



EDITORIAL

New ERES Web site

At the end of last year, the association has bought its own web-server, which will allow an expansion of its web site activities. Daniel Baumann, from the University of Lausanne has taken a special course for the management of web servers and is now working on improving the site of the association. The upgrading is slow, because of lack of time, but look for new features to be added within the next few months! The new address of the site is:

<http://www-eres.unil.ch>

The previous site will be abandoned and a link to the new site will be provided. Please consult the site and forward your comments to

daniel.baumann@icma.unil.ch.

ICFE'4, Madrid September 17-21

The organization of the 4th International conference on f-elements, to be held September 17-21 in Madrid is now well on its tracks. Some of the deadlines have been expanded, particularly for submitting abstracts. For updated information, connect to:

<http://www.icmm.csic.es/icfe4/>

The ERES Executive committee is now seeking nominations for the two awards to be presented at ICFE'4: the ERES Junior Award and the P.E. LeCoq de Boisbau-

dran Senior Award (deadline: June 15, 2000). Moreover proposals for the venue of ICFE'6 to be held in 2006 are to be sent by July 31, 2000.

HANDBOOK

The 27th and 28th volumes in the successful series edited by K. A. Geschneidner Jr. and Leroy Eyring have appeared at the end of 1999 and at the beginning of 2000.

Volume 27

This volume contains three chapters dealing with rare earth alloys and intermetallic compounds.

Chapter one (*Ternary rare-earth-germanium systems* by P. S. Salamakha, O. L. Sologub and O. I. Bodak) deals with ternary rare earth-germanium alloys, their phase diagrams and the crystal structures of the intermediate phases. In particular the group VIII metals are discussed, of which the first member of each row (iron, ruthenium and osmium) forms only half the number of compounds as the other two members, cobalt and nickel and their congeners. The author also observes that the ternary alloy systems of the rare earths and germanium with the s and p elements have hardly been investigated. The chapter ends with a discussion on the general trends and unusual features observed in the various sets of ternary phase

diagrams.

Chapters two (*Crystal structures and crystal chemistry of ternary rare-earth germanides* by P. S. Salamakha) describes in detail the various structure types that have been adopted by the rare earth-germanium ternary intermetallic compounds. The correlation, crystal chemistry and interrelationships of the 135 structure types are discussed. This paper also reviews quaternary compounds and superstructures.

The final chapter (*Scandium alloy systems and intermetallics* by B. Ya. Kotur and E. Gratz) deals with scandium alloys and intermetallic compounds, binary, ternary and higher order systems. The authors summarize the various phase diagrams of scandium systems and present the crystal structure properties of the various intermediate phases. The chapter finishes with a presentation of physical property data on scandium intermetallic phases. The results are divided into three groups: compounds with a magnetic ground state, a superconducting ground state and those with neither a magnetic nor a superconducting ground state.

Elsevier Science B.V., P.O. Box 211, 1000 AE Amsterdam, The Netherlands. Hardbound, ISBN: 0-444-50342-0, 572 pages. Price: NLG 455 (euro 206.47, USD 231).

Volume 28

Even at the beginning of the new millenium the rare earths still

remain, to a certain extent, a mystery. The chapters in this volume will help to unravel some of these. In the filling of the 4f electronic orbitals the lanthanides defy the elementary Aufbau principle that underlies the periodic sequence of the elements, and the authors of the first chapter (*Electronic excitation in atomic species* by J.-P. Connerade and R. C. Karnatak) introduce the readers to the basic physics of the orbital collapse leading to that failure. Furthermore an explanation is offered in terms of double-well potentials. The phenomenon is illustrated using the valence transitions observed in some of the rare earth atoms, including Sm group metals and the higher oxides of cerium, praseodymium and terbium.

In the second chapter (*Simple and complex halides* by G. Meyer, and M.S. Wickleder), the synthesis and structure of the many types of rare earth halides are described. They have been described as simple, complex, binary, ternary and multinuclear complex, and other categories needed to deal with the most studied of the rare earth compounds. The structure types are skillfully illustrated to show the elementary architecture of each type.

In chapter three (*Solid electrolytes* by R. V. Kumar and H. Iwahara), the authors discuss the science and applications of rare earth super ionic conductors as solid electrolytes. Conduction by oxygen and fluorine anions as well as hydrogen and other cations associated with these electrolytes is emphasized. They deal with extrinsic and intrinsic types together with their associated structures and structural types

including structural defects. The chapter concludes with an outline of the many applications of solid electrolytes.

