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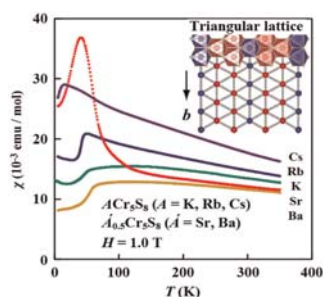
Abstracted/indexed in BioEngineering Abstracts, Chemical Abstracts, Coal Abstracts, Current Contents/Physics, Chemical, & Earth Sciences, Engineering Index, Research Alert, SCISEARCH, Science Abstracts, and Science Citation Index. Also covered in the abstract and citation database SCOPUS<sup>®</sup>.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

Regular Articles

Synthesis, structures and magnetic properties of pseudo-hollandite chromium sulfides

Satoshi Yamazaki and Yutaka Ueda

Page 1905



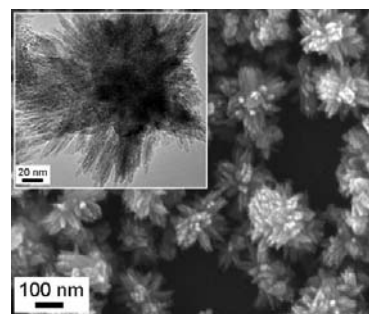
Temperature dependences of magnetic susceptibilities for pseudo-hollandite sulfides,  $A\text{Cr}_3\text{S}_8$  ( $A = \text{K, Rb, Cs}$ ) and  $A_{0.5}'\text{Cr}_3\text{S}_8$  ( $A' = \text{Sr, Ba}$ ). The observed magnetic frustration effect originates in the triangular lattice.

Regular Articles—Continued

Nonaqueous seeded growth of flower-like mixed-phase titania nanostructures for photocatalytic applications

Yu-Chuan Hsu, Huang-Ching Lin, Chia-Hsiu Chen, Yi-Ting Liao and Chia-Min Yang

Page 1917

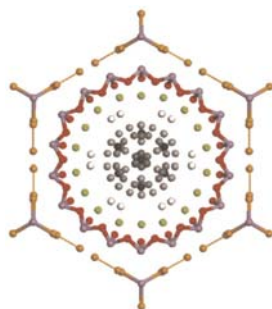


Flower-like  $\text{TiO}_2$  nanostructures synthesized by a nonaqueous seeded growth without using any structural directing or capping agents.

Reversible sorption in the crystalline microporous semiconductor Rb-CTH-1

Alexander Shulman, Ezio Zanghellini and Anders E.C. Palmqvist

Page 1912

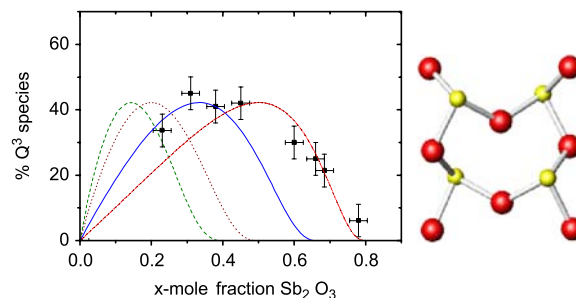


The novel crystalline microporous semiconductor Rb-CTH-1 shows heat-induced reversible sorption of disordered guest species and desorption-induced irreversible rearrangements of ordered guest ions with a response in its semiconductive properties.

Antimony and silicon environments in antimony silicate glasses

M. Mee, B.C. Davies, R.G. Orman, M.F. Thomas and D. Holland

Page 1925

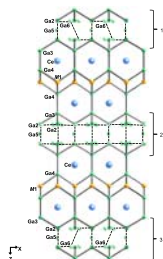


Antimony silicate glasses have been shown to contain  $\text{Sb}^{3+}$  in  $[\text{SbO}_3]$  trigonal pyramid units using  $^{121}\text{Sb}$  Mössbauer spectroscopy and Raman spectroscopy.  $^{29}\text{Si}$  magic-angle-spinning NMR has shown silicon  $Q^n$  speciation which can be interpreted as formation of rings of 4  $[\text{SbO}_3]$  units such as are found in valentinite.

### Crystal growth and properties of $Ln_2Ag_{1-x}Ga_{10-y}$ ( $Ln = La, Ce$ ), a disordered variant of the $Ce_2NiGa_{10}$ -structure type

Melissa C. Menard, Yimin Xiong, Amar B. Karki, Brenton L. Drake, Philip W. Adams, Frank R. Fronczek, David P. Young and Julia Y. Chan

Page 1935



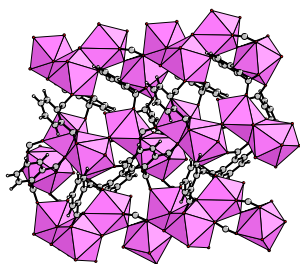
The figure illustrates the structure of  $Ce_2Ag_{0.7(1)}Ga_{9.1(1)}$ , which can be described as a distorted variant of the  $Ce_2NiGa_{10}$  structure. The distorted gallium segments are best described as variants of  $CeGa_6$  ( $PuGa_6$ -structure type), and the distorted  $Ce(Ag,Ga)_4$ -type segments are built of layers of face-sharing tetragonal antiprisms. Here  $M = Ag + Ga$  and the shaded atoms are partially occupied.

