

Table of Contents

Editors Comments, Preface

China's Rare Earth Industry: Past, Present and Future

J.W. Yan and J.L. Xiong 1

VUV Spectroscopy of Lanthanides: Extending the Horizon

A. Meijerink and R.T. Wegh 11

Rare Earths in the Luminescence of Inorganic Hosts Excited in the VUV and XUV Range

J.-. Krupa, M. Queffelec, N.Y. Kirikova and V.N. Makhov 27

Rare Earth Ions in the Glass Amplifying Medium: A Proposal for New Doping Precursors

F. Auzel and P. Goldner 34

The Use of Molecular Dynamics to Simulate the Temperature Dependence of the Calculated Absorption Spectrum for Nd³⁺:YAG

M. Klintenberg, S. Edvardsson, O. Guillot-Noël, B. Viana and J.O. Thomas 42

Photon-Gated Holeburning Materials: Directions in High Density Memory Storage

Z. Hasan and L. Biyikli 51

Time Domain Optical Memories Using Rare Earth Ions

M.J. Sellars, T.R. Dyke, G.J. Pryde and N.B. Manson 59

Recent Developments in Magnetic Refrigeration

K.A. Gschneidner Jr., V.K. Pecharsky, A.O. Pecharsky and C.B. Zimm 69

Rare-Earth Permanent Magnets: New Magnet Materials and Applications

S.J. Collocott, J.B. Dunlop, H.C. Lovatt and V.S. Ramsden 77

Comparison of the Electrochemical- and Gas Phase Hydrogen Sorption Process

A. Züttel, D. Chartouni, C. Nützenadel, L. Schlapbach, V. Güther, A. Otto, M. Bärtsch and R. Kötz 84

Non-Stoichiometric AB₅ Type Alloys and Their Properties as Metal Hydride Electrodes

T. Vogt, J.J. Reilly, J.R. Johnson, G.D. Adzic and J. McBreen 94

Rare Earth Element (La) Doped LiNiVO₄ as a Cathode Material for Secondary Lithium Ion Cells

G.X. Wang, S. Zhong, D.H. Bradhurst, S.X. Dou and H.K. Liu 105

Magnetic Dichroism in Photoemission: a New Element-Specific Magnetometer with Atomic-Layer Resolution

K. Starke, E. Arenholz and G. Kaindl 113

Determination of Rare Earth Contents in Plant and Soil by Neutron Activation Analysis (NAA)

B. Krafka, X. Lin and R. Henkelmann 121

Mononuclear and Binuclear Lanthanide Complexes of the Macroyclic Polyamine Polycarboxylic Ligands H₈OTEC and H₈OHEC

H. Schumann, U. Böttger, A. Zschunke, H. Weisshoff and B. Ziemer 128

Recent Advances in the Syntheses and Structures of some Lanthanoid Group 15 Heterocyclic Complexes

J.E. Cosgriff, G.B. Deacon, E.E. Delbridge, C. Jones, B.W. Skelton and A.H. White 136

Divalent Compounds of Thulium, Neodymium and Dysprosium

M.N. Bochkarev, A.A. Fagin, I.L. Fedushkin, A.A. Trifonov, E.N. Kirillov, I.L. Eremenko and S.E. Nefedov 144

The Unlike Didymium Twins: Chemistry of Praseodymium and Neodymium

G. Meyer 154

The Influence of Light Anions (O²⁻, N³⁻ and F⁻) on the Crystal Chemistry of Rare-Earth Metal Trichlorides and Sesquisulfides

T. Schleid 163

Liquid-Crystalline Lanthanide Complexes

K. Binnemanns 169

The Development of a Rare-Earths Bases Polishing Powder Business through Sino-Japanese Cooperation

T. Morishita 175

Production of Rare Earth Polishing Powders in Russia

V.D. Kosynkin, E.N. Ivanov, V. Kotrekhov, M.G. Shtutza, A.V. Kardapolov and A.I. Grabko 179

