



EDITORIAL

Best wishes for 1998

The Executive Committee of the European Rare Earth and Actinide Society wishes you a successful and enjoyable 1998 year. We thank you for your continuing support and hope you are satisfied with our work.

Lauri Niinistö, Jean-Claude Bünzli, Pierre Porcher, Marek Godlewski.

NOMENCLATURE

Heavy element names final decision

The Council of the International Union of Pure and Applied Chemistry (IUPAC) has approved the following names for elements 104 to 109 in Geneva in August 1997 :

104	Rf	rutherfordium
105	Db	dubnium
106	Sg	seaborgium
107	Bh	bohrium
108	Hs	hassium
109	Mt	meitnerium

This revised list is in agreement with the ACS proposal for 104, 106 and 108, but not for the others.

ERES 3RD GENERAL COUNCIL

The third General Council of the association was held under the chairmanship of Prof. Lauri Niinistö on September 18, 1997 in Paris, at the end of the 3rd International Con-

ference on f-Elements. Despite a somewhat unfavorable timing (6.45 p.m. on Friday afternoon), fifty-five members showed up, representing 71 votes. Two members (Prof. Y. Susuki - who is retiring at the end of the year - and M. Pietraszkiewicz) informed the secretary they could not attend. The agenda was as follows :

1. Report, executive committee
2. Report, treasurer
3. Report, financial auditors
4. Membership dues 1998-2000
5. Executive committee, 1998-2000
6. Account auditors, 1998-2000
7. Next ICFE conferences
8. Individual proposals

1. Report, Executive committee

The goals of the association, namely (i) the organization of a triennial international conference on f-elements (ii) the exchange of professional, technical, industrial and economical information, (iii) the promotion of educational and research activities at the European level, and (iv) the maintenance of close contacts with similar societies and organizations around the world, have been essentially met since the association was founded in 1989.

- a) Three ICFE conferences have been organized by ad hoc committees (Leuven, 1990 ; Helsinki, 1994 and Paris, 1997) and a 4th one is planned in Madrid in 2000.
- b) Three workshops have been sponsored by the association (Venice, 1991 ; Wroclaw, 1991 and Madrid 1995).
- c) 44 stipends have been granted, mostly to young scientists, to help them attending meetings and workshops.

d) An advisory committee has been formed with representatives for each country where the association has members and who should play the role of antenna for the association.

e) Friendly relationships have been established and maintained with rare earth societies in Japan, China and United States (RERC conferences and RIC center).

Planned actions

The Executive committee proposes the following actions :

- 1) Construction of a Web site (January 1998)
- 2) New concept for the Newsletter (1998)
- 3) Renewal of the Advisory committee (1998)
- 4) Publication of a Directory of European laboratories dealing with f-elements (1999)
- 5) Elaboration of didactic material (1999-2000).

Prof. Elbanowski proposes to set-up a special panel with readily accessible members (via Internet) willing to act as referees for papers to be submitted. J.-C. Bünzli answers that the Member's directory published yearly contains the E-mail addresses of the members and could be used for this purpose. The report is approved by the general council.

2. Report of the treasurer

Total receipts (dues + interests) and disbursements (stipends and costs) amounted to the following figures (rounded to 1 SFrs) and yielded the deficit or profit indicated *in italic* :

	1994	1995	1996
Rec.	4159	12107	6837
Dis.	-9034	-2582	-761
D/P	-4875	9525	6076

The receipts are split between the

dues from regular individual members (65%), corporate members (25.9%), members entitled to reduced rates (3.2%) as well as interests and tax reimbursements (5.9%). Stipends represent most of the disbursements (96.3%), while operating cost are kept to a minimum (average : *ca* 150 SFrs a year).

Membership has increased from 131 in 1994 to 282 in 1995, consecutive to the ICFE policy of including one year membership dues in the conference fees. It slowly decreased to 268 in 1996. The association has five corporate members : Rhône-Poulenc, Rare Earths & Gallium Division, Treibacher AG, KUL Leuven, IPN Orsay and ICMA Lausanne.

The assets of the association increased as follows (figures rounded to 1 SFrs) :

1994	1995	1996
17'221	26'746	32'822

The report is approved by the general council.

