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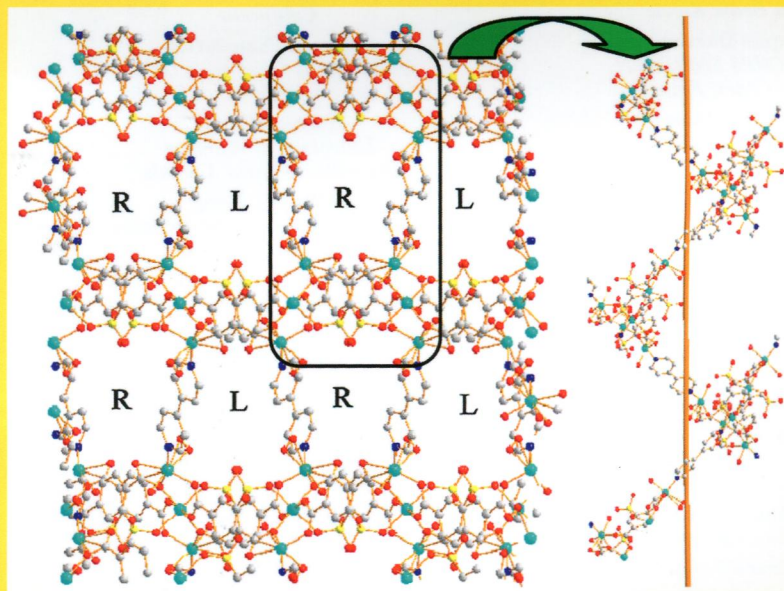
W. TREMEL

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IN THIS ISSUE:

**4,4'-Bipyridine-aided synthesis and characterization of
Zn(II) and Cd(II) 2-sulfoterephthalate complexes**



**Shan-Shan Xiao, Xin-Xin Li, Xiang-Jun Zheng,
Tian-Jing Jia and Lin-Pei Jin**

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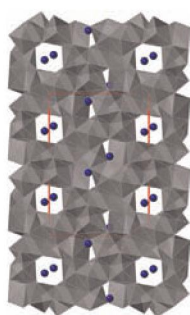
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Regular Articles

Synthesis, single-crystal structure, and optical absorption of $\text{Rb}_2\text{Th}_7\text{Se}_{15}$

Lukasz A. Koscielski, Eric A. Pozzi, Richard P. Van Duyne and James A. Ibers

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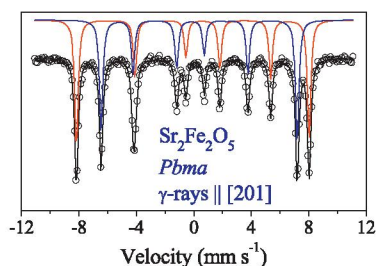


Structure of $\text{Rb}_2\text{Th}_7\text{Se}_{15}$ viewed down the *b*-axis.

Magnetic structure of $\text{Sr}_2\text{Fe}_2\text{O}_5$ brownmillerite by single-crystal Mössbauer spectroscopy

J.C. Waerenborgh, E.V. Tsipis, J.E. Auckett, C.D. Ling and V.V. Kharton

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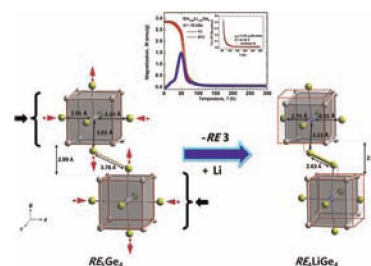
Mössbauer spectra of powdered and oriented single-crystal $\text{Sr}_2\text{Fe}_2\text{O}_5$, analyzed by solving the complete Hamiltonian for hyperfine interactions in the excited and ground states of the ^{57}Fe nuclei, show that the magnetic moments of both octahedrally and tetrahedrally coordinated iron cations are parallel to the shortest *c*-axis of the orthorhombic brownmillerite unit cell.