Rare-Earth Oxides Promoted Nickel Based Catalysts for Steam Reforming	187
L. Ma, Praharsa and D.L. Trimm	
Influence of Ceria on the Thermally Durability of Pt/Rh Automotive Catalyst	194
H. Muraki and G. Zhang	
Luminescence, Non-Radiative Processes and Quantum Yields in Lanthanide Complexes	204
C. de Mello Donegá, S. Alves, O.L. Malta and G.F.d. Sá	
Photoreduction of Sm³⁺ to Sm²⁺in Alcoholic Solution	211
M. Kusaba, Y. Tsunawaki and N. Nakashima	
Controlled Growth of Yttrium Oxysulphide Thin Films by Atomic Layer Deposition	216
K. Kukli, M. Peussa, L.-. Johansson, E. Nykänen and L. Niinistö	
The 5d4fⁿ⁻¹ → 4fⁿ Luminescence of Trivalent Rare Earth Ions in Inorganic Crystals	222
P. Dorenbos	
Phosphors Doped with Dy³⁺ and Gd³⁺ for Lighting	228
Q. Su, Z. Pei, Q. Zeng, L. Chi, S.Z. Liu, J. Lin, S.P. Wang and Y. Lu	
Spatial Distribution of Pr³⁺ and F⁻ Ions in Ca_{1-x}Pr_xF_{2+x} Luminescent Thin Films	236
P. Tardy, Y. Deshayes, L. Hirsch, A.S. Barrière, A. El Fajri and B. Desbat	
High Pressure Studies of Configuration Interaction and Crystal Field Effects in Sm²⁺	243
Y.M. Shen and K.L. Bray	
Molecular Dosimeter Developed from High Efficient Rare-Earth Complexes: UV-A, UV-B and UV-C Responses	249
C.G. Gameiro, E.F.d. Silva Jr., S. Alves, G.F.d. Sá and P.A. Santa-Cruz	
Holmium-166 Therapy of Malignant and Benign Diseases	257
C.H. Park	
Simple and General Procedure for the Synthesis of Semi-Rigid Chelating Agents for Radiometal Complexation Studies and its Application to Semi-Rigid Functionalised Ligands (BCA) Synthesis	262
A. Loussouarn, A. Faivre-Chauvet, J.-. Chatal and J.F. Gestin	
Improvement of Separation of Pr and Nd in Solvent Extraction	268
J. Shibata and S. Matsumoto	
Extraction and Group Separation of Rare Earths by a Combined Extraction/Electrostatic Pseudo Liquid Membrane from Simulated Rare Earths Mine Water	275
X.J. Yang, Z.M. Gu and A.G. Fane	
Separation of Dy, Y, Tm and Yb from Heavier Rare Earth Residue with Solvent Impregnated Resin	282
J. Shibata and S. Matsumoto	
The Solvent Extraction of Cerium from Sulphate Solutions - Mini-Plant Trials	290
K. Soldenhoff, D. Wilkins and R. Ring	
Recovery of Rare Earths from Used Polishes by Chemical Vapor Transport Process	297
T. Ozaki, K. Machida and G. Adachi	
The Exceptional Behaviour of Pr, Ce and Tb in High-T_c Superconductors	306
U. Staub	
Induced Point and Correlated Disorder Pinning in Untwinned YBa₂Cu₃O_{7-δ} Crystals	314
W.K. Kwok, L. Paulius, D. Lopez, H. Safar, R.J. Olsson, A.M. Petrean and G.W. Crabtree	
A Study of New Rare-Earth Metal Group-13 Chalcogenides: Structural Chemistry and Optical Properties	322
P.M. Van Calcar and P.K. Dorhout	
Trivalent Ion Conduction in the Sc₂(WO₄)₃ Type Structure	331
N. Imanaka, Y. Kobayashi, T. Egawa, S. Tamura and G. Adachi	
The Role of Applications of Rare Earth Elements in Enhancement of Crop and Pasture Production	339
S. Buckingham, J. Maheswaran, B. Meehan and K. Peverill	
Effect of Foliar Application of Neodymium on the Growth and Nutrition of Brassica napus L.	348
Y. Wei, X. Zhou, M.O. Maalim and C. Tang	
The Effects of Rare Earth Elements on the Growth and Nutrition of Plants	354
E. Diatloff, C.J. Asher and F.W. Smith	
The Investigation of Lanthanum Sorption in Agricultural Soils	361
J. Stokes, B. Meehan, A. Fowlless and K. Peverill	

