The Geochemical News

Newsletter of The Geochemical Society

in cooperation with The European Association of Geochemistry

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Goldschmidt 2002 - Geochemistry at the Top of Europe

The Geochemical Society

The **Geochemical Society** is a nonprofit scientific society founded to encourage the application of chemistry to the solution of geological and cosmological problems. Membership is international and diverse in background, encompassing such fields as organic geochemistry, high- and low-temperature geochemistry, petrology, meteoritics, fluid-rock interaction, and isotope geochemistry. The Society produces a ***Special Publications Series***, ***The Geochemical News*** (this quarterly newsletter), the ***Reviews in Mineralogy and Geochemistry Series*** (jointly with the Mineralogical Society of America), the journal ***Geochimica et Cosmochimica Acta*** (jointly with the Meteoritical Society), and co-publishes the electronic journal ***G³*** (jointly with the American Geophysical Union: AGU); grants the ***V.M. Goldschmidt***, ***F.W. Clarke*** and ***Clair C. Patterson Awards***, and, jointly with the European Association of Geochemistry (EAG), the Geochemistry Fellows title; sponsors the V.M. Goldschmidt Conference, held in North America in odd years and elsewhere in even years, jointly with the EAG; and co-sponsors the Geological Society of America annual meeting and the AGU spring meeting. The Society honors our first President, F. Earl Ingerson, and our first Goldschmidt Medalist, Paul W. Gast, with the ***Ingerson*** and ***Gast Lectures***, held annually at the GSA Meeting and the V.M. Goldschmidt Conference, respectively. The Geochemical Society is affiliated with the American Association for the Advancement of Science and the International Union of Geological Sciences.

Members of the Organic Geochemistry Division are individuals with interests in studies on the origin, nature, geochemical significance, and behavior during diagenesis and catagenesis of naturally occurring organic substances in the Earth, and of extraterrestrial organic matter. GS members may choose to be affiliated with the OGD without any additional dues. The OGD presents the **Alfred E. Treibs Award** for major achievements in organic geochemistry, and **Best Paper** awards (student and professional) in organic geochemistry.

The Geochemical News
January 2003

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The 2003 Goldschmidt Conference —"Frontiers in Geochemistry"

Writing this letter at the half-way point in my 2-year term as President of the Geochemical Society gives me the opportunity to reflect on what transpired during the past year and project my thoughts towards events planned for the coming year. Of course, without a doubt, participation in the very successful Goldschmidt Conference held in Davos last August was the highlight of my first presidential year. To learn more about the Davos Conference, please see Alex Halliday's report with photographs published on pages 8 - 13 of this GN. Based on comments from many of the attendees, the annual Goldschmidt Conference has definitely become the most important event in the meeting calendar of the geochemical community. It is now time for us to turn our attention to the upcoming Goldschmidt Conference in Japan.

In my last letter for the October issue of the GN, my acknowledgements to the Swiss based organizers of the Davos meeting were mistakenly merged with their Japanese counterparts. See the correction under the Editor's Corner. As often happens with "cut & paste" errors, unexpected

combinations result. In this case, however, a smooth transition between the 2002 and 2003 Goldschmidt Conferences was achieved with a symbolic bridging from one organizing committee to the next. Indeed, the 13th Goldschmidt Conference to be held in Kurashiki, Japan, on September 7-12, 2003 represents a milestone for the international geochemical and cosmochemical communities, being the first co-sponsored meeting of the GS and EAG together with the Geochemical Society of Japan. And, it is the first Goldschmidt Conference to be organized outside of the USA or Europe. The theme of the Conference is "Frontiers in Geochemistry", which is, in my opinion, a fitting designation for where the field of geochemistry stands today.

The 13th Goldschmidt Conference will be held at Kurashiki-Sakuyo University located just outside the well-preserved, historical town of Kurashiki. I am sure you will agree that this venue will offer geochemists and cosmochemists an excellent opportunity to exchange ideas on a wide range of topics at the frontiers of geochemistry in a unique cultural setting. The Goldschmidt International Program Committee, which so successfully developed the scientific program for Davos, has already been hard at work producing a list of exciting topics for special sessions to engage your interest. The second circular is due out soon, while detailed information can be readily obtained from the Conference web site at www.ics-inc.co.jp/gold2003/. It is not too early to begin making your plans to attend, as well as spreading the word about the conference among your colleagues and friends.

Promotion of Geochemistry

The Goldschmidt Conference has proven to be an ideal vehicle to promote geochemistry on an international stage attracting geochemists from around the world. Focus on the field of geochemistry need not, however, be restricted to scientific interactions at our annual conference but should be promoted beyond our relatively small scientific community through exchange at other large gatherings of geoscientists. For example, the Geochemical Society sponsors special symposium at other meetings during the year, in particular the Annual GSA meeting and the Spring AGU meeting. If you have a symposium topic that you would like to see presented to a wider earth scientist audience, consider submitting your idea to Marty Goldhaber (mgold@usgs.gov), who is the current chair of the Program Committee. At the present, Marty, along with his fellow committee members, is putting together topics for special sessions for the Annual GSA meeting in Seattle in November 2003. Your input is most welcome. Also, remember that the Geochemical Society has begun a new Meetings Assistance Program, to which GS members can apply for up to $2,000 grants to help fund geochemically related meetings or GS sponsored symposia (see page 4).

Board of Directors

Each year, there is a rotation within the membership of the Board of Directors. As of 31 December 2002, Thure Cerling, University of Utah, and Albrecht W. Hoffman, Max Planck Institut fuer Chemie, have completed their terms as Directors. I would like to take this opportunity to sincerely thank Thure and Al for their service to our community and acknowledge their valuable contributions to the deliberations of the Board of Directors. The two new Directors elected to replace them, Harry Elderfield, Cambridge University, and Gil Hanson, SUNY-Stoney Brook, have joined the Board of Directors, as of 1 January 2003. See their profiles on page 6. Rebecca Lange, University of Michigan, has completed her first term as Treasurer, but, at the request of the Board members, she has agreed to serve a second term. As the job of Treasurer has a steep learning curve and requires a certain degree of continuity, Becky's acceptance of a second term is very much appreciated.

The incoming officers and directors elected to serve on the Board of Directors are nominated by the Nomination Committee, which performs a very important function in determining the leadership of the Geochemical Society. This is just one of several committees of the GS rendering essential functions for our community. Other committees include the Joint Publications and Program committees, as well as the Clarke, Goldschmidt, Patterson and Geochemical Fellows committees which afford one the opportunity to participate in the nomination of new awardees and fellows to be honored each year by the Society. Check the Geochemical Society web site at http://gs.wustl.edu to learn more about the activities of the various committees. If you would like to be more directly involved and did not tick the appropriate box on your membership application, please contact Seth Davis at the GS Business Office (gsoffice@gs.wustl.edu) and tell him to add your name to the list. Vice President Tim Drever will be contacting potential candidates in the near future to fill vacancies on all GS committees. He would appreciate knowing who is ready to serve. Be active and see what a difference your contribution can make! And, if you have not, as yet, renewed your membership for 2003, add this to your list of *must* things to do. And, while you are at it, encourage your colleagues to sign up, too. Being a member of GS is a real bargain for both professionals and students.

Wishing you a productive and fulfilling New Year 2003,

Judith A. McKenzie
GS President

COVER:

A view from near the Pischahorn (2980 m), near Davos, Switzerland. Photo credit: Johnson R. Haas.

EDITOR'S CORNER...

We have a full issue this time: Leading this edition of GN is a review of the highly successful - some say the most successful so far - 2002 V. M. Goldschmidt Conference, held in Davos, Switzerland. Accompanying Alex Halliday's summary of events at the meeting, we present a slideshow of memorable events from the meeting.

In addition to the Goldschmidt requiem, we also include in this issue another in our series of European Research Facilities reports, this one focused on isotope geochemistry at the University of Münster. We also present a brief history of GCA written by Denis Shaw. There's no room to tell you more. Enjoy!

Johnson R. Haas
Carla Koretsky
Editors

Announcing the Geochemical Society Meeting Assistance Program (GSMAP)

The Geochemical Society wishes to help support geochemically-oriented meetings. GS MAP has been created to this end. This program is divided into two parts:

Part I: This is a $10K award given each year from the Treasurer of the GS to the organizers of the Goldschmidt Conference that year. This award is automatic, that is, no application is required. The money is to be used exclusively for assistanceships to graduate students attending Goldschmidt Conferences. It is the responsibility of the conference organizers to distribute the money as they think best. However, it is also the responsibility of the organizers to report to the GS Treasurer how the money was distributed in a brief report after the meeting takes place.

Part II: This is a $10K sum per year that is to be used by GS members to financially support geochemistry sessions/symposia at any scientific conference of geochemical relevance. The following guidelines will be enforced:

1) Individual GS members who are symposia/session organizers can apply for such a MAP award.

2) Proposals should be between 1 and 2 pages in length and should describe the overall conference, the session(s) for which funds are required along with the session(s) speaker list, and exactly how the requested funds will be spent.

3) The amount requested cannot exceed $2,000 per proposal.

4) Only one proposal from the same individual or group can be submitted in a 12 month period.

5) Proposals are reviewed and awarded/rejected by the Program Committee of the Geochemical Society. Submission is made to the Chair of the Program Committee (see the GS website for the current chair by clicking on About the GS, then Governance, then GS Personnel). Although the proposals are judged primarily on merit and funds available, grants will be distributed as widely as possible across the broad range of disciplines and geographical areas represented by the GS, and also as evenly as possible throughout the calendar year.

6) There is no submission deadline, but it would be wise to submit a proposal as early as one can be put together. If the proposal is rejected because that year's funds have already been assigned, the organizers will still have time to seek funding elsewhere.

CORRECTION

The 'From the President' column in the last issue of GN (#113, October 2002) contained an error; missing text linking the first and second paragraphs of Judith McKenzie's letter may have left readers with the impression that Alex Halliday operates simultaneously in Switzerland and Japan. Although impressively accomplished, Alex cannot, to the editors' knowledge, bilocate. The Editors apologize for the misprint. The corrected portion of the President's letter is reproduced below.

The 2002 Goldschmidt Conference —"From Stars to Life"

Here in Switzerland, the euphoria produced by a highly successful Goldschmidt Conference is gradually fading in the golden light of autumn. With approximately 1800 participants, this Conference was undoubtedly the most well attended to date. The overall success of a conference, however, is not just in the number of participants but has much to do with the quality of presentations, the variety of themes and the possibilities for interaction. Davos received excellent marks in all of these categories. It was simply a "high" to be among so many geochemists, to hear the latest accomplishments in our diverse sub-fields, and to learn that established concepts are being re-evaluated and new ones are emerging. The publication of the abstracts as a special issue of"*Geochimica et Cosmochimica Acta* was an appreciated new initiative this year, providing the participants with a substantial volume containing 1750 abstracts in a solidly bound format. Details of the Conference highlights will appear in an upcoming issue of GN. Finally, I would like to take this opportunity to thank Alex Halliday and all of his co-organizers, especially Rainer Wieler and Valentina Müller-Weckerle, for a splendid Conference.

The 2003 Goldschmidt Conference —"Frontiers in Geochemistry"

And, now, let us turn our attention to preparations underway for the 13th Goldschmidt Conference to be held in Kurashiki, Japan, on September 7-12, 2003. This will be the first Goldschmidt Conference held in the western Pacific region and will be co-sponsored by the Geochemical Society of Japan.

Economic Geology, 1905 to 2005
100th Anniversary Call for Ideas

As part of the 100th anniversary celebration of the journal Economic Geology, the Society of Economic Geologists (SEG) is organizing several special publications:

- Special Anniversary Papers published in Economic Geology in 2005-06
- ore deposits as geological anomalies
- how ore deposits record the history of Earth, its processes and evolution
- reach out beyond the traditional bounds of economic geology to all related disciplines

- 100th Anniversary Volume: a reference textbook with three major sections
- ore-forming processes, ore-deposit descriptions and models, and regional metallogeny

- The Economics of Economic Geology: linked to the 2006 SEG Biennial meeting

The Organizing Committee encourages all interested earth scientists to suggest topics to be included in this undertaking, in particular for the Special Papers. Please send suggestions to:

Jeffrey W. Hedenquist, 100th Anniversary Editor
Geology and Geological Engineering, Colorado School of Mines
Golden CO 80401-1887 USA Email: jhedenqu@mines.edu

On behalf of the Organizing Committee:
Nic Beukes, Rand Afrikaans University; Larry Cathles, Cornell University; Rich Goldfarb, US Geological Survey; David Groves, University of Western Australia; Murray Hitzman, Colorado School of Mines; Susanne M. Kay, Cornell University; Steve Kesler, University of Michigan; James Macdonald, BHP-Billiton; Eric Marcoux, University of Orléans; Yukihiro Matsuhisa, Geological Survey of Japan; Gordon Southam, University of Western Ontario; Jeremy Richards, University of Alberta; François Robert, Barrick Australia; John Thompson, Teckcominco; Scott Wood, University of Idaho; Alexander Yakubchuk, British Natural History Museum

Geochemical Society Business Office News

- The 2002 year ended with a membership of 1,902 (up over 20% from 1,571 in 2001). The sudden boost of membership was due to the many Davos Goldschmidt Conference registrants taking advantage of the membership discount by applying for membership with their registration.

- For those that subscribe to GCA through membership with the Geochemical Society or the Meteoritical Society, you will again be receiving free on-line access to GCA via Elsevier's Science Direct. Access is good for one year and must be renewed each year. If you have lost or not received your login information, please contact the business office.

- GCA back issue requests continue to be a challenge. For those that have not received their back issues yet, I appreciate your patience as I continue to work with Elsevier to get a working system that will get your issues to you. Always let me know as soon as you can if you are missing an issue. Processing for back issue requests can take more than 12 weeks, so the sooner I know about it, the sooner you can get your issues. Also, when you receive your requested back issues, please let me know because I will be monitoring Elsevier's progress.

- Geochemical News back issue requests are much easier to handle since I keep the over-prints in my office. The January 2002 issue is out of print, but if you have missed any other issue of GN in 2002, send me a request and I will fill it as long as I have issues available.

- January 1, 2003, marks a change in the pricing system for Special Publications. All GS, EAG and MSA members now qualify for the 25% discount on *all* Special Publications volumes. In the past, shipping costs were included in the price. This has been separated to better reflect the actual cost of shipping. If you have questions about pricing, please contact the business office.

- I will be running Geochemical Society exhibits at two conventions this year. The 13th V.M. Goldschmidt Conference in Kurashiki, Japan from September 7-12 (see http://www.ics-inc.co.jp/gold2003/ for circulars and registration information), and the Geological Society of America 2003 Annual Meeting in Seattle, Washington, USA (see http://www.geosociety.org/meetings/index.htm for circulars and registration information). If you will be going, please come by and check out the exhibit.

- And one final note, I will be working with Bob Nichols (GS Webmaster) on making the website a more useful tool. At the forefront of this will be adding on-line membership, and special publication order processing. If you have comments or suggestions regarding the website, please sent them to me.

