

Volume 585

5 February 2014
ISSN 0925-8388



Journal of ALLOYS AND COMPOUNDS

**An Interdisciplinary Journal
of Materials Science and
Solid-State Chemistry and Physics**

EDITOR-IN-CHIEF

L. SCHULTZ

EDITORS

K.H.J. BUSCHOW

J. CHAN

D.G. ESKIN

H. FAN

J.-M. GRENECHE

V.G. HARRIS

H. KLEINKE

C. KOCH

H.G. PAN

V. PECHARSKY

H. SAKAGUCHI

H. ZUR LOYE



ELSEVIER

Contents lists available at ScienceDirect

Journal of Alloys and Compounds

journal homepage: www.elsevier.com/locate/jalcom

Contents

Abstracting Services Abstracted/indexed in: Cambridge Scientific Abstracts, Ceramics Abstracts, Chemical Abstracts, Current Contents, Engineering Index, FIZ Karlsruhe, Metals Abstracts, PASCAL/CNRS, Physics Abstracts, Physikalische Berichte, Research Alert, Science Citation Index. Also covered in the abstract and citation database SCOPUS.[®] Full text available on ScienceDirect.[®]

Structural and optical properties of DC Sputtered Cd ₂ SnO ₄ nanocrystalline films M.M. El-Nahass (Cairo, Egypt), A.A. Atta (Cairo, Egypt), (Taif, Saudi Arabia), M.M. Abd El-Raheem (Taif, Saudi Arabia), (Sohag, Egypt) and A.M. Hassanien (Al-Quwayiyah, Saudi Arabia)	1
A method based on the Harcourt and Esson equation to estimate the catalytic effect of metallic additives on light crude oil Y.-B. Li, J.-Z. Zhao, W.-F. Pu, H. Peng, D. Zhong and Z.-W. Hu (Chengdu, People's Republic of China)	7
Energy-storage properties of (1-x)Bi _{0.47} Na _{0.47} Ba _{0.06} TiO ₃ -xKNbO ₃ lead-free ceramics B. Wang, L. Luo, X. Jiang, W. Li and H. Chen (Ningbo, China).	14
Study on inhomogeneous characteristics and optimize homogenization treatment parameter for large size DC ingots of Al–Zn–Mg–Cu alloys H. Wang, J. Xu, Y. Kang, M. Tang and Z. Zhang (Beijing, China)	19
Improvement of in vitro physicochemical properties and osteogenic activity of calcium sulfate cement for bone repair by dicalcium silicate C.-C. Chen (Taichung City, Taiwan), C.-W. Wang (Tainan City, Taiwan), N.-S. Hsueh and S.-J. Ding (Taichung City, Taiwan)	25
Effect of micron size Ni particle addition in Sn–8Zn–3Bi lead-free solder alloy on the microstructure, thermal and mechanical properties M.M. Billah, K.M. Shorowordi and A. Sharif (Dhaka, Bangladesh)	32
Facile synthesis of antimony selenide with lamellar nanostructures and their efficient catalysis for the hydrogenation of p-nitrophenol S.-S. Zhang, J.-M. Song, H.-L. Niu, C.-J. Mao, S.-Y. Zhang and Y.-H. Shen (Hefei, PR China)	40
A novel stearate melting method for synthesizing highly reactive YAG nanopowders J. Li, X. Sun, S. Liu, X. Li, D. Huo (Shenyang, China), J.-G. Li (Tsukuba, Japan), Q. Zhu, M. Zhang (Shenyang, China), Y. Sang and H. Liu (Jinan, China)	48
Microstructure and size effect in ultrafine (Ti _{0.705} Fe _{0.295}) _{100-x} Sn _x (0 ≤ x ≤ 4 at.%) composites T. Maity and J. Das (India)	54
Preliminary synthesis and mechanical property of titanium beryllide pebbles with different chemical compositions J.-H. Kim and M. Nakamichi (Aomori, Japan)	63
Effect of milling temperature on nanoclusters and ultra fine grained microstructure of oxide dispersion strengthened steel J.H. Kim and C.H. Park (Changwon, South Korea)	69
A new highly efficient method for the synthesis of rutile TiO ₂ G. Chen, J. Chen, Z. Song (Kunming, PR China), C. Srinivasakannan (Abu Dhabi, United Arab Emirates) and J. Peng (Kunming, PR China)	75
Pinning behavior of glycine-doped MgB ₂ bulks with excellent critical current density by Cu-activated low-temperature sintering Q. Cai, Y. Liu, Z. Ma, L. Yu, J. Xiong and H. Li (Tianjin, PR China)	78
Selective preparation of Bi ₂ O ₃ visible light-driven photocatalyst by dispersant and calcination L. Cheng and Y. Kang (Tianjin, China)	85
Se concentration dependent band gap engineering in ZnO _{1-x} Se _x thin film for optoelectronic applications J.-c. Lee, J.-e. Lee, J.-w. Lee, J.-c. Lee, N.G. Subramaniam, T.-w. Kang (Seoul, Republic of Korea) and R. Ahuja (Uppsala, Sweden)	94
Effect of hydrostatic and uniaxial pressure on structural and magnetic transitions in TbNiAl J. Kaštil (Prague, Czech Republic), M. Klicpera, J. Prchal (Prague, Czech Republic), M. Mišek (Prague, Czech Republic), J. Prokleška and P. Javorský (Prague, Czech Republic)	98
Highly conductive barium zirconate-based carbonate composite electrolytes for intermediate temperature-protonic ceramic fuel cells K.-Y. Park, T.-H. Lee, J.-T. Kim, N. Lee, Y. Seo (Seoul, Republic of Korea), S.-J. Song (Gwangju, Republic of Korea) and J.-Y. Park (Seoul, Republic of Korea)	103
Grain growth and texture evolution during annealing in an indirect-extruded Mg–1Gd alloy W.X. Wu, L. Jin, Z.Y. Zhang, W.J. Ding and J. Dong (Shanghai, PR China)	111