Regular Articles—Continued

Combined effect of chemical pressure and valence electron concentration through the electron-deficient Li substitution on the RE_4LiGe_4 ($\text{RE}=\text{La}$, Ce , Pr , and Sm) system

Gnu Nam, Jieun Jeon, Youngjo Kim, Sung Kwon Kang, Kyunghan Ahn and Tae-Soo You

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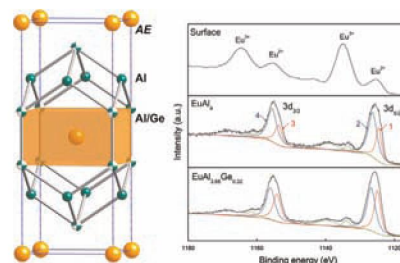


Reported is a combined effect of the chemical pressure and the reduced VEC caused by the smaller monovalent non-magnetic Li substitution for the larger trivalent magnetic rare-earth metals in the RE_4LiGe_4 ($\text{RE}=\text{La}$, Ce , Pr , and Sm) system. This results in the structure transformation from the Sm_5Ge_4 -type to the Gd_5Si_4 -type structure and the changes in magnetic properties.

Synthesis, structural characterization and properties of $\text{SrAl}_{4-x}\text{Ge}_x$, $\text{BaAl}_{4-x}\text{Ge}_x$, and $\text{EuAl}_{4-x}\text{Ge}_x$ ($x \approx 0.3-0.4$)—Rare examples of electron-rich phases with the BaAl_4 structure type

Jiliang Zhang and Svilen Bobev

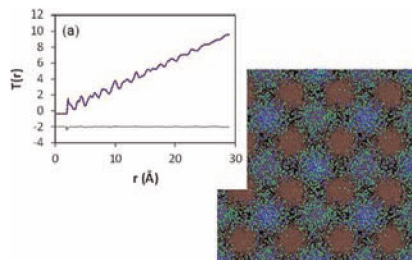
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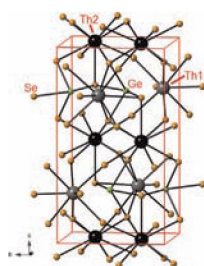
$\text{AEAl}_{4-x}\text{Ge}_x$ ($\text{AE}=\text{Eu}$, Sr , Ba ; $0.32(1) \leq x \leq 0.41(1)$), three “electron-rich” phases with BaAl_4 structure type have been synthesized and characterized.

Continued

From fluorite to pyrochlore: Characterisation of local and average structure of neodymium zirconate, $\text{Nd}_2\text{Zr}_2\text{O}_7$
 Julia L. Payne, Matthew G. Tucker and Ivana Radosavljević Evans
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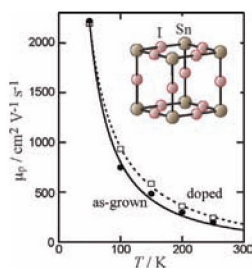


The synthesis, single-crystal structure, optical absorption, and resistivity of Th_2GeSe_5
 Lukasz A. Koscielski, Christos D. Malliakas, Amy A. Sarjeant and James A. Ibers
 page 35



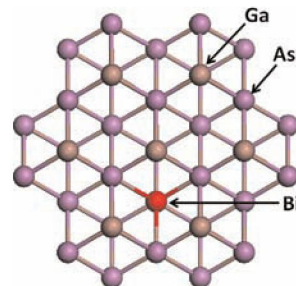
The structure of Th_2GeSe_5 .

Hall mobility in tin iodide perovskite $\text{CH}_3\text{NH}_3\text{SnI}_3$: Evidence for a doped semiconductor
 Yukari Takahashi, Hiroyuki Hasegawa, Yukihiro Takahashi and Tamotsu Inabe
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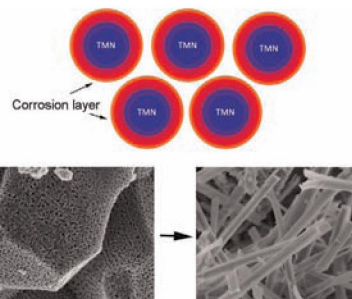
Hall effect measurements of as-grown $\text{CH}_3\text{NH}_3\text{SnI}_3$ crystals give a hole concentration of about $9 \times 10^{17} \text{ cm}^{-3}$. Artificial hole doping enhances the electrical conductivity of the crystals without influencing mobility, indicating that the electronic structure of $\text{CH}_3\text{NH}_3\text{SnI}_3$ can be described as that of an intrinsic semiconductor with a wide valence band.