Cheers,

Seth Davis
Geochemical Society Business Manager

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European Association of Geochemistry
2003 Awards Nominations - H.C. UREY AWARD

The H.C. Urey Award is given annually by the European Association of geochemistry and is intended to honour established scientists for outstanding research contributions to any field of geochemistry. The award is based solely on scientific merit without regard to nationality, and will normally be presented at the V.M. Goldschmidt Conference. Nominations for the H.C. Urey Award should be accompanied by a brief statement from the nominator outlining the reason for the nomination and should include an abbreviated curriculum vitae and bibliography of the proposed candidate, as well as several letters of support.

Recent Recipients: R.N. Clayton, S. Epstein and H.P. Taylor (1995), G. Eglington and J. Hayes (1997), J-G. Schilling (1998), J. Edmond (1999), D.J. DePaolo (2000), R.K. O'Nions (2001), G. Turner (2002)

Nominations for the 2003 H.C. Urey Award should be submitted before 1 April 2003 to:

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School of Earth Sciences
University of Leeds
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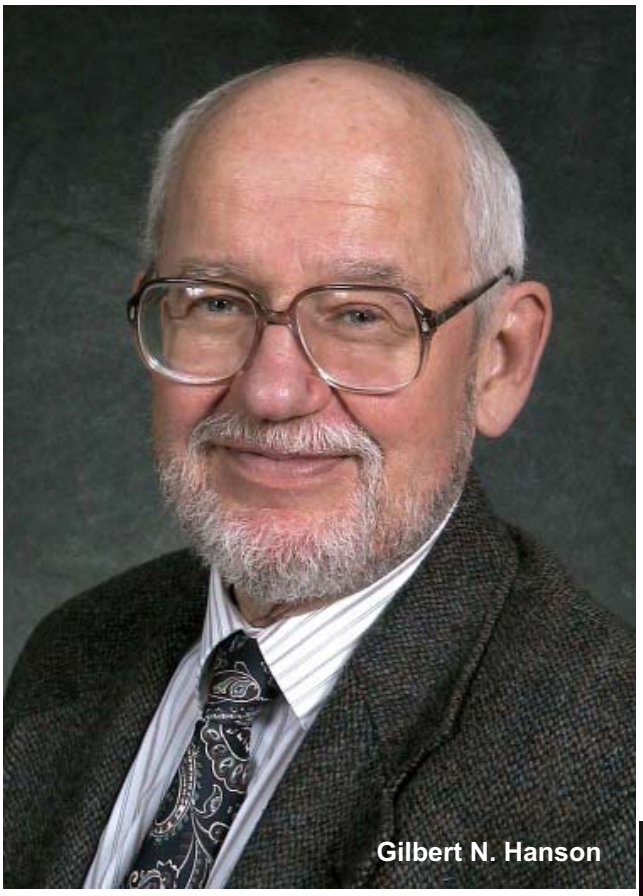
Tel: +44 113 3435227
Fax: +44 113 3435259
e-mail: bruce@earth.leeds.ac.uk



Gilbert N. Hanson

Meet Your New GS Directors

Gilbert N. Hanson's present research interests in geochemistry and isotope geology are:

(1) the development of geochronological approaches for the dating the time of formation of syn-sedimentary minerals and the development and evaluation of procedures for determining the provenance of clastic sediments primarily loess; and

(2) the application of major and trace element and isotope systems to groundwater, soil and environmental systems particularly those relating to the geology of Long Island.

Harry Elderfield's research is in the area of ocean geochemistry and palaeochemistry. The oceanic record is central to monitoring and interpreting past climate change.

Because the oceans are such a large carbon reservoir, fluctuations in atmospheric CO2, and hence global temperature, are intimately linked to ocean composition. At present, the oceans are slave to atmospheric CO2 but in the past the atmosphere was slave to the oceans. The factors which control past ocean chemistry are complex and multi-proxy methods are the key to understanding them.

He works principally using trace metal and isotope chemistry of biogenic carbonate as palaeochemical tracers, especially studies of the modern and glacial oceans and Cenozoic ocean chemistry. For this work Harry was recipient of the Geochemical Society's Clair C. Patterson Award for 2002.

Harry Elderfield and Oxford graduate student Laura Robinson on board RRS Charles Darwin in 2001 sampling a box core from the SW Indian Ocean sea floor

In Memoriam Wim van Raaphorst (1955 - 2002)

On November 6, while biking home in rain and darkness after work at the Royal Netherlands Institue of Sea Research (NIOZ) on the island of Texel, Wim van Raaphorst was hit by a car and died shortly afterwards in the hospital in Den Helder. He left behind his wife Mieke and their children Guus, Renske and Elske.

Dr. Ir. Wim van Raaphorst was born at October 20, 1955 in Culemborg, the Netherlands. He attended high school (Atheneum-ß)in Almelo and there he met his future wife Mieke Plettenburg. After highschool Wim went to Delft University and specialised in sanitary and water quality engineering. As a PhD-student he worked at the University of Twente in Enschede where he graduated on a thesis on phosphorus cycling in the shallow Lake Veluwe. The project was carried out together with his lifetime friend Bert Brinkman.

Since 1986 Wim worked at NIOZ on Texel. He participated initially in a research project on the ecology of the North Sea (EON), and later became a member of the department of Marine Chemistry, since 1989 the department of Marine Chemistry and Geology (MCG).

Wim's earliest publications concerned fresh water studies and after his transfer to NIOZ his basic interests continued to be sediment geochemistry, sediment-water exchange processes, and sediment resuspension mechanisms, now in marine sediments from Wadden- and North Sea. In cooperation with Dutch and foreign colleagues, he was involved in the construction of nutrient budgets for North Sea and Wadden Sea.

Wim and I have been colleagues at NIOZ since 1986 and we gradually developed the habit of discussing our research topics intensively. More and more I learnt how this modest man was able to express his scientific views eloquently, concise and with deep insight. I learned a lot from him. We started to cooperate in the guidance of PhD students and post-docs and spent together with them many hours discussing results and formulating manuscripts. Wim was well-beloved by his students who knew that he gave his best to stimulate them in their scientific development and many of them are now successfully executing scientific careers on their own. Also internationally his expertise was well known from more than 60 publications in refereed journals and from his participation in groups such as, for example, SCOR working group nr.114 on transport and reaction in permeable sediments, a subject that he also studied in North Sea sediments.

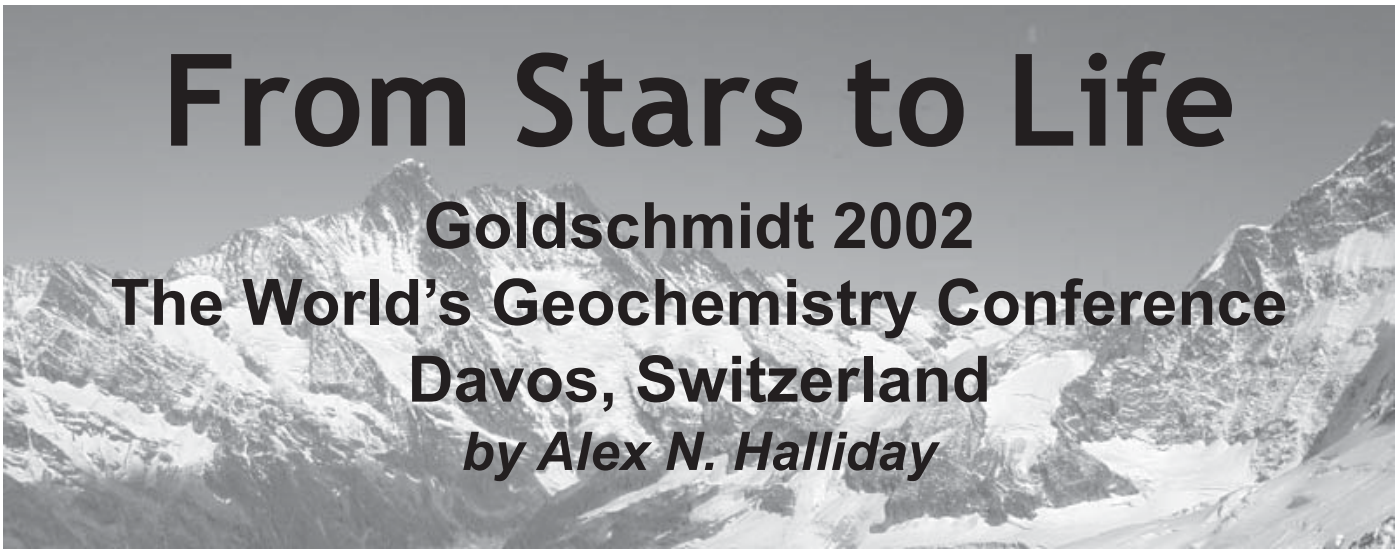
From the above it is evident that Wim was not a solitary scientist who restricted himself to his own direct interests, something that is further demonstrated by his very effective job as editor for the *Journal of Sea Research* and the NIOZ Annual Reports.

In 2002 Wim was appointed as the head of the MCG department, undoubtedly on account of his broad knowledge and overview of marine science but also of his pleasant and communicative character that made him an excellent department head in times that are not always easy for the department and for NIOZ as a whole. He was full of ideas for the future structure of his group consisting of chemists, biologists, geologists, research technicians, students and PhD's and involved them all intensively in his considerations.

Wim's interests in NIOZ were not only of scientific nature or restricted to his own department. He was a sociable person who had many contacts throughout the institute and participated fullheartedly in NIOZ sport teams in volleyball and soccer. These activities and his human interest made him an appreciated consultant for many NIOZ employees.

Thus not only for his family but also for his NIOZ colleagues Wim's death is a terrible blow from which it will be difficult to recover.

Willem Helder.



From Stars to Life

Goldschmidt 2002
The World's Geochemistry Conference
Davos, Switzerland

by Alex N. Halliday

The 2002 Goldschmidt Conference, judged by many to have been the best yet, was held from the 18th to the 23rd of August in Davos, Switzerland. The conveners of this meeting were Alex Halliday (ETH Zürich), Jan Kramers (Univerity of Bern) and Rainer Wieler (ETH Zürich). Davos was a great location for this meeting and is very modestly priced in the summer. It is one of Europe's largest mountain resorts, set in the midst of spectacular scenery, geology and glacial features. Davos is easily accessible by train or car from Zürich. It is a sports paradise, with hiking, golfing, mountain biking, horse riding and much more. Cultural attractions include an excellent Museum with works of the famous Expressionist painter Ernst Ludwig Kirchner who painted the original of the backdrop for the poster for the Conference. The meeting was held in the Davos conference center – a venue that can handle up to 2000 attendees and which is where the World Economic Forum is held almost every year.

"The Davos Goldschmidt" as it already has come to be labelled, was designed as a meeting for everybody concerned with, and interested in, the science of geochemistry. The organizers considered that it was particularly important that this meeting become the place to announce to all geochemists, plus others, the fascinating new discoveries that are being made by harnessing the power of sophisticated new geochemical tools, the behavior of key elements and the rapidly expanding fields of biogeochemistry and isotope geochemistry. Although many other conferences are important, getting together just once a year with the world's geochemists clearly is something that is essential for interaction with the overall field. The goal was to facilitate this and allow scientists to familiarize themselves with much that is happening in other areas of geochemistry at the same time as meeting with colleagues in their own specialty.

Apart from this aspect, this year's Davos Goldschmidt was of special significance for several other reasons, many of which represented a "first":

- This meeting was, for the first time, organized by the geochemists of Switzerland, the birthplace of Victor Moritz Goldschmidt. In fact, Switzerland has long held a prominent place in geochemistry. It was the Swiss chemist Schönbein who first used the term "geochemistry" in 1888, the same year that Victor Moritz Goldschmidt was born in Zurich. Of course Switzerland has, over the years, had a terrific impact in geochemistry with giants like the late Oeschger and Stumm.

- For the first time the meeting incorporated the quadrennial International Conference of Geochronology, Cosmochronology and Isotope Geochemistry (ICOG).

- Davos was the largest geochemistry conference ever held by a long mark with 1750 submitted abstracts, and 1800 attendees - double that of any previous Goldschmidt Conference.

- The conference deliberately attempted to tackle in a reasonably comprehensive fashion the gamut of geochemistry "from Stars to Life". A wide range of special sessions covered subjects as diverse as pre-solar grains, ICPMS, crustal fluids, erosion, biomarkers, atmosphere formation and development, high pressure mineral physics and experimental petrology, biogeochemistry, accretion of planets, life in extreme environments, noble gases in groundwaters and lakes, neotectonics, ore deposits, the origin and development of life, ocean circulation, extra-solar planets, arc magmatism, the impact of climate on anthropological development, fission tracks, biomineralization, advances in mass spectrometry, core formation, climate change, the solar nebula, pollution, GERM and the bulk composition of the Earth, isotopic tracing in archeology and laser microsampling.

- To achieve this, the organizers established, for the first time, a 100 strong International Program Committee, which did an outstanding job of proposing excellent special sessions and chairs. The response to this idea has been very positive. There is a strong sentiment in the community for making Goldschmidt a bigger success. The community wants and expects better-planned sessions with some continuity and strategic changes from year to year and does not want to leave this solely to local organizers. Clearly "out there" the

view is widely held that this meeting is becoming extremely important to everybody, they take the future of the meeting seriously and want to share in the responsibility.

• For several years the Goldschmidt Conference has been sponsored jointly by the European Association of Geochemistry and the Geochemical Society. This year was no exception but the meeting also was supported to a lesser degree by a broad array of other scientific organizations spanning the spectrum of geochemistry from that represented by the European Association of Organic Geochemistry to that of the Mineralogical Society of America. Mass spectrometry companies notably Nu Instruments and Finnigan, as well as the new airline Swiss, together with Elsevier and *Science* magazine played major roles. ETH Zürich contributed hugely.

• The abstracts were, for the first time, published by Elsevier *in Geochimica et Cosmochimica Acta*, the world's most prestigious geochemistry journal. The abstract volume looked great and was the outcome of considerable effort by Paul Beattie (Cambridge Publications), Friso Veestra (Elsevier) and Frank Podosek (for GCA).

The Swiss Program Committee divided up the science into 13 themes, each of which needed an international team of experts. Two chairs headed each of these teams or Task Groups. We picked these chairs, who then, with no hesitation, all agreed to serve. The chairs picked their Task Groups with a bit of input from the Swiss. This 100 strong IPC then proposed special sessions (about 80 of them) and their potential chairs, as well as ideas for keynote speakers. The Swiss Program Committee then merged many of these because there were inevitably many overlaps, and finally came up with about 50 – our target for the meeting. We then contacted the session chairs (more than 100) nearly all of whom also agreed to serve and they in turn invited an excellent slate of keynote and invited speakers. This structured and organized sharing of responsibility worked well.

