates the potential of this approach to form particular structural features within hybrid materials.

Crystal growth and magnetic behavior of $R_6T_{13-x}Al_xM_y$ phases ($R=La, Nd$; $T=Mn, Fe$; $M=$ main group) grown from lanthanide-rich eutectic fluxes
 Evan M. Benbow, Naresh S. Dalal and Susan E. Lattner
Page 3055



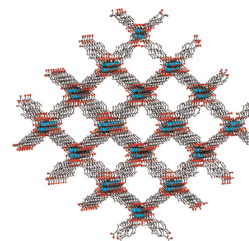
$R_6T_{13-x}Al_xM_y$ phases with the $La_6Co_{11}Ga_3$ structure type crystallize from La/Ni and Nd/Fe eutectics. Transition metal slabs in $La_6Fe_{13-x}Al_xM_y$ and $La_6(Mn/Ni)_{10}Al_3$ order antiferromagnetically (T_N 150 K) and ferromagnetically (T_C 200 K), respectively.

Synthesis, structure characterization and fluorescence property of a new fluoride borate crystal, $CdZn_2KB_2O_6F$
 Zhi-Wei Jiao, Fan Zhang, Qing-Feng Yan, De-Zhong Shen and Guang-Qiu Shen
Page 3063



Preparation, structure and fluorescence property of a new fluoride borate crystal, $CdZn_2KB_2O_6F$ are described. The crystal represents a new structure type in which $ZnBO_3$ layers are connected through bridging fluorine and cadmium atoms alternately to form a 3D open framework.

A 3D porous indium(III) coordination polymer involving *in-situ* ligand synthesis
 Zheng-Bo Han, Yong-Juan Song, Jian-Wei Ji, Wei Zhang and Guang-Xi Han
Page 3067

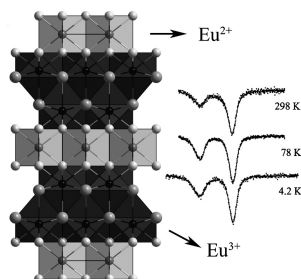


The hydrothermal reaction of In^{3+} and 1,2,4-benzenetricarboxylic acid with the presence of piperazine leads to the generation of a novel 3D porous coordination polymer, $[H_3O][In_2(btc)(bdc)(OH)_2] \cdot 5.5H_2O$, (*btc* = 1,2,4-benzenetricarboxylate, *bdc* = 1,4-benzenedicarboxylate).

Eu₃F₄S₂: Synthesis, crystal structure, and magnetic properties of the mixed-valent europium(II,III) fluoride sulfide EuF₂ · (EuFS)₂

Hagen Grossholz, Ingo Hartenbach, Gunter Kotzyba, Rainer Pöttgen, Henning Trill, Bernd D. Mosel and Thomas Schleid

Page 3071

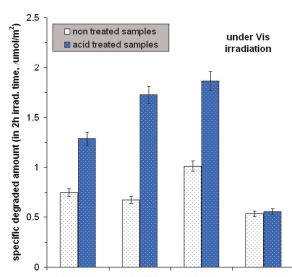


Crystal structure and ¹⁵¹Eu-Mössbauer spectra of mixed-valent Eu₃F₄S₂.

Preparation and characterization of mesoporous N-doped and sulfuric acid treated anatase TiO₂ catalysts and their photocatalytic activity under UV and Vis illumination

Robert Kun, Sándor Tarján, Albert Oszkó, Torben Seemann, Volker Zöllmer, Matthias Busse and Imre Dékány

Page 3076

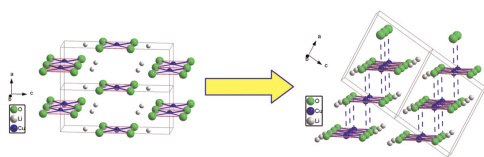


The effect of the acid treatment on the visible-light-driven photocatalytic activity of the N-doped, anatase TiO₂ catalysts.