Bismuth alloying properties in GaAs nanowires
 Lu Ding, Pengfei Lu, Huawei Cao, Ningning Cai, Zhongyuan Yu, Tao Gao and Shumin Wang
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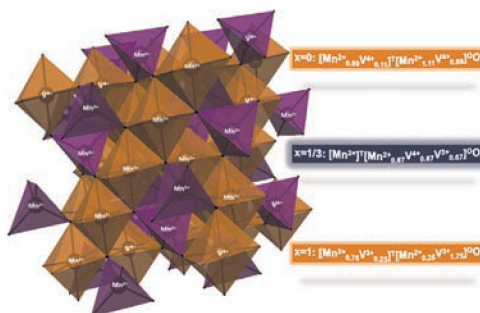
Top view of Bi-doped GaAs nanowires. Ga, As, and Bi atoms are denoted with grey, purple and red balls, respectively.

Corrosion behavior of mesoporous transition metal nitrides
 Minghui Yang, Amy J. Allen, Minh T. Nguyen, Walter T. Ralston, Michelle J. MacLeod and Francis J. DiSalvo
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Corrosion behavior of mesoporous transition metal nitrides ($TM = \text{Nb}$, V , Cr and Ti) in acidic and alkaline solutions at 80°C for 2 weeks.

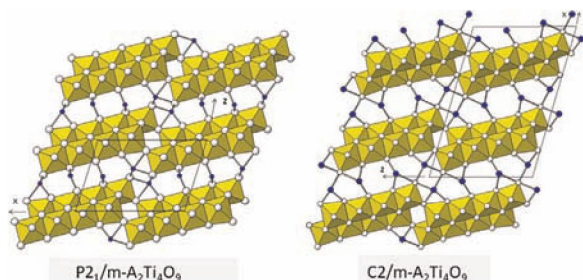
Magnetocrystalline interactions and oxidation state determination of $\text{Mn}_{(2-x)}\text{V}_{(1+x)}\text{O}_4$ ($x=0, 1/3$ and 1) magnetoresistive spinel family
 F. Pomiro, S. Ceppi, J.M. De Paoli, R.D. Sánchez, A. Mesquita, G. Tirao and E.V. Pannunzio Miner
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View of the crystallographic structure of a spinel. It shows as an example one of the models of ion distribution determined for the spinels $\text{Mn}_{(2-x)}\text{V}_{(1+x)}\text{O}_4$ ($x=0, 1/3, 1$).

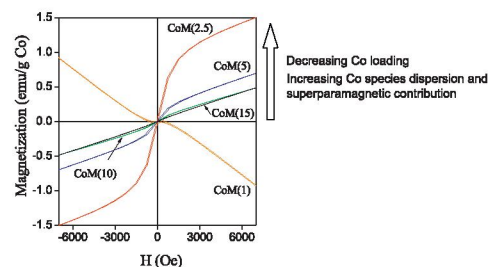
On the crystal energy and structure of $A_2Ti_nO_{2n+1}$ ($A=Li, Na, K$) titanates by DFT calculations and neutron diffraction

Michele Catti, Ilya Pinus and Antonella Scherillo
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Synthesis, characterization and magnetic behavior of Co/MCM-41 nano-composites

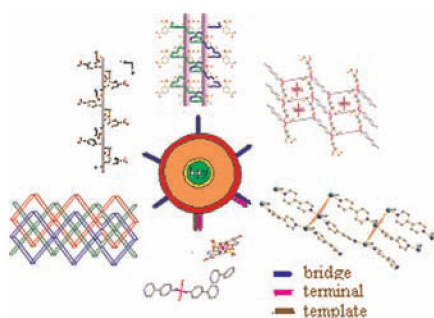
N. Cuello, V. Elías, M. Crivello, M. Oliva and G. Eimer
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Room temperature hysteresis loops as a function of the Co content.