### Synthesis, crystal structure and thermal behavior of two hydrated forms of lanthanide phthalates

$Ln_2(O_2 + C_6H_4-CO_2)_3(H_2O)$  ( $Ln = Ce, Nd$ ) and  $Nd_2(O_2C-C_6H_4-CO_2)_3(H_2O)_3$

David Pizon, Natacha Henry, Thierry Loiseau, Pascal Roussel and Francis Abraham

Page 1943

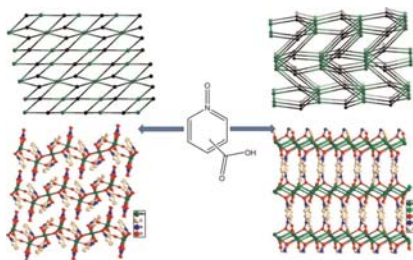


New members of the chain-like structures of neodymium phthalates with different hydration states  $Nd_2(1,2-bdc)_3(H_2O)_x$  ( $x = 1$  or  $2$ ,  $1-2bdc =$  phthalate group) and comparison with cerium-based analogs.

### New divalent manganese complex with pyridine carboxylate N-oxide ligand: Synthesis, structure and magnetic properties

Fu-Chen Liu, Min Xue, Hai-Chao Wang and Jie Ou-Yang

Page 1949

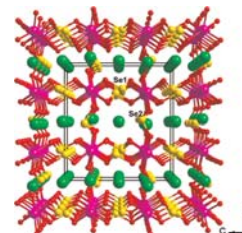


The synthesis, crystal structure and magnetic properties of two new MnII complexes with pyridyl-carboxylate N-oxide ligands are reported.

### Syntheses, crystal structures, and properties of three new metal selenites $Na_2Co_2(SeO_3)_3$ , $Na_2Co_{1.67}Ni_{0.33}(SeO_3)_3$ , and $Na_2Ni_2(SeO_3)_3$

Xiao-Qing Yuan, Mei-Ling Feng, Jian-Rong Li and Xiao-Ying Huang

Page 1955

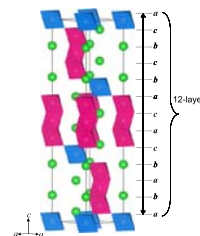


Three new isostructural metal selenites,  $Na_2Co_2(SeO_3)_3$ ,  $Na_2Co_{1.67}Ni_{0.33}(SeO_3)_3$ , and  $Na_2Ni_2(SeO_3)_3$  have been hydro-/solvothermally synthesized and characterized. Their structures feature three-dimensional open frameworks with  $Na^+$ -occupied channels.

### Magnetic and electrical properties of quadruple perovskites with 12 layer structures $Ba_4LnM_3O_{12}$ ( $Ln =$ rare earths; $M = Ru, Ir$ ): The role of metal-metal bonding in perovskite-related oxides

Yuki Shimoda, Yoshihiro Doi, Makoto Wakeshima and Yukio Hinatsu

Page 1962

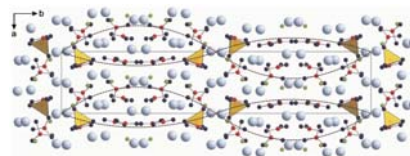


Structures and magnetic and electrical properties of quadruple perovskites containing rare earths  $Ba_4LnM_3O_{12}$  ( $Ln =$  rare earths;  $M = Ru, Ir$ ) were investigated. They crystallize in the 12L-perovskite-type structure. All the  $Ba_4Ln^{3+}Ru_3^{4,33+}O_{12}$  compounds show magnetic ordering at low temperatures, while any of the corresponding iridium-containing compounds  $Ba_4Ln^{3+}Ir_3^{4,33+}O_{12}$  is paramagnetic down to 1.8 K.  $Ba_4Ce^{4+}Ir_3^{4+}O_{12}$  orders antiferromagnetically at 10.5 K, while the corresponding ruthenium-containing compound  $Ba_4Ce^{4+}Ru_3^{4+}O_{12}$  is paramagnetic. These magnetic results were well understood by the magnetic behavior of  $M_3O_{12}$ . The electrical resistivity measurements show that these compounds demonstrate two-dimensional Mott-variable range hopping behavior.

### A new structure type of $RE_4B_4O_{11}F_2$ : High-pressure synthesis and crystal structure of $La_4B_4O_{11}F_2$

Almut Haberer, Reinhard Kaindl, Oliver Oeckler and Hubert Huppertz

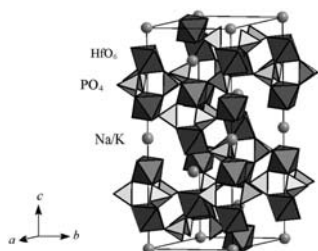
Page 1970



A new structure type of  $RE_4B_4O_{11}F_2$ : high-pressure synthesis and crystal structure of  $La_4B_4O_{11}F_2$ .

**The study of the crystalline phosphates of kosnarite type structure containing different alkali metals**

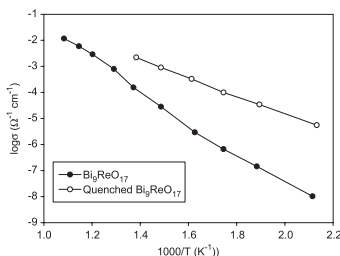
E.A. Asabina, V.I. Pet'kov, D.A. Rusakov, B.I. Lazoryak and V.S. Kurazhkovskaya  
 Page 1980



The incorporation possibilities of different alkali elements into crystalline phosphates  $A_{1-x}A'_x\text{Hf}_2(\text{PO}_4)_3$  ( $A = \text{Li, Na, K, Rb, Cs}$ ) were studied, the formation regions of kosnarite solid solutions were determined.  $\text{Na}_{0.5}\text{K}_{0.5}\text{Hf}_2(\text{PO}_4)_3$  crystal structure was studied by powder X-ray diffraction, and the distribution of alkali metals in kosnarite structure was found out. The phosphate crystallizes in the space group  $R\bar{3}c$ , with  $a = 8.7295(1) \text{ \AA}$ ,  $c = 23.2023(4) \text{ \AA}$ ,  $V = 1531.24(4) \text{ \AA}^3$ ,  $Z = 6$ ;  $R_{\text{wp}} = 6.15$ ,  $R_p = 4.43$ . The concentration region knowledge of the kosnarite phase existence and peculiarities of their phase formation in the  $A_{1-x}A'_xM_2(\text{PO}_4)_3$  ( $M = \text{Ti, Zr, Hf}$ ) systems allow us to choose phosphate matrix compositions suitable for solidification of reprocessing wastes of spent U–Pu nuclear fuels.