High pressure induced coordination evolution in chain compound Li₂CuO₂

Shujie You, Zhi Li, Liuxiang Yang, Cheng Dong, Liangcheng Chen, Changqing Jin, Jingzhu Hu, Guoyin Shen and Hokwang Mao

Page 3085

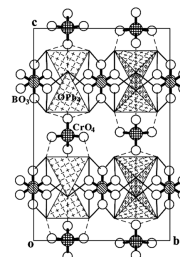


Li₂CuO₂ undergoes a first-order transition from the ambient orthorhombic to a monoclinic phase at above 5.4 GPa with coordination change from four-square to six-octahedron.

Syntheses and characterization of two oxoborates, (Pb₃O)₂(BO₃)₂MO₄ (M = Cr, Mo)

Xuean Chen, Fangping Song, Xinan Chang, Hegui Zang and Weiqiang Xiao

Page 3091

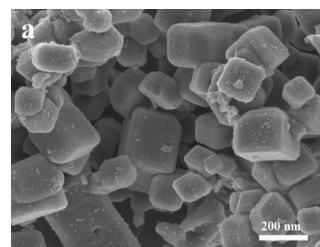


(Pb₃O)₂(BO₃)₂MO₄ (M = Cr, Mo) are characterized by 1D ¹_∞[Pb₃O]⁴⁺ chains formed by corner-sharing OPb₄ tetrahedra. BO₃ and CrO₄ (MoO₄) groups are located around the chains to hold them together via Pb–O bonds.

Direct low-temperature synthesis of RB₆ (R = Ce, Pr, Nd) nanocubes and nanoparticles

Maofeng Zhang, Xiaoqing Wang, Xianwen Zhang, Pengfei Wang, Shenglin Xiong, Liang Shi and Yitai Qian

Page 3098

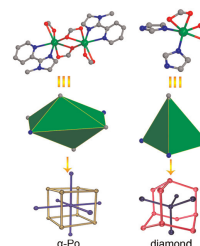


FESEM images of CeB₆ nanocubes prepared at 500 °C for 12 h using B₂O₃ as boron resource.

Interpenetrating metal-organic frameworks formed by self-assembly of tetrahedral and octahedral building blocks

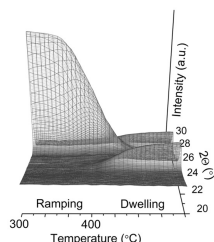
Yong-Ming Lu, Ya-Qian Lan, Yan-Hong Xu, Zhong-Min Su, Shun-Li Li, Hong-Ying Zang and Guang-Juan Xu

Page 3105



A series of three-dimensional interpenetrating metal-organic frameworks based on different polygons or polyhedra has been synthesized. The crystal structures and topological analysis of these compounds, along with a systematic investigation of the relationship between topological types and molecular building blocks, will be discussed.

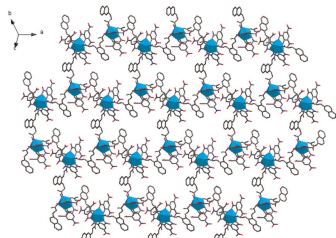
A new material for hydrogen storage; $\text{ScAl}_{0.8}\text{Mg}_{0.2}$
 Martin Sahlberg, Premysl Beran, Thomas Kollin Nielsen,
 Yngve Cerenius, Krisztina Kadás, Marko P.J. Punkkinen,
 Levente Vitos, Olle Eriksson, Torben R. Jensen and
 Yvonne Andersson
Page 3113



Hydrogen absorption in $\text{ScAl}_{0.8}\text{Mg}_{0.2}$ studied by *in situ* synchrotron radiation powder X-ray diffraction. The hydrogen absorption properties were studied by neutron diffraction and quantum mechanical calculations.