Hydrogen absorption characteristics and Mössbauer spectroscopic study of $\text{Ti}_{0.67}\text{Nb}_{0.33-x}\text{Fe}_x$ ($x = 0.00, 0.13, 0.20$) alloys P. Ruz, A. Kumar, S. Banerjee, S.S. Meena and C.G.S. Pillai (Mumbai, India)	120
Auto-ignition based synthesis of Y_2O_3 for photo- and thermo-luminescent applications R. Hari Krishna (Bangalore, Belgaum, India), B.M. Nagabhushana (Belgaum, India), H. Nagabhushana (Tumkur, India), R.P.S. Chakradhar, R. Sivaramakrishna, C. Shivakumara and T. Thomas (Bangalore, India)	129
Charge transfer bands of Mo–O and photoluminescence properties of micro-material $\text{Y}_2\text{MoO}_6:\text{Eu}^{3+}$ red phosphor M. Wang, H. Zhang (Wuhan, China), L. Li (Wuhan, China), (Busan, Republic of Korea), X. Liu, F. Hong, R. Li, H. Song, M. Gui, J. Shen, W. Zhu, J. Wang, L. Zhou (Wuhan, China) and J.H. Jeong (Busan, Republic of Korea)	138
Fabrication of a new SiC/2024Al co-continuous composite with lamellar microstructure and high mechanical properties Q. Liu, F. Ye, Y. Gao, S. Liu, H. Yang and Z. Zhou (Harbin, China)	146
Europium-doped calcium titanate: Optical and structural evaluations T.M. Mazzo, I.M. Pinatti (São Carlos, Brazil), L.R. Macario (Araraquara, Brazil), W. Avansi Junior (São Carlos, Brazil), M.L. Moreira (Pelotas, Brazil), I.L.V. Rosa (São Carlos, Brazil), V.R. Mastelaro (São Carlos, Brazil), J.A. Varela and E. Longo (Araraquara, Brazil)	154
Spectral properties of Er^{3+} -doped CaGdAlO_4 crystal for laser application around 1.55 μm J.H. Huang, X.H. Gong, Y.J. Chen, Y.F. Lin, Z.D. Luo and Y.D. Huang (Fuzhou, China)	163
Enhanced thermoelectric performance of optimized Ba, Yb filled and Fe substituted skutterudite compounds S. Ballikaya (Ann Arbor, USA), (Istanbul, Turkey) and C. Uher (Ann Arbor, USA)	168
Enhanced thermoelectric properties of $(\text{Pb}_{1-x}\text{Yb}_x\text{Te})_{0.15}(\text{GeTe})_{0.85}$ composites due to phase separation and Yb doping J.F. Deng, J.Q. Li, R.F. Ye, X.Y. Liu, F.S. Liu and W.Q. Ao (Shenzhen, PR China)	173
Temperature and tellurium (Te) dependence of electrical characterization and surface properties for a chalcopyrite structured schottky barrier diode S. Fiat (Kütahya, Türkiye), E. Bacaksiz (Trabzon, Türkiye), M. Kompitsas (Athens, Greece) and G. Çankaya (Ankara, Kastamonu, Türkiye)	178
Influence of B-site complex-ion substitution on the structure and electrical properties in $\text{Bi}_{0.5}\text{Na}_{0.5}\text{TiO}_3$ -based lead-free solid solutions C.C. Jin, F.F. Wang, L.L. Wei, J. Tang, Y. Li, Q.R. Yao, C.Y. Tian and W.Z. Shi (Shanghai, China)	185
Effects of superfine refractory carbide additives on microstructure and mechanical properties of $\text{TiB}_2\text{--TiC+Al}_2\text{O}_3$ composite ceramic cutting tool materials B. Zou, W. Ji, C. Huang, J. Wang (Jinan, PR China), S. Li (Jinan, PR China) and K. Xu (Jinan, PR China)	192