**The ionic conductivity and local environment of cations in  $\text{Bi}_9\text{ReO}_{17}$**

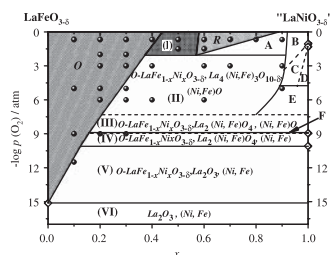
M. Thompson, T. Herranz, B. Santos, J.F. Marco, F.J. Berry and C. Greaves  
 Page 1985



The structure of  $\text{Bi}_9\text{ReO}_{17}$  is discussed and related to the ionic conductivity of the ordered and disordered forms.

**$p(\text{O}_2)$ -stability of  $\text{LaFe}_{1-x}\text{Ni}_x\text{O}_{3-\delta}$  solid solutions at  $1100 \text{ }^\circ\text{C}$**

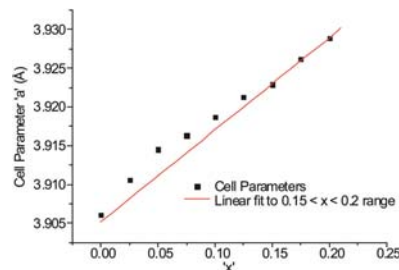
E.A. Kiselev and V.A. Cherepanov  
 Page 1992



Isothermal  $\text{LaFeO}_{3-\delta}$ –“ $\text{LaNiO}_{3-\delta}$ ” section of the phase diagram of the La–Fe–Ni–O system at  $1100 \text{ }^\circ\text{C}$ . The hatched areas represent single phase regions:  $O\text{-LaFe}_{1-x}\text{Ni}_x\text{O}_{3-\delta}$  ( $x \leq 0.4$ ) with orthorhombically distorted perovskite structure and  $R\text{-LaFe}_{1-x}\text{Ni}_x\text{O}_{3-\delta}$  ( $0.6 \leq x < 0.8$ ) with rhombohedral one.

**Temperature and composition dependent structural investigation of the defect perovskite series  $\text{Sr}_{1-x}\text{Ti}_{1-2x}\text{Nb}_{2x}\text{O}_3$ ,  $0 \leq x \leq 0.2$**

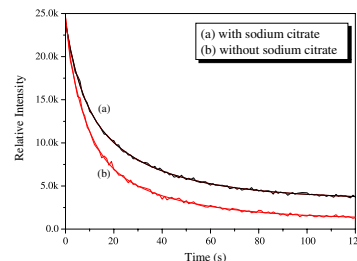
William R. Brant, Siegbert Schmid, Qinfen Gu, Ray L. Withers, James Hester and Maxim Avdeev  
 Page 1998



Change in cell dimensions for the series  $\text{Sr}_{1-x}\text{Ti}_{1-2x}\text{Nb}_{2x}\text{O}_3$ ,  $0 \leq x \leq 0.2$ .

**Controlled synthesis and luminescent properties of  $\text{Eu}^{2+}$  ( $\text{Eu}^{3+}$ ),  $\text{Dy}^{3+}$ -doped  $\text{Sr}_3\text{Al}_2\text{O}_6$  phosphors by hydrothermal treatment and postannealing approach**

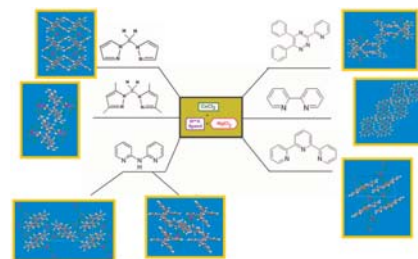
Xiang Ying Chen, Shi Ping Bao and Yu Cheng Wu  
 Page 2004



We present a simple and efficient hydrothermal treatment and subsequently postannealing approach to prepare  $\text{Sr}_3\text{Al}_2\text{O}_6$ :  $\text{Eu}^{2+}$  ( $\text{Eu}^{3+}$ ),  $\text{Dy}^{3+}$  phosphors on a large scale.

**$\text{Cu}(N\text{-}N)_2\text{Cl}_2$  and  $\text{Cu}(N\text{-}N\text{-}N)\text{Cl}_2$  and  $\text{HgCl}_2$  building blocks in the synthesis of coordination compounds—X-ray studies and magnetic properties**

B. Machura, A. Świtlicka, I. Nawrot, J. Mroziński, R. Kruszynski and J. Kusz  
 Page 2012



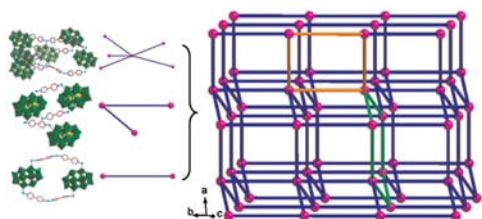
$N\text{-}N$ : bis(3,5dimethylpyrazol-1-yl)methane (bdmpzm), 2,2-dipyridylamine (dpa), 5,6-diphenyl-3-(2-pyridyl)-1,2,4-triazine (dppt) and 2,2'-bipyridine (bipy), 6',2''-terpyridine (terpy).