3. Report, financial auditors

“ As auditors for the European Rare Earth and Actinide Society (ERES) we have examined the book of account and the financial statements presented by Dr. J.C. Bünzli, secretary-treasurer of the ERES, covering the period from January 1st, 1994 to December 31st, 1996. Based on our examination we ascertain that the financial statements are in accordance with the book of account and pieces justifying earnings and expenses. We recommend that the financial statements submitted to you be approved. ” (Signed) Drs A. Merbach and C. Friedli.

The report is approved by the general council.

4. Membership dues 1998-2000

The council approves the proposal of the Executive committee to apply the following dues, unchanged from the preceding period :

<i>Regular individual member</i>	
1 year	SFrs 30
4 years	SFrs 110

Students + Eastern countries

1 year Sfrs 15

Corporate members

5 votes SFrs 750

10 votes SFrs 1500

5. Executive committee 1998-2000

Following a proposal from Paul Caro, the acting committee is re-elected :

Chairperson	L. Niinistö
Vice-chairperson	P. Porcher
Secretary-treasurer	J.-C. Bünzli
2 nd secretary	M. Godlewski

6. Account auditors

A.E. Merbach and C. Friedli are re-elected.

7. Next ICFE Conferences

The conference schedule appears as follows :

1998	Rare Earths '98, Perth (Australia)
1999	22 nd RERC Chicago area (USA)
2000	ICFE-4 (Madrid)
2001	free
2002	23 rd RERC (USA)
2003	to be decided

L. Soderholm, chairwomen of the 22nd RERC briefly confirms that the venue will be in the Chicago area and that the conference will probably be organized at the end of September 1999.

R. Saez-Puche considers organizing ICFE-4 during the first week of September 2000. A local committee is being set up and information about the conference will be given in one of the next issues of the Newsletter.

J.-C. Bünzli presents a proposal from the Universities of Lausanne and Geneva to organize ICFE-5 in 2003 on the shore of lake *Léman*, either at the *Centre International de Conférences de Genève* (venue of the 36th IUPAC meeting, August 1997) or at the University of Lausanne (venue of the 29th ICCS conference in 1992). This proposal is accepted by the general council.

No information is presently available

from our Chinese colleagues regarding a Chinese conference in 2001. G. Vicentini will inquire about the possibility of organizing an international conference in Brazil that year.

8. Individual proposals

J.-C. Bünzli presents a proposal from A.E. Merbach (Université of Lausanne) regarding the establishment of a prize for an outstanding young researcher (under 35). The prize of US \$ 1000 would be remitted every three years at the ICFE conference and a special lecture would be organized. The principle is accepted by the council. However, a hefty discussion takes place about the age limit proposed. A compromise emerges for considering researchers under age 37 or 38. The Executive committee will draft the necessary regulations and the first prize will be granted during ICFE-4 in Madrid.

The meeting is closed at 7h55 p.m.

MINING REPORT Rare earths in 1995

James B. Hedrick, Commodity Specialist and his team at the U.S. Geological Survey have published their annual reports on lanthanides, yttrium and scandium. Available from J.B. Hedrick, 983 National Center, USGS, Reston, VA 20192. Phone : (+1 703) 648 7725, Fax 648 7722, URL : http://minerals.er.usgs.gov/minerals/pubs/commodity/rare_earths/

ERES NEWSLETTER

Vol. 8 No 2

December 31, 1997

Published 2-3 times a year by the European Rare-Earth and Actinide Society.

Editor : Jean-Claude G. Bünzli.

Circulation : 320.

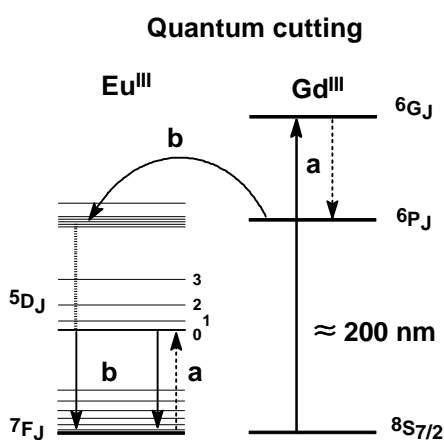
SCIENCE

Quantum cutting : improving lamp phosphor efficiency ?