Corrosion protection provided by electrolytic nickel and tin coatings for Nd–Fe–B magnets E. Isotahdon, E. Huttunen-Saarivirta, V.-T. Kuokkala (Tampere, Finland), M. Paju (Pori, Finland) and L. Frisk (Tampere, Finland)	203
Raman study of surface optical phonons in $\text{ZnO}(\text{Mn})$ nanoparticles B. Hadžić, N. Romčević, M. Romčević (Belgrade, Serbia), I. Kuryliszyn-Kudelska, W. Dobrowolski (Warszawa, Poland), R. Wróbel, U. Narkiewicz and D. Sibera (Szczecin, Poland)	214
Effect of heat treatment on microstructure and mechanical properties of laser deposited Ti60A alloy A. Zhang, D. Liu (Beijing, China), X. Wu (Clayton, Australia) and H. Wang (Beijing, China)	220
The effect of temperature on the in situ synthesis–sintering and mechanical properties of MoSi_2 prepared by spark plasma sintering M. Kermani, M. Razavi, M.R. Rahimpour and M. Zakeri (Tehran, Iran)	229
Synthesis and characterization of a new ferroelectric oxide $\text{Li}_2\text{Pb}_2\text{Pr}_2\text{W}_2\text{Ti}_4\text{Ta}_4\text{O}_{30}$ B.N. Parida and P.R. Das (Bhubaneswar, India)	234
Synthesis and microwave absorbing properties of quasio-ne-dimensional mesoporous NiCo_2O_4 nanostructure J. Zhan, Y. Yao, C. Zhang and C. Li (Changsha, China)	240
Recrystallisation in a cold drawn low cost beta titanium alloy during rapid resistance heating A.A. Gazder, V.Q. Vu, A.A. Saleh (Australia), P.E. Markovsky, O.M. Ivasishin (Kiev, Ukraine), C.H.J. Davies and E.V. Pereloma (Australia)	245
Phase selection and microstructural formation of rapidly directionally solidified peritectic Fe–Ni alloys by laser surface remelting Y.Z. Chen, K. Wang, X.H. Shi, X.Y. Ma and F. Liu (Xi'an, PR China)	260
Comparative study of ZnO nanorod array and nanoparticle film in photoelectric response and charge storage Q. Zhu, C. Xie, H. Li and Q. Yang (Wuhan, PR China)	267
Effects of combinative surface modification on the stability and conductivity of the copper particles Y. Zeng, T. Li, M. Fu, S. Jiang and G. Zhang (Wuhan, PR China)	277
Effect of Ti content on structure and properties of $\text{Al}_2\text{CrFeNiCoCuTi}_x$ high-entropy alloy coatings X.W. Qiu (Xi'an, Deyang, China), Y.P. Zhang (Xi'an, China) and C.G. Liu (Deyang, China)	282
The system Ba–Zn–Sn at 500 °C: Phase equilibria, crystal and electronic structure of ternary phases V.V. Romaka, M. Falmbigl, A. Grytsiv and P. Rogl (Wien, Austria)	287
Experimental thermodynamics of the Li–Sn system by Knudsen Effusion Mass Spectrometry D. Henriques, V. Motalov, L. Bencze (Jülich, Germany), S. Fürtauer (Vienna, Austria) and T. Markus (Jülich, Germany)	299
Influence of Ti super-stoichiometry on the hydrogen storage properties of $\text{Ti}_{1+x}\text{Cr}_{1.2}\text{Mn}_{0.2}\text{Fe}_{0.6}$ ($x = 0\text{--}0.1$) alloys for hybrid hydrogen storage application Z. Chen, X. Xiao, L. Chen, X. Fan, L. Liu, S. Li, H. Ge and Q. Wang (Hangzhou, PR China)	307
Deposition of Ag and Au–Ag alloy nanoparticle films by spray pyrolysis technique with tuned plasmonic properties N. Kumar, F. Alam and V. Dutta (New Delhi, India)	312