**Coordination polymers with the chiral ligand *N-p*-tolylsulfonyl-L-glutamic acid: Influence of metal ions and different bipyridine ligands on structural chirality**  
 Rong He, Hui-Hua Song, Zhen Wei, Jian-Jun Zhang and Yuan-Zhe Gao  
 Page 2021



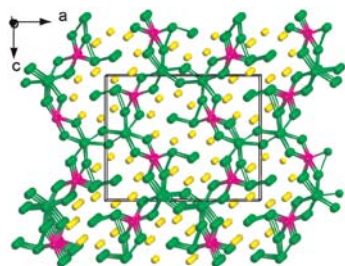
Four novel polymers based on a chiral ligand were prepared and structurally characterized; it represents the first series of investigations about the effect of central metals and bipyridine ligands on framework chirality.

**A novel extended architecture with  $4^6 \cdot 6^4$  topology based on mixed-valence Wells–Dawson arsenotungstate and mixed-ligand Cu(I) units**  
 Ruizhan Tong, Xiaoyu Ren, Zuoxi Li, Bin Liu, Huaiming Hu, Ganglin Xue, Feng Fu and Jiwu Wang  
 Page 2027



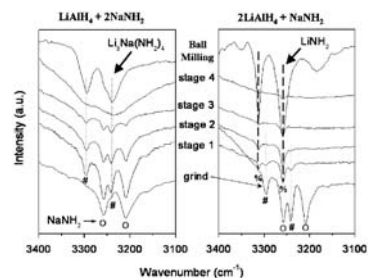
A novel organic–inorganic hybrid compound based on mixed-valence Wells–Dawson arsenotungstate and mixed-ligand Cu(I) units has been successfully synthesized. The functionalized arsenotungstate exhibits a five-connected  $4^6 \cdot 6^4$  topology network.

**Syntheses and crystal structures of  $RE_3MnSn_{5-x}$  ( $RE = Tm, Lu$ ) with 3D Mn–Sn framework**  
 Xiao-Wu Lei, Chun-Li Hu and Jiang-Gao Mao  
 Page 2032



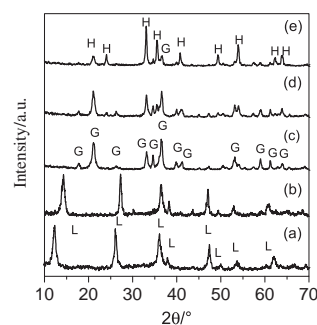
The new isostructural rare earth manganese stannides, namely  $RE_3MnSn_{5-x}$  ( $RE = Tm, Lu$ ), have been synthesized by reacting the mixture of the corresponding pure elements and structurally characterized.

**Investigations on the solid state interaction between  $LiAlH_4$  and  $NaNH_2$**   
 Yong Shen Chua, Guotao Wu, Zhitao Xiong and Ping Chen  
 Page 2040



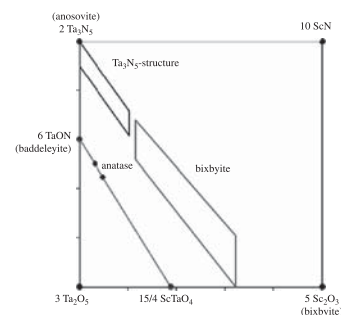
Mechanical ball milling  $LiAlH_4$ – $NaNH_2$  mixture with  $LiAlH_4$  to  $NaNH_2$  molar ratio of 1/2 and 2/1 both result in evolution of 2 equiv hydrogen. However, FTIR revealed different reaction pathways for hydrogen release.

**Studies on the controllable transformation of ferrihydrite**  
 Hui Liu, Miaorui Ma, Mei Qin, Lijuan Yang and Yu Wei  
 Page 2045



The transformations from ferrihydrite to lepidocrocite, goethite, hematite or magnetite can be controlled with the help of mechanism.

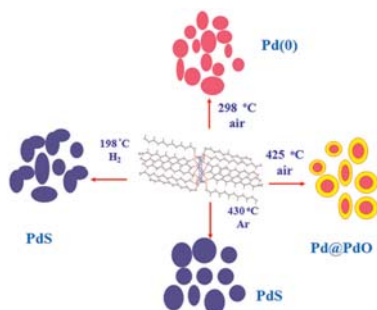
**Bixbyite- and anatase-type phases in the system Sc–Ta–O–N**  
 A. Stork, H. Schilling, C. Wessel, H. Wolff, A. Börger, C. Baetz, K.-D. Becker, R. Dronskowski and M. Lerch  
 Page 2051



New anatase- and bixbyite-type phases obtained as single-phase samples in the system Sc–Ta–O–N.

**Synthesis and characterization of Pd(0), PdS, and Pd@PdO core-shell nanoparticles by solventless thermolysis of a Pd-thiolate cluster**

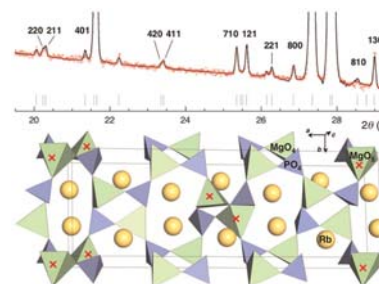
Deepa Jose and Balaji R. Jagirdar  
Page 2059



Solventless thermolysis of a single palladium-thiolate cluster affords various Pd systems such as Pd(0), Pd@PdO core-shell, and PdS nanoparticles demonstrating the versatility of the precursor and the methodology.

**Polymorphism of new rubidium magnesium monophosphate**  
Rajia Ait Benhamou, Gilles Wallez, Pascal Loiseau, Bruno Viana, Mohamed Elaamrani, Mohamed Daoud and Abdelwahed Zegzouti

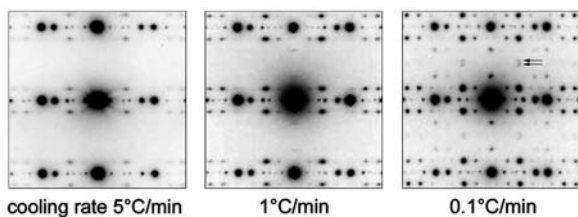
Page 2082



Superstructure  $hkl$ ,  $h \neq 3n$  diffraction peaks of low-temperature  $\text{RbMgPO}_4$  results of the transformation of 1/3 of the  $\text{MgO}_4$  tetrahedra into  $\text{MgO}_5$  pyramids.

