

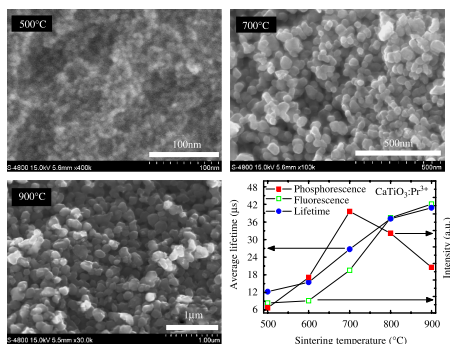
CONTENTS

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Regular Articles

The dependence of persistent phosphorescence on annealing temperatures in $\text{CaTiO}_3:\text{Pr}^{3+}$ nanoparticles prepared by a coprecipitation technique

Xianmin Zhang, Jiahua Zhang, Xinguang Ren and Xiao-Jun Wang
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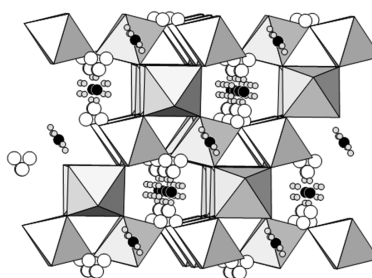


The dependence of fluorescence and phosphorescence on annealing temperature in $\text{CaTiO}_3:\text{Pr}^{3+}$ nanoparticles prepared by a coprecipitation technique.

Regular Articles—Continued

Pyrochlore formation, phase relations, and properties in the $\text{CaO-TiO}_2\text{-(Nb,Ta)}_2\text{O}_5$ systems

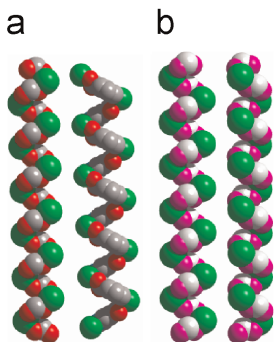
R.S. Roth, T.A. Vanderah, P. Bordet, I.E. Grey, W.G. Mumme, L. Cai and J.C. Nino
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Crystal structures of the pyrochlores $\text{Ca}_{1.46}\text{Ti}_{1.38}\text{Nb}_{1.11}\text{O}_7$ and $\text{Ca}_{1.51}\text{Ti}_{1.32}\text{V}_{0.04}\text{Ta}_{1.10}\text{O}_7$ were refined using single-crystal X-ray diffraction data. Both Ca^{2+} and Ti^{4+} occupy the A-type sites; Ca occupies the ideal $16d$ site and Ti is displaced 0.7 \AA to partially occupy a ring of six $96g$ sites. The O' oxygens are disordered among a tetrahedral cluster of $32e$ sites displaced 0.48 \AA from the ideal $8b$ site. Both pyrochlores display dielectric relaxation similar to that observed for analogous Bi-based systems.

Hydrothermal synthesis of two copper helical coordination polymers with acentric three-dimensional framework constructing from mixed pyridine carboxylates

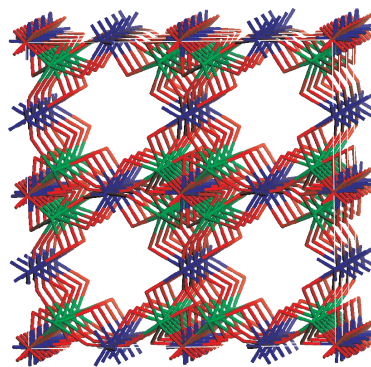
Shuai Zhang, Yanning Cao, Hanhui Zhang, Xiaochuan Chai and Yiping Chen
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Two copper helical coordination polymers, $[\text{Cu}(2\text{-pc})(3\text{-pc})]_n$ **1** and $[\text{Cu}(2\text{-pc})(4\text{-pc})]_n$ **2** have been obtained by hydrothermal synthesis. Both two compounds crystallized in non-centrosymmetric space groups, $P2_12_12_1$ and $Pna2_1$, respectively. The 3D framework of **1** is constructed from right-handed helical $\text{Cu}(2\text{-pc})$ chains and left-handed $\text{Cu}(3\text{-pc})$ helices. As for **2**, $\text{Cu}(2\text{-pc})$ helical chains, in which left- and right-handed helices are coexisting, and $\text{Cu}(4\text{-pc})$ zigzag chains combined together to form 3D architecture of **2** as well.

