Newsletter of the Mineralogical Society of America Vol. 16, No. 2, May 2000

The Lattice

MSA OFFERS SHORT COURSE ON SULFATE MINERALS

The Mineralogical Society of America takes its short course series to the slopes above Lake Tahoe on November 11-12, 2000. The short course, entitled "Sulfate Minerals: Geochemistry, Crystallography, and Environmental Significance," will be held at the Granlibakken Resort and Conference Center, Tahoe City, California. The co-conveners of the short course are Charlie Alpers, John Jambor, and Kirk Nordstrom. The short course is set to precede the 2000 GSA annual meeting in Reno, at which topical sessions will be held on sulfate minerals in hydrothermal systems and in low-temperature environments.

Sulfate minerals are common in sedimentary rocks and their significance in some fresh igneous rocks certain metamorphic rocks has only recently been appreciated. They are also important products of sulfide weathering, and play important roles in mineral exploration and environmental studies of metal mobility. This short course reviews the crystal chemistry of sulfate minerals and provides an overview of the most important settings of sulfate mineral formation, including hydrothermal systems, ground-water systems, evaporites, and weathering environments, both acidic and alkaline. The spectroscopy of sulfate in earth materials will be reviewed, including solid phases, the aqueous phase, and the mineral-water interface. Thermodynamics of sulfate minerals will be the basis of several presentations, including a summary of available thermodynamic properties for end-member sulfate minerals and a discussion of binary solid solutions and their interactions with aqueous solutions. The state-of-the-art with regard to modeling of sulfate mineral formation from concentrated solutions will be presented, including a comparison of ion-association and specific-ion-interaction (Pitzer) modeling. The colorful, efflorescent metal-sulfate salts from sulfide oxidation and the alunite-jarosite supergroup will receive special attention, as these are the phases of most environmental significance in acid mine drainage systems. Recent advances in the use of alunite, jarosite, and other sulfate minerals for studies of paleoclimate using stable isotopes and radiometric dating will be reviewed, along with other aspects of stable istope sytstematics. A highly interactive series of discussions in a relaxed, mountain setting is expected to continue with the related topical sessions at the 2000 GSA meeting in Reno the following week.

For additional information and registration forms for this short course, see the course description and registration form elsewhere in this issue of *The Lattice*.

MSA Course on Transformation Processes in Minerals to held in Cambridge, UK

The Mineralogical Society of America is expanding its short course venue to Cambridge, United Kingdom on September 1-2, 2000. The short course, entitled "Transformation Processes in Minerals", will be held in the Department of Earth Sciences, University of Cambridge, Cambridge, United Kingdom. The co-conveners of the short course are Simon Redfern, Michael Carpenter and Ekhard Salje. The short course, set to precede the Goldschmidt 2000 meeting in Oxford, covers some of the most important and timely information on mineral transformations.

Also in this issue

ISSN 1526-3746

From the President

To begin, let me issue a final reminder of a very special affair. During the spring AGU meeting, join your fellow MSA and Geochemical Society members at a reception to be held on *May 31, 2000 between 6:30 p.m and 8:30 p.m. in the Janet Annenberg Hooker Hall of Geology, Gems, and Minerals of the Smithsonian's National Museum of Natural History.* Don't miss this unique opportunity to view and discuss the spectacular exhibits in this newly renovated hall, in relatively uncrowded conditions and while surrounded by some of the world's foremost experts!

This is a ticketed event: $15 for members, $5 for students, $25 for non-members. Tickets will not be available on site that evening, but can be purchased online by visiting the Society's website, or by contacting the Society's Business Office. The event, which is co-sponsored by the Geochemical Society, is made possible by the generous cooperation of the Director and staff of the National Museum of Natural History, to whom we owe a large debt of gratitude. Special thanks also to the "local organizing committee," namely Jeffrey Post, Sorena Sorensen, Brooks Hansen, and our Society's tireless Administrator, Alex Speer.

Extraordinary opportunities like this are a special advantage of MSA membership, highlighting a wider range of benefits that accrue to MSA members individually, and to the entire membership (and to its science) in aggregate. But all of the beneficial activities of MSA depend on maintaining its size and its broad appeal, and present trends in this regard aren't wholly positive. In this letter I'd like to encourage you to *renew your membership right away, if you haven't yet done so*, and also to ask you to give some thought to ways of bolstering our ranks, something I see as vital if MSA is to continue its leadership role in promoting the mineral sciences.