**Second order incommensurate phase transition in 25L-Ta<sub>2</sub>O<sub>5</sub>**

M. Audier, B. Chenevier, H. Roussel and A. Lintanf Salaün  
Page 2068



Electron diffraction patterns of [100] zone axis, showing a structural change of the 25L-Ta<sub>2</sub>O<sub>5</sub> phase through a variation of the cooling rate from 1000°C.

**Syntheses, crystal structures and vibrational spectra of  $\text{KLn}(\text{SO}_4)_2 \cdot \text{H}_2\text{O}$  ( $\text{Ln} = \text{La, Nd, Sm, Eu, Gd, Dy}$ )**

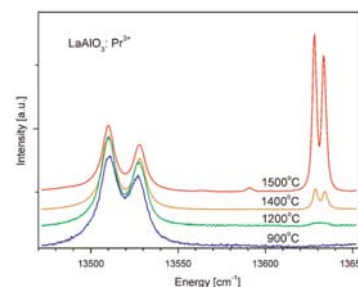
Karolina Kazmierczak and Henning A. Höpfe  
Page 2087



The lanthanide potassium double sulphates exhibit an unexpected change in the coordination mode by a simple rotation of sulphate tetrahedron 2.

**Symmetry of LaAlO<sub>3</sub> nanocrystals as a function of crystallite size**

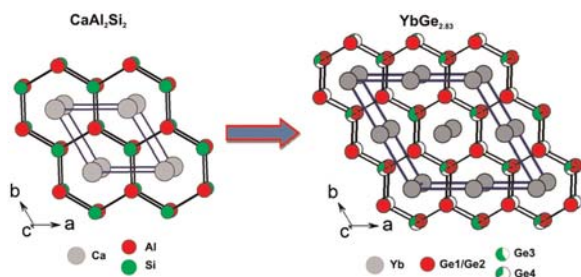
P.J. Dereń, K. Lemański, A. Gągor, A. Watras, M. Małecka and M. Zawadzki  
Page 2095



The 77 K emission spectra of  $\text{LaAlO}_3:\text{Pr}^{3+}$  nanocrystallites codoped with  $\text{Cr}^{3+}$  as a function of the annealing temperature. Intensities were normalized to the maximum of the  $^3\text{P}_0 \rightarrow ^3\text{H}_4$  transition. The R line at  $13633 \text{ cm}^{-1}$  vanishes with decreasing the nanocrystals size and is absent for the smallest ones.

**The new binary intermetallic  $\text{YbGe}_{2.83}$**

C. Peter Sebastian and Mercuri G. Kanatzidis  
Page 2077



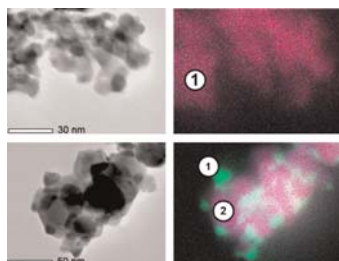
The new binary compound  $\text{YbGe}_{2.83}$  is a variant of the  $\text{CaAl}_2\text{Si}_2$  structure type with ordered vacancies. Zintl formalism and valence bond sum calculations suggest intermediate valence of Yb ions in  $\text{YbGe}_{2.83}$ .

Continued

**Influence of  $\text{Sn}^{4+}$  and  $\text{Sn}^{4+}/\text{Mg}^{2+}$  doping on structural features and visible absorption properties of  $\alpha\text{-Fe}_2\text{O}_3$  hematite**

M. Gaudon, N. Pailhé, J. Majimel, A. Wattiaux, J. Abel and A. Demourgues

Page 2101

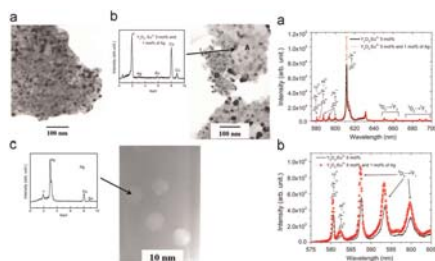


Sn-doped or Sn/Mg-doped  $\text{Fe}_2\text{O}_3$  hematites, were analyzed by X-ray diffraction refinement, Mössbauer spectroscopy, magnetic characterization and TEM investigations. Their color is correlated to the doping ions concentration.

**$\text{Y}_2\text{O}_3:\text{Eu}^{3+}$  (5 mol%) with Ag nanoparticles prepared by citrate precursor**

J.L. Ferrari, M.A. Cebim, A.M. Pires, M.A. Couto dos Santos and M.R. Davolos

Page 2110

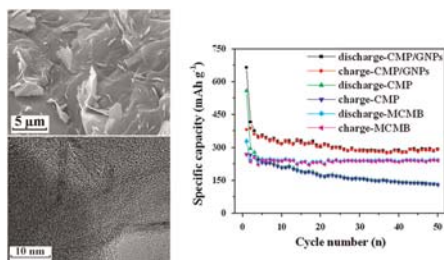


The presence of Ag nanoparticles together  $\text{Y}_2\text{O}_3:\text{Eu}^{3+}$  5 mol% phosphor showed to affect directly the optical and crystallinity of the material. Luminescence spectra show directly the effect observed.