Designing and tuning properties of a three-dimensional porous quaternary chalcogenide built on a bimetallic tetrahedral cluster $[\text{M}_4\text{Sn}_3\text{S}_{13}]^{5-}$ ($\text{M} = \text{Zn}/\text{Sn}$)

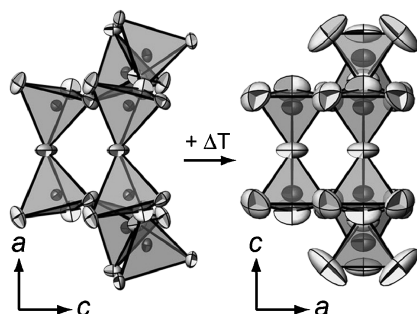
Min Wu, Thomas J. Emge, Xiaoying Huang, Jing Li and Yong Zhang
page 415



A three-dimensional quaternary chalcogenide $[\text{Na}_5\text{Zn}_{3.5}\text{Sn}_{3.5}\text{S}_{13}] \cdot 6\text{H}_2\text{O}$ represents an interesting example of chalcogenide based semiconductor that combines semiconductivity, porosity, and light emission in a single structure. The electronic and optical properties of this compound can be systematically tuned by substitution of metal and chalcogen elements.

Temperature-dependent structural study of microporous CsAlSi₅O₁₂

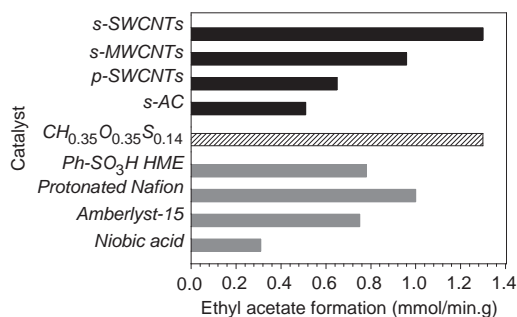
Martin Fisch, Thomas Armbruster and Boris Kolesov
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Temperature-dependent structural evolution of microporous CsAlSi₅O₁₂ has been investigated by single-crystal and powder X-ray diffraction, as well as Raman spectroscopy. Results yielded a phase transition of order–disorder type.

Synthesis and characterization of sulfonated single-walled carbon nanotubes and their performance as solid acid catalyst

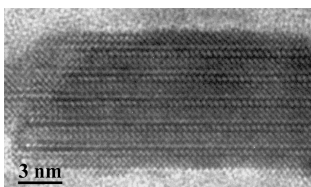
Hao Yu, Yuguang Jin, Zhili Li, Feng Peng and Hongjuan Wang
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Sulfonated SWCNTs with 20 wt% –SO₂OH groups were prepared by a high-temperature H₂SO₄ process, which transformed the hydrophobic surface of pristine SWCNTs to a hydrophilic surface and provided an excellent performance as solid acid catalyst.

Exfoliated nanoplatelets of an Aurivillius phase, Bi_{3.25}La_{0.75}Ti₃O₁₂: Characterisation by X-ray diffraction and by high-resolution electron microscopy

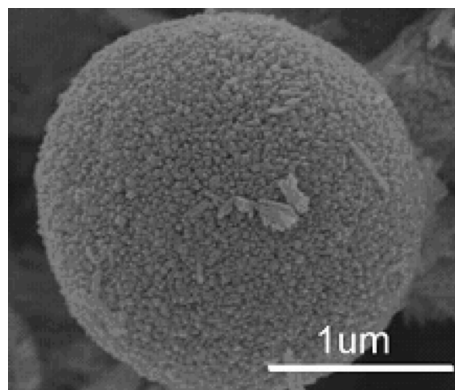
Virginie Chevallier, Geneviève Nihoul and Véronique Madigou
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Bi_{3.25}La_{0.75}Ti₃O₁₂ nanoplatelets, of which the thickness downs to one cell parameter along the *c*-axis, are obtained through a soft chemical lithiation process followed by exfoliation. Li⁺ cations intercalate in the intermediate (Bi₂O₂)²⁺ layers. However, not all of them actually accommodate lithium. Moreover, exfoliation is destructive for the host layers.

Novel three-dimensional dandelion-like TiO₂ structure with high photocatalytic activity

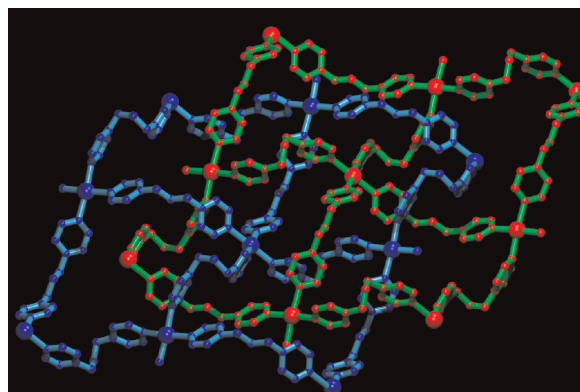
Xuelian Bai, Bin Xie, Nan Pan, Xiaoping Wang and Haiqian Wang
page 450



Rutile-phase TiO₂ powders with novel 3D dandelion-like structures were synthesized. This kind of 3D artificial hierarchical titania structure has the advantage of reserving the novel nanometer-scale properties while providing us the easiness of storing and handling as we routinely enjoyed for the micrometer-scale materials. A different oxidation process of Ti(III) to Ti(IV) during hydrothermal process was suggested.