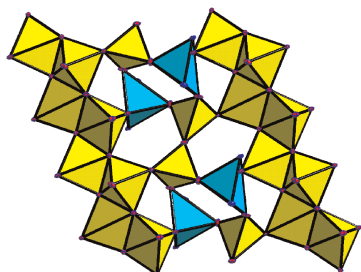
Preparation, crystal structure and luminescent properties of the (6,3) type network supramolecular lanthanide picrate complexes with 2,2'-(1,2-naphthalene)bis(oxy)]bis [N-(phenylmethyl)]acetamide

Qin Wang, Kuan-Zhen Tang, Wei-Sheng Liu, Yu Tang and Min-Yu Tan
Page 3118



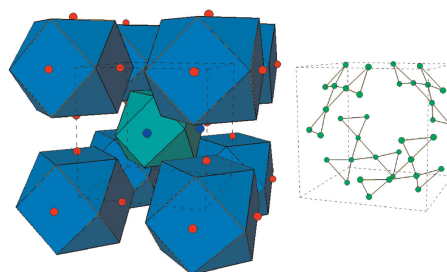
The (6,3) type network supramolecular luminescent lanthanide picrate complexes $\{\text{Ln}_2\text{L}_3(\text{Pic})_6\}_n$ ($\text{L} = 2,2'-(1,2\text{-naphthalene})\text{bis}(\text{oxy})\text{bis}[\text{N}-(\text{phenylmethyl})\text{acetamide}]$) displaying a two-dimensional honeycomb-like framework have been designed and prepared.

Novel building units with bimetallic rings in inorganic/organic hybrid chains and layers
 Thushitha Mahenthirarajah, Yang Li and Philip Lightfoot
Page 3125



Hydrothermal synthesis is used to prepare hybrid mixed metal oxides and oxyfluorides with novel extended connectivities.

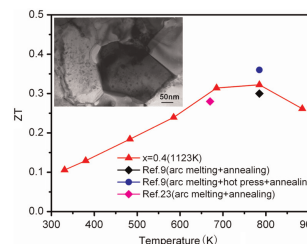
$\text{Ba}_5\text{Ti}_{12}\text{Sb}_{19+x}$, a polar intermetallic compound with a stuffed γ -brass structure
 Haiying Bie and Arthur Mar
Page 3131



A γ -brass substructure built up of Ba–Sb clusters is stuffed with planar Ti_9 clusters.

Fabrication and thermoelectric properties of fine-grained TiNiSn compounds

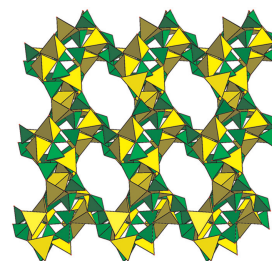
Minmin Zou, Jing-Feng Li, Bing Du, Dawei Liu and Takuji Kita
Page 3138



Nearly single-phased TiNiSn -based half-Heusler compound polycrystalline materials with fine grains were fabricated by combining mechanical alloying (MA) and spark plasma sintering (SPS). A high ZT value for undoped TiNiSn was obtained because of the reduced thermal conductivity.

Flux synthesis of (3,4)-connected zinc phosphites with different framework topologies

Zhien Lin and Stefanie Dehnen
Page 3143



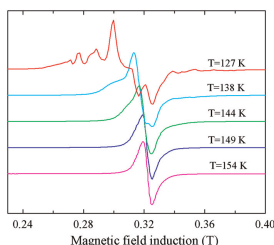
Two three-dimensional open-framework zinc phosphites have been synthesized by a phosphorous acid flux method. The two compounds are constructed from $\text{Zn}_3(\text{HPO}_3)_4$ clusters and have *noz* and *pcu* topologies, respectively.

Continued

The effects of doping ferromagnetic spinel CdCr₂Se₄ with Sb³⁺ ions

E. Malicka, A. Waškowska, D. Skrzypek, R. Sitko and D. Kaczorowski

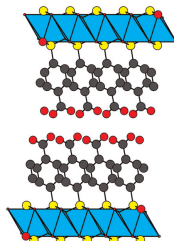
Page 3149



Temperature dependent evolution of the ESR spectrum for the (Cd_{0.56}Sb_{0.44})[Cr₂]Se₄ single-crystal showing inhomogeneous nature of the ferromagnetic ordered state below $T_c = 130$ K. At temperature 127 K a fraction of the paramagnetic phase can still be observed.