The meeting ran with 10 parallel lecture sessions plus posters. A good-sized exhibition area was available for commercial companies and other organizations. The only plenary session was an entire morning devoted to recognizing the accomplishments of GS and EAG medallists, fellows and plenary lecturers. These included the Clark Medallist - Ruth Blake, the GS Distinguished Service Awardee - Dennis Shaw, the Patterson Medallist - Harry Elderfield, the Urey Medallist - Grenville Turner, the Goldschmidt Medallist – John Hayes and the Gast Lecturer – Patricia Dove. For the first time there was an EAG Presidential Address (given by Francis Albarède).

The meeting also hosted a banquet with about 700 people and had a Swiss alpine evening for 400 situated a cable car ride up a nearby peak. There were in addition an ice breaker party sponsored by Nu Instruments, poster sessions with wine and beer sponsored by Science and Elsevier and an apero sponsored by the City of Davos, together with other smaller parties that ranged from well organized to other kinds…

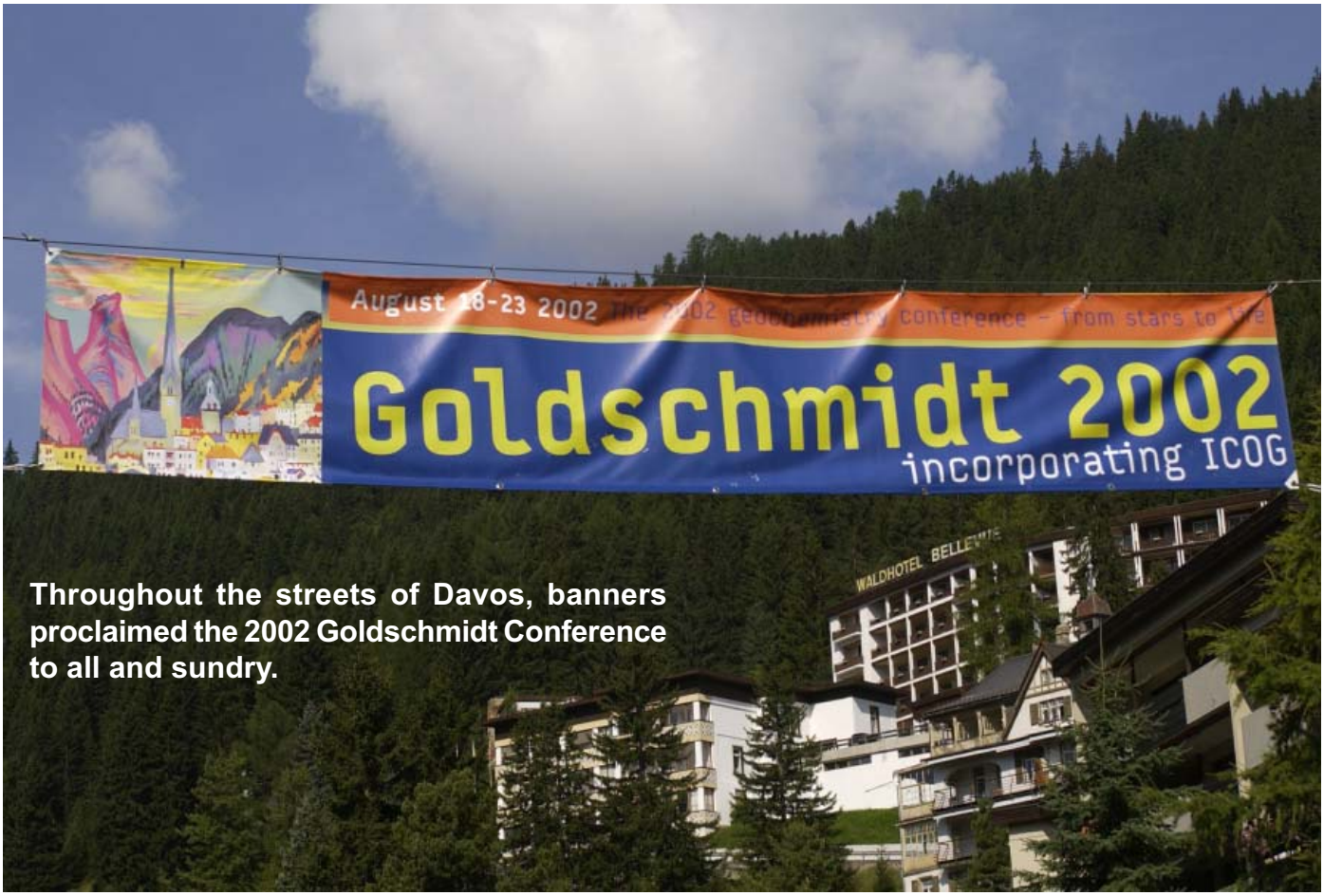
This meeting also had field trips organized by Jan Kramers and members of the Swiss Organizing Committee. These included trips to the Adamello Massif, the Ivrea Zone tilted crust/mantle transition, classic Alpine tectonics and metamorphism, the effects of erosion and loading of sedimentary basins and Alpine glacial climatic features.

Although this was a team effort, certain players had to invest more effort than others. At the top of this list were Rainer Wieler, Valentina Mueller-Weckerle at ETH and Paul Beattie and his team from Cambridge Publications who did an incredible job under severe time constraints. Jan Kramers and I had a lot to do but we did not match their efforts. But it was not just this small group of core organizers; the Organizing Committee comprised more than 30 willing and enthusiastic scientists from across Switzerland.

One has to say a bit more about the background and logisitical support. The Lunar and Planetary Institute really wanted to help us with Goldschmidt but were prevented from doing so and pulled out at the last minute just when we were about to produce the first circular. We turned to a number of people and organizations for help and advice including ETH, the American Geophysical Union, Elsevier, the organizers of the Virginia Goldschmidt and the Boards of the Geochemical Society and the European Association of Geochemistry. Judy McKenzie, Mike Hochella and Bob Bodnar in particular, provided lots of useful tips and advice. Cambridge Publications proved themselves to be outstanding partners who worked very hard to give us the kind of abstract submission procedures, deadlines, program organization and web pages that we wanted. On the ground one should have noticed countless others as well. In particular, a large team of students, technical personnel, secretarial staff and postdoctoral scientists from across Switzerland ran the registration booths, provided security, and did all of the audiovisual support (under the direction of Martin Frank). This was a LOT of work. Finally, Davos Tourism were fantastically helpful and a pleasure to work with.

In closing I have to say also that without the help of the International Program Committee (IPC) this meeting would not have been anything like as successful. Goldschmidt is no longer a conference that belongs solely to local organizers. It has become too big for that and the entire geochemistry community worldwide has a vested interest in using it as an effective vehicle for meeting and presenting research. Fortunately geochemistry is booming in Switzerland and there are lots of talented people here. Nevertheless it always was clear that the program had to be defined with input from a broader cross section of scientists. This had the added bonus that the whole world felt "involved". This is as it should be; Goldschmidt is a meeting for everybody in geochemistry. Long may it continue. See you in Japan next year.

ETH Zürich 18th December 2002



Throughout the streets of Davos, banners proclaimed the 2002 Goldschmidt Conference to all and sundry.

Expert Swiss service at the Goldschmidt evening Awards Banquet.

A panorama of the central atrium at the Davos Conference Center, a world-class conventioneering venue.

No party in Davos would be complete without the tonal accompaniment of Alpenhorns.

Save room for rüsti. Goldschmidt attendees enjoying Swiss hors divers at the ice-breaker party.

EAG Presidental lecture given by Francis Albarede.

Ruth Blake (right) receives the Clarke Medal from GS President Judith McKenzie (left).

The mayor of Davos (left) toasts the success of Goldschmidt 2002.

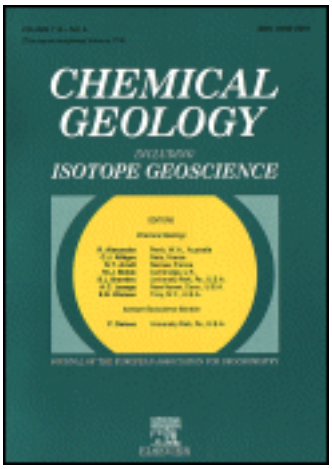
Goldschmidt attendees peruse new publications on display.

CHEMICAL GEOLOGY
Year 2001-2002 report for EAG

Dear fellow geochemists,

It is our pleasure to provide this report of the state of *Chemical Geology*, the journal of the European Association for Geochemistry.

Over the past two years we have had a significant change in our editorial staff. Long-term editors, Peter Deines of Penn State University and Claude Allègre of Université of Paris remain as editors. They were joined by Roberta Rudnick of the University of Maryland and Eric Oelkers of the Université Paul Sabatier during the 2000/1 academic year, and by Steven Goldstein of Lamont-Doherty Laboratory, and Lynn Walter of the University of Michigan during 2001/2 academic year.



Manuscript submissions continue to be dominated by European scientists. Roughly 55 percent of submissions originate from European laboratories, compared to 25 percent from the United States and 20 percent from the rest of the world. *Chemical Geology* continues to publish a mix of submitted manuscripts and special issues in areas of current geochemical interest.

One of the major goals of the editorial staff is to improve the quality and publication speed of *Chemical Geology*. We are happy to report that significant progress has already been made in these two areas.

- The impact factor of *Chemical Geology* has improved dramatically from 1.824 for the year 2000 to 2.532 for the year 2001 (which is the most recent figure). This latter figure compares well with those of other geochemistry journals including *Geochimica et Cosmochimica Acta*, which has a 2001 impact factor of 2.700 and *Earth and Planetary Science Letters*, which has a 2001 impact factor of 2.614.

- The slow publication speed of *Chemical Geology* has caused particular concern. The average publication time during the year 2000 had ballooned to 80 weeks between submission and publication. This time has shrunk to 48 weeks for manuscripts published during the year 2002, with an average of less than 19 weeks between acceptance and publication.

Some of this improvement is due to stricter acceptance criteria imposed by the editorial staff. The acceptance rate of *Chemical Geology* manuscripts has shrunk from 65 to 52 percent from 2000 to 2002. This higher rejection rate is due to efforts to accept only those papers that have significant general interest. Manuscripts that are only, or for the most part, of local/regional interest are being redirected to regional or more specialized journals.

Another factor leading to the improved impact factor of *Chemical Geology* is that it is now more accessible than ever through the web via SCIENCE DIRECT. This exciting and successful service gives scientists throughout the world access to *Chemical Geology* on their personal computers. This service has been incredibly successful. During the 12 months ending in July 2002, *Chemical Geology* articles have been downloaded close to 70,000 times. Our thumbnail calculations suggest that this leads to an average of 50 downloads this year per *Chemical Geology* article available in SCIENCE DIRECT!

We anticipate that with a stricter acceptance criteria and your support that we will be able to continue to improve *Chemical Geology* in terms of both its scientific quality and publication speed.

Your Faithfully,

Claude J. Allègre and Christa Göpel, Paris, FRANCE
Peter Deines, University Park PA, USA
Steven L. Goldstein, Palisades NY, USA
Eric H. Oelkers, Toulouse, FRANCE.
Roberta L. Rudnick, College Park, USA
Lynn M. Walter, Ann Arbor MI, USA

European Research Facilities
Isotope Geochemistry
at ZLG Münster, Germany

Introduction

The isotope laboratory at the University of Münster was established in 1979 in the Institute for Mineralogy as a joint facility funded by state of Northrhine-Westphalia and the German Research Foundation (DFG). The driving force behind this unusual joint venture was a strong need for a German facility that would allow earth scientists and others to obtain key geochronologic data needed for their research projects, hence the name Zentrallaboratorium für Geochronologie (ZLG, Central Laboratory for Geochronology). Though isotope systems had already been used for quite some time to obtain age information for geologic materials, German universities at the time were severely lagging behind in this area and most earth science departments could not afford to maintain and staff such a laboratory. The DFG supported the lab until it became an official part of the University of Münster in 2000.

ZLG was established to function in part as a service facility for the community at large and thus numerous guest scientists and graduate students have visited the lab to obtain isotope data for their own research. This guest program has proven to be extremely successful and over time our staff became well experienced in assisting visitors who now come regularly from all over the world to generate high quality isotope data. Most visitors spend about 6 months learning the techniques, processing their samples, and discussing their results with staff members. ZLG also offers a two-week introductory course annually to teach modern isotope geochemistry and laboratory methods as a preparation for the planned projects. In ZLG's early years, geochronologic applications were our major research focus. Over time, however, our research scope has expanded to include the application of isotopes and high precision trace element analyses to trace geologic and planetary processes. We have even opened our doors to the burgeoning field of isotope Archeology. Nevertheless, we are still true to our roots and maintain several active research projects based on state-of-the-art geochronology. ZLG has two permanent and two temporary scientific staff members and two technicians. All scientific staff members are part of the regular university faculty and teach earth sciences courses at all levels.

The ZLG facility is fully equipped to produce rock powders and mineral separates from almost any geologic or meteoritic materials. A clean lab enables the separation of all the elements of interest from their matrix with minimal contamination. The lab also houses three mass spectrometers whose capabilities span a wide array of applications. Our oldest instrument is a Teledyne SS1290 (a.k.a. NBS-type 12-inch mass spectrometer) with a single faraday cup. This machine is ideally suited to run small samples where maximum sensitivity and transmission are required. Our main Sr-Sm-Nd-U-Pb workhorse is a VG (Micromass) Sector54 TIMS equipped with 9 Faraday cups and an ion counter. For applications involving difficult-to-ionize elements (e.g., HFSE) or where external mass bias corrections are required (e.g., Lu), we have a multicollector ICP-MS (Micromass Isoprobe) equipped with 9 Faraday cups, 4 channeltrons, and an ion counter. Our diverse array of mass spectrometers allows the analysis of almost any isotope system that is used to solve geologic problems.

Currently the most widely used techniques in the lab include analysis of the following isotope systems: Rb-Sr, Sm-Nd, Lu-Hf, Hf-W, U-Pb, and common Pb. High precision elemental concentrations are measured by isotope dilution and include the high field strength elements Zr, Hf, Nb, Ta, and the platinum group elements Ir, Pt, Pd and Ru. The high sensitivity and low blanks of our methods enable the analysis of depleted mantle samples for HFSEs and basalts for PGEs to a precision of at least 1-4% depending on the element (Münker et al. 2001a, Weyer et al. 2002).