2D parallel interpenetration of [M₂(bpp)₄X₄] [M, Fe(II)/Co(II); bpp, 4,4'-trimethylenedipyridine; X, SCN⁻, SeCN⁻ and N₃⁻] complexes: Pseudohalide-dependent conformation of bpp

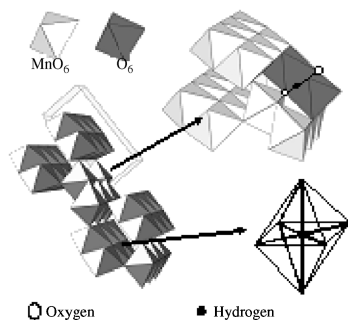
Subal Chandra Manna, Atish Dipankar Jana, Georgina M. Rosair, Michael G.B. Drew, Golam Mostafa and Nirmalendu Ray Chaudhuri
page 457



Complexes of [M₂(bpp)₄X₄] [M, Fe(II)/Co(II); bpp, 4,4'-trimethylenedipyridine; X, SCN⁻, SeCN⁻ and N₃⁻] have been synthesized. The structural analysis reveals undulated 2D network with (4,4) net topology adopting two different conformations of bpp alternately. Two such networks undergo parallel interpenetration. Pseudohalides are observed to help in stacking the interpenetrated nets through hydrogen bonding.

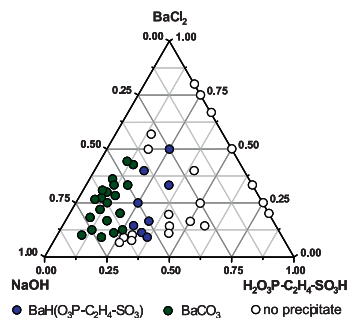
Continued

The structure of manganese dioxide and position of proton studied by neutron diffraction with isotopic substitution
Cédric Pitteloud, Miki Nagao, Keiji Itoh and Ryoji Kanno
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Proposed model for the position of 'Ruetschi' and 'Coleman' proton inside manganese dioxide.

Synthesis and characterization of 2-phosphonoethanesulfonic acid and a barium-hydrogenphosphonatoethanesulfonate — BaH(O₃P-C₂H₄-SO₃)
Andreas Sonnauer and Norbert Stock
page 473



The synthesis of the ligand H₂O₃P-C₂H₄-SO₃H and its use in the systematic investigation in the system BaCl₂/H₂O₃P-C₂H₄-SO₃H/NaOH/H₂O led to the new barium phosphonosulfonate BaH(O₃P-C₂H₄-SO₃H).

A facile two-step modifying process for preparation of poly(SStNa)-grafted Fe₃O₄/SiO₂ particles
Zhongli Lei, Yanli Li and Xiangyu Wei
page 480

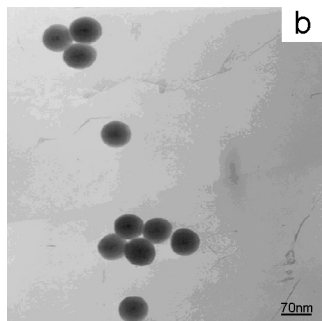
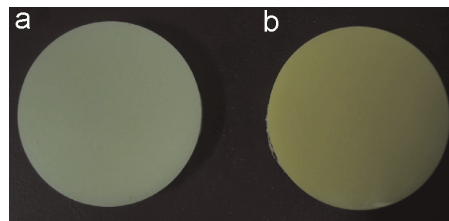


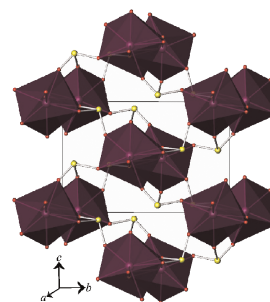
Fig. 2b shows TEM images of silica-coated Fe₃O₄ particles. The magnetic silica particles with well-defined core/shell structures were rather monodisperse, even though silica shells have trapped more than one magnetic core. The Fe₃O₄/SiO₂ particles used in this case for the production of composite particles had an average diameter of 70 ± 10 nm obtained by TEM images.

Synthesis and characterization of environmentally benign calcium-doped Pr₂Mo₂O₉ pigments: Applications in coloring of plastics
Giable George, L. Sandhya Kumari, V.S. Vishnu, S. Ananthakumar and M.L.P. Reddy
page 487



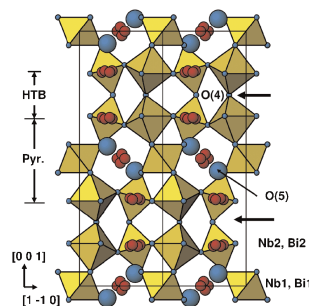
A new class of environmentally benign rare earth pigments of general formula Pr_{2-x}Ca_xMo₂O_{9-δ} (*x* ranges from 0 to 1.0) displaying colors ranging from green to yellow were synthesized by traditional solid-state route, as alternatives to lead, cadmium and chromium colorants. The yellow-green pigments were found to be interesting alternatives to existing toxic pigments for coloration of plastics.