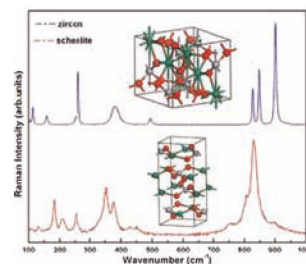
4,4'-Bipyridine-aided synthesis and characterization of Zn(II) and Cd(II) 2-sulfoterephthalate complexes

Shan-Shan Xiao, Xin-Xin Li, Xiang-Jun Zheng, Tian-Jing Jia and Lin-Pei Jin
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Physical properties of zircon and scheelite lutetium orthovanadate: Experiment and first-principles calculation

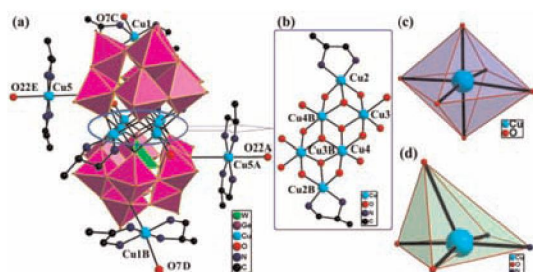
Zuocai Huang, Lei Zhang and Wei Pan
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Lutetium orthovanadate polymorphs were synthesized by SSR and HP methods and their physical and chemical properties, including lattice dynamical properties, were determined by DFT calculations and experiments.

Synthesis, characterization, magnetic and electrochemical properties of a new 3D hexa-copper-substituted germanotungstate

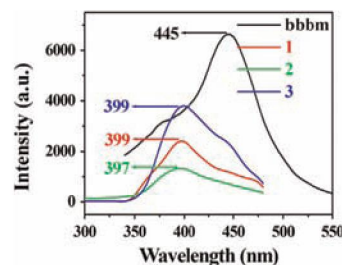
Yanzhou Li, Jie Luo, Yanting Zhang, Junwei Zhao, Lijuan Chen, Pengtao Ma and Jingyang Niu
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A hexa-Cu^{II} sandwiched germanotungstate has been synthesized and structurally characterized. The magnetic, solid-state electrochemical and electrocatalytic properties have been investigated.

Aromatic carboxylate effect on dimensionality of three bis(benzimidazole)-based cobalt(II) coordination polymers: Syntheses, structures and properties

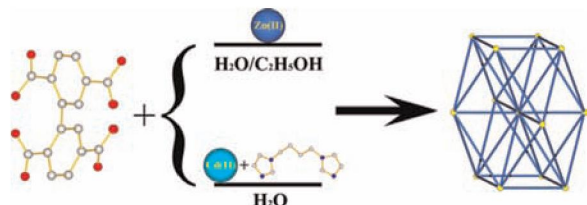
Ju-Wen Zhang, Chun-Hua Gong, Li-Li Hou, Ai-Xiang Tian and Xiu-Li Wang
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Three bis(benzimidazole)-based cobalt(II) coordination polymers tuned by aromatic carboxylates were hydrothermally synthesized and structurally characterized. The aromatic carboxylates play a key role in the dimensionality of three polymers. The electrochemical and luminescent properties of three polymers were investigated.

Two unusual 12-connected metal–organic coordination polymers with *fcu* net

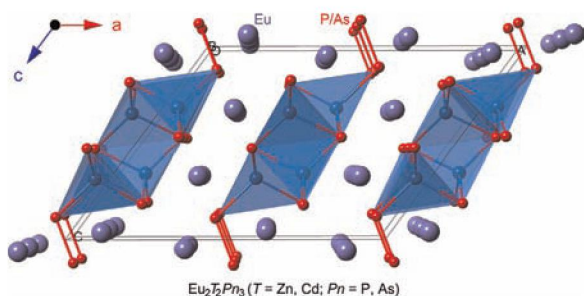
Sheng-Qi Guo, Dan Tian, Yu-Hui Luo, Xin Chen and Hong Zhang
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Two new compounds with unusual 12-connected *fcu* topology display intriguing structural feature, as well as luminescence property.