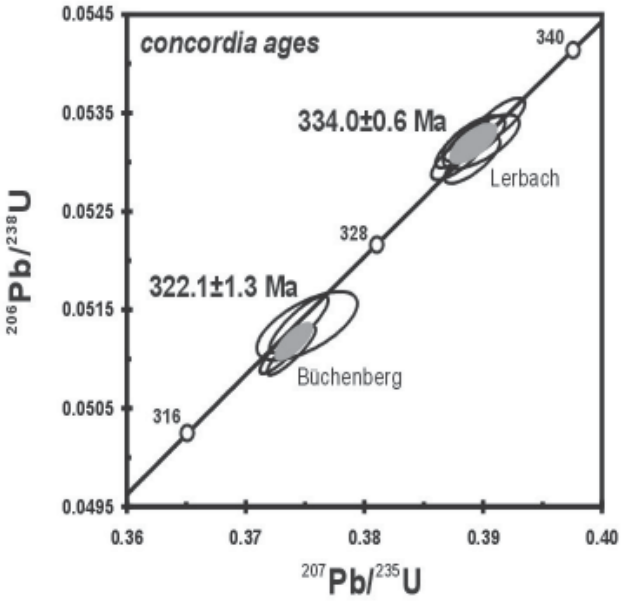


Figure 1: Precise single zircon ages for two different volcanic ash layer of the Dinantian (Lower Carboniferous).

The field areas of many Geologists-turned-Geochemists have unfortunately been reduced to cardboard boxes that periodically arrive in the mail. To keep our feet on the ground and to connect geochemical data with the geology, ZLG members frequently escape the acid fumes and the glow of fluorescent lights to get outside and do field work. Active field campaigns are being conducted by ZLG and collaborating scientists in the Solomon Islands, Zambia, South Africa, India, Syria, New Zealand, Poland, Switzerland, Oman, and Greece.

Research topics:

High Precision Geochronology
(Contacts: Michael Bröcker, Klaus Mezger, Erik Scherer, Endres Trapp)

A longstanding expertise has been developed at the ZLG to date events and processes in metamorphic and igneous terranes. The most widely used techniques include U-Pb dating of zircons, monazites, and sphenes, Rb-Sr dating of micas, and Sm-Nd dating of garnet. A new expansion has been the application of the Lu-Hf system to date eclogites and other garnet-bearing assemblages. The main focus of the metamorphic studies is centered on high-pressure rocks of the blueschist and eclogite facies. Recently we miniaturized our U-Pb zircon technique to make it possible to analyze single zircons from volcanic ash layers. Through a combination of low analytical blanks, a ^{205}Pb tracer, and refined sample preparation procedures, ZLG has developed the capability to analyze very small amounts (<10mg) of Paleozoic zircon containing as little as 30 pg of radiogenic Pb at precisions of 0.1% and 0.3% for the Pb ratios and U/Pb, respectively. This advance opened up the possibility to make major improvements in the calibration of the geologic timescale by the precise dating of biostratigraphically calibrated volcanic ashes. In the younger Paleozoic (Devonian, Carboniferous, Permian), most of our present knowledge concerning the duration of changes in the geological record depends on interpolation between relatively few ages that were determined with different isotope systems and various analytical methods. Only a few of these ages are precise and biostratigraphically well controlled. On the basis of such ages, which vastly differ in quality, comparatively imprecise and flawed timescales have been constructed. High initial parent/daughter element ratios and a unique dual decay

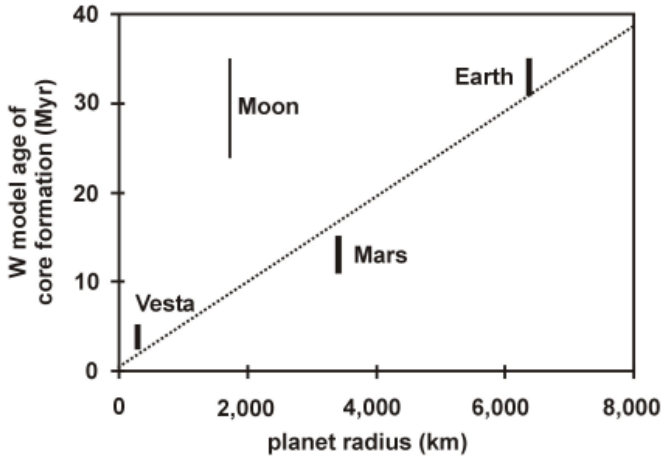


Figure 2: Age vs. size of planets as constrained by Hf-W chronometry.

scheme make U-Pb zircon ages more precise and reliable than most other dating methods, and thus they are inherently superior for timescale calibration. The aims of the present collaborative projects between ZLG and various national and international colleagues are two-fold: (1) To increase the isotope database for this period by precise U-Pb single zircon ages of biostratigraphically well calibrated volcanic ash layers and (2) to combine these new ages with time-relevant geological indicators in order to derive a revised and more detailed numerical timescale for the younger Paleozoic (Trapp et al. 2003). The precise U-Pb ages (e.g., fig. 1.) provide an overall framework, whereas the geological time indicators are used as controls on the substage and zone levels. Continued application of U-Pb geochronology to biostratigraphically well-correlated primary volcaniclastic rocks promises to establish a timescale for the Paleozoic that approaches the precision and accuracy of the Mesozoic and Cenozoic scales.

The field of Lu-Hf chronology has recently blossomed due to the advent of the MC-ICP-MS. This instrument easily ionizes Hf, allowing high precision measurements of Hf isotope ratios for small amounts of sample (e.g., 50 mg of hand-picked garnet) that simply were not possible to analyze with TIMS. Initially, high-precision Lu-Hf geochronology methods were developed at ZLG for the specific purpose of dating the garnet that forms during metamorphic reactions such as the subduction-related transition of basalt to eclogite. Though Sm-Nd has been the chronometer of choice for this application, Lu-Hf can provide better age resolution for younger rocks and is less sensitive to certain types of accessory phase inclusions than Sm-Nd (Scherer et al., 2000). Furthermore, the closure temperature of Lu-Hf in eclogites, garnet pyroxenites, and granulites seems to be higher than that of Sm-Nd, so Lu-Hf garnet ages have the potential to further define the high-temperature end of metamorphic temperature-time paths (Scherer et al., 2000, Scherer et al., 2002). In addition to garnet geochronology, other current ZLG projects based on Lu-Hf geochronology involve dating apatites, biogenic phosphates, and meteorites.

High-precision Lu-Hf geochronology by MC-ICP-MS requires reasonably good purification of Hf for a wide range of sample matrices (e.g., whole rocks, garnets, apatites). Ti-removal seems to be especially important for accurate and precise Hf isotope composition measurements (e.g., Münker et al 2001a). Traditional chemistry methods for Lu-Hf separations were not only tedious, involving the use of up to four ion exchange columns, but their Hf yields were often low, especially for ultramafic rocks, clinopyroxene, and some garnets. We have developed a single-column method to isolate Hf and HREE for analysis by MC-ICP-MS that produces consistently high yields for a wide array of sample matrices and drastically reduces the sample preparation time (Münker et al., 2001a). After doping the HREE cut with Re (for an external mass bias correction), it can be analyzed directly for Lu concentration by ID-MC-ICPMS without further purification, resulting in external precisions on the Lu/Hf ratio of ca. 1%. This precision is usually sufficient for calculating the initial Hf isotope compositions of low Lu/Hf rocks and zircons. For more demanding applications, such as constructing Lu-Hf meteorite isochrons, we add an additional chemistry step to remove Yb, which otherwise gives a large isobaric interference on mass 176 (Scherer et al., 1999). This step improves the external precision of Lu/Hf ratios to better than 0.2%.

Early planetary and solar system Evolution

(Contacts: Carsten Münker, Thorsten Kleine, Klaus Mezger, Erik Scherer)

Key issues regarding early planetary evolution are the timing of (1) metal core formation, (2) the earliest silicate differentiation, and (3) the formation

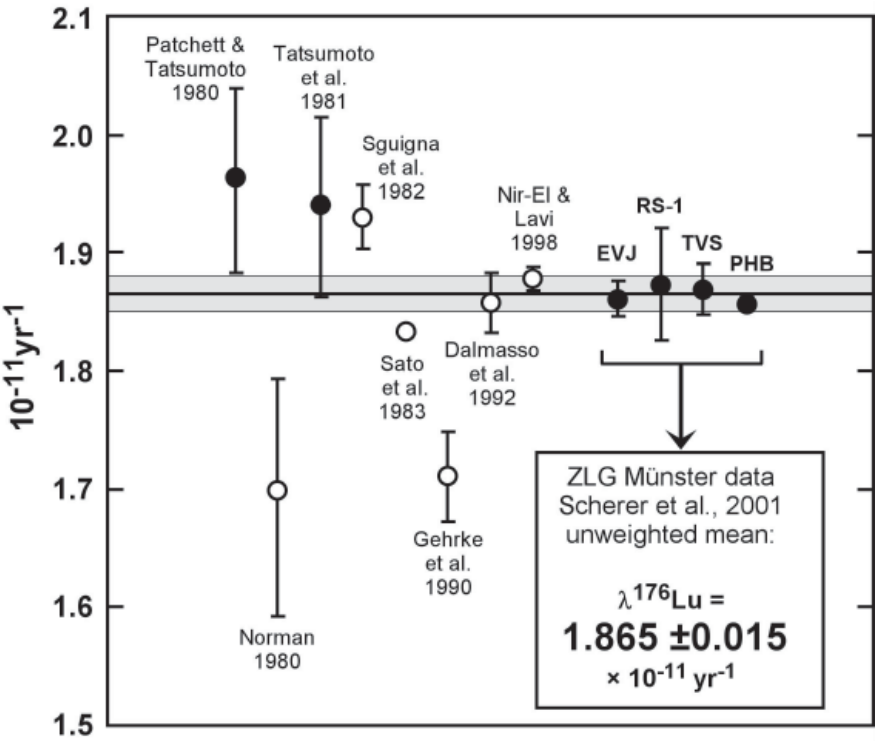


Fig. 3: λ^{176}Lu determinations since 1980. Filled circles = age-comparison data; open circles = decay-counting experiments. Samples: EVJ = Evje, RS-1 = Hudson Highlands, TVS = Tvedestrand, PHB = Phalaborwa. For age comparisons, λ^{176}Lu = ln(m+1)/t, where m is the slope of the Lu-Hf isochron and t is the U-Pb age of the sample in years. The gray bar represents 2 s.d. about the unweighted mean of the four independent determinations from this study. Published age-comparison data for eucrites (Patchett and Tatsumoto 1980, Tatsumoto et al., 1981) and unpublished data for eucrites and chondrites (Copenhagen, Lyon, and ZLG Münster, data not shown) yield systematically higher λ^{176}Lu values than the most recent counting experiments and age comparisons of the four terrestrial samples, giving an average of ca. 1.95 x 10^{-11} yr^{-1}. The cause of the discrepancy is not yet known, but must be solved in order to calculate accurate initial ε_{Hf} values for Archean and Hadean rocks and zircons.

of the first persistent crust. A major research focus at ZLG is the application of the ^{182}Hf-^{182}W, ^{92}Nb-^{92}Zr and ^{176}Lu-^{176}Hf chronometers to questions related to early planetary evolution. Using these chronometers, we are able to deduce timescales for the formation of planetary bodies and in particular for Earth's accretion, core formation, and earliest crust formation. Furthermore, we can put new time constraints on the origin of the Moon.

New determinations of the chondritic W isotope composition and the initial abundance of the extinct nuclide ^{182}Hf at the start of the solar system (Kleine et al., 2002) provided revised time constraints for the accretion of planetary bodies and of metallic core formation within them. Formation of Earth's core occurred at least ~ 30 million years (Myr) earlier than previously assumed and now can be dated at 4.533 Ga. Likewise, Mars and Vesta also accreted more rapidly than previously thought and their revised core formation ages are 13 (Mars) and ~3 Myr (Vesta) after the start of the solar system. Remarkably, the time of core formation correlates with a planet's size, indicating that the larger planets accreted over a longer time interval (fig. 2). The Moon does not fit this simple linear relationship, strongly suggesting that it formed by a different process than the one that produced the other planets. This process is generally assumed to be a collision of a Mars-sized impactor with the proto-Earth. Using the revised Hf-W parameters, the age of the Moon can now be constrained to ~30 Myr after the start of the solar system, which is significantly older than previously suggested (Kleine et al., 2002).

The earliest differentiation processes in the silicate Earth can be constrained by the ^{92}Nb-^{92}Zr and ^{176}Lu-^{176}Hf isotope systems. Based on determinations in CAIs, chondrites, and meteoritic zircons, the initial ^{92}Nb/^{93}Nb of the solar system could be constrained to (1.0±0.8) x 10^{-3}. Using this value, the absence of ^{92}Zr anomalies on Earth relative to chondrites indicates there are no vestiges for differentiation of the silicate Earth earlier than 50 Myrafter the start of the solar system (Münker et al., 2000).

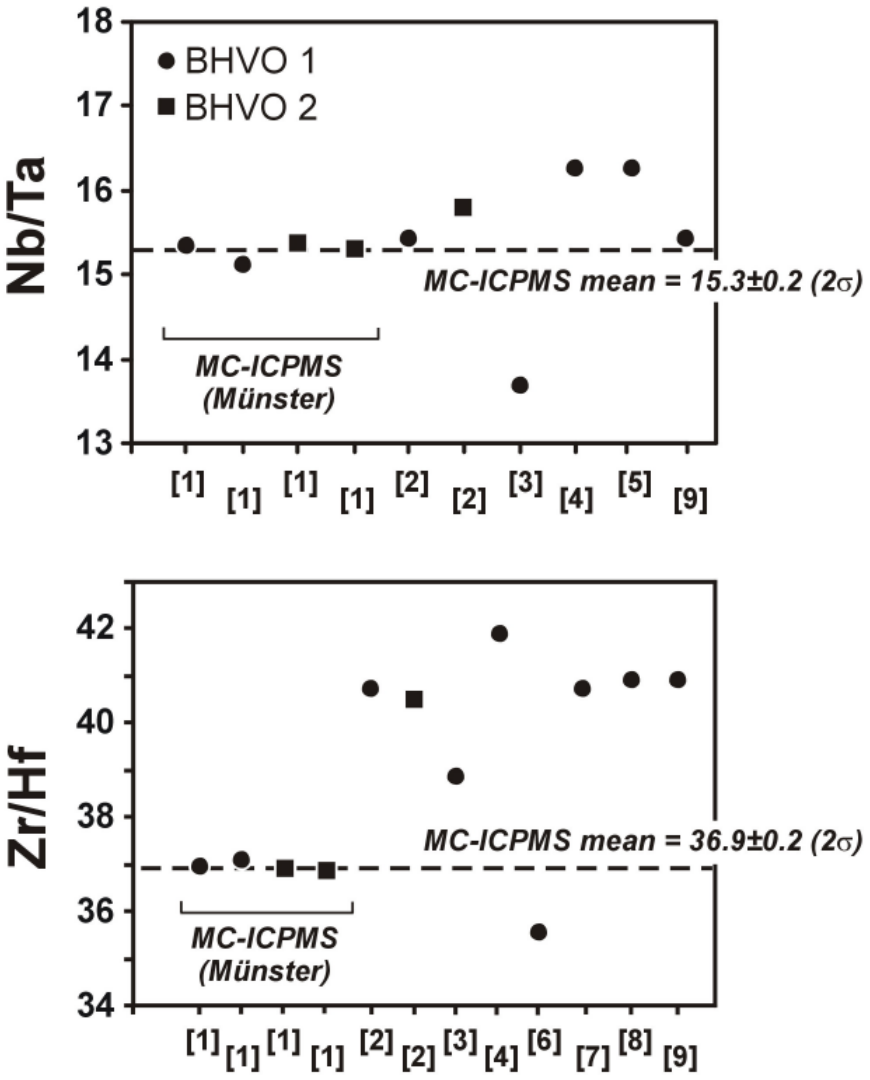


Fig. 4: Nb/Ta and Zr/Hf ratios in BHVO-1 and BHVO-2 as measured by isotope dilution (except Nb) MC-ICPMS in Münster [1]. 2σ external reproducibility is ± 4% for Nb/Ta and ± 0.5% for Zr/Hf ratios, as determined by repeated digestions of our laboratory standard. Literature values are from: [2] Jochum et al., 2001; [3] Makishima et al., 1998; [4] Eggins et al., 1997; [5] Poitrasson et al., 1993; [6] Xie & Kerrich, 1995; [7] Reid et al., 1999; [8] Dupuy et al., 1992; [9] Govindaraju, 1994.