Hydrothermal synthesis, structure, and magnetic properties of Pu(SeO₃)₂
Travis H. Bray, S. Skanthakumar, L. Soderholm, Richard E. Sykora, Richard G. Haire and Thomas E. Albrecht-Schmitt
page 493



A depiction of the three-dimensional structure of Pu(SeO₃)₂ formed from the interconnection of one-dimensional chains of edge-sharing PuO₈ dodecahedra by selenite anions.

Crystal structure, stoichiometry, and dielectric relaxation in Bi_{1.32}Nb_{7.09}O_{22.7} and structurally related ternary phases
I.E. Grey, T.A. Vanderah, W.G. Mumme, R.S. Roth, J. Guzman, J.C. Nino and I. Levin
page 499

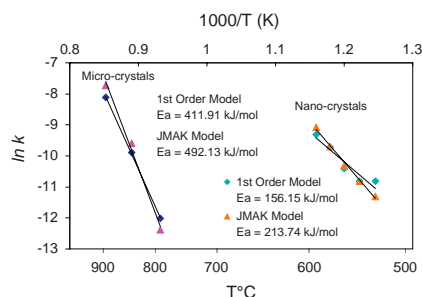


[110] polyhedral projection of the structure of Bi_{1.32}Nb_{7.09}O_{22.7}. Heavy arrows show location of chemical twin planes.

Kinetics study on phase transformation from titania polymorph brookite to rutile

Jason Huberty and Huifang Xu

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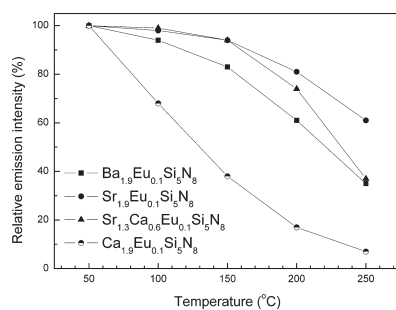


The transformation kinetics from titania brookite to rutile can be described by both the standard first-order model and the JMAK model. The obtained activation energy for micron-sized brookite crystals is much higher than that for brookite nano-crystals.

The effect of replacement of Sr by Ca on the structural and luminescence properties of the red-emitting $\text{Sr}_2\text{Si}_5\text{N}_8:\text{Eu}^{2+}$ LED conversion phosphor

Y.Q. Li, G. de With and H.T. Hintzen

page 515

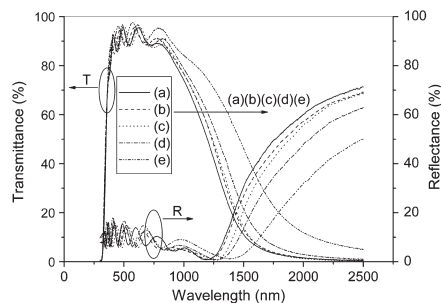


The temperature dependence of the luminescence efficiency of $\text{M}_{1.9}\text{Eu}_{0.1}\text{Si}_5\text{N}_8$ ($M = \text{Ca}, \text{Sr}, \text{Ba}$) and $\text{Sr}_{1.3}\text{Ca}_{0.6}\text{Eu}_{0.1}\text{Si}_5\text{N}_8$ ($\lambda_{\text{exc}} = 465 \text{ nm}$).

Effects of Mg doping on the properties of highly transparent conductive and near infrared reflective $\text{Zn}_{1-x}\text{Mg}_x\text{O}:\text{Ga}$ films

Quan-Bao Ma, Hai-Ping He, Zhi-Zhen Ye, Li-Ping Zhu, Jing-Yun Huang, Yin-Zhu Zhang and Bing-Hui Zhao

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The figure shows transmittance and reflectance spectra of $\text{Zn}_{1-x}\text{Mg}_x\text{O}:\text{Ga}$ films measured in the wavelength range of 300–2500 nm. In the visible region the films are highly transparent, and their spectra are like those of dielectrics regardless of Mg content. In the IR region the films behave like metals and have high reflectance and low transmittance.

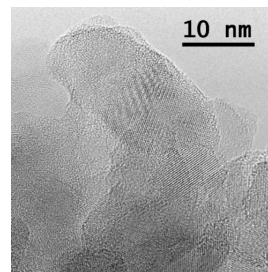
Stepwise conversion of a single source precursor into crystalline AlN by transamination reaction

Stephan Schulz, Tillmann Bauer, Wilfried Hoffbauer,

Jörn Schmedt auf der Günne, Markus Doerr,

Christel M. Marian and Wilfried Assenmacher

page 530

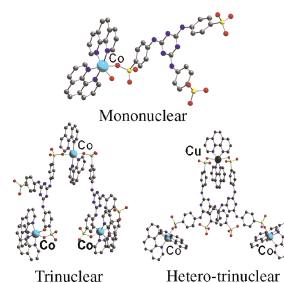


Ammonolysis reactions of $\text{Me}_3\text{N}-\text{Al}(\text{NHDipp})_3$ in liquid NH_3 yielded Al–N oligomers, which can be transformed into nanocrystalline aluminum nitride particles under thermolysis conditions at 1000 °C. Theoretical calculations were performed in order to identify potential reaction intermediates.