**Facile synthesis of mesophase pitch/exfoliated graphite nanoplatelets nanocomposite and its application as anode materials for lithium-ion batteries**

Yi-Shuang Yang, Cheng-Yang Wang, Ming-Ming Chen, Zhi-Qiang Shi and Jia-Ming Zheng

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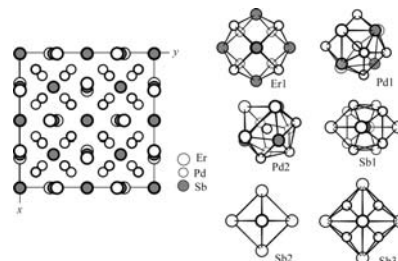


Uniform mesophase pitch/exfoliated graphite nanoplatelets nanocomposite has been efficiently fabricated with an initiation of graphite intercalation compounds. The as-prepared composite electrode exhibited high electrochemical performance for Li-ion batteries.

**Crystal structure and physical properties of the new ternary antimonides  $\text{Ln}_3\text{Pd}_8\text{Sb}_4$  ( $\text{Ln} = \text{Y, Gd, Tb, Dy, Ho, Er, Tm}$ )**

Mariya Zelinska, Stepan Oryshchyn, Olga Zhak, Jean-Yves Pivan, Michel Potel, Olivier Tougait, Henri Noel and Dariusz Kaczorowski

Page 2121

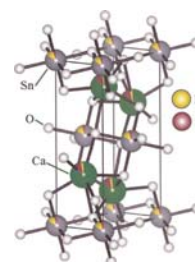


Projection of the crystal structure of  $\text{Er}_3\text{Pd}_8\text{Sb}_4$  onto  $XY$  plane and the coordination polyhedra of all the atoms.

**Quantitative determination of site occupancy of multi-rare-earth elements doped into  $\text{Ca}_2\text{SnO}_4$  phosphor by electron channeling microanalysis**

Y. Fujimichi, S. Muto, K. Tatsumi, T. Kawano and H. Yamane

Page 2127

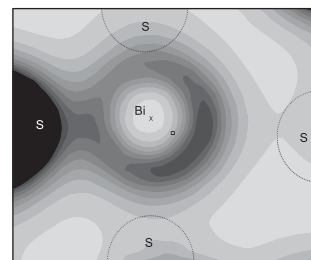


The composition of  $\text{Ca}_{1.8}\text{Eu}_{0.2}\text{Y}_{0.2}\text{Sn}_{0.8}\text{O}_4$  determined by electron channeling microanalysis is graphically shown, where the rare-earth dopants, Eu and Y preferentially occupy the Ca and Sn sites, respectively, to maintain the local charge neutrality.

**Dependence of the lone pair of bismuth on coordination environment and pressure: An *ab initio* study on  $\text{Cu}_4\text{Bi}_5\text{S}_{10}$  and  $\text{Bi}_2\text{S}_3$**

Lars Arnskov Olsen, Javier López-Solano, Alberto García, Tonči Balić-Žunić and Emil Makovicky

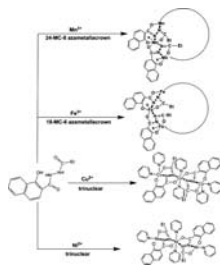
Page 2133



The article includes charge density maps used to analyze the charge distribution around bismuth in sulfides. This map shows the orientation of a lone electron pair.

**Metal coordination architectures of N-propionyl-1-hydroxy-2-naphthoylhydrazide: From metalladiazamacrocycles to trinuclear complexes**

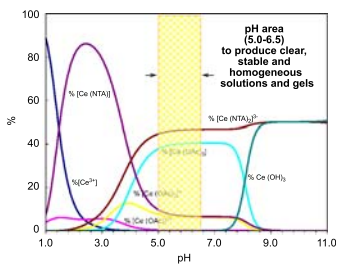
Xuefeng Shi, Dacheng Li, Suna Wang, Suyuan Zeng, Daqi Wang and Jianmin Dou  
 Page 2144



One 24-membered octanuclear and one 18-membered hexanuclear metalladiazamacrocycles as well as two linear trinuclear complexes have been reported from a trianionic pentadentate bridging ligand N-propionyl-1-hydroxy-2-naphthoylhydrazide (H<sub>3</sub>pnhz).

**A nitrilo-tri-acetic-acid/acetic acid route for the deposition of epitaxial cerium oxide films as high temperature superconductor buffer layers**

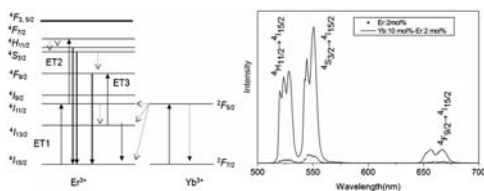
T.T. Thuy, P. Lommens, V. Narayanan, N. Van de Velde, K. De Buysser, G.G. Herman, V. Cloet and I. Van Driessche  
 Page 2154



Study of the complexation and hydrolysis behavior of Ce<sup>4+</sup> ions in the presence of nitrilo-tri-acetic acid and the subsequent development of an aqueous chemical solution deposition route suited for the processing of textured CeO<sub>2</sub> buffer layers on Ni-W tapes.

**Synthesis and luminescence properties of Yb<sup>3+</sup> and Er<sup>3+</sup> doped KLa(WO<sub>4</sub>)<sub>2</sub> nanoparticles**

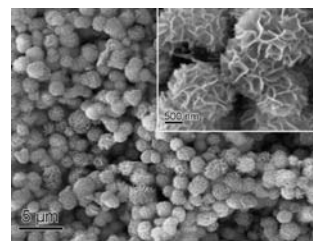
Meng Chen, Tongqing Sun, Hong Chen, Yu Zhang, Li Wu, Yongfa Kong and Jingjun Xu  
 Page 2161



Er<sup>3+</sup> and Yb<sup>3+</sup> codoped KLa(WO<sub>4</sub>)<sub>2</sub> nanoparticles have been prepared by Pechini method. Luminescence studies showed that the intensity of upconversion emission of the Yb<sup>3+</sup> and Er<sup>3+</sup> codoped samples was much stronger than that of the Er<sup>3+</sup> single doped samples (pumped by 980 nm LD), and the upconversion emission mechanisms suggested that all the three bands of upconversion emissions were two-photon process.