Synthesis and characterization of copper 4-carboxyphenylphosphonates

Vítězslav Zima, Jan Svoboda, Ludvík Beneš, Klára Melánová, Miroslava Trchová and Aleš Růžička
Page 3155

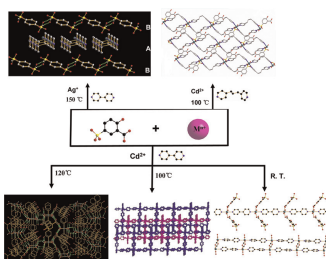


Three new copper carboxyphenylphosphonates were synthesized. Layered structure of one of them, CuH(OOCC₆H₄PO₃), is composed of CuO₆ octahedra arranged hexagonally around two phosphonate groups, which have their carboxyphenyl groups extending into the space above and below the copper-phosphonate layer.

The d¹⁰ metal-sulfosalicylate complexes: Herring-bone, ladder and double-stranded chain frameworks with green luminescences

Chun-Feng Yan, Fei-Long Jiang, Lian Chen, Rui Feng, Ming Yang and Mao-Chun Hong

Page 3162

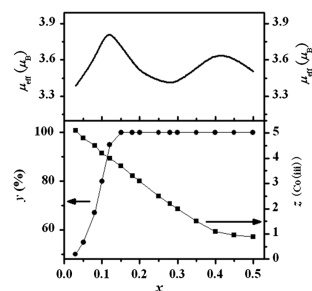


Reactions of 5-sulfosalicylic acid (H₃L) and d¹⁰ metal ions (Cd^{II}, Ag^I) produce five new complexes. Complexes 1–4 all display green luminescences at room temperature.

Phase separation in the spin-state transition system of La_{1-x}Ba_xCoO₃

Wanju Luo and Fangwei Wang

Page 3171

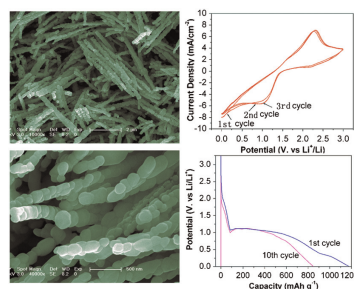


x dependence of the calculated results from a phase separation model.

Porous cobalt oxide (Co₃O₄) nanorods: Facile syntheses, optical property and application in lithium-ion batteries

Rui Xu, Jiawei Wang, Qiuyu Li, Guoying Sun, Enbo Wang, Siheng Li, Jianmin Gu and Mingliang Ju

Page 3177

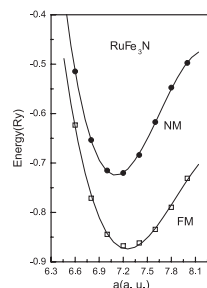


The porous Co₃O₄ nanorods synthesized via a microemulsion-based method in combination with subsequent calcination were applied in the negative electrode materials for lithium-ion batteries and exhibited high electrochemical performance.

Electronic structure and magnetic properties of RuFe₃N nitride

A.V. dos Santos and C.A. Kuhnen

Page 3183

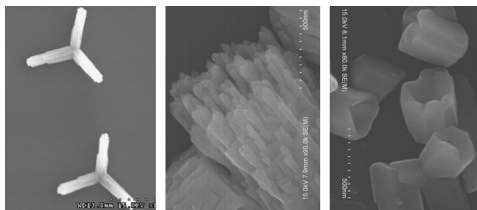


Total energy curves, versus lattice spacing for the RuFe₃N nitride. It is observed an energy difference between ferromagnetic and paramagnetic states, which provides high critical pressure.