Production of Al–Cu–Fe metallic foams without foaming agents or space holders M.A. Suarez, I.A. Figueroa, G. Gonzalez, G.A. Lara-Rodriguez, O. Novelo-Peralta, I. Alfonso and I.J. Calvo (México, Mexico)	318
Isothermal section of Al–Ti–Zr ternary system at 1273 K F. Yang, F.H. Xiao, S.G. Liu, S.S. Dong, L.H. Huang, Q. Chen, G.M. Cai, H.S. Liu and Z.P. Jin (Changsha, PR China)	325
Electrodeposition of copper–tin nanowires on Ti foils for rechargeable lithium micro-batteries with high energy density G.F. Ortiz, M.C. López, R. Alcántara and J.L. Tirado (Cordoba, Spain)	331
Thermal and dielectric properties of $K_3Nd(PO_4)_2$ prepared by Pechini and solid state method D. Piotrowska, A. Matraszek (Wrocław, Poland), S. Szulia, M. Kosmowska (Wrocław, Poland) and I. Szczygieł (Wrocław, Poland)	337
Structural, optical, and ferroelectric behavior of $Zn_{1-x}Li_xO$ ($0 \leq x \leq 0.09$) nanostructures P. Chand, A. Gaur and A. Kumar (Kurukshetra, India)	345
The new polymorphic modification of the equiatomic stannide CeRuSn V. Gribanova, E. Murashova, Y. Seropegin and A. Gribanov (Moscow, Russia)	352
Mesoporous nanonickel oxide: Anode with good initial discharge capacity and efficiency in lithium ion batteries at 1 C rate E.M. Masoud (Benha, Egypt)	357
Hardness of Multi Wall Carbon Nanotubes reinforced aluminium matrix composites C.R. Bradbury (Thun, Switzerland), J.-K. Gomon, L. Kollo (Tallinn, Estonia), H. Kwon (Thun, Switzerland), (Nam-gu, Korea) and M. Leparoux (Thun, Switzerland)	362
Effects of Cu content and mechanical alloying parameters on the preparation of W–Cu composite coatings on copper substrate Y. Meng, Y. Shen, C. Chen, Y. Li and X. Feng (Nanjing, PR China)	368
Afterglow performance enhancement and mechanism studies on $Y_2O_3S:Eu,Mg,Ti$ prepared via cold isostatic pressing X. Zhou, M. Xing, T. Jiang, Y. Fu, Y. Peng, H. Wang and X. Luo (Dalian, PR China)	376
Phase equilibria of the Mg–La–Nd system at 500 °C F. Zhang, H. Xu, Y. Du (Changsha, PR China), R. Schmid-Fetzer (Clausthal-Zellerfeld, Germany) and T. Zhou (Changsha, PR China)	384
Role of Au nanoparticle aggregation in laser induced anisotropy of ITO transparent substrates I.V. Kityk (Czestochowa, Poland), J. Ebothe, N.-B. Bercu (Reims cedex, France), M.A. Aziz (Dhahran, Saudi Arabia) and M. Oyama (Kyoto, Japan)	393
An excellent performance anode of $ZnFe_2O_4$ /flake graphite composite for lithium ion battery L. Yao, X. Hou, S. Hu, X. Tang (Guangzhou, PR China), X. Liu (Nanjing, PR China) and Q. Ru (Guangzhou, PR China)	398
Improved thermal barrier properties of $InFeZnO_4$ ceramics by Gd/Yb doping H. Guo, C. Zhang, Y. Pei, L. Guo and S. Gong (Beijing, China)	404
Characterization and properties of sintered WC–Co and WC–Ni–Fe hard metal alloys S.-H. Chang and S.-L. Chen (Taipei, Taiwan, ROC)	407
Electrical characteristics of Mg-doped p-GaN treated with the electrochemical potentiostatic activation method M. Oh (Jeonju, Republic of Korea), J.J. Lee, J.K. Lee (Gwangju, Republic of Korea) and H. Kim (Jeonju, Republic of Korea)	414
Fabrication of Mo–Si–B intermetallic powder by mechano–chemical process S.H. Hwang, J.M. Byun (Seoul, Republic of Korea), S. Lee (Daejeon, Republic of Korea), M.-J. Suk (Samcheok, Republic of Korea), S.-T. Oh and Y.D. Kim (Seoul, Republic of Korea)	418
Magnetic properties of $SmCo_{5-x}Fe_x$ ($x = 0-4$) melt-spun ribbon T. Saito (Narashino, Japan) and D. Nishio-Hamane (Kashiwa, Japan)	423
Local atomic and crystal structure rearrangement during the martensitic transformation in $Ti_{50}Ni_{25}Cu_{25}$ shape memory alloy A. Menushenkov, O. Grishina, A. Shelyakov, A. Yaroslavtsev (Moscow, Russia), Y. Zubavichus, A. Veligzhanin (Moscow, Russia), J. Bednarcik, R. Chernikov (Hamburg, Germany) and N. Sitnikov (Moscow, Russia)	428
Iron titanium phosphates as high-specific-capacity electrode materials for lithium ion batteries R. Essehli (Oujda, Morocco), (Lunel, France), B. El Bali (Oujda, Morocco), A. Faik (Miñano, Spain), M. Naji (Orléans cedex, France), S. Benmokhtar (Casablanca, Morocco), Y.R. Zhong, L.W. Su, Z. Zhou (Tianjin, PR China), J. Kim, K. Kang (Republic of Korea) and M. Dusek (Czech Republic)	434
Influence of Ge content on the microstructure, phase formation and microhardness of hypereutectic Al–Si alloys Y. Zhang, T. Gao and X. Liu (Jinan, China)	442
Peculiarities of thermoelectric half-Heusler phase formation in Zr–Co–Sb ternary system V.V. Romaka (Lviv, Ukraine), (Wien, Austria), L. Romaka (Lviv, Ukraine), P. Rogl (Wien, Austria), Yu. Stadnyk, N. Melnychenko, R. Korzh, Z. Duriagina and A. Horyn (Lviv, Ukraine)	448
Thermoelectric figure of merit enhancement of intermetallic compound $RuGa_2$ by ball-milling N. Sato, Y. Matsuura, K. Kitahara, Y. Takagiwa and K. Kimura (Chiba, Japan)	455
Improved light emission of GaN-based light-emitting diodes by efficient localized surface plasmon coupling with silver nanoparticles C.-H. Lu (Tainan, Taiwan), S.-E. Wu, Y.-L. Lai, Y.-L. Li (Tainan, Taiwan) and C.-P. Liu (Tainan, Taiwan)	460
Magnetic properties and Mössbauer spectroscopy on Ga, Al, and Cr substituted hexaferrites M. Awawdeh (Irbid, Jordan), I. Bsoul (Mafraq, Jordan) and S.H. Mahmood (Amman, Jordan)	465
Effect of Si addition on the microstructure and mechanical properties of Al–Cu–Mg alloy F. Wang (Beijing, China), Y. Zeng (Nanchang, China), B. Xiong, Y. Zhang, X. Li, Z. Li and H. Liu (Beijing, China)	474