New ternary phosphides and arsenides. Syntheses, crystal structures, physical properties of Eu_2ZnP_2 , $\text{Eu}_2\text{Zn}_2\text{P}_3$ and $\text{Eu}_2\text{Cd}_2\text{As}_3$

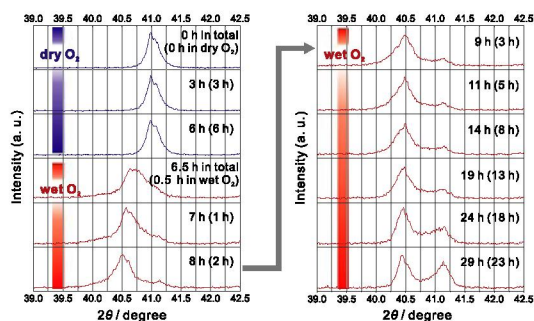
Jian Wang, Sheng-Qing Xia, Xu-Tang Tao, Marion C. Schäfer and Svilen Bobev
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A polyhedral view of the crystal structure of new pnictides $\text{Eu}_2\text{T}_2\text{Pn}_3$ ($T=\text{Zn}$ or Cd ; $\text{Pn}=\text{P}$ or As).

Structure analysis of $\text{BaCe}_{0.8}\text{Y}_{0.2}\text{O}_{3-\delta}$ in dry and wet atmospheres by high-temperature X-ray diffraction measurement

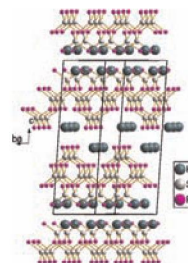
Donglin Han, Masatoshi Majima and Tetsuya Uda
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A $\text{BaCe}_{0.8}\text{Y}_{0.2}\text{O}_{3-\delta}$ rhombohedral phase transitioned to a monoclinic phase at 300 °C when moisture was introduced into the atmosphere.

KSi_2P_3 : A new layered phosphidopolysilicate (IV)

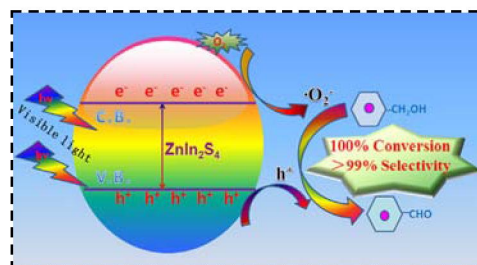
Kai Feng, Lei Kang, Wenlong Yin, Wenyu Hao, Zheshuai Lin, Jiyong Yao and Yicheng Wu
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KSi_2P_3 contains two-dimensional layer $[\text{Si}_2\text{P}_3]$ separated by K^+ cations.

High efficient photocatalytic selective oxidation of benzyl alcohol to benzaldehyde by solvothermal-synthesized ZnIn_2S_4 microspheres under visible light irradiation

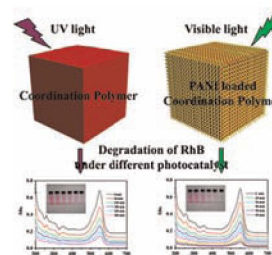
Zhixin Chen, Jingjing Xu, Zhuyun Ren, Yunhui He and Guangcan Xiao
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Marigold-like ZnIn_2S_4 microspheres were synthesized by a solvothermal method. The high visible photocatalytic activities of ZnIn_2S_4 were evaluated by selective oxidation of benzyl alcohol to benzaldehyde under mild conditions.