Distribution of Rare Earths in Liver of Mice Administered with Chloride Compounds of 12 Rare Earths	
A. Shinohara, M. Chiba and Y. Inaba	368
Optical Study of Rare Earth Metaborates Doped with Europium as a Local Structural Probe	
E. Antić-Fidančev, J.C. Krupa and M. Lemaître-Blaise	373
Dipolar Characterisation of Luminescent Centres in $\text{Ca}_{1-x}\text{Er}_x\text{F}_{2+x}$ Thin Films	
L. Hirsch, A. El Fajri, P. Tardy and A.S. Barrière	380
Site-Selective Laser Excitation of Er^{3+} Ions in $\text{Ca}_{1-x}\text{Er}_x\text{F}_{2+x}$ Thin Films ($x \leq 0.01$)	
M. Bouffard, J.P. Jouart, T. Césaire, L. Hirsch and A.S. Barrière	387
EXAFS Study of Defect Clusters of Highly Er^{3+} Doped CaF_2 Thin Films	
T. Césaire, L. Hirsch, B. Porté and A.S. Barrière	394
Theoretical Prediction of the Structure and Electronic Spectra of Lanthanide Complexes	
G.B. Rocha, M.E. de Mesquita, A.M. Simas and G.F.d. Sá	400
The Use of CI Calculated Polarizabilities to Study Rare-Earth CFP Dependencies in the Laser Host RE:YLF	
S. Edvardsson and M. Klintenberg	407
Analysis of the Optical Spectrum of Pr^{3+} in La_2O_3 and Pr_2O_3	
O.K. Moune, C.K. Jayasankar, M.D. Faucher and A.M. Lejus	415
Magnetic Circular Dichroism Spectra of $\text{KY}_3\text{F}_{10}/\text{EU}^{3+}$: a Revised Theoretical Approach	
L. Fluyt, K. Heyde and C. Görller-Walrand	424
Spectroscopic Characterisation of Luminescent Eu(III)/Polyoxometalate Sandwiched and Encrypted Complexes	
S. Lis and S. But	431
Ultraviolet Absorption Spectra of CeO_2 Nano-Particles	
S. Tsunekawa, R. Sivamohan, T. Ohsuna, H. Takahashi and K. Tohji	439
Charge Transfer Luminescence of Yb^{3+} in Orthophosphates	
L. van Pieterson and A. Meijerink	446
Simulation of the Experimental Crystal Field Splitting Pattern of a Mono Tetrahydrofuran Adduct Derived from Tris(Bis(Trimethylsilyl)Amido) Neodymium (III)	
S. Jank, H. Reddmann and H.-. Amberger	457
Synthesis and Crystal Structure of a Stable Bimetallic Neodymium(III)-Potassium Complex with the O-Benzenedisulfonate Ligand	
G.B. Deacon, A. Gitlits, G. Meyer, D. Stellfeldt and G. Zelesny	465
Dehydrogenation of Cyclohexane to Benzene on Lanthanide Catalysts Formed by Thermal Decomposition of Eu or Yb Metal Solutions in Liquid Ammonia	
H. Imamura, T. Sakamoto, T. Matsuoka, Y. Sakata and S. Tsuchiya	471
Complex Formation Constant and Hydration Number Change of Aqua-Rare Earth Ions	
H. Kanno	477
Striving towards Understanding Lanthanoid Friedel-Crafts Acylation Catalysis	
N. Scott, G.B. Deacon and W. Appel	484
Lanthanide Complexation with Amino Acids. EU(III) with Glutamine and Serine in Water	
H.B. Silber, N. Ghajari and V. Maraschin	490
Coordination of Thiocyanate Ions to Rare Earth Ions in Concentrated Aqueous Rare Earth Thiocyanate Solutions	
Y. Yoshimura, T. Oikawa, H. Kanno and Y. Suzuki	494
Coordination Compounds of 4-Methylmorpholine-n-Oxide with Lanthanide Trifluoromethanesulfonates and Iodides: Synthesis and Spectral Properties	
L.C. Schmitz, V.D. Santos, P.C. Isolani, K. Zinner and L.B. Zinner	500
Crystal Growth of Nd:RVO₄ (where R=Y, Gd) under Mild Hydrothermal Conditions	
K. Byrappa, B. Nirmala and M. Yoshimura	506
Crystal Growth and Characterisation of Rare Earth Phosphates	
K. Byrappa and J.R. Paramesha	514
A Study of the Migration and Adsorption Kinetics of Rare Earth Elements in Soils	
Z.L. Gao, W. Hong, B. Xiong, W. Zheng and Y. Wu	520
Effects of Rare Earth on the Lactate Dehydrogenase Isozyme Patterns of Mouse Organs	
J. Liu, Y. Lu, G. Su, H. Lei and Y. Yang	525

Acid Curing and Baking of Bastnaesite Ore and Concentrate	530
Y. Topkaya and S. Akkurt	
Trivalent Cationic Conduction Properties in M₂(WO₄)₃-Al₂O₃ (M=Al, Sc, Lu) Composites	537
J. Köhler, N. Imanaka and G. Adachi	
Improvement of the Performance of Mg-Based Alloy Electrodes	545
H.K. Liu, J.M. Chen, L. Sun, D.H. Bradhurst and S.X. Dou	
Combustion Synthesis of Micron-Sized Sm₂Co₁₇ Particles via Mechanochemical Processing	552
W.X. Liu and P.G. McCormick	
Bi-Functional Oxygen Electrodes Using Pr-Mn-Fe-Based Perovskite-Type Oxides as Catalysts	562
N. Miura, M. Hayashi, T. Hyodo and N. Yamazoe	
Magnetisation Reversal on the Surface of Nd-Fe-B Magnets	570
H. Sun, R.C. Woodward and R. Street	
Crystal and Magnetic Structures of SrTbO₃ and BaTbO₃ by Powder Neutron Diffraction	578
K. Tezuka, M. Itoh, M. Haga and Y. Hinatsu	
Synthesis of Ultrafine Ce₂S₃ Powder by Mechanochemical Processing	586
T. Tsuzuki and P.G. McCormick	
Structural and Superconducting Properties of PrBa₂Cu₃O_x	592
J. Ye, Z. Zou, K. Oka, Y. Nishihara, A. Matsushita and T. Matsumoto	