Chemical states of gold doped in ZnO films and its effect on electrical and optical properties Y. Xu, B. Yao, Y.F. Li, Z.H. Ding, J.C. Li, H.Z. Wang (Changchun, People's Republic of China), Z.Z. Zhang, L.G. Zhang, H.F. Zhao and D.Z. Shen (Changchun, People's Republic of China)	479
Amorphization and evolution of magnetic properties during mechanical alloying of $\text{Co}_{62}\text{Nb}_6\text{Zr}_2\text{B}_{30}$: Dependence on starting boron microstructure L.M. Moreno, J.S. Blázquez, J.J. Ipus and A. Conde (Sevilla, Spain)	485
Structural stability and elastic properties of IrSi in B31 and B20-phase from first-principles calculations C.-Z. Zhang, X.-Y. Kuang, Y.-Y. Jin, X.-Z. Yan (Chengdu, China) and X.-F. Huang (Chengdu, China)	491
Transparent $\text{La}_{2-x}\text{Gd}_x\text{Zr}_2\text{O}_7$ ceramics obtained by combustion method and vacuum sintering Z. Wang (Shanghai, Beijing, China), G. Zhou, X. Qin, Y. Yang (Shanghai, China), G. Zhang (Suzhou, China), Y. Menke (Mainz, Germany) and S. Wang (Shanghai, China)	497
The novel optical properties of CdS caused by concentration of impurity Co Y.-X. Han, C.-L. Yang, Y.-T. Sun, M.-S. Wang and X.-G. Ma (Yantai, People's Republic of China)	503
Influence of roughness and composition on the total emissivity of tungsten, rhenium and tungsten–25% rhenium alloy at high temperature E. Brodu (Font-Romeu Odeillo, France), (Cambridge, USA), M. Balat-Pichelin, J.-L. Sans (Font-Romeu Odeillo, France) and J.C. Kasper (Cambridge, USA)	510
Flake-by-flake ZnCo_2O_4 as a high capacity anode material for lithium-ion battery X. Song, Q. Ru, B. Zhang, S. Hu and B. An (Guangzhou, PR China)	518
Evolution of microstructure and opto-electrical properties in boron doped nc-Si:H films deposited by HW-CVD method V.S. Waman, M.M. Kamble, S.S. Ghosh, A.H. Mayabadi, B.B. Gabhale, S.R. Rondiya, A.V. Rokade, S.S. Khadtare (Pune, India), V.G. Sathe (Indore, India), H.M. Pathan, S.W. Gosavi and S.R. Jadkar (Pune, India)	523
An <i>ab initio</i> molecular dynamics study on the structural and electronic properties of AlB_2 , TiB_2 and $(\text{Al}_x\text{Ti}_{1-x})\text{B}_2$ in Al–Ti–B master alloys H.L. Zhang, Y.F. Han, J. Wang, Y.B. Dai and B.D. Sun (Shanghai, PR China)	529
A novel synthesis of $\alpha\text{-MoO}_3$ nanobelts and the characterization T.H. Chiang and H.C. Yeh (Miaoli, Taiwan, ROC)	535
Synthesis, characterization and microwave dielectric properties of spinel MgGa_2O_4 ceramic materials S. Wu, J. Xue, R. Wang (Guangzhou, China) and J. Li (Shenzhen, China)	542
Hydrogen embrittlement of Pt_3Zr compound from first-principles Y. Pan, W. Guan, M. Wen, J. Zhang, C. Wang and Z. Tan (Kunming, PR China)	549
Nanocauliflower like structure of CdS thin film for solar cell photovoltaic applications: <i>In situ</i> tin doping by chemical bath deposition technique K.C. Wilson (Chennai, Ernakulam, India), E. Manikandan, M. Basheer Ahamed (Chennai, India) and B.W. Mwakikunga (Pretoria, South Africa)	555