Photocatalytic activity of PANI loaded coordination polymer composite materials: Photoresponse region extension and quantum yields enhancement via the loading of PANI nanofibers on surface of coordination polymer

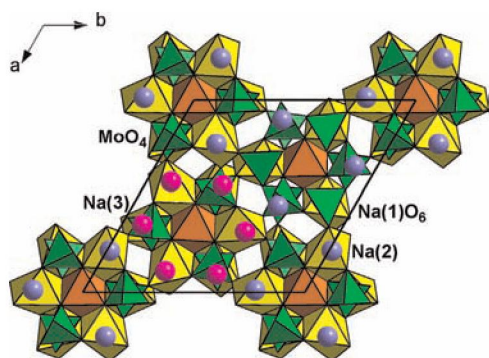
Zhongping Cui, Ji Qi, Xinxin Xu, Lu Liu and Yi Wang
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PANI loaded coordination polymer composite material, which displays excellent photocatalytic activity under visible light was firstly synthesized through in-situ chemical oxidation of aniline on surface of coordination polymer.

New double molybdate $\text{Na}_9\text{Fe}(\text{MoO}_4)_6$: Synthesis, structure, properties

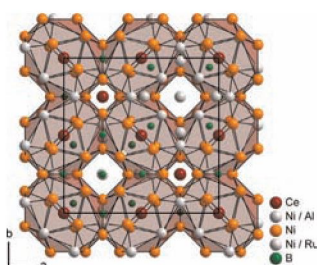
Aleksandra A. Savina, Sergey F. Solodovnikov, Olga M. Basovich, Zoya A. Solodovnikova, Dmitry A. Belov, Konstantin V. Pokholok, Irina A. Gudkova, Sergey Yu. Stefanovich, Bogdan I. Lazoryak and Elena G. Khaikina
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A new double molybdate $\text{Na}_9\text{Fe}(\text{MoO}_4)_6$ was synthesized and structurally characterized, its physicochemical properties were studied.

Crystal structure, magnetism and transport properties of $\text{Ce}_3\text{Ni}_{25.75}\text{Ru}_{3.16}\text{Al}_{4.1}\text{B}_{10}$

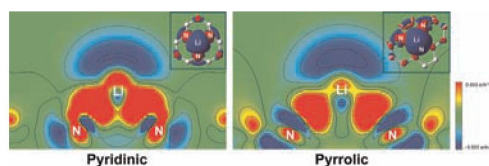
Oliver Janka, Ryan E. Baumbach, Joe D. Thompson, Eric D. Bauer and Susan M. Kauzlarich
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Single crystals of $\text{Ce}_3\text{Ni}_{25.75}\text{Ru}_{3.16}\text{Al}_{4.1}\text{B}_{10}$ were obtained using a process in which a polycrystalline sample of $\text{CeRu}_2\text{Al}_2\text{B}$ was annealed in an excess of a Ni–In flux. Electrical resistivity measurements reveal metallic behavior with a minimum of $700 \mu\Omega \text{ cm}$ and a small residual resistivity ratio of $\text{RRR}=1.4$ indicating a large amount of disorder scattering. The cerium atoms are either in the $4+$ or an intermediate valence state with a valence fluctuation temperature far above room temperature.

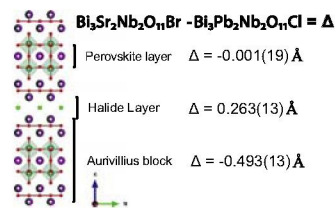
Nitrogen-tuned bonding mechanism of Li and Ti adatom embedded graphene

Sangho Lee and Yong-Chae Chung
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Designing new $n=2$ Sillen–Aurivillius phases by lattice-matched substitutions in the halide and $[\text{Bi}_2\text{O}_2]^{2+}$ layers

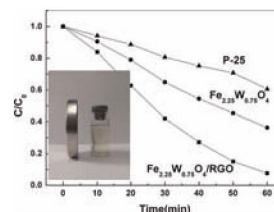
Samuel Liu, Peter E.R. Blanchard, Maxim Avdeev, Brendan J. Kennedy and Chris D. Ling
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The structural expansion and contractions in the stacking axis of co-doped Sillen–Aurivillius phases.