Further constraints on the age of Earth's first continental crust are provided by Hf isotope studies on ancient detrital zircons. These zircons reach further back in Earth's history (up to 4.4 Ga) than Archean rocks and they are very resistant to later metamorphic overprints. In contrast to Nd isotope studies, which were limited to whole-rock analyses, Hf isotope measurements can be performed on individual U-Pb-dated zircon grains as small as 50 mm. Interpretations based on these Hf data, however, hinge on the accurate knowledge of the ^{176}Lu decay constant (λ^{176}Lu), which is used to calculate the zircons' initial ε_{Hf} values. The 4% discrepancy between the λ^{176}Lu values derived from eucrite isochrons and those measured directly by physical counting methods results in a 2 to 4 ε-unit discrepancy in initial ε_{Hf} values for many early Archean rocks and zircons. This in turn leads to vastly different interpretations regarding the differentiation of the early silicate Earth, depending on the decay constant. Using the slopes of isochrons defined by high-Lu/Hf minerals (gadolinites, xenotimes, and apatites) together with the U-Pb ages of the same minerals, we determined λ^{176}Lu to be (1.865 ±0.015) x 10^{-11} yr^{-1} (Scherer et al., 2001). This revised value, based on four independent age comparison experiments, agrees very well with values obtained by the two most recent physical counting experiments, but disagrees with the value of ca. 1.95 x 10^{-11} yr^{-1} derived from the meteorite isochrons, including recent results obtained here at ZLG and by groups in Lyon and Copenhagen (fig. 3, recent unpublished data not shown). The cause for the discrepancy between terrestrial age-comparison data and decay-counting data on the one hand, and meteorite data on the other, remains unknown. Given the importance of decay constant accuracy in calculating initial ε_{Hf} values that are used to constrain models of the early Earth, resolving the λ^{176}Lu issue has become a top priority at ZLG.

Using the revised ^{176}Lu decay constant derived from the *terrestrial* samples and the latest physical counting experiments, Hf isotope data from some of Earth's oldest zircons suggest that an enriched reservoir, perhaps crust, separated from the mantle at or before 4.3 Ga, and persisted for 200 Myr or more. The lack of evidence for widespread depleted mantle at this time suggests that the volume of this enriched reservoir was small. A magma ocean likely existed at the time of terrestrial core formation which ended at 4.533 Ga. Hafnium evidence of persistent

Figure 5: The Münster Isotope Team

silicate crust at or before 4.3 Ga implies that the magma ocean had more or less crystallized by this time. The duration of the magma ocean was thus likely less than ~230 Myr.

During the formation of our solar system, evaporation and condensation process occurred in nebular and planetary environments. Under suitable conditions, partial evaporation and condensation leads to stable isotope fractionations that can be traced with elements that are not significantly fractionated at a later time by chemical or geological processes. While the stable isotope composition of the moderately volatile element potassium is remarkably uniform in solar system materials, isotope fractionations for the highly volatile element cadmium have been found in ordinary chondrites. In co-operation with Mark Rehkämper at ZIRGL (ETH Zürich), we have developed a precise and accurate method for measuring Cd stable isotope fractionations using MC-ICPMS. Terrestrial samples, and certain meteorites (e.g., carbonaceous chondrites and eucrites) display almost no Cd isotope fractionation, while ordinary chondrites and enstatite chondrites display Cd isotope fractionations that are 50 times larger than the analytical uncertainty (Wombacher et al. 2002). The large Cd isotope fractionations are due to evaporation and condensation processes that occurred on the parent bodies of planets, and they are probably related to thermal metamorphism. As with K isotopes, the depletion of volatile elements in the inner solar system did not result in resolvable Cd isotope fractionation, thus ruling out Rayleigh evaporation as the cause of volatile element depletion.

Mantle differentiation on Earth and the terrestrial planets: high precision trace element measurements by isotope dilution
(contacts: Carsten Münker, Jörg Pfänder, Klaus Mezger)

Accuracy and precision of conventional trace element measurements by external calibration (Quadrupole ICPMS, INAA) are typically limited to ±10-20%. These analytical limits are largely imposed by interference and matrix problems. Isotope dilution measurements using well calibrated artificially enriched isotope tracers can improve both accuracy and precision to better than ±1%. In addition, isotope dilution enables trace element measurements at very low abundance (lower ppb and upper ppt range, e.g., PGEs).

At Münster, we perform high precision measurements of Zr-Hf-Nb-Ta-Lu-Hf and of PGE concentrations by MC-ICPMS, using mixed Ta-Zr-Hf-Lu and Ru-Pd-Pt-Ir tracers. All of these tracers were calibrated against 99.9% pure metals. For the first time, Ta concentrations can be analyzed by isotope dilution using a ^{180}Ta tracer that has a ^{180}Ta/^{181}Ta of 0.045. At a natural ^{180}Ta/^{181}Ta of 0.01198±6 (Weyer et al., 2002), ^{180}Ta is the rarest stable isotope in the solar system. Using our newly developed separation procedure (Münker et al., 2001a), Ta, Hf, Lu, and a quantitative Zr/Nb cut can be separated from rock matrices, permitting precise and accurate Nb/Ta and Zr/Hf measurements. External precisions and accuracies of ±0.6% for Zr/Hf and of ±4% for Nb/Ta (all 2σ) can be achieved, resulting in a nearly 10-fold improvement in analytical resolution compared to older techniques. The potential of the new technique is shown by comparison of results obtained for the BHVO-1 and 2 basalt standards with literature values (fig. 4). Isotope dilution analyses of a suite of meteorites yielded chondritic Nb/Ta and Zr/Hf values of 17.6±1 and 34.2±0.3 (all 2σ), respectively (Weyer et al., 2002).

Measurements of Nb/Ta and Zr/Hf in the major reservoirs of the silicate Earth help to unravel the mass budget of Nb-Ta and Zr-Hf on Earth. Data for MORB, OIB, subduction-related rocks, continental basalts, the depleted mantle, crustal rocks, and Archean greenstones indicate that

the silicate Earth has a subchondritic Nb/Ta (Münker et al., 2002). However, Nb and Ta appear to be little fractionated during subduction processes as indicated by a comprehensive study on arc rocks from Kamchatka (Münker et al., 2001b). Most important, Archean rocks also have subchondritic Nb/Ta. It is therefore unlikely that, as previously suggested, an isolated reservoir of subducted oceanic crust accumulated over geologic time that has a superchondritic Nb/Ta (Pfänder et al., 2002). Rather, the observed Nb deficit in the silicate Earth supports experimental predictions that Nb is slightly siderophile at high pressures (>20 GPa) and that significant amounts of Earth's Nb are hosted by the core. In contrast to Earth, the silicate portions of Mars and Vesta have chondritic Nb/Ta, in agreement with much lower pressures during core-mantle equilibration on these planetary bodies.

ZLG, in collaboration with MPI Mainz, has developed a new technique that enables combined Os isotope and Ru-Pd-Re-Pt-Ir measurements by isotope dilution. Using the MC-ICPMS at Münster it is now possible to determine precise and accurate PGE concentration patterns in basaltic rocks. First applications of the technique included basaltic samples from the Kerguelen Plateau and the Ninety East ridge (Brügmann et al., 2002) as well as mantle rocks from the Troodos ophiolite, Cyprus (Büchl et al., 2002). The detailed study on a dunite melt channel in the Troodos ophiolite has shown that highly siderophile elements can be mobilized and fractionated during melt percolation in the Earth's mantle.

Archaeometry

(contacts: Albrecht Baumann, Michael Bröcker)

Metals play a pivotal role in the evolution of human civilization. Innovations in metallurgy have been generally associated with major technological advances and sweeping changes in society. Thus, archaeologists have a strong interest in reconstructing the flow of metals from their origin to the end user, thereby gaining interesting insights into trade routes as well as political and economic interaction among different groups or countries (Gottschalk and Baumann, 2001). Particularly useful for this purpose is the element Pb because different ore deposits are characterized by different Pb-isotope compositions. Lead has been used as a metal particularly in Roman times. Vast amounts were used for Pb-pipes, coffin linings, and in the construction of large public buildings. Trace amounts of Pb are also found in all silver-objects (e.g., coins and tableware) because most Ag was produced from galena. During the Middle Ages, Pb was also used to lower the melting point of glass and to increase its brilliance (Wedepohl and Baumann, 2000). Through analyses of Pb isotopes in different artifacts, it was possible to demonstrate that Pb was already being mined during Roman times in the areas that are now western Germany and eastern Belgium and not all Pb was imported from Spain as originally thought. The investigation of Pb in post-Roman objects can be used to reconstruct the discovery and exploitation of different sulfide deposits in central Europe and thus provides great insights in the evolution of mining and ore processing that eventually led up to the industrial revolution.

Academic staff: Michael Bröcker, Klaus Mezger, Carsten Münker

Postdoctoral Researchers: Jörg Pfänder, Erik E. Scherer, Endres Trapp

Doctoral Students: Michael Bode, Yona Jacobsen, Thorsten Kleine, Ulrich Lange, Oliver Nebel, Stefan Schuth, Frank Wombacher

Homepage: http://www.zlg-muenster.de

Selected publications:

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The Beginnings of *Geochimica et Cosmochimica Acta*

by Denis Shaw

Introduction

It is believed by some (see Ingerson, 1985) that it was the Geochemical Society which founded its journal, *Geochimica et Cosmochimica Acta*, but this was not the case and it will be seen in the following that GCA is some five years older. The prime mover for the new journal was a former scientific editor named Paul Rosbaud, whose background will be introduced shortly.

In his declining years in England, V.M. Goldschmidt discussed with Rosbaud that the time was coming for launching a journal devoted to geochemistry. This was not to happen during Goldschmidt's lifetime, but soon after his death a meeting was called in Durham, in 1949, to oversee the start of a journal (see below); it is clear that the instigator was Rosbaud, as he had written the following:

> "I am aware that the new journal will, at the beginning, have to fight its way through the maze of scientific literature, but I have no doubt that the journal will soon be established and become a very valuable contribution to the development of geochemistry and cosmochemistry. I am deeply sorry that the late Professor V M Goldschmidt, who was an old friend of mine, is with us no longer. I have discussed the idea of such a journal with him many times after the war, and he would certainly have given every possible support to it." (*in*Wickman, 1988)

In the following, we will look first at the role played by Rosbaud, then at how the British publishing business developed after World War II, and finally at the birth of *Geochimica et Cosmochimica Acta*.

The Instigator - Paul Rosbaud

It is not clear to the writer how familiar Paul Rosbaud was with the earth sciences in general, or geochemistry in particular, although as a young man he had worked in X-ray crystallography. But Haines tells us (1988, p.135) that at Butterworth in 1946

> A[Rosbaud} was to edit the journal which the board proposed to publish...

and that was clearly to be *Geochimica et Cosmochimica Acta*. Rosbaud had also been a friend of V.M. Goldschmidt and wrote (Rosbaud, 1961) a short biography as an obituary for him (*in* Mason, 1992). He did not in fact become the editor of G.C.A. but is evident that he was the prime agent in persuading a group of geochemists that the time had come to initiate it.

His background was colourful and moulded by the times. Before and during World War II he was science editor for Springer Verlag in Berlin.According to the biography by Kramish (1986, p. 250), Rosbaud had been seen, apparently, as "a pillar of Nazi society" when he was, in fact, a spy for Britain, with the codename "Griffin". The book credits him with the first information to reach Britain about the German V-2 rockets which brought terror attacks on London in late 1944, and it was from him that the British Government first learned of the German intention to build an atomic bomb. He was also the first to send word of Hitler's plan to launch a blitzkrieg against England with the help of submarines. His motive was a burning hatred of Nazism.

Paul Rosbaud was instrumental in getting Otto Hahn and Fritz Strassman's paper on the fission of uranium into press in *Die Naturwissenschaften* on an accelerated schedule, so as to alert the scientific community of the danger of this discovery. He hoped to inform the scientific community without delay about these exceptionally important results, fearing, perhaps, that the results might be suppressed by the Nazi secret services (Khariton and Smirnov, 1993).

During 1945, Rosbaud was spirited out of Berlin in military uniform, and took up various consultancies with European scientific publishers, including the one with Butterworth. Sometimes he had his payments from German firms remitted directly to his friend Ruth Lange. She was living in 1988 in Berlin in poverty, but was apparently content to have been with him during the most trying years of his life. Two of his other mistresses lament that Rosbaud ruined their lives (Kramish, *op.cit*.).

Ruth's sister, Hilde Benjamin, became the Minister of Justice for East Germany and authorized the building of the Berlin Wall. She dispensed harsh justice to those who attempted to cross it and became known as Rote Hilde, Red Hilde. It is she who was the model for the president of the tribunal that tried the spy who came in from the cold, in John le Carré's novel of that name. The woman who had opposed the tyranny of Adolf Hitler sentenced 146 people to death, 356 to life imprisonment, and more than 24,000 to a total of 116,476 years of penal servitude (Kramish, *op.cit*.).

The emergence of Pergamon Press

In describing the origins of Pergamon Press I have borrowed heavily from Haines (1988, p. 134-136 and 166-168) and Kramish, 1986, p.250.

As already mentioned, in 1945, Rosbaud was smuggled out of Berlin in military uniform by Eric Welsh. With the support of Welsh, Sir Charles Hambro, and Count Frederick van den Heuvel, Rosbaud helped to establish a Springer Verlag affiliate in London, collaborating with a young British army captain, of Czech origin, who had been press officer in Berlin for the Foreign Office, and who had adopted the name of Robert Maxwell. Books hidden in Herberstein castle, in Styria, supplied the initial stock.