**Ethanol-assisted hydrothermal synthesis and electrochemical properties of coral-like β-Co(OH)<sub>2</sub> nanostructures**

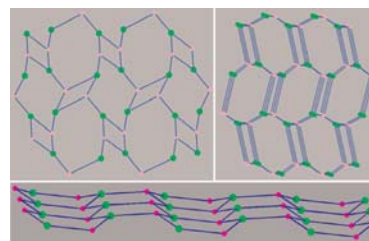
Shaochun Tang, Sascha Vongehr, Yang Wang, Lan Chen and Xiangkang Meng  
 Page 2166



Coral-like β-Co(OH)<sub>2</sub> nanostructures were synthesized via a facile ethanol-assisted hydrothermal route. Their high porosity facilitates a deep penetration by electrolytes and thus contributes to the excellent capacitive properties.

**Syntheses, structures and properties of silver(I) complexes with flexible 1,3,5-tris(pyridylmethoxy)benzene ligands**

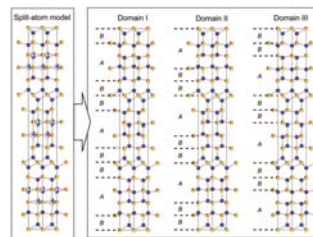
Gang Wu, Xiao-Feng Wang, Taka-aki Okamura, Min Chen, Wei-Yin Sun and Norikazu Ueyama  
 Page 2174



Five new silver(I) coordination frameworks with different topology were obtained and their structures were determined by single crystal X-ray diffraction studies. The influence of counteranion and ligand on the structure of complexes was discussed, the photoluminescence and anion-exchange properties were reported.

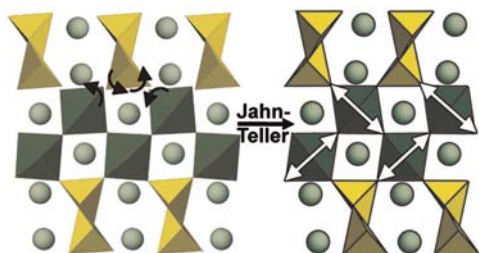
**Synthesis and structural characterization of Al<sub>4</sub>Si<sub>2</sub>C<sub>5</sub>-homotypic aluminum silicon oxycarbide, (Al<sub>6-x</sub>Si<sub>x</sub>)(O<sub>y</sub>C<sub>5-y</sub>) (x ~ 0.8 and y ~ 1.6)**

Motoaki Kaga, Daisuke Urushihara, Tomoyuki Iwata, Keita Sugiura, Hiromi Nakano and Koichiro Fukuda  
 Page 2183



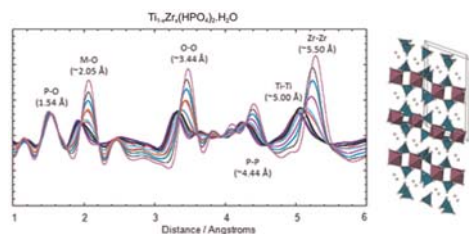
A new aluminum silicon oxycarbide, (Al<sub>6-x</sub>Si<sub>x</sub>)(O<sub>y</sub>C<sub>5-y</sub>) (x ~ 0.8 and y ~ 1.6). The crystal is composed of three types of domains (I, II and III), and hence the structure is represented by a split-atom model. Individual crystal structures can be regarded as layered structures, which consist of A-type [(Al,Si)<sub>4</sub>(O,C)<sub>4</sub>] unit layers and B-type [(Al,Si)(O,C)<sub>2</sub>] single layers.

**New perovskite-based manganite  $\text{Pb}_2\text{Mn}_2\text{O}_5$**   
 Joke Hadermann, Artem M. Abakumov, Tyché Perkisas,  
 Hans D'Hondt, Haiyan Tan, Johan Verbeeck,  
 Vladimir P. Filonenko, Evgeny V. Antipov and  
 Gustaaf Van Tendeloo  
 Page 2190



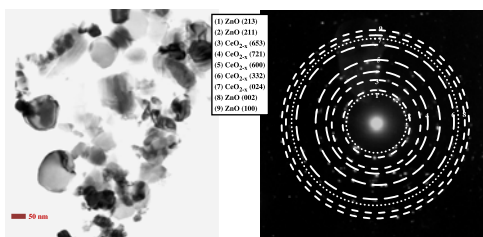
Order of the Jahn–Teller distorted  $\text{MnO}_6$  octahedra in  $\text{Pb}_2\text{Mn}_2\text{O}_5$ . Two long and two short bonds lie in the  $a$ – $c$  plane, along two perpendicular orientations within this plane, forming a  $d$ -type pattern.

**Synthesis and structural characterisation using Rietveld and pair distribution function analysis of layered mixed titanium–zirconium phosphates**  
 Victoria A. Burnell, Jennifer E. Readman, Chiu C. Tang,  
 Julia E. Parker, Stephen P. Thompson and  
 Joseph A. Hriljac  
 Page 2196



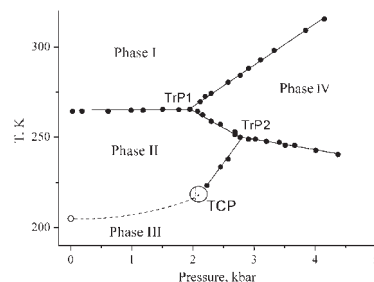
Layered phosphates of general formula  $(\text{Ti}_{1-x}\text{Zr}_x)(\text{HPO}_4)_2 \cdot \text{H}_2\text{O}$  have been prepared by the hydrothermal treatment of amorphous gels in phosphoric acid and characterised by Rietveld analysis of high resolution synchrotron X-ray powder diffraction data and pair distribution function analysis of high energy synchrotron X-ray total scattering data.