$\text{Fe}_{2.25}\text{W}_{0.75}\text{O}_4$ /reduced graphene oxide nanocomposites for novel bifunctional photocatalyst: One-pot synthesis, magnetically recyclable and enhanced photocatalytic property

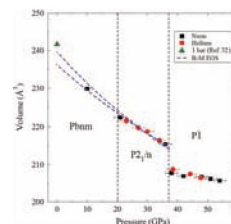
Jinxue Guo, Bin Jiang, Xiao Zhang, Xiaoyu Zhou and Wanguo Hou
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Magnetically recyclable $\text{Fe}_{2.25}\text{W}_{0.75}\text{O}_4$ /reduced graphene oxide nanocomposites with enhanced photocatalytic property

Pressure-induced volume collapse and structural phase transitions in SrRuO_3

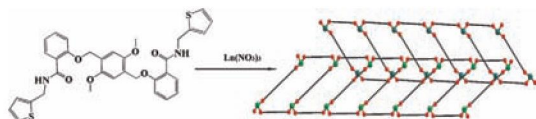
Mikhail Zhernenkov, Gilberto Fabbris, Omar Chmaissem, J.F. Mitchell, H. Zheng and Daniel Haskel
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Unit cell volume as a function of pressure ($T=6 \text{ K}$). Black squares and red circles correspond to Ne and He pressure media, respectively. Blue dashed lines are fit to the data before the volume collapse using a second-order Birch–Murnaghan equation of state excluding (lower curve) and including (upper curve) neutron diffraction data for the low temperature, ambient pressure volume. Dashed lines denote structural phase boundaries.

Synthesis, crystal structure and luminescence properties of lanthanide coordination polymers with a new semirigid bridging thenylsalicylamide ligand

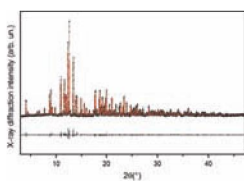
Xue-Qin Song, Li Wang, Meng-Meng Zhao, Xiao-Run Wang, Yun-Qiao Peng and Guo-Quan Cheng
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We present herein one dimensional lanthanide coordination polymers of a new semirigid *exo*-bidentate ligand which not only display interesting structures but also possess strong luminescence properties.

Structural investigation of the new $\text{Ca}_3\text{Ln}_2\text{Ge}_3\text{O}_{12}$ ($\text{Ln}=\text{Pr}$, Nd , Sm , Gd and Dy) compounds and luminescence spectroscopy of $\text{Ca}_3\text{Gd}_2\text{Ge}_3\text{O}_{12}$ doped with the Eu^{3+} ion

F. Piccinelli, A. Lausi and M. Bettinelli
page 190

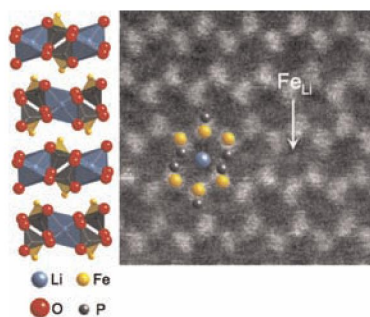


Structural investigation of the new $\text{Ca}_3\text{Ln}_2\text{Ge}_3\text{O}_{12}$ ($\text{Ln}=\text{Pr}$, Nd , Sm , Gd and Dy) compounds and luminescence spectroscopy of $\text{Ca}_3\text{Gd}_2\text{Ge}_3\text{O}_{12}$ doped with the Eu^{3+} ion
F. Piccinelli, A. Lausi, M. Bettinelli
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The structural study on $\text{Ca}_3\text{Ln}_2\text{Ge}_3\text{O}_{12}$ exploiting synchrotron X-ray diffraction, allows us to determine the detailed geometry of the coordination polyhedra of the metals and their distribution in the crystal sites. These features are, in the case of $\text{Ca}_3\text{Gd}_2\text{Ge}_3\text{O}_{12}$ host, closely related to the luminescence spectroscopy of the Eu^{3+} dopant ion.