Springer Verlag wanted to resume its pre-war eminence and regain its old customers, especially in the United States, and in the years up to 1952 Springer Verlag needed Robert Maxwell because he was their outlet to the world. The collaboration with Maxwell between 1947-50 brought SpringerVerlag many successes, as no direct exports from Germany were then possible, and Maxwell knew how to obtain advantages for Springer Verlag in every respect. He cleverly used the difficulties which existed in Germany to Springer Verlag's benefit. Without his intervention, this would not have been possible. The close relationship with Springer Verlag not only brought him great financial advantages but enabled him to lay the foundations on which he could build his publishing house, Pergamon Press.

The company which was to become Pergamon Press was, in fact, founded jointly in 1948 by Butterworth and Co. (Publishers), Ltd., one of Britain's oldest publishing houses, and Springer Verlag. It was called simply Butterworth-Springer, Ltd., and incorporated in April 1949. But its origins went back to November 1946, when the British Government suggested to Butterworth that it should enter the field of scientific publishing. A company history says that the Government's emissary was Count Frederick Vanden Heuvel, a shadowy and influential person, described as "the epitome of a diplomat with his imperial whiskers and black homburg". Vanden Heuvel (or Huyvel), a Dutchman by descent, was a Count of the Holy Roman Empire and died in 1963 at the age of 78. In reference books he was described as being a member of the British diplomatic service in Switzerland during the war - in fact, he was the station chief of the Secret Intelligence Service (MI6) in Berne - and was awarded the high honour of the C.M.G. in 1945. Also involved were Captain Maxwell and some of the best-known scientists of the day.

The scientists who met Butterworth in government offices in Great George Street, just off Whitehall, were: Sir Wallace Akers, Sir Charles Darwin, Sir Alfred Egerton, Sir Richard Gregory, Professor R.S. Hutton and Sir Edward Salisbury. Also there were representatives of Butterworth and Sir Charles Hambro, chairman of Hambro's Bank. A Scientific Advisory Board was set up with Professor Hutton as its secretary. Sir Alexander Fleming, the discoverer of penicillin, joined the board at its second meeting. Sir Edward Appleton became a member in 1949. The Butterworth representatives were John Whitlock, their joint managing director, and Hugh Quennell, both of whom became directors of Butterworth-Springer when it was formed. Quennell and Whitlock, "novices in the world of science", leaned on Vanden Heuvel for advice and support. John Whitlock used to refer to the Count as the cloak and dagger man. He was called by his friends Van, but those who had known him longer, and perhaps a little better than Whitlock, referred to him as Fanny the Fixer.

The purpose of the Scientific Advisory Board was to develop British scientific publishing through Butterworth, using the expertise of SpringerVerlag. Paul

Rosbaud, as a Springer Verlag protégé, was also at the initial meeting and was to edit the journal which the board proposed to publish. Rosbaud was another who had lived in the world of espionage and he had been introduced to Butterworth by Vanden Heuvel.

The development of the Butterworth-Springer company was of labyrinthine complexity in its financial and company arrangements, and by 1948 Butterworth was becoming concerned about the links between Springer Verlag and Maxwell. A Butterworth account says that Rosbaud was at this time not on the Butterworth payroll, but working for them freelance. His reports on visits to Springer Verlag tended to reach Quennell via Vanden Heuvel, who got to know Robert Maxwell through Whitlock.

In the summer of 1950 the Scientific Sales Manager of Butterworth, Ron Watson, believed that Butterworth-Springer worked more to the advantage of Springer than Butterworth. As a consequence, and after discussions in Berlin with Dr Lange and Ferdinand Springer, Butterworth decided to pull out of the partnership. In May 1951 Butterworth agreed to sell its interests to Maxwell for British Pounds (BP) 13,000 net and to a change of name for the company to Pergamon Press Ltd. (an original intention to change it to Parthenon Press was abandoned). Butterworth waived a debt of BP 23,547 owed to it by Butterworth-Springer, which meant it emerged from what it calls an "adventure" showing a loss of BP 10,547.

The stock of titles published by Butterworth-Springer and handed to Pergamon, thus forming the beginning of Pergamon's book list,consisted of five books and the following three journals:

Spectrochimica Acta (bought by Vanden Heuvel for Butterworth from the Vatican)[1].
Journal of Atmospheric and Terrestrial Physics.
Geochimica et Cosmochimica Acta.

According to Kramish (*op.cit.,* p. 250) the name, Pergamon Press, was proposed by Rosbaud. But Haines (*op.cit*, p. 38) says that:

> Maxwell took the name for his new company from a Greek town in Asia Minor, famous for a great work of art, the Altar of Pergamon, dedicated to the goddess Athena, and for a library unique in the civilised Mediterranean world. The company's colophon, or publisher's imprint, was taken from a head of Athena shown on the back of a coin of about 400 B.C. Board of Trade approval for the new name came on July 17, 1951.

When Maxwell acquired Butterworth-Springer it had only the few journals and books mentioned above. Up to the end of 1987 Pergamon Press had published some 11,000 books, had 4,000 or so titles in print and was publishing new titles at the rate of 365-400 a year.

Rosbaud collaborated with Maxwell over a number of years and then the relationship broke down (Haines, *op.cit.*, p.166-168). Pergamon had moved in March 1955 to larger offices in Fitzroy Square, London, which were to remain its headquarters until the move to Headington Hill Hall, Oxford, in 1960. An extraordinary general meeting of the company had increased its capital from BP 10,000 to BP 50,000 by the creation of 40,000 shares. But this galloping expansion was resisted by Pergamon's science director, Paul Rosbaud, who was, after Maxwell, the most important man in the company and one who, because of his reputation with SpringerVerlag, had the trust of many of the scientists whom Maxwell had recruited. Rosbaud doubted the wisdom of such a vaulting ambition and such rapid growth as Maxwell was demanding. Friction began to grow between him on the one hand and Maxwell and the rest of the board on the other. The row simmered for months before reaching a crisis in May 1956.

Rosbaud had written a letter to Hugh Handsfield, editor-in-chief of the American scientific publishers McGraw-Hill, telling him that Pergamon could not fulfil his order for copies of *Principles of Optics*[2] in the time required, nor could it possibly quote him a price. But the time and the price were paramount in a deal which had already been negotiated by Maxwell."Surely there must be some misunderstanding", Rosbaud wrote to Handsfield:

> I don't think there will be any hope for the sheets to be shipped for twelve to fifteen months, and with regard to price, we cannot possibly give you a quotation as we don't even know the size of the book ....

Maxwell exploded. There was an acrimonious meeting with Rosbaud on May 25, two days after that letter had been sent, and then a formal letter from Maxwell to his science director later that same day:

> This is to confirm our discussion this morning when I informed you of the immediate suspension from your duties as science editor .... I regret to have to take this step but I am afraid that your letter of May 23 addressed to the editor-in-chief of McGraw-Hill leaves me no alternative ... having regard to similar acts of disloyalty in the past about which you have been reprimanded. I would remind you also that in September 1955 you assured me, on your word of honour, of your loyalty, support and co-operation. I am afraid that I am unable to accept your apology and explanation that you have acted impulsively. I regard your letter to McGraw-Hill, together with many other recent actions you have taken, as constituting a definite breach of your service agreement with the company.(Haines, *op.cit.*, p. 167).

Rosbaud protested, in a reply written that day, that he had in no way been disloyal and said the suspension ordered by Maxwell was "entirely unjustified". But at a special board meeting of Pergamon four days later Maxwell set out his case. He had, he said, earlier in the year agreed that publication of *Principles of Optics* would take place towards the end of 1956, with a view to getting a firm order from McGraw-Hill. He had also agreed with them a maximum price for 2,500 copies. When Rosbaud had seen the order he had taken "unilateral action of a most disloyal and harmful nature". The only object of his action, said Maxwell, must have been to encourage McGraw-Hill to negotiate directly with him, thus "seeking to discredit the veracity as well as the authority of the Managing Director" (Maxwell).

Dr Rosbaud admitted, again, that he had acted impulsively, but denied Maxwell's allegations about his motives. The chairman of Pergamon in those days was Harry Siepmann, previously an executive director of the Bank of England, who had been recruited by Maxwell.The minutes record him (Siepmann) saying:

> He would categorically acquit Dr Rosbaud of disloyalty to the Press, though at the same time he considered him to be constitutionally unable to be loyal to any one person. He did not appear to realise that being loyal to a company meant being loyal to the individual members directing that company .... The letter should never have been written ....

The suspension of Rosbaud was then confirmed. After negotiations, Rosbaud gave "undertakings about his future conduct", but his days were numbered. By October the board was agreeing to pay him BP 2,500 for loss of office and Paul Rosbaud formally resigned and sold his shares. Maxwell said of him later:

> He was an outstanding editor of the European type from whom I learned some of the trade in the early days.

After 1956 he was the European editor for Interscience Publishers and a consultant to other publishing companies. On September 28th 1961 Dr. Rosbaud was made the first recipient of the John T. Tate International Medal for distinguished service to physics, by the American Institute of Physics,

> "for his stimulating and unconquerable devotion to conscientious publication in the physical sciences" (Snavely, 2002)

He died two years later.

The First Issue of *Geochimica et Cosmochimica Acta*

The meeting in Durham mentioned at the beginning took place in May 1950 and was attended by F.A. Paneth, L.R. Wager and P. Rosbaud; it is not certain whether any of the other original editors, *i.e.* C.W. Correns, E. Ingerson, S.R. Nockolds, were present.

It is clear that Rosbaud was instrumental in starting the periodical. Ingerson later said (1985) that:-

> I negotiated the establishment of Geochimica et Cosmochimica Acta with Paul Rosbaud, who was active with Pergamon Press at the time...we started working on it in 1949 ... unfortunately, Paul Rosbaud's untimely death happened before G&CA reached full bloom, but his knowledge, foresight, and planning helped it do so sooner than it could have without his early participation.

Of course, Ingerson is premature in here identifying Pergamon Press, which

was incorporated later, as already discussed.

The journal was already past the planning stage at the time of the Durham meeting in 1949 and, in fact, the first issue was being put together, and of course came out in June 1950, under the imprint of Butterworth Springer Ltd, but with the business side handled by Lange, Maxwell & Springer Ltd. The colophon from the coin found at Herakleia (see above) was used on the first issue and continued to be used when the company name changed, in 1951, to Pergamon Press.

The main topic at the Durham meeting was the preparation of a Foreword for that first issue, which duly appeared (1950) as follows:

> The aim of this journal is to publish original research papers on geochemistry and cosmochemistry, such as have hitherto been scattered over a wide range of geological, mineralogical, chemical and astronomical periodicals.
>
> The chemistry of the Earth and of the Cosmos has become a branch of science independent enough to have a journal of its own. As there should be no political frontiers in science, the Editors and Publishers hope that the new Journal will be used as a means of publication by scientists of all countries.
>
> The scope of the journal will be wide. Geochemistry as conceived by the pioneers - F.W. CLARKE, V.M. GOLDSCHMIDT, V.1. VERNADSKY - will be its leading theme but papers from neighbouring fields will be welcomed if they have geochemical significance.
>
> There is a close link between geochemistry and cosmochemistry and in this journal papers dealing with the chemical composition of extra-terrestrial matter, knowledge of which comes mainly from the study of meteorites in the laboratory and the chemical interpretation of spectra, will appear alongside the results from the related geochemical field. (Foreword, 1950)

Wickman comments *(op. cit.)*. that

> *... it is still after 45 years an impressive document...*

To conclude this account of the beginnings of the journal, it may be added that in 1955 the Geochemical Society was founded and early in 1957 the first ballot on Society issues carried the question

> *Shall Geochimica et Cosmochimica Acta be designated as the official publication of the Geochemical Society ?...*

The vote was favourable: Yes 655, No 125. The initial rate for members was US$10, about half the regular rate for individuals.

Acknowledgements

My colleague G.V.Middleton offered valuable comments on an earlier version of this text. I am grateful for help provided by the McMaster University Library Special Collections personnel.

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(Footnotes)
[1] A brief account of Spectrochimica Acta is given by Kettle (1988).
[2] The author of this book is not given by Haines (*op. cit.*) and it is not clear whether it was eventually published.

Employment Opportunities

The Department of Geological Sciences at the University of Texas at Austin seeks to fill two faculty positions in the general areas of igneous petrology, metamorphic petrology, and high-temperature geochemistry.

These searches will be focused at the level of tenure-track Assistant Professor, but full consideration will be given to outstanding scientists at more senior levels. The successful candidates will conduct vigorous externally funded research programs that integrate field-based investigations with modern analytical/experimental methods to attack fundamental geologic problems. We seek enthusiastic teachers to participate in undergraduate courses in earth materials, igneous and metamorphic petrology, and introductory physical geology, and to offer graduate courses and direct the research of M.S. and Ph.D. students. The persons filling these positions will join a large, diverse and active geoscience department with superb analytical facilities and research support: see http://www.geo.utexas.edu for complete information.

The anticipated starting date for these positions is August 2003; a Ph.D. is required at the time of appointment. To apply, please send a curriculum vitae, statements of research and teaching interests, and the names and contact information for five references to: Chair, Petrology/Geochemistry Search Committee, Department of Geological Sciences, The University of Texas at Austin, Austin TX 78712. Review of applications will begin on October 15, 2002, and will continue until the positions are filled. The University of Texas at Austin is an Equal Opportunity / Affirmative Action employer.

Meetings Announcements

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Join us in beautiful and historic Saratoga Springs to discuss all aspects of water-rock interaction, including:

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Meetings Announcements

2003 Goldschmidt Conference
Kurashiki, Japan
September 7-12, 2003

www.ics-inc.co.jp/gold2003/

Goldschmidt 2003

The Goldschmidt Conference is now the premier annual meeting for geochemistry. The conference covers a wide range of topics in geochemistry and cosmochemistry, including cosmic substances and the solar system, early earth, substances and processes in the earth's interior, material circulation on the earth's surface, climate change, earth's environment, biogeochemical processes, and technological advancement. The past Goldschmidt Conferences have been organized through the collaboration of the Geochemical Society and European Association of Geochemistry. In 2003, the Geochemical Society of Japan will join this collaboration, and the 13th Goldschmidt Conference will be held in Kurashiki, Japan, from September 7th to 12th. For the first time, the meeting will be held in the western Pacific region.

Kurashiki, where you will meet old Japan

The city of Kurashiki is located approximately 200km west of Osaka, easily accessible by the bullet train (Shinkansen) from Tokyo, Osaka, or Fukuoka. Kurashiki was a local trading center in western Japan in the 17th to 19th centuries, preserving the medieval Japan atmosphere in its old town area. Many attractive tourist cities such as Kyoto, Nara, Himeji, Okayama, and Hiroshima can be reached by Shinkansen.