Plant latex mediated green synthesis of $\text{ZnAl}_2\text{O}_4\text{:Dy}^{3+}$ (1–9 mol%) nanophosphor for white light generation B.S. Ravikumar, H. Nagabhushana, D.V. Sunitha (Tumkur, India), S.C. Sharma, B.M. Nagabhushana and C. Shivakumara (Bangalore, India)	561
Influence of a low-temperature capping on the crystalline structure and morphology of InGaN quantum dot structures B. Krause, B. Miljevic (Eggenstein-Leopoldshafen, Germany), T. Aschenbrenner, E. Piskorska-Hommel, C. Tessarek (Bremen, Germany), M. Barchuk (Praha, Czech Republic), G. Buth, R. Donfeu Tchana (Eggenstein-Leopoldshafen, Germany), S. Figge, J. Gutowski (Bremen, Germany), D. Hänschke (Eggenstein-Leopoldshafen, Germany), J. Kalden, T. Laurus (Bremen, Germany), S. Lazarev (Eggenstein-Leopoldshafen, Germany), R. Magalhaes-Paniago (Grenoble, France), K. Sebald (Bremen, Germany), A. Wolska (Warsaw, Poland), D. Hommel, J. Falta (Bremen, Germany), V. Holý (Praha, Czech Republic) and T. Baumbach (Eggenstein-Leopoldshafen, Germany)	572
Regular Fe_3O_4 octahedrons with excellent soft magnetic properties prepared by dealloying technique S. Jia (Shanghai, PR China), T. Song (Brisbane, Australia), B. Zhao, Q. Zhai (Shanghai, PR China) and Y. Gao (Shanghai, PR China), (Tallahassee, USA)	580
Ab-initio investigations on elastic properties in L1_2 structure Al_3Sc and Al_3Y under high pressure Y.H. Duan, Y. Sun, M.J. Peng and S.G. Zhou (Kunming, China)	587
Studies on structural, morphological and electrical properties of $\text{Ce}_{0.8}\text{Ln}_{0.2}\text{O}_{2-\delta}$ ($\text{Ln} = \text{Y}^{3+}$, Gd^{3+} , Sm^{3+} , Nd^{3+} and La^{3+}) solid solutions prepared by citrate complexation method K.C. Anjaneya, G.P. Nayaka, J. Manjanna, G. Govindaraj and K.N. Ganesha (India)	594
Synthesis, structures, optical properties and electronic structures of two mixed metal borates MBaB_5O_9 ($\text{M} = \text{Na}, \text{K}$) H. Yu (Urumqi, Beijing, China), S. Pan, H. Wu, X. Su and Z. Yang (Urumqi, China)	602
Development of flexible Mg and Ga co-doped ZnO thin films with wide band gap energy and transparent conductive characteristics S.W. Shin (Daejeon, South Korea), (Kolhapur, India), I.Y. Kim, G.V. Kishor (Gwangju, South Korea), (Kolhapur, India), Y.Y. Yoo, Y.B. Kim (Gwangju, South Korea) (Kolhapur, India), J.Y. Heo (Gwangju, South Korea), (Kolhapur, India), G.-S. Heo (Gwangju, South Korea), (Kolhapur, India), P.S. Patil (Gwangju, South Korea), (Kolhapur, India), (Daejeon, South Korea), J.H. Kim (Gwangju, South Korea), (Kolhapur, India) and J.Y. Lee (Daejeon, South Korea), (Kolhapur, India)	608
Developing an advanced Si-bearing DS Ni-base superalloy A.C. Yeh, K.C. Yang, J.W. Yeh (Hsinchu, Taiwan, ROC) and C.M. Kuo (Kaohsiung, Taiwan, ROC)	614
Cold metal transfer spot plug welding of AA6061-T6-to-galvanized steel for automotive applications R. Cao, Q. Huang, J.H. Chen and P.-C. Wang (Lanzhou, China), (Warren, USA)	622