Mononuclear, trinuclear, and hetero-trinuclear supramolecular complexes containing a new tri-sulfonate ligand and cobalt(II)/copper(II)-(1,10-phenanthroline)₂ building blocks

Yunfang Yu, Yongqin Wei, Ria Broer, Rongjian Sa and Kechen Wu

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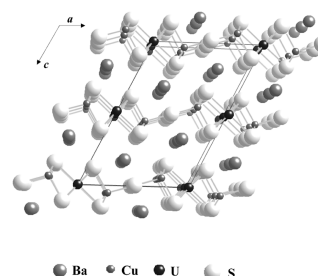


Novel mononuclear, trinuclear, and hetero-trinuclear supermolecular complexes, $[\text{Co}(\text{phen})_2(\text{H}_2\text{O})(\text{HTST})] \cdot 2\text{H}_2\text{O}$ (1), $[\text{Co}_3(\text{phen})_6(\text{H}_2\text{O})_2(\text{TST})_2] \cdot 7\text{H}_2\text{O}$ (2), and $[\text{Co}_2\text{Cu}(\text{phen})_6(\text{H}_2\text{O})_2(\text{TST})_2] \cdot 10\text{H}_2\text{O}$ (3), have been synthesized by the reactions of a new tri-sulfonate ligand (2,4,6-tris(4-sulfophenylamino)-1,3,5-triazine, H_3TST) with the M^{2+} ($M = \text{Co}, \text{Cu}$) and the second ligand 1,10-phenanthroline (phen). The study shows the flexible multifunctional self-assembly capability of H_3TST ligand presenting in these supramolecular complexes.

Synthesis, structure, and magnetic properties of $\text{Ba}_2\text{Cu}_2\text{US}_5$

Hui-yi Zeng, Jiyong Yao and James A. Ibers

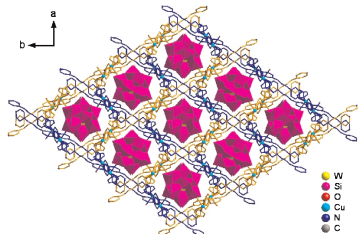
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Unit cell of $\text{Ba}_2\text{Cu}_2\text{US}_5$ viewed down [010].

An unprecedented extended architecture constructed from a 2-D interpenetrating cationic coordination framework templated by $\text{SiW}_{12}\text{O}_{40}^{4-}$ anion

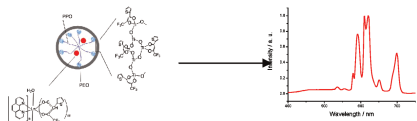
Xiuli Wang, Hongyan Lin, Yanfeng Bi, Baokuan Chen and Guocheng Liu
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Compound $[\text{Cu}_2(\text{bpp})_4(\text{H}_2\text{O})_2](\text{SiW}_{12}\text{O}_{40}) \sim 6\text{H}_2\text{O}$ (I) represents the first 2-D interpenetrating cationic metal-organic frameworks (MOFs) templated by Keggin-type anions. These MOF layers are stacked together along the crystallographic *c* axis exactly to construct large cubic-like channels (with dimensions of $12.3 \times 13.6 \text{ \AA}$) occupied by $\text{SiW}_{12}\text{O}_{40}^{4-}$ clusters.

Synthesis and luminescence properties of hybrid organic-inorganic transparent titania thin film activated by *in-situ* formed lanthanide complexes

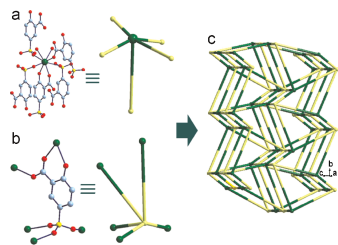
Yige Wang, Li Wang, Huanrong Li, Peng Liu, Dashan Qin, Binyuan Liu, Wenjun Zhang, Ruiping Deng and Hongjie Zhang
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Novel stable luminescent organic-inorganic hybrid titania thin film with high transparency activated by *in-situ* formed lanthanide complexes have been obtained at room temperature via a simple one-pot synthesis approach by using TTFA-modified titanium precursor with amphiphilic triblock copolymer P123. The obtained hybrid thin film displays bright red (or green), near-monochromatic luminescence due to the *in-situ* formed lanthanide complex.