Defect chemistry of phospho-olivine nanoparticles synthesized by a microwave-assisted solvothermal process

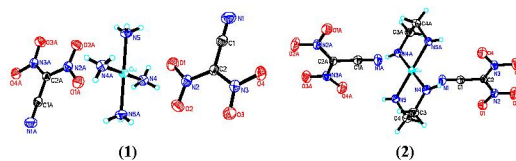
Craig A. Bridges, Katharine L. Harrison, Raymond R. Unocic, Juan-Carlos Idrobo, M. Parans Paranthaman and Arumugam Manthiram
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Temperature-dependent antisite defect formation has been observed in nanocrystalline LiFePO_4 powders synthesized by a microwave solvothermal process, using high resolution diffraction and STEM imaging.

Syntheses and characterizations of two new energetic copper–amine-DNANT complexes and their effects on thermal decomposition of RDX

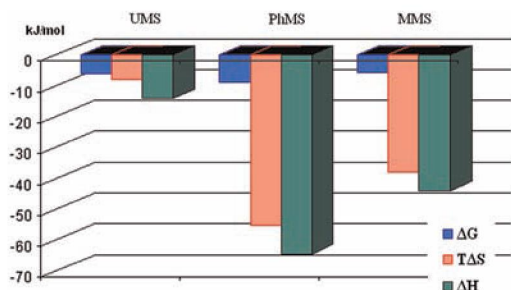
Qianqian Qiu, Kangzhen Xu, Shihe Yang, Zhe Gao, Hang Zhang, Jirong Song and Fengqi Zhao
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$\text{Cu}(\text{NH}_3)_4(\text{DNANT})_2$ (1) and $\text{Cu}(\text{en})_2(\text{DNANT})_2$ (2) have been first synthesized through an unique reaction. Cu^{2+} ion shares a similar four-coordinated structure in the two complexes.

Functionalized mesoporous silica materials for molsidomine adsorption: Thermodynamic study

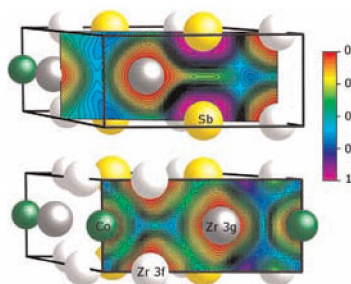
Nonna A. Alyoshina and Elena V. Parfenyuk
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Comparative analysis of the thermodynamic characteristics of molsidomine adsorption showed that the adsorption process on mesoporous silica materials is controlled by chemical nature of surface functional groups. Molsidomine adsorption on the phenyl modified silica is the most quantitatively and energetically favorable. Taking into account ambiguous nature of mesoionic compounds, it was found that molsidomine is rather aromatic than dipolar.

Structural stability of ternary $\text{C22-Zr}_6\text{X}_2\text{Co}$ ($\text{X}=\text{Al}$, Ga , Sn , As , Sb , Bi , Te) and $\text{C22-Zr}_6\text{Sn}_2\text{T}'$ ($\text{T}'=\text{Fe}$, Co , Ni , Cu) compounds

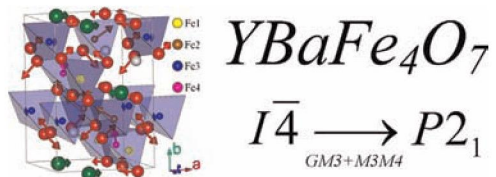
Catherine Colinet, Jean-Claude Crivello and Jean-Claude Tedenac
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Valence charge electronic localization function (ELF) calculated for $\text{Zr}_6\text{Sb}_2\text{Co}$ compound.

Lifting the geometric frustration through a monoclinic distortion in “114” YBaFe₄O_{7.0}: Magnetism and transport

V. Duffort, T. Sarkar, V. Caignaert, V. Pralong, B. Raveau, M. Avdeev, A. Cervellino, J.C. Waerenborgh and E.V. Tsipis
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Atomic displacements at the tetragonal-monoclinic transition in YBaFe₄O₇.

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