Chapter four (*Activated thermoluminescent dosimeters and related radiation detectors* by A. Halperin) introduces the reader to the principles that underlie thermoluminescence and its application to dosimetry and provides detailed information on the R-activated phosphors that support dosimetry.

The final chapter (*Analytical separations of the lanthanides: basic chemistry and methods* by K. L. Nash and M. P. Jensen) elaborates on the data gained by the studies and interpretation around the analytical separation of the individual rare earth elements utilizing chromatographic techniques. The authors describe the fundamental chemistry that underpins contemporary analytical separation techniques for lanthanide separation and analysis. This is done after a description of the rich assortment of separation methods in use has been introduced.

Elsevier Science B.V., P.O. Box 211, 1000 AE Amsterdam, The Netherlands. Hardbound ISBN: 0-444-50346-3, 432 pages. Price: NLG 325 (euro 147.48, USD 170).

JOURNÉES DES ACTINIDES

The 30th Journées des Actinides will be held May 4-6, 2000 in Dresden, Germany. The Journées des Actinides is an annual conference the scope of which is to provide a forum for open and informal discussions on all aspects, fundamental and applied, that are related to the chemistry and physics of actinides. The scientific program will consist of

contributed papers in oral and poster sessions. Prior to the conference, a School devoted to the physics and chemistry of actinides will be held May 2-3, 2000 at the Max-Planck Institute for the Physics of Complex Systems in Dresden.

Contact : Konferenzservice TU Dresden GmbH, Frau A. Schwackhausen, George-Baehr Strasse 8, D-01069 Dresden, Germany. Phone : + 49 351 463 3417. Fax + 49 351 463 7049.

<http://www.ifw-dresden.de/jda2000>

SCIENCE

Molecular nanospheres and nanotubes

Calixarenes are known to be versatile receptors which are commonly used in extraction processes, heavy metal recycling and nuclear waste management.¹ There are also exceptional building blocks for erecting bilayer structures. In the latter, the calixarene anions (obtained by removing the protons from the phenol functions) the shape of which is conical are arranged in an up-down manner. By adding pyridine *N*-oxide and lanthanide ions to these systems, J. L. Atwood from the University of Missouri (Columbia) and his team has recently succeeded in forcing the calixarene anions to arrange into spheres and nanotubes.² One particularly fascinating arrangement has icosahedral geometry and is obtained by the self-assembly of 12 calixarene units. One pyridine *N*-oxide guest lies in each calixarene cavity while lanthanide ions assume the stability of the structure by holding the pieces together through ionic bonds. Alternatively, changing the

stoichiometry of the reactants allowed the research team to produce tubular structures.

1. *Calixarenes for Separations*, G. J. Lumetta, R. D. Rogers, A. Gopalan, eds, ACS Symposium Series 757, Washington D.C., 2000.
2. J.L. Atwood, G.W. Orr, L.J. Barbour, *Science*, **285**, 1049 (1999).

PEOPLE

Distinguished European Chemists

The Federation of European Chemical Societies (FECS) has proposed to celebrate the new millenium by proclaiming the names of the top 100 European chemists who lived and worked in the 18th, 19th and 20th centuries. Twenty national chemical societies provided a list of names each and then a Working Party for the History of Chemistry tried to sort them out, with the help of a computer program. A final list of 100 outstanding European chemists emerged, despite many doubts on the significance of the exercise. Interestingly, several are known from the f-element community. Among these are Johan Gadolin (discoverer of yttrium in 1794), M. H. Klaproth (discoverer of uranium in 1798 and co-discoverer of cerium in 1803), Marie Curie (co-discoverer of radium in 1898) and O. Hahn (co-discoverer of uranium fission in 1938). Of course A. L. Lavoisier, S. A. Arrhenius, A. Avogadro, J. H. Van't Hoff, H. L. Le Chatelier, L. Pasteur, E. Rutherford, are all on the list too. If you are curious to see the other names or to make comparison between countries, please connect to:

<http://www.chemsoc.org/networks/enc/fecs/100chemists.htm>

1999 FINANCIAL RECORDS

During the last year, ERES membership has remained stable at 365 members in about 35 different countries. The financial record is positive, with a profit of about SFrs 3682, despite the loss of an industrial sponsor. Here are the details (all figures are in Swiss francs).