Important Dates

January, 2003	2nd Circular (website), Call for papers, pre-registration
May, 2003	Deadline for electronic submission of abstracts
September 7-12, 2003	Goldschmidt 2003 in Kurashiki, Japan

Call for Topical Session Proposals: Geological Society of America Annual Meeting
Seattle, Washington, November 2-5, 2003

The Geochemical Society has traditionally had a strong presence at the GSA meeting and we can continue this tradition by proposing an exciting suite of topical sessions under the Geochemical Society banner. Information on how to submit a proposal is at:

http://gsa.confex.com/gsa/2003AM/sessionproposals.epl

Please bear in mind that the SUBMISSION DEADLINE IS JANUARY 16, 2003. The Geochemical Society has some funds available to support travel to those symposia accepted for the GSA meeting through our Meetings Assistance Program. Information on this program is on the GS web site in the minutes of the 2002 Davos Switzerland board of directors meeting. [See http://gs.wustl.edu/archives/#Minutes Davos Meeting, pg. 6 - The Program Committee Report]

In addition to symposia, GSA is the venue for the Ingerson Lecture, which is the Geochemical Society's annual distinguished lecture. The last three have been low temperature geochemistry oriented, so this year it seems appropriate to invite a high temperature geochemist. If you have suggestions for deserving candidates, please forward them to Marty Goldhaber at <mgold@usgs.gov>.

Finally, we are planning a nice reception at the Seattle GSA for GS members, as well as a booth for the Society in the display area. Hope to see you in Seattle.

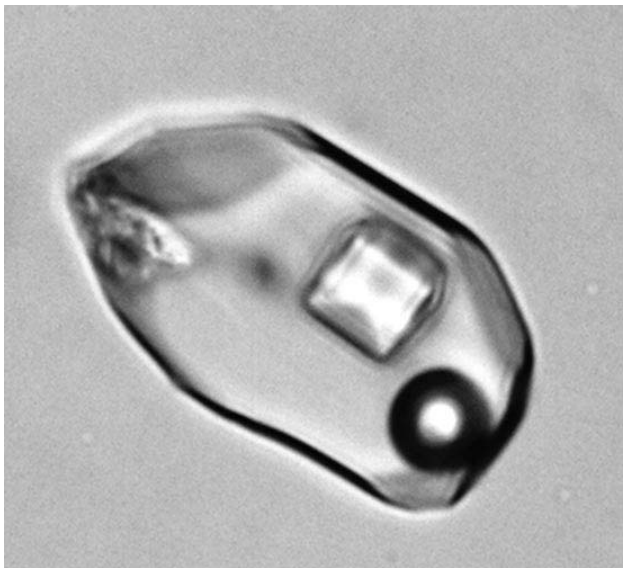
Judith McKenzie
President, GS

Marty Goldhaber
Program Chair, USGS, email: mgold@usgs.gov

MEETINGS ANNOUNCEMENTS

SHORT COURSES 2003
MINERALOGICAL ASSOCIATION OF CANADA

Mineralogical Association of Canada
Association minéralogique du Canada



Analysis and Interpretation of Fluid Inclusions

Vancouver GAC-MAC-SEG 2003
May 24 and 25, 2003

Organizers IAIN SAMSON (University of Windsor), ALAN ANDERSON (St. Francis Xavier University), DAN MARSHALL (Simon Fraser University)

Objectives

• Introduce participants to both basic and advanced tools for the analysis and interpretation of fluid inclusions (including melt inclusions).

• Teach the participants about what fluid inclusions are, what types of data can be obtained from fluid inclusions, the approaches and techniques that can be used to analyze fluid inclusions. How such data are processed and interpreted, and where the limitations and pitfalls lie in the various techniques. Examples using the various techniques will also be called upon. There will be demonstrations.

Detailed list of topics can be viewed at ***www.mineralogicalassociation.ca***

Presenters Alan Anderson (St. Francis Xavier University); Fred Anderson (University of Chicago); Ronald Bakker (University of Leoben, Austria); Robert Bodnar (Virginia Tech); Philip Brown (University of Wisconsin); Robert Burruss (USGS); Larryn Diamond (University of Leoben, Austria); Brian Fryer (University of Windsor); Joel Gagnon (University of Windsor); Sarah Gleeson (University of Alberta); Robert Goldstein (University of Kansas); Stefano Salvi (CNRS, France); Iain Samson (University of Windsor); Anthony Williams-Jones (McGill University).

For more information, contact **Iain Samson** at ***ims@uwindsor.ca***
To register www.vancouver2003.com
Registration fee CDN$290 (students **CDN$165**)

Environmental Aspects of Mine Wastes

MAY 24 and 25, 2003, Vancouver

Conveners J.L. Jambor, D.W. Blowes & A.I. Ritchie

This two-day intensive short course, to be held at Robson Square in the heart of downtown Vancouver, will cover a wide spectrum of environmental issues dealing with mine-waste solids and effluents. Individual presentations will be given on environmental regulations and compliance, mine-waste geology, hydrology, mineralogy, geochemistry, microbiology, drainage prediction, remediation, advances in ARD modelling, and case studies. The course will ensure not only entry-level familiarization with the various topics of primary concern in studies of mining-related wastes, but will also provide exposure to the advances that have been made in these and related fields over the past decade.

Presenters will be C.N. Alpers (USGS, Sacramento), J.W. Bennett (ANSTO, Australia), D.W. Blowes (U. Waterloo), K. Ferguson (Placer Dome) and M. Filion (Teck Cominco), W.D. Gould (NRCan, Ottawa), J.L. Jambor (LRC, Vancouver), B. Kimball (USGS, Utah), K. Lapakko (Minnesota Natural Resources), M. Logsdon (Geochimica, CA), U. Mayer (UBC), D.K. Norsdtrom (USGS, Boulder), W. A. Price (B.C. Ministry of Energy and Mines), C.J. Ptacek (U. Waterloo), M. Raudsepp (UBC), A.I.M. Ritchie (ANSTO, Australia), R. Seal (USGS, Reston), L. Smith and R. Beckie (UBC), K. Walton-Day (USGS, Denver), and W. Wilson (UBC).

Registration fee: CDN$375 (students **CDN$250**)
Early registration (prior to April 15, 2003): CDN$325 and **CDN$200.**

Payable to MAC Short Course.
Remittances MAC business office
For more information John Jambor (***JLJambor@aol.com***) or the MAC website (***www.mineralogicalassociation.ca***)

To download a registration form or to register online, ***www.mineralogicalassociation.ca***

MEETINGS ANNOUNCEMENTS

International Workshop on

Biogeochemical Controls on the Mobility and Bioavailability of Metals in Soils and Groundwater

Monte Verita, Ascona, Switzerland, March 2-7, 2003

Scope of the workshop

Numerous trace metals have been identified as essential micronutrients for plants and/or microorganisms and as electron acceptors or donors in metabolic processes. At elevated concentrations, however, many of these same metals exhibit significant toxicity and trace metal pollution in soils. This workshop will foster discussion of the biogeochemical processes that control metal mobility and bioavailability. The relevant experimental and modeling approaches used by scientists and students from various fields will be discussed. Ultimately, an understanding of fundamental biogeochemical processes is needed for the accurate and quantitative prediction of the fate and transport of metals on a range of time and length scales. This issue will be addressed in the workshop through case studies on the application of process oriented knowledge and modeling to local and regional scale problems.

Sessions

- *Solubility and sorption controls on metal mobility*
- *Effects of redox processes on metal mobility*
- *Characterization of mineral and biological surfaces and surface reactions*
- *Modeling of surface and transport processes*
- *Microbial processes*
- *Plant- and fungi-soil interactions*
- *Case studies*
- *Additional case studies and consequences for water supply and soil quality*

Invited speakers

J.K. Fredrickson, Batelle Pacific Northwest Laboratories; **G. Gadd,** University of Dundee; **P. Jaffe**, Princeton University; **D. Kinniburgh**, British Geological Survey; **D.R. Lovley**, University of Massachusetts; **S.T. Martin**, Harvard University; **D.M. McKnight**, University of Colorado; **P. Persson**, Umeå University; **A. Scheinost**, Swiss Federal Institute of Technology; **A. Stone**, Johns Hopkins University; **S.J. Traina**, Ohio State University; **P. Van Cappellen**, Utrecht University.

Scientific Committee

Stephan M. Kraemer, Janet G. Hering, Ruben Kretzschmar, Giovanni Bidoglio, Barbara Sulzberger, Alexander J. B. Zehnder.

Call for papers and submission guidelines

The total number of participants is limited to 90. Oral and poster contributions are invited on topics within the scope of the workshop. Approximately 35 oral and 55 poster presentations can be accommodated. Please send the title of your presentation and a short abstract before Nov. 15 by e-mail to

monteverita.2003@ito.umnw.ethz.ch

indicating your preference for oral or poster presentation. Acceptance of the presentations will be confirmed before January 15, the deadline for registration (payment of 300.- SFr registration fee).

Timetable

Deadline for Abstracts	November 15. 2002
Acceptance notification	January 5. 2002
Registration deadline	January 31. 2002

Registration fee, accommodation and travel information

The workshop registration fee is SFr 300.- (~205€ / $200) including conference dinner and excursion. Accommodation costs for the 5-days are SFr 1000.- (~680€ / $670) including food and lodging. Travel information can be found on the internet:
http://www.csf-mv.ethz.ch/ (click Travel&Tourism)

More information: http://www.ito.umnw.ethz.ch/SoilChem/kraemer/main.html

ITÖ
Institut für terrestrische Ökologie
Institute of Terrestrial Ecology

The Geochemical Society and the Mineralogical Society of America present:
U-SERIES GEOCHEMISTRY

A two-day short course presenting advances in the application of U-series geochemistry across the Earth Sciences

April 3-4, 2003 Paris, France
(before the EGS-AGU-EUG joint assembly in Nice)

Analytical advances have revolutionized the field of Uranium Series disequilibria, impacting diverse fields from groundwater to mantle melting. For instance, mass spectrometry has greatly improved U-series dating techniques allowing accurate chronology of coral and speleothem paleoclimatic records. More comprehensive U-series database now exist for the field of paleoceanography, allowing examination of the rates of modern oceanic processes and investigation of past ocean productivity and circulation. Understanding melting and melt migration beneath mid-ocean ridges, hotspots and subduction zones has greatly progressed and recent U-series data place important constraints on the timing of magma crystallization. This short course will update knowledge in this active field of research and offers an opportunity for non-specialists to understand the basics of U-series geochemistry illustrated with strong cases studies and demonstrations of how dynamic processes affect the generation of U-series disequilibria. The short course will be accompanied by publication of a Reviews in Mineralogy and Geochemistry volume on U-series Geochemistry which will be free to attendants.

Convened by:
Bernard Bourdon (bourdon@ipgp.jussieu.fr)
Simon Turner (simon.turner@bristol.ac.uk)
Craig Lundstrom (lundstro@uiuc.edu)
Gideon Henderson (Gideon.Henderson@earth.ox.ac.uk)

Speakers Include:
Jon Blundy, Bristol
Bernard Bourdon, IPGP, Paris
Francois Chabaux, Strasbourg
Hai Cheng, Minnesota
Alistair Pike, Oxford
Dave Richards, Bristol
Simon Turner, Bristol
Gideon Henderson, Oxford
Steve Goldstein, Los Alamos
Craig Lundstrom, Univ. of Illinois
Kirk Cochran, SUNY
Don Porcelli, Oxford
Peter Swarzneski, USGS

Student Scholarships: A limited number of student scholarships including support for travel and registrations fees will be available. Please contact one of the conveners for more information.

Sponsored by: CEA, ANDRA, MAT-Finnigan, U.S. DOE

See: **www.earth.ox.ac.uk/~gideonh/rimg.html** for more details.

Meetings Calendar

Jan 6-10, 2003: 10th International Symposium on deep seismic profiling of continents and their margins, Huka Village Conference Centre, Taupo, New Zealand. By the IASPEI; Royal Society of New Zealand, IGNS, Geoscience Australia. Contact: Dr Fred Davey, Ph: +64-4-570-1444; Fax: +64-4-570-4600; seismix2003@gns.cri.nz. http://www.gns.cri.nz/news/conferences/seismix2003

Jan 7-10, 2003: OCEANS: Ocean Biogeochemistry and Ecosystems Analysis (International Open Science Conference), Paris, France. Abstract and early registration deadline: October 15, 2002. This conference will focus on integrated studies of biogeochemistry and ecosystem dynamics in the ocean in the context of the Earth System and global change. It is designed to assist the development of a new ten-year international SCOR/IGBP research project. E-mail: scor@dmv.com; http://www.igbp.kva.se/obe/

Jan 29-31, 2003: Environmental Geochemistry of Metals, Denver, Colorado, U.S.A. National Ground Water Association. http://www.ngwa.org/education/index.html#03jan

Feb 4-5, 2003: Reservoir Geochemistry Conference, Petroleum Group Geological Society of London, to promote the latest advances in organic and inorganic geochemistry and their applications in the evaluation and study of reservoirs. Deadline for submission of formal abstracts was June 1, 2002. Contact: Dr. John Cubitt; E-mail: john-cubitt@es- information.demon.co.uk

Feb 16-21, 2003: Gordon Research Conference - Chemical Reactions At Surfaces, Holiday Inn, Ventura, CA, U.S.A. http://www.grc.uri.edu/programs/2003/chemreac.htm

Mar 3-4, 2003: Fundamentals of Ground Water Geochemistry (course), Scottsdale, AZ, U.S.A. Presented by: Bill Deutsch and Patrick Longmire, National Ground Water Association. http://www.ngwa.org/education/03-0303-235.shtml

Mar 5-7, 2003: Applications of Ground Water Geochemistry (NGWA Education Course), Scottsdale, AZ, U.S.A. Presented by: Bill Deutsch and Patrick Longmire, National Ground Water Association. http://www.ngwa.org/education/03-0305-485.html

Mar 5-7, 2003: The Petrolem Geology And Hydrocarbon Potential Of East Africa, The Nairobi Safari Park Hotel, Nairobi, Nairobi, Kenya. ContactDr. N.C. Weggoro, Phone: +257-27-2504253/8; Fax: +257-27-2504255; weggoro@eachq.org.

Mar 17–21, 2003: 34th Lunar and Planetary Science Conference, near NASA Johnson Space Center, League City, Texas. International specialists in petrology, geochemistry, geophysics, geology, and astronomy to present the latest results of research in planetary science. http://www.lpi.usra.edu/meetings/lpsc2003/lpsc2003.1st.html

Mar 23-27, 2003: 225th ACS National Meeting, New Orleans, LA, USA. Geochemistry Division Sessions: Organic Geochemistry in Contemporaneous Environments - Ancient Sediments and Laboratory Simulations (In Honor of Professor Earl W. Baker) - Ancient Biomolecules: New Perspectives in Archaeology and Palaeobiology. http://membership.acs.org/g/geoc/upcoming.html

Mar 24-27, 2003: Study of Matter at Extreme Conditions (SMEC), to promote the integration of mineral-physics, high-pressure chemistry/physics and materials science, Florida International University, Miami. Contact: Debby Arnold; arnoldd@fiu.edu. (http://www.lcm3b.u-nancy.fr/ecasig5/Activity.htm#SMEC)

Mar 29-Apr 2, 2003: 3rd International Limnogeology Congress, Presidio Plaza Hotel, Tucson, AZ, USA. Contact: Andrew Cohen, Phone: +1 520 621 4691; acohen@geo.arizona.edu.