Syntheses, structures, luminescence, and magnetism of four 3D lanthanide 5-sulfosalicylates

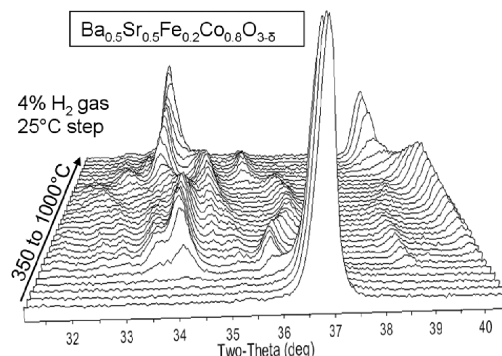
Rui-Sha Zhou, Ling Ye, Hong Ding, Jiang-Feng Song, Xiao-Yu Xu and Ji-Qing Xu
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Syntheses and crystal structures of four 3D lanthanide-5-sulfosalicylates, $\text{Ln}(\text{SSA})(\text{H}_2\text{O})_2$ [$\text{Ln} = \text{Ce}(\text{III})$ (1), $\text{Pr}(\text{III})$ (2), $\text{Nd}(\text{III})$ (3), and $\text{Dy}(\text{III})$ (4)], have been reported. In complexes 1–4, $\text{Ln}(\text{III})$ acting as 5-connected inorganic node and SSA^{3-} ligand acting as 5-connected organic node interlink into rarely reported $4^6 6^4$ topology network. Luminescence and magnetism properties have also been studied.

Phase stability of BSCF in low oxygen partial pressures

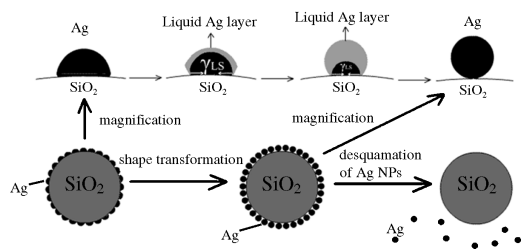
James Ovenstone, Jae-II Jung, Jeffery S. White, Doreen D. Edwards and Scott T. Misture
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The phase stability of the fuel cell cathode $\text{Ba}_{0.5}\text{Sr}_{0.5}\text{Fe}_{1-x}\text{Co}_x\text{O}_{3-\delta}$ in low $p\text{O}_2$ and high temperature has been investigated using *in situ* X-ray diffraction. Both stability and thermal expansion coefficient were found to increase with increasing iron content. Decomposition products under reducing conditions have been identified.

Shape evolution and thermal stability of Ag nanoparticles on spherical SiO_2 substrates

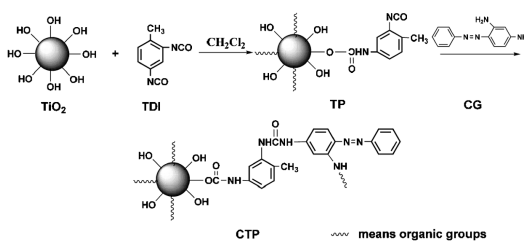
Shaochun Tang, Shaopeng Zhu, Haiming Lu and Xiangkang Meng
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The shape evolution and thermal stability of Ag nanoparticles (NPs) on spherical SiO_2 substrates were investigated by means of *in situ* TEM imaging and DSC analysis. A possible mechanism for the desquamation of Ag NPs from the SiO_2 sphere surface is proposed. Here, a simple sketch is shown to describe the shape evolution and desquamation process of the Ag NPs.

Visible-light responsive dye-modified TiO_2 photocatalyst

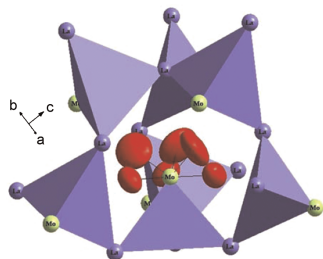
Dong Jiang, Yao Xu, Dong Wu and Yuhan Sun
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Dye-modified TiO_2 photocatalysts were synthesized via the reaction between Chrysoidine G (CG), Degussa P25 (TiO_2), and tolylene-2,4-diisocyanate (TDI) as a bridging molecule. As a result, π -conjugated surface organic complexes were formed on TiO_2 surface. Due to the existence of organic complexes, dye-modified TiO_2 catalysts showed great visible absorption and high activity under the visible light irradiation.

Lattice effects in cubic $\text{La}_2\text{Mo}_2\text{O}_9$: Effect of vacuum and correlation with transport properties

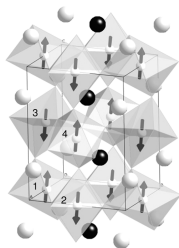
Cristina Tealdi, Lorenzo Malavasi, Clemens Ritter, Giorgio Flor and Giorgio Costa
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Anti-tetrahedral unit centred in O1 and linked through La ions to form a cage where the partially occupied O2 and O3 ions are placed.

Neutron powder diffraction study of the crystal and magnetic structures of BiNiO_3 at low temperature

Sandra J.E. Carlsson, Masaki Azuma, Yuichi Shimakawa, Mikio Takano, Alan Hewat and J. Paul Attfield
page 611



A neutron diffraction study shows that the perovskite BiNiO_3 retains the unusual charge distribution $\text{Bi}_{0.5}^{3+}\text{Bi}_{0.5}^{5+}\text{Ni}^{2+}\text{O}_3$ down to 5 K. The Ni^{2+} moments are ordered in the G-type antiferromagnetic arrangement shown; however, BiNiO_3 is ferrimagnetic due to the inexact cancellation of the four inequivalent moments in the triclinic unit cell.