In conventional fluorescent lamps, such as those developed in the 1970's and 1980's, the electric discharge excite mercury atoms which emit the well known 254 nm line. UV to visible conversion is readily achieved by rare-earth containing phosphors of which $Y_2O_3:Eu^{III}$ (red), $BaMg_2Al_{10}O_{17}:Eu^{II}$ (blue) and $GdMgB_5O_{10}:Ce^{III}$ (green) are typical examples (for a review, see the book by G. Blasse and B.C. Grabmaier¹). Mercury is however increasingly replaced by xenon for obvious environmental reasons. One problem is that the intense xenon UV emission lines lie at quite short wavelengths, 147 and 172 nm for instance. There is therefore a need for new phosphors able to convert these lines efficiently into visible light. Part of the answer may come from gadolinium.

Andries Meijerink and his team from the Debye Institute at Utrecht University (The Netherlands) has undertaken the task of exploring 4f energy levels lying in the vacuum UV region. In a recent joint communication² with the team of Jorma Hölsä (Department of Chemistry, University of Turku, Finland) they report the first overview of the VUV 4f levels of Gd^{III} . They also demonstrate that quantum cutting in $LiYF_4:Gd^{III}$ ² and $LiGdF_4:Eu^{III}$ ³ is a very promising phenomenon for the design of highly efficient phosphors. In the latter material, one 202 nm photon is absorbed by the $^8S_{7/2} \rightarrow ^6G_{7/2}$ transition of gadolinium. Two energy transfer steps follow this initial excitation

(see figure). (a) Due to the good spectral overlap between the $Gd(^6G_{7/2} \rightarrow ^6P_{7/2})$ and the $Eu(^5D_0 \leftarrow ^7F_1)$ transitions, cross relaxation occurs, leading to the emission of one red photon through the $Eu(^5D_0 \rightarrow ^7F_2)$ transition. (b) Energy from the $Gd(^6P_{7/2})$ level is transferred onto Eu^{III} excited levels followed by emission of a second photon from (mainly) the $Eu(^5D_0)$ level. All together the visible (red) quantum efficiency upon excitation in the VUV amounts to 195 % !



1. G. Blasse and B.C. Grabmaier, *Luminescent Materials*, Springer-Verlag, Berlin, 1994, Chap. 6.
2. R.T. Wegh, H. Donker, A. Meijerink, R.J. Lamminmäki and J. Hölsä, *Phys. Rev. B*, **1997**, *56*, 13841.
3. H. Donker, R.T. Wegh, A. Meijerink, J.C. Krupa and M. Queffelec, *J. Soc. Information Display*, in press.

INDUSTRY

Rhône-Poulenc increases its involvement in China and changes name

Rhône-Poulenc has signed an investment agreement in December 1977 with Baotou Rare Earth Development Zone (BRDZ) and the Westlake American Company (WAC) with the aim of setting up a production unit of rare earth alloys and metal hydride powder for rechargeable batteries. The

new production unit is meant to meet the demand of the rapidly expanding domestic market for both portable telephones and batteries.

The yearly production capacity of the unit is 500 metric tons and operations are scheduled to start in July 1998. Rhône-Poulenc's investment amounts to US\$ 1.5 million. BRDZ and WAC are Rhône-Poulenc's partner in Baotou Luxi Rhône Rare Earths Co Ltd venture in China.

On January 1st 1998, Rhône Poulenc's activities dealing with specialty chemicals, and including rare earths & gallium, will be incorporated into a new company called RHODIA. The new company will employ a workforce of 38 000 and its consolidated turnover will be US\$ 6.2 billion.

BOOKS

History of Rare Earths

Kluwer Academic Publishers (Dordrecht) are editing a series of books titled *Chemists and Chemistry* and dedicated to the historical aspects of chemistry. Volume 15, *Episodes from the History of the Rare Earth Elements*, edited by C.H. Evans from the University of Pittsburgh (Pennsylvania, USA) is entirely devoted to the discovery of rare-earth elements. Part I (*Discovery*) describes the difficulties encountered by chemists in the isolation and characterization of the elements, a 150 year story. The development of technology played a key role in settling disputes and false assertions. Part II (*Applications*) features chapters on the industrial uses of the rare-earth elements, including their applications in pharmacology and medicine.