**Preparation of  $\text{ZnO}:\text{CeO}_{2-x}$  thin films by AP-MOCVD: Structural and optical properties**  
 A.M. Torres-Huerta, M.A. Domínguez-Crespo,  
 S.B. Brachetti-Sibaja, H. Dorantes-Rosales,  
 M.A. Hernández-Pérez and J.A. Lois-Correa  
 Page 2205



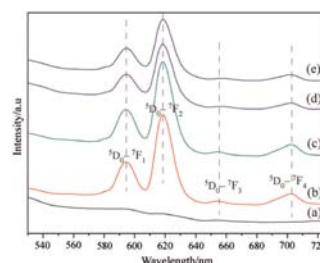
TEM micrographs and their corresponding SAED pattern obtained for the as-deposited  $\text{ZnO}-\text{CeO}_{2-x}$  thin films for a  $\text{Zn}/\text{Ce}$  metallic ratio 16:9.

**Tricritical point in ferroelastic ammonium titanyl fluoride: NMR study**  
 V.Ya. Kavun, S.G. Kozlova, N.M. Laptash,  
 I.A. Tkachenko and S.P. Gabuda  
 Page 2218



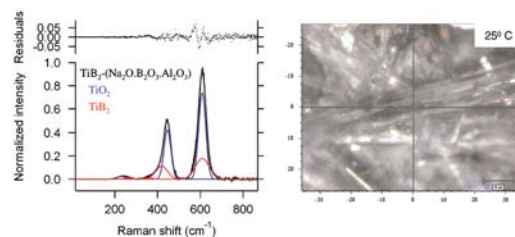
$p$ – $T$  phase diagram of  $(\text{NH}_4)_3\text{TiOF}_5$ .

**Structure and photoluminescence of Mg–Al–Eu ternary hydroxalite-like layered double hydroxides**  
 Yufeng Chen, Fei Li, Songhua Zhou, Junchao Wei,  
 Yanfeng Dai and Yiwang Chen  
 Page 2222



A series of Mg–Al–Eu ternary hydroxalite-like layered double hydroxides (LDHs), with Mg/(Al + Eu) atomic ratios ranging from 1.3/1, 2/1, 3/1 to 4/1, were synthesized by a coprecipitation method. The photoluminescent spectra of the Mg–Al–Eu ternary LDHs are described by the well-known  ${}^5D_0$ – $F_J$  transition ( $J=1, 2, 3, 4$ ) of  $\text{Eu}^{3+}$  ions with the strongest emission for  $J=2$ .

**Structural investigation in the  $\text{TiB}_2-(\text{Na}_2\text{O} \cdot \text{B}_2\text{O}_3 \cdot \text{Al}_2\text{O}_3)$  system**  
 Elena Buixaderas, Elena Maria Anghel, Simona Petrescu  
 and Petre Osiceanu  
 Page 2227

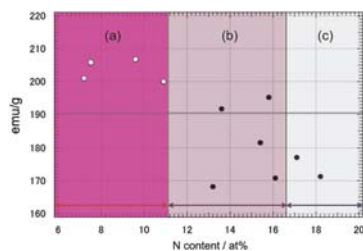


Deconvolution of the reduced Raman spectrum of the grain phase in  $\text{TiB}_2-(\text{Na}_2\text{O} \cdot \text{B}_2\text{O}_3 \cdot \text{Al}_2\text{O}_3)$  composite along with its Raman micrographs collected at room temperature.



## Humidity effects in Fe<sub>16</sub>N<sub>2</sub> fine powder preparation by low-temperature nitridation

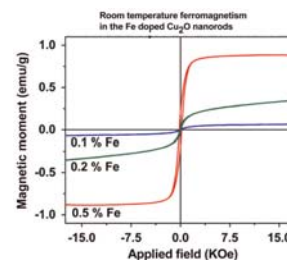
Kohetsu Yamanaka, Yuki Onuma, Shohei Yamashita, Yuji Masubuchi, Takashi Takeda and Shinichi Kikkawa  
Page 2236



Humidity should be as low as possible to obtain a fine powder with a high  $\alpha''$ -Fe<sub>16</sub>N<sub>2</sub> content. An enhancement of magnetization to 210 emu g<sup>-1</sup> at room temperature was observed from a nitrided mixture of  $\alpha''$ -Fe<sub>16</sub>N<sub>2</sub> with residual  $\alpha$ -Fe, compared to 199 emu g<sup>-1</sup> for an  $\alpha$ -Fe fine powder reduced from  $\gamma$ -Fe<sub>2</sub>O<sub>3</sub>.

## Structural and magnetic properties of self assembled Fe-doped Cu<sub>2</sub>O nanorods

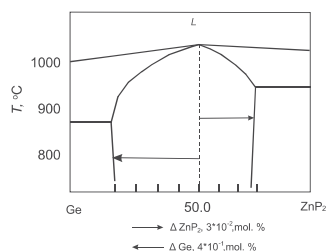
Asar Ahmed, Namdeo S. Gajbhiye and S. Kurian  
Page 2248



Ferromagnetism at room temperature was observed in the Fe doped Cu<sub>2</sub>O nanorods. The origin seems to be the defects of cation vacancies created by the dopant ions.

## Nonstoichiometry of ZnGeP<sub>2</sub> crystals probed by static tensimetric method

I.G. Vasilyeva, R.E. Nikolaev and G.A. Verozubova  
Page 2242



The nonstoichiometry of ZnGeP<sub>2</sub> on the  $T$ - $x$  diagram of the ZnP<sub>2</sub>-Ge system.

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