Flash microwave synthesis of trevorite nanoparticles

C. Bousquet-Berthelin, D. Chaumont and D. Stuerger
page 616

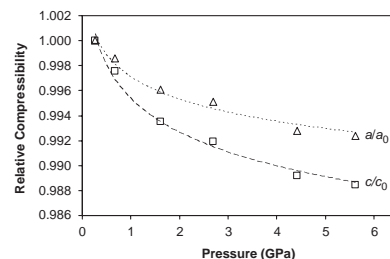


At the end of the 20th century, a new concept of battery was introduced, named "Li ion", where electrodes are both lithium-storage materials. Compounds with a spinel structure are so investigated and microwave heating appears as an efficient source of energy to produce nanoparticles in a very short time and at low temperature, with controlled size (4–5 nm) and high specific area ($240 \text{ m}^2/\text{g}$).

Legend: Pictogram represents our original microwave reactor, the RAMO (French acronym of Réacteur Autoclave Micro-Onde), containing the reactants and submitted to the microwave irradiation. Multicolor candy represents obtained material.

Synthesis, structure, magnetic properties and structural distortion under high pressure of a new osmate, $\text{Sr}_2\text{CuOsO}_6$

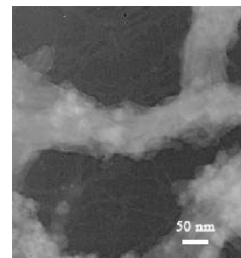
Michael W. Lufaso, William R. Gemmill, Samuel J. Mugavero III, Seung-Joo Kim, Yongjae Lee, Thomas Vogt and Hans-Conrad zur Loye
page 623



Relative compressibility of the lattice parameters of a new osmate, $\text{Sr}_2\text{CuOsO}_6$.

Facile synthesis of multifunctional multiwalled carbon nanotubes/ Fe_3O_4 nanoparticles/polyaniline composite nanotubes

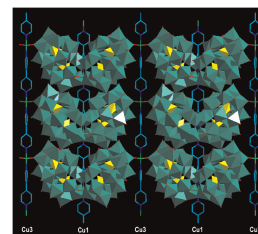
Lirong Kong, Xiaofeng Lu and Wanjin Zhang
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The work on preparing nanocomposites has been too much, but few reports were about synthesizing one-dimensional nanocomposite of three different nanoscale materials. In our work, we prepared one-dimensional multiwalled carbon nanotubes/ Fe_3O_4 particles/polyaniline composite nanotubes and studied their conductive and magnetic properties.

Hydrothermal synthesis and structural characterization of two 1-D and 2-D Dawson-based phosphotungstates

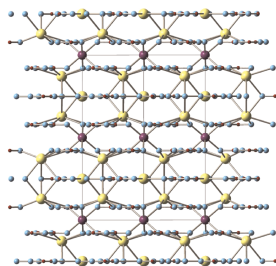
Jun-Wei Zhao, Shou-Tian Zheng, Wei Liu and Guo-Yu Yang
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Two Dawson-based phosphotungstates $(\text{H}_2\text{en})_{0.5}\text{H}[\text{Cu}(\text{en})_2(\text{H}_2\text{O})_2]\{[\text{Cu}(\text{en})_2](\alpha_1\text{-P}_2\text{W}_{17}\text{CuO}_{61})\} \cdot 8\text{H}_2\text{O}$ (1) and $[4,4'\text{-H}_2\text{bpy}]_2\{[\text{Cu}(4,4'\text{-bpy})_3][\text{Cu}(4,4'\text{-bpy})_4(\text{H}_2\text{O})_2][\text{Cu}(4,4'\text{-bpy})][\alpha\text{-P}_2\text{W}_{18}\text{O}_{62}]_2\} \cdot 6\text{H}_2\text{O}$ (2) have been hydrothermally synthesized and structurally characterized. 1 consists of a 1-D linear chain structure constructed from monocopper-substituted Dawson polyoxoanions, while 2 represents the first 2-D sheet-like structure with a (4,4)-connected topological net built up from saturated Dawson-type polyoxoanions and $\text{Cu}^{\text{II}}\text{-}4,4'\text{-bpy}$ complex cations in polyoxometalate chemistry.

A new promising scintillator $\text{Ba}_3\text{InB}_9\text{O}_{18}$

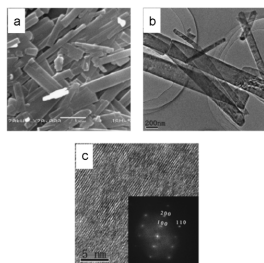
Gemei Cai, X.L. Chen, W.Y. Wang, Y.F. Lou, J. Liu, J.T. Zhao and H.H. Chen
page 646



A new compound $\text{Ba}_3\text{InB}_9\text{O}_{18}$ was synthesized with space group $P6_3/m$, lattice parameters $a = 7.1359(3) \text{ \AA}$, $c = 16.6151(8) \text{ \AA}$, $Z = 2$ and $V = 723.697 \text{ \AA}^3$. Its crystal structure is made up of planar B_2O_6 groups, regular InO_6 octahedra, irregular BaO_6 hexagons and BaO_9 polyhedra. Its XEL spectra show an intense emission band in the range of 360–500 nm with light yield about 75% of BGO. The projection of the $\text{Ba}_3\text{InB}_9\text{O}_{18}$ structure along the $\langle 11-20 \rangle$ direction.