Hardbound, 268 pages, ISBN 0-7923-4101-5, US\$ 130.

Handbook, 23rd Volume

The 23rd volume of the *Handbook on the Physics and Chemistry of Rare Earths* has appeared. The 664-page hard bound book features 6 chapters (153-158) covering advanced fields of research: (i) nuclear magnetic resonance, with lanthanide induced shifts and contrast agents for magnetic resonance imaging, (ii) Antenna effect in encapsulation complexes of lanthanide ions, (iii) Rationalization in crystal-field parameterization, (iv) Rare earth phosphides, (v) Rare earth metal-containing halides and (vi) Marine chemistry and geochemistry of the lanthanides.

Available through Elsevier Science customer services (US \$ 279) : *in America*, P.O. Box 945, New York, NY 10159-0945 (fax +1 212 633 3764; usinfof@elsevier.com), *in Europe*, P.O. Box 21, 1000 AE Amsterdam (fax +31 20 485 3432; nlinfof@elsevier.nl).

PEOPLE

Friedrich Hund (1896-1997)

Author of the Hund's rule, the well known German physicists died in Göttingen shortly after his 101st birthday.

ERES NEWSLETTER is your newsletter. Please send articles on any topic of interest to the f-element community.
Next deadline: March 31, 1998

CONFERENCES

ICFE-3, Paris

The Third International Conference on f-Elements was held in Paris, September 14-19. Co-chaired by Drs Pierre Porcher and Jean-Claude Krupa, it attracted 400 regular participants.

The Conference turned to be a real scientific success and a major 1997 event in the field of f-elements. We thank Pierre, Jean-Claude and their dedicated collaborators who made the stay in Paris scientifically stimulating and socially exciting.

AGENDA

Major events on f-elements

RARE EARTHS '98

October 25-30, 1998

*International Rare Earth Conference
New Technologies for the 21st Century*

Fremantle, Western Australia

Mr Dudley J. Kingsnorth

Materials Institute of Western
Australia

133 Salvado Road

WEMBLEY 6014, W.A.

☎ (+61 9) 387 9590 Fax 387 9639

E-mail: RE98@wantree.com.au

<http://www.miwa.org.au/IREC98/>

22ND RERC September 1999

Twenty-second Rare Earth Research Conference

Chicago area, USA.

Dr Lynda Soderholm

Argonne National Laboratory

Chemistry Division

Building 200.

9700 S. Cass Avenue

ARGONNE, Illinois 60439 6014

☎ (+1 630) 252 4364 Fax 252 9289

soderholm@anlchm.chm.anl.gov

4TH ICFE September 2000

Fourth International Conference on f-Elements.

Madrid, Spain.

Prof. Regino Saez-Puche

Dept. Quimica Inorganica
Universidad Complutense

E-28040 MADRID, Spain

☎ (+34 1) 549 1850 Fax 394 4352

Specialized meetings

13TH Radiochemical Conference April 19-24, 1998

Mariánské Lázně-Jáchymov

Dr Jan John

Department of Nuclear Chemistry

Czech Technical University

Fax (+42 2) 232 0861

radchem98@br.fjfi.cvut.cz

<http://www.fjfi.cvut.cz/~john/>

28^{EMES} JOURNEES DES ACTINIDES

May 14-16, 1998

Uppsala, Sweden.

Dr Olle Eriksson

Fysiska institutionen

S-75121 UPPSALA, Sweden

☎ (+46 18) 471 3621 Fax 471 3524

olle.eriksson@fysik.uu.se

<http://www.fysik4.fysik.uu.se>

FORUM ON RARE EARTHS

October 4, 1998

Beijing, China.

Prof. Yu Zongsen

The Chinese Society of rare Earths

Beijin 100081, P.R. China

Fax (+ 86 10) 62 18 10 18

ERES SPONSORS

RHONE-POULENC
Rare Earths & Gallium

TREIBACHER Auermet

K U L Leuven

I P N Orsay

ICMA Lausanne