Combustion synthesis and optical properties of Oxy-borate phosphors $\text{YCa}_4\text{O}(\text{BO}_3)_3\text{:RE}^{3+}$ ($\text{RE} = \text{Eu}^{3+}, \text{Tb}^{3+}$) under UV, VUV excitation J.T. Ingle (Yavatmal, India), A.B. Gawande, R.P. Sonekar (Khamgaon, India), S.K. Omanwar (Amravati, India), Y. Wang and L. Zhao (Lanzhou, PR China)	633
Combustion synthesis of NiAl matrix composite powder reinforced by TiB_2 and TiN particulates from Ni–Al–Ti–BN reaction system A.A. Shokati, N. Parvin and M. Shokati (Tehran, Iran)	637
Synthesis and crystal structures of novel LaOAgS-type alkaline earth – Zinc, manganese, and cadmium fluoride pnictides D.O. Charkin, A.V. Urmanov, I.V. Plokhikh, A.D. Korshunov, A.N. Kuznetsov and S.M. Kazakov (Moscow, Russian Federation)	644
Hydrogen absorption–desorption features and degradation mechanism of ErNi_3 compound S.C. Xie, Z.L. Chen, Y.T. Li, T.Z. Si, D.M. Liu and Q.A. Zhang (Maanshan, PR China)	650
Effect of Sn addition on the microstructure and mechanical properties of Mg–6Zn–1Mn (wt.%) alloy F. Qi (Mianyang, PR China), D. Zhang (Chongqing, PR China), X. Zhang (Mianyang, PR China) and X. Xu (Chongqing, PR China)	656
Synthesis of three coordination polymer microspheres and their application in hydrogen storage Y. Sun, H. Yu, L. Wang, W. Ding, J. Ji, Y. Chen, F. Ren, Z. Tian, Y. Zhao, L. Huang, P. Ren and R. Tong (Hangzhou, PR China)	667
Hydrogen storage properties and mechanisms of $\text{Mg}(\text{BH}_4)_2 \cdot 2\text{NH}_3$ – $x\text{MgH}_2$ combination systems Y. Yang, Y. Liu, Y. Zhang, Y. Li, M. Gao and H. Pan (Hangzhou, China)	674
A new route for the synthesis of graphene oxide– Fe_3O_4 (GO – Fe_3O_4) nanocomposites and their Schottky diode applications Ö. Metin, Ş. Aydoğan and K. Meral (Erzurum, Turkey)	681
Preparation of a bionic microtexture on X52 pipeline steels and its superhydrophobic behavior S.R. Yu, J.A. Liu, W. Diao and W. Li (China)	689
Improvement of inverted type organic solar cells performance by incorporating Mg dopant into hydrothermally grown ZnO nanorod arrays R.T. Ginting, C.C. Yap, M. Yahaya and M. Mat Salleh (Bangi, Malaysia)	696
Synthesis, characterization and optical properties of a red organic–inorganic phosphor based on terephthalate intercalated Zn/Al/Eu layered double hydroxide X. Gao (Handan, Nanjing, China), L. Lei (Nanjing, China), L. Kang (Handan, China), Y. Wang (Nanjing, China), Y. Lian and K. Jiang (Handan, China)	703
Magnetotransport behavior of silver-rich silver selenide polycrystalline synthesized by a chemical method F. Yang, Z. Xia, G. Yu and D. Zhang (Wuhan, People's Republic of China)	708
Selective laser melting additive manufacturing of Inconel 718 superalloy parts: Densification, microstructure and properties Q. Jia and D. Gu (Nanjing, PR China)	713
Structural and optical properties of crystalline and nanocrystalline $\text{NaIn}(\text{WO}_4)_2\text{:Cr}^{3+}$ H. Fuks, T. Skibiński, S.M. Kaczmarek (Szczecin, Poland), J. Hanuza (Wrocław, Poland), G. Leniec (Szczecin, Poland), K. Hermanowicz, M. Mączka and M. Ptak (Wrocław, Poland)	722