Carbon-assisted morphological manipulation of CdS nanostructures and their cathodoluminescence properties

Meng Zhang, Tianyou Zhai, Xi Wang, Qing Liao, Ying Ma and Jiannian Yao

Page 3188

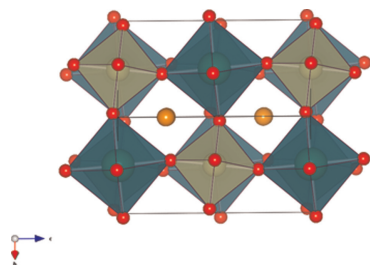


A facile and effective carbon-assisted thermal evaporation method is explored to synthesize CdS multipods, nanobrushes and nanocups. These CdS nanostructures display very different optical properties.

Structural studies of the phases in Ba₂LaIrO₆—New light on an old problem

Qingdi Zhou, Brendan J. Kennedy, Maxim Avdeev, Lisa Giachini and Justin A. Kimpton

Page 3195

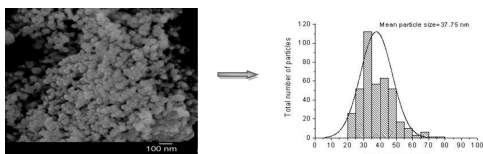


Variable temperature neutron and synchrotron X-ray powder diffraction methods have been used to resolve the long standing question regarding the symmetry and structure of the cation-ordered perovskite Ba₂LaIrO₆. We show this is monoclinic in *I*2/*m* at room temperature, with the sequence of phases $I\bar{1}I2/mR\bar{3}Fm\bar{3}m$.

Synthesis of nanosized silicon particles by a rapid metathesis reaction

C.W. Won, H.H. Nersisyan, H.I. Won and H.H. Lee

Page 3201



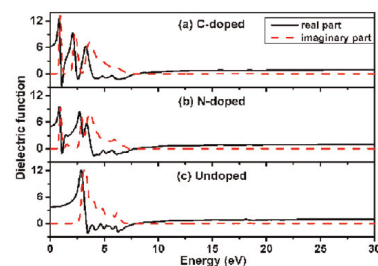
Silicon nanoparticles 37.75 nm in mean diameter was obtained by rapid metathesis reaction performed in Na₂SiF₆ + 4NaN₃ powder bed diluted with NaF.

Rapid Communications

Density functional study on electronic and optical properties of C (or N)-doped cubic cerium dioxide

Yufen Zhang and Xian Zhao

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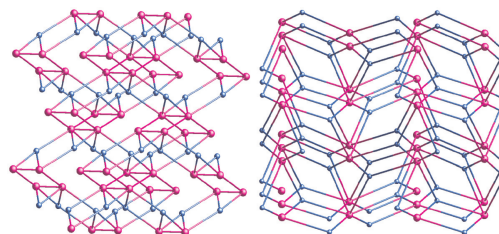


By first-principles calculations, it is predicted that substitutional doping of C (or N) in *c*-CeO₂ lowers *E*_g and also O 2*p*–Ce 4*f* gap, and increases O 2*p*–Ce 4*f* transition intensity.

Three-dimensional (3-D) metal-organic frameworks with 3-pyridin-4-yl-benzoate defining new (3,6)-connected net topologies

Xiu-Juan Jiang, Miao Du, Yan Sun, Jian-Hua Guo and Jin-Shan Li

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This work presents a series of 3-D metal-organic frameworks with 3-pyridin-4-yl-benzoate, which display new (3,6)-connected net topologies of (3.4.5)(3².4⁴.5⁵.6².7²) for Mn^{II}/Zn^{II}/Cd^{II} and (4².6)₂(4⁴.6².8³) for Pb^{II} species.

Corrigendum

Corrigendum to “Polymorphism of the iron doped strontium aluminate SrAl_{1.5}Fe_{0.5}O₄” [Journal of Solid State Chemistry 182 (2009) 1806–1820]

H. Desmoulin, S. Malo, S. Boudin, V. Caignaert and M. Hervieu

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