Selected-control hydrothermal synthesis and formation mechanism of 1D ammonium vanadate

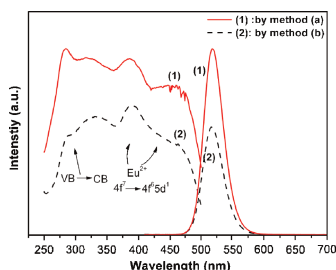
Nian Wang, Wen Chen, Liqiang Mai and Ying Dai
page 652



Selective-controlled structure and shape of ammonium vanadate nanocrystals were successfully synthesized by a simple hydrothermal method without the presence of catalysts or templates. The final products were $\text{NH}_4\text{V}_4\text{O}_{10}$ nanobelts, $(\text{NH}_4)_2\text{V}_6\text{O}_{16} \cdot 1.5\text{H}_2\text{O}$ nanowires, and $(\text{NH}_4)_6\text{V}_{10}\text{O}_{28} \cdot 6\text{H}_2\text{O}$ nanobundles, respectively, when the pH of the growth solution varied from 2.5 to 1.5, then to 0.5.

Luminescence properties of Eu^{2+} - and Ce^{3+} -doped CaAl_2S_4 and application in white LEDs

Ruijin Yu, Jing Wang, Jianhui Zhang, Haibin Yuan and Qiang Su
page 658

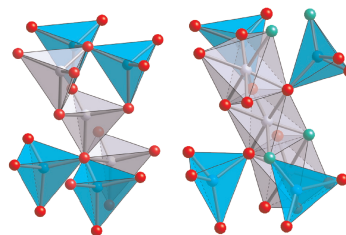


The Eu^{2+} - and Ce^{3+} -doped CaAl_2S_4 phosphors were comparatively synthesized by two methods. The emission intensity of Eu^{2+} ion in sample synthesized by the evacuated sealed quartz ampoule method is by a factor of 1.7 as strong as that of Eu^{2+} ion in sample prepared by the conventional solid-state reaction method.

Rapid Communications

Formation of Co^{3+} octahedra and tetrahedra in $\text{YBaCo}_4\text{O}_{8.1}$

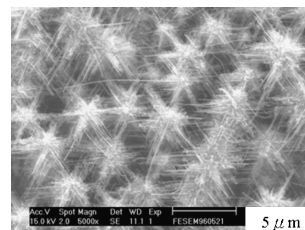
O. Chmaissem, H. Zheng, A. Huq, P.W. Stephens and J.F. Mitchell
page 664



A new mixed-metal oxide of composition $\text{YBaCo}_4\text{O}_{8.1}$ has been synthesized by controlled oxidation of YBaCo_4O_7 and its structure determined using neutron and synchrotron X-ray powder diffraction. The structure features two alternating layers: a triangular layer of isolated CoO_6 octahedra and CoO_4 tetrahedra that links distorted Kagomé planes of charge-ordered Co ions. In these planes, a rarely observed motif of zigzag rows of edge-sharing octahedra is found, which are connected by ribbons of corner-sharing tetrahedra.

Sixfold self-assembled hierarchical structures synthesized by direct annealing of Zn microtips

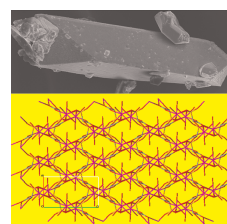
C.Y. Kuan, J.M. Chou, I.C. Leu and M.H. Hon
page 673



The novel three-dimensional hierarchical structure is composed of single-crystalline Zn microtips with the converted ZnO coating as stem, and ZnO nanowhiskers as branches. The branched ZnO nanowhiskers exhibit preferred growth direction, suggesting that the branched nanostructures might have a preferred orientation, and maintain a well-defined relationship to the Zn stem.

2D and 3D alkaline earth metal carboxyphosphonate hybrids: Anti-corrosion coatings for metal surfaces

Konstantinos D. Demadis, Maria Papadaki, Raphael G. Raptis and Hong Zhao
page 679



$\{\text{Sr}[(\text{HPAA})(\text{H}_2\text{O})_2]_n\}$

Syntheses, characterization and crystal structures of metal-hydroxyphosphonoacetate hybrids are reported (Metal = Sr, Ba). 2D and 3D materials were prepared. Their anti-corrosion effects were studied at pH 2.0 and 7.3. It was found that anti-corrosion efficiency was demonstrated only at pH 7.3.

Continued

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