Apr 2-4, 2003: 18th Himalaya-Karakoram-Tibet Workshop (HKTW), Ascona, Monte Verita, Switzerland. http://www.geology.ethz.ch/sgt/Himalaya/default.htm

Apr 6-11, 2003: EGS-AGU-EUG Joint Assembly, Nice, France. Http://www.copernicus.org/egsagueug

Apr 13-17, 2003: European Union of Geosciences (EUG) XII, Strasbourg, France. eug@eost.u-strasbg.fr, http://eost.u-strasbg.fr/EUG

Apr 14-17, 2003: Uranium Geochemistry – 2003 - Ore deposits – Natural Analogy – Rehabilitation, Nancy, France. Fax: +33 - 3 83 91 38 01; Michel.Cuney@g2r.uhp-nancy.fr. http://www.gl.rhbnc.ac.uk/geode/Registration.html

Apr 24-26, 2003: 15th Argentine Geological Congress, El Calafate, Santa Cruz Province, Southern Patagonia, Argentina. Contact: President Dr. Miguel Haller or Secretary Dr. Roberto Page,Phone: +54 11 4325 3104; Fax: +54 11 4325 3104; haller@cenpat.edu.ar or fomicruz@internet.siscoPhonecom.

May 5-8, 2003: 3rd JGOFS Open Science Conference, Washington DC, USA. Contacts: Roger Hanson, Phone: +47 555 84244; Fax: +47 555 89687 or Ken Buesseler, Phone: +1 508 289 2309; Fax: +1 508 457 2193.

May 8-10, 2003: Third meeting on Magmatism, Metamorphism and associated Mineralizations (3Ma), Hassan II Aïn Chock University, Casablanca, Morocco. http://www.colloque3ma.com

May 9, 2003: International Coalbed Methane Symposium, Tuscaloosa, AL, USA. Fax: +1 205 348 9276; ghood@ccs.ua.edu.

May 12-17, 2003: GEOFLUIDS IV - on fluid evolution, migration and interaction in sedimentary basins and orogenic belts, University of Utrecht, Utrecht, The Netherlands. (Special Issue of Netherlands Journal of Geosciences: 'Geofluids in the Netherlands', early 2003. Deadline for manuscripts: January 15, 2002.) Contact: Mrs. Drs. J.M. Verweij, Phone: +31 30 256 46 00; Fax: +31 30 256 46 05; E-mail: j.verweij@nitg.tno.nl; http://www.nitg.tno.nl/eng/geofluid2.pdf

May 19-23, 2003: Isotope Hydrology and Integrated Water Resources Management: 40th Anniversary International Symposium, Vienna, Austria. http://www.iaea.or.at/programmes/ripc/ih/

May 18-24, 2003: 39th Forum on the Geology of Industrial Minerals, John Ascuaga's Nugget Hotel & Casino, Sparks, Nevada, USA , by the Nevada Bureau of Mines and Geology, Nevada Division of Minerals, and Nevada Mining Association. Contact: Terri Garside, Phone: +1 775-784-6691 ext 126; Fax: +1 775-784-1709; tgarside@unr.edu. http://www.nbmg.unr.edu/imf2003.htm

May 20-23, 2003: GERM 4, Lyon, France. Contact: Janne Blichert-Toft, Phone: +33 (0)472 72 84 88; Fax: +33 (0)472 72 86 77; jblicher@ens-lyon.fr.

May 25 - 28, 2003: Joint meeting of GAC/MAC/SEG, Vancouver, B.C., Canada. Web site: http:// www.vancouver2003.com/

May 26-28, 2003: 2nd International Symposium on Contaminated Sediments: Characterisation, Evaluation, Mitigation/Restoration, Management Strategy Performance, Quebec City, Quebec, Canada. Contact: Helene Tremblay, Phone: +1-418-656-2193; Fax: +1-418-656-7339; E-mail: 2sisc@ggl.ulaval.ca; http://www.scs2003.ggl.ulaval.ca/

May 26-30, 2003: XII international conference on heavy metals in the environment, Grenoble, France. Tel: + 33 4 76 82 42 53; Fax: + 33 4 76 82 42 01; E-mail: echevet@glaciog.ujf-grenoble.fr and ichmetals@glaciog.ujf-grenoble.fr

May 26-30, 2003: Fifth International Symposium on Applied Isotope Geochemistry (AIG-5), Heron Island, Great Barrier Reef, Australia. Applied Isotope Geochemistry is a working group of the International Association of Geochemistry and Cosmochemistry. Contact: Barry Batts; E-mail: aig-5@chem.mq.edu.au. http://www.chem.mq.edu.au/aig-5

May 29-June 1, 2003: Geology Without Frontiers: Magmatic and Metamorphic Evolution of the Central European Variscides, Blansko, Czech Republic. Contact: Jaromir Leichmann, Phone: +420 (5) 41 12 92 61; Fax: +420 (5) 41 21 12 14; E-mail: cgs@mail.natur.cuni.cz; http://www.natur.cuni.cz/~cgs/nofrontiers/

June 4-9, 2003: 17th Biennal European Current Research on Fluid Inclusions (ECROFI XXVII), Budapest, Hungary. Contact: Csaba Szabo, E-mail: ecrofi17@geology.elte.hu; http://ecrofi17.geology.elte.hu/

June 4-15, 2003: High-Pressure Crystallography, Erice, Italy. E-mail: katran@amu.edu.pl; http://www.geomin.unibo.it/orgv/erice/highpres.htm

June 7–11, 2003: The Clay Minerals Society 40th Annual Meeting, Athens, Georgia, USA. Jointly held with the Mineralogical Society of America. Web site: http://cms.lanl.gov

June 8-13, 2003: Gordon Research Conference - Interior Of The Earth, Mount Holyoke College, USA.

June 9-12, 2003: Hedberg conference - Origin of Petroleum — Biogenic and/or Abiogenic and Its Significance in Hydrocarbon Exploration and Productions. Web site: http://www.aapg.org/education/hedberg/london/index.html

June 15-19, 2003: 7th international conference on the biogeochemistry of trace elements (7th ICOBTE), Swedish University of Agricultural Sciences (SLU), Uppsala, Sweden. Includes "Arsenic in Soil and Groundwater Environments: Biogeochemical Interactions". Contact: ICOBTE7@slu.se; Web site: http://www-conference.slu.se/7thICOBTE/index.htm

June 15-20, 2003: EUSTONE 2003 - Forum for stone, Natural stone congress, University of Joensuu, Joensuu, Finland. Organization: Geological Survey of Finland. Contact; Mr Hannu Luodes, P.O.Box 1237, 70211 Kuopio, Finland; Phone: +358 20 550 3528; Fax: +358 20 550 13; E-mail: hannu.luodes@gsf.fi; Web site: http://www.gsf.fi/events/eustone2003

June 15-20, 2003: Gordon Research Conference - Permeable Sediments, Bates College, Lewiston, ME, USA. Web site: http://www.grc.uri.edu/programs/2003/perm.htm

June 16-18, 2003: 5th International Conference on the Analysis of Geological and Environmental Materials, Rovaniemi, Finland. Web site: http://www.gsf.fi/geoanalysis2003

June 19-20, 2003: Timor Sea symposium, Darwin, Australia. Includes Petroleum systems and geochemistry. Web site: http://www.dme.nt.gov.au/ntgs/timorseasymposium/home.html

June 22–26, 2003: Euroclay 2003, Modena, Italy. Web site: www.unimo.it/euroclay2003/

June 22–27, 2003: 8th International Kimberlite Conference, Victoria, BC, Canada. http://www.venuewest.com/8IKC

Meetings Calendar

July 20-25, 2003: Gordon Conference - Catchment Science: Interactions of Hydrology, Biology & Geochemistry - Water as a Mirror of the Landscape - How Valid and Useful is the hypothesis?, Colby-Sawyer College, New London, http://www.grc.uri.edu/programs/2003/forest.htm

July 21-25 2003: Ultra-high pressure metamorphism, 5th EMU School in Mineralogy, Eötvös L. University, Budapest, Hungary. http://www.lcm3b.u-nancy.fr/ecasig5/Activity.htm#EMU5

Aug 24-27, 2003: 4th South American Symp on Isotope Geology (IV SSAGI), Salvador, Bahia, Brazil. http://www.cbpm.com.br/ivssagi/index.htm

July 28-Aug 1, 2003: 66nd Annual Meeting of the Meteoritical Society, M¸nster, Germany. Contact: E-mail: ekj@nwz.uni-muenster.de (subject: 66MetSoc); http://www.uark.edu/campus-resources/metsoc/index1.htm

Aug 2003: XVth International Congress on the Carboniferous and Permian (XV ICC-P) and 55th Meeting of the International Committee for Coal and Organic Petrology (55 ICCP). http://www.nitg.tno.nl

Aug 10-15, 2003: Chemistry at the Interfaces, 39th IUPAC Congress & 86th Conf of The Can Soc for Chem, Ottawa, Canada. http://www.nrc.ca/confserv/iupac2003

Aug 16-18, 2003: SCANDIUM 2003 - An Int Symp on the Min and Geochem of Sc, http://www.toyen.uio.no/geomus/scsymp/

Aug 24-29, 2003: 5th International Conference on f-elements (ICFe), Geneva, Switzerland. http://ereswww.epfl.ch/icfe/

Aug 24-30, 2003: ECM-21 - XXI European Crystallographic Meeting, Durban, South Africa. http://www.ecm21-africa.co.za/

Aug 29-Sept 3, 2003: 21st Int Geochem Exploration Symp, Dublin, Ireland http://www.conferencepartners.ie/igesandnams2003/

Aug 31-Sept 5, 2003: 16th Int Mass Spec Soc Conf (IMSC), Edinburgh, Scotland http://www.imsc-edinburgh2003.com/

Sept 2-6, 2003: 5th Hutton Symposium on the Origin of Granites, Toyohashi City, Japan. http://www.gsj.jp/Info/event/hutton

Sept 2-6, 2003: ECNS 2003 European Conference on Neutron Scattering, Montpellier, France. rene@ldv.univ-montp2.fr

Sept 7-11, 2003: 6th Int Symposium on Environmental Geochemistry (ISEG), Edinburgh, UK. http://www.iseg2003.com/

Sept 7-12, 2003: 13th V.M. Goldschmidt Conference, Kurashiki, Japan. http://www.ics-inc.co.jp/gold2003/

Sept 8-12, 2003: 21st IMOG meeting, Krakow, Poland. http://www.imog.agh.edu.pl/.

Sept 9-13, 2003: Assoc. of Eur. Geol. Soc. (13th Annual Biennial Meeting), http://www.uni-essen.de/geologie/aegs.htm

Sept 22-26, 2003: Specialist Group in Structural Geol. & Tectonics (SGTSG), Kalbarri,Australia. Alanc@lithos.curtin.edu.au

Sept 22-26, 2003: 7th International Conf on Gas Geochemistry ICGG 7, Freiberg, Germany. heinicke@physik.tu-freiberg.de.

Fall, 2003: Biomineralization Short Course. http://www.minsocam.org/MSA/Short_Courses.html#Biomineralization

Oct 6-9, 2003: North Africa & Mediterranean Geoscience Conf.. Tunis. http://www.eage.nl/conferences/index2.phtml?confid=15

October 20-25, 2003, 25th International Mining Congress, Acapulco, Mexico. Web site: http://www.mexpomin2003.com.mx/index2.html

Nov 2–5, 2003: Annual meeting GSA, Seattle, Washington. http://www.geosociety.org/meetings/index.htm.

Dec 7-9, 2003: International Congress of Chemistry and Environment ICCE-2003. India. http://www.chemenviron.com

Dec 8-12, 2003: AGU Fall Meeting, San Francisco, California, USA. Web site: www.agu.org.

Dec 12-13, 2003: ACE 2003 - 4th European meeting on environmental chemistry, UK. E-mail: mfitzsimons@plymouth.ac.uk.

May 17-21, 2004: 2004 AGU Spring & Canadian Geophysical Union: MontrÈal, Canada. Contact: meetinginfo@agu.org.

May 26-Juni 6, 2004: Polymorphism: Solvates and Phase Relationships, Erice, Italy. Yoel@bgumail.bgu.ac.il;

June 6 - 12, 2004 , 14th V.M. Goldschmidt Conference, Copenhage, Denmark. Web site: http://www.goldschmidt2004.dk/

July 25-20, 2004: 7th INTECOL International Wetlands Conference, Utrecht, Netherlands. http://www.bio.uu.nl/INTECOL

Aug 20-28, 2004: 32nd International Geological Congress (IGC), Florence, Italy. http://www.32igc.org/

Aug, 2004: 67th annual meeting of the Meteoritical Society, Rio de Janeiro, Brazil. Contact: E-mail: congrex@congrex.com.br

Dec 2004: ACE 2004 - 5th European meeting on environmental chemistry, Bari, Italy. E-mail: resta@metea.uniba.it

Dec 13-17, 2004: AGU Fall Meeting, San Francisco, California, USA. Contact : meetinginfo@agu.org.

2005: IAVCEI, Continental Basalt Volcanism, China.

Aug 2005: IUCr-20 - XX Meeting and General Assembly of the International Union of Crystallography, Florence, Italy.

July 2006: IMA-2006 - XIX General Meeting of the International Mineralogial Association, Kobe, Japan.

The **ACS Division of Geochemistry** is very pleased to announce that **Dr John M. Hayes** has been selected as the recipient of the the 2003 Geochemistry Division Medal.

Dr Hayes is being recognized for his visionary contributions to an understanding of organic geochemistry, cosmochemistry, isotope geochemistry and paleoenvironmental analysis. Additional details of the award can be found at the Geochemistry Division web site, http://membership.acs.org/g/geoc/ The medal will be presented at a special symposium in honor of Dr Hayes during the ACS National Meeting, to be held in New Orleans, March 23-27, 2003. (A complete list of other symposia is also available on the Division web site) Please join us in New Orleans to celebrate and recognize Dr Hayes' truly outstanding accomplishments and contributions to the field of Geochemistry.

Information for Contributors

Geochemical News **publishes timely and informative articles, announcements, letters, and reviews relevant to geochemists and geochemistry. Contributions are welcome from professionals, students, and other interested parties. Please send all communications to geochemical-news@wmich.edu.**

Text contributions should be in Microsoft Word format. Graphically-designed contributions (i.e. advertisements, announcements) should be submitted as PDF files, and must fit within one page having the dimensions 18.4 cm wide by 22.9 cm tall (or smaller).

Graphics files submitted as figures to accompany articles MUST be in one of the following formats only: PDF, GIF, JPG, or TIFF.

Thanks again for your contributions!

Mineralogical Society of America

Mineralogical Society of America Publications Price List and Order Form

Reviews in Mineralogy and Reviews in Mineralogy and Geochemistry (25% member discount)

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___v. 36: Planetary Materials (2002 reprint) **$40**
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___v. 38: U Minerals & Chemistry (1999) **$32**
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