Earnings

1997 dues cashed	170.--
1998 dues cashed	1895.--
1999 dues cashed	2015.--
2000 dues cashed	395.--
Interests	558.07
Total	5033.07

Expenses

Bank costs	97.40
VISA costs	26.15
Taxes	17.45
PC for web site server	1210.--
Total	1351.--

1999 profit 3682.07

Assets

December 31, 1995	26 746.06
December 31, 1996	32 822.21
December 31, 1997	41 234.77
December 31, 1998	41 878.22
December 31, 1999	45 560.29

ERES GENERAL COUNCIL

A meeting of the ERES General Council will be held during the ICFE'4 Conference in Madrid, according to the bylaws of the association. It is scheduled on the last day of the conference, Thursday 21 September 2000, at 18h30. The agenda will include the following points :

1. Report, Executive Committee

2. Report, treasurer
3. Report, financial auditors
4. Membership dues, 2001-2003
5. Executive Committee, 2001-2003
6. Accounting auditors
7. ICFE'5 (Geneva, 2003)
8. Venue of ICFE'6
9. Varia, individual proposals

If you would like one particular point to be discussed during this meeting, please report to the chairman of the association (Prof. L. Niinistö) **before June 15 2000**.

VENUE OF ICFE'6 (2006) CALL FOR PROPOSALS

As mentioned in the previous story, one point of the agenda of the forthcoming general council will be concerned with the selection of the venue for the 6th International Conference on f-Elements in 2006. The triennial system agreed upon among the various organizers of international conferences on f-elements seems now to be well accepted and we have been able to coordinate most of these events so that not more than one major conference is taking place per year.

ERES NEWSLETTER

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There remains some problems with the Chinese ICRE but we hope to be able to sort them out in a near future. As a reminder, here is a list of the past and future

conferences:

1997	ICFE'3, Paris
1998	Rare Earths '98, Perth
1999	22 nd RERC, Argonne
2000	ICFE-4, Madrid
2001	Rare Earth's 2001, Sao Paulo (Brazil)
2002	23 rd RERC, Davis
2003	ICFE'5, Geneva
2004	free
2005	24 th RERC, USA
2006	ICFE'6 venue to be decided

People interested in organizing ICFE'6 should prepare a proposal to be sent to the secretary-treasurer of ERES (Prof. J.-C. Bünzli), **before July 31, 2000.**

ICFE'4

Nomination for the ERES Junior Award

The first ERES Junior award will be presented at the 4th International Conference on f-Element in Madrid, September 17-21 2000. The award is intended to distinguish a young scientist (ideally not older than 35-37 years) which has made an innovative contribution to the basic science and/or technology of the f-elements.

Nominations are now sought and should be sent to Professor J.-C.G. Bünzli so that they are received by **June 15, 2000** at his address: University of Lausanne, Institute of Inorganic and Analytical Chemistry, BCH 1402 CH-1015 Lausanne, Switzerland.

Nomination for the P.E. LeCoq de Boisbaudran Senior Award

The first Paul-Émile LeCoq de

Baoisbaudran award, sponsored by Rhodia Rare Earths, will be presented at the 4th International Conference on f-Element in Madrid, September 17-21 2000. This award will be given in recognition of distinguished contributions to the basic science and/or technology of the f-elements. Nominations are now sought from the world-wide f-element community. Seconding letters are encouraged, especially if they cover information complementary to the nominating letter.

The nominations should be sent to Professor Lauri Niinistö so that they are received by June 15, 2000 at his address: Helsinki University of Technology, Laboratory of Inorganic and Analytical Chemistry, P.O. Box 6100, FIN-02015 Espoo, Finland.

ERES Newsletter is your newsletter. Please send articles on any topic of interest to the f-element community.

Next deadline: June 15, 2000

AGENDA

MAJOR CONFERENCES

4TH ICFE Sep. 17-21, 2000

Fourth International Conference on f-Elements.
Madrid, Spain.

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Rare Earths 2001 Sept. 2001

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www.iq.usp.br/geral/RE2001/congress.html

23RD RERC July 14-18, 2002

Twenty-third Rare Earth Research Conference Inc.
Davis, California, USA

Prof. Suzan M. Kauzlarich
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OTHER EVENTS

30TH JOURNÉES DES ACTINIDES

May 4-6, 2000

TU Dresden, Germany

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<http://www.ifw-dresden.de/jda2000>

4TH ICRE June 15-20, 2001

Fourth International Conference on Rare Earth Development & Applications

Beijing, People's Republic of China
Xu Guangyao, Liu Aisheng
The Chinese Society of Rare Earths
76, Xueyuan Nan Lu

BEIJING 1000081, P.R. China

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