Oxygen sensing performance of Nb-doped TiO_2 thin film with porous structure L. Gan, C. Wu, Y. Tan, B. Chi, J. Pu and L. Jian (Wuhan, China)	729
Fabrication of multilayered Ti–Al intermetallics by spark plasma sintering Y. Sun (Beijing, China), S.K. Vajpai, K. Ameyama (Kusatsu, Japan) and C. Ma (Beijing, China)	734
Structural polymorphism in multiferroic BiMnO_3 at high pressures and temperatures D.P. Kozlenko (Dubna, Russia), N.T. Dang (Dubna, Tula, Russia), S.H. Jabarov (Dubna, Russia), (Baku, Azerbaijan), A.A. Belik (Tsukuba, Japan), S.E. Kichanov, E.V. Lukin (Dubna, Russia), C. Lathe (Potsdam, Germany), L.S. Dubrovinsky (Bayreuth, Germany), V.Yu. Kazimirov (Dubna, Russia), M.B. Smirnov (St-Petersburg, Russia), B.N. Savenko (Dubna, Russia), A.I. Mammadov (Baku, Azerbaijan), E. Takayama-Muromachi (Tsukuba, Japan) and L.H. Khiem (Hanoi, Viet Nam)	741
New phase boundary and piezoelectric properties in $(\text{K}, \text{Na})\text{NbO}_3$ based ceramics H. Wang, J. Wu, X. Cheng, D. Xiao and J. Zhu (Chengdu, PR China)	748
The effects of room temperature ECAP and subsequent aging on mechanical properties of 2024 Al alloy M.H. Goodarzy, H. Arabi, M.A. Boutorabi, S.H. Seyedein (Tehran, Iran) and S.H. Hasani Najafabadi (Saveh, Iran)	753
Studies on the hydrogen storage characteristic of $\text{La}_{1-x}\text{Ce}_x(\text{NiCoMnAlCuSiZr})_{5.7}$ with a B2 secondary phase K. Young, B. Chao, B. Huang and J. Nei (Rochester Hills, USA)	760
The microstructure and microhardness of W–5wt% Cr alloy fabricated by spark plasma sintering Y. Zhou, Q.X. Sun, Z.M. Xie, R. Liu, X.P. Wang, Q.F. Fang and C.S. Liu (Hefei, People's Republic of China)	771
Spray deposition of $\text{Cu}_2\text{ZnSnS}_4$ thin films M. Valdés, G. Santoro and M. Vázquez (Mar del Plata, Argentina)	776
A novel composite with highly dispersed Fe_3O_4 nanocrystals on ordered mesoporous carbon as an anode for lithium ion batteries F. Wu, R. Huang, D. Mu, X. Shen and B. Wu (Beijing, China)	783
New nanoparticulate $\text{Gd}_{1-x}\text{Zr}_x\text{Fe}_{1-y}\text{Mn}_y\text{O}_3$ multiferroics: Synthesis, characterization and evaluation of electrical, dielectric and magnetic parameters A. Sultan, A. Mahmood (Bahawalpur, Pakistan), N.K. Goraya, A.M. Qureshi (Multan, Pakistan), I. Ahmad (Gujrat, Pakistan), M.N. Ashiq (Multan, Pakistan), I. Shakir (Riyadh, Saudi Arabia) and M.F. Warsi (Bahawalpur, Pakistan)	790

Strain rate sensitivity studies on bulk nanocrystalline aluminium by nanoindentation S. Varam, K.V. Rajulapati and K. Bhanu Sankara Rao (Hyderabad, India).....	795
Ce-doped $\text{SiO}_2/\text{TiO}_2$ nanocomposite as an effective visible light photocatalyst X. Sun, C. Li, L. Ruan, Z. Peng, J. Zhang, J. Zhao and Y. Li (Shijiazhuang, China).....	800
Synthesis and study of structural, dielectric, magnetic and magnetoelectric characterization of $\text{BiFeO}_3\text{-NiFe}_2\text{O}_4$ nanocomposites prepared by chemical solution method H. Singh (Uttarkashi, Roorkee, India) and K.L. Yadav (Uttarkashi, India).....	805
Keywords.....	III