What's going on?

In my November letter, under the heading "MSA's future: Broader, larger, stronger," I outlined three themes that encapsulate issues I think the Society needs to address effectively in the near future. Here I'd like to consider the first two of them — the Society's breadth and its size — both of which revolve around our membership.

Many have noted the apparent paradox between the expanding relevance of mineralogy to collateral disciplines and the steady downward trend in MSA membership for the last decade. Does this mean that MSA programs do not address the needs of mineralogically oriented disciplines that fall outside the traditional bounds of mineralogy, petrology, and crystallography? Or have we simply failed to make known to persons in those disciplines the advantages of MSA membership? Are the groups traditionally served by MSA no longer finding the same relative value in their membership and gravitating instead toward other organizations? Has MSA done less than it should to encourage international participation? Is part of this — for example, the decline in student memberships and in international subscriptions to our journal — simply the result of demographics and economics, factors over which we exercise no control?

Right now, no one really knows the answer to any of these questions, but I suspect that the answer to most of them is probably, "yes, to some degree." An obvious next step is to try to get some reliable answers to questions like these, by soliciting input from members about those aspects of MSA in which they find the greatest value — and if possible by getting input from non-members with mineralogical interests as well. I will propose to the MSA Council that we do this in the coming year. As part of a planned online membership renewal option, we can invite members to spend a few moments completing a short online survey that should give us some firm data. (Those of you who have been with the Society since the days of President Alex Navrotsky will recall an effort rather similar to this, spearheaded by Jonathan Stebbins, that served to direct and in some cases re-orient the Society's objectives for many years after. I think it's time to try again.)

A reminder: What MSA does, and why

If the surmise is correct that many of the questions above are properly answered by "yes, to some degree," then there are steps that can be taken now. In most cases, activities are already underway that should have appreciable effects. The breadth of topics covered by articles in *American Mineralogist* continues to expand; we are strengthening our ties to allied organizations by increased co-sponsorship of activities (our upcoming participation in Goldschmidt 2001 in Roanoke is a prime example); the addition of a European lecturer and European, Mexican and Canadian visits to the MSA Distinguished Lectureship program, together with co-sponsorship of the short course on "Transformation Processes in Minerals" at Oxford this fall, speak to an enlarging international component of MSA activities;

and we continue to expand our traditional efforts in public outreach (soon via our website), student support through the ...us Crystallographic and Mineralogy-Petrology Awards, short courses on vital topics, and of course publication of premier journals and the *Reviews in Mineralogy and Geochemistry* series.

MSA membership brings with it a wealth of direct benefits. Unless one chooses otherwise, *American Mineralogist* comes direct to one's door eight times a year. Our Society's publications, including the popular *Reviews in Mineralogy* series, are available to members at a discount of 25%. Members are also entitled to substantial discounts on subscriptions to *Mineralogical Abstracts*, *Journal of Petrology*, and *Physics and Chemistry of Minerals*. As an MSA member, one is eligible for registration at member rates at the Mineralogical Society of America / Geological Society of America annual meeting each fall, and at the spring and fall meetings of the American Geophysical Union.

And beyond all those considerations are the deeper, more-enduring benefits of membership: every person who joins MSA strengthens our ability to meet the Society's mission of promoting the mineral sciences within our professions and beyond them.

Against that backdrop, I have to believe that MSA membership has significant value to anyone with mineralogically oriented interests, and therefore that persons who are made aware ...all that MSA has to offer will jump at the chance to join up. So part of the solution may be simply making our Society better known to potential members. All of us can probably, with only a few moments thought, come up with the names of several individuals among our colleagues and students who should find value in MSA membership but who haven't yet signed up. Past experience proves it: *A direct approach from you, as a present member, to your non-member acquaintances is by far the most effective way of building MSA's membership.* I ask you, on behalf of the Society, to make the small effort necessary to describe the benefits of membership to your friends and colleagues, and invite them to sign up — right now, an application form can be downloaded from the Society's website, and soon, with the planned online membership application, joining up will be even simpler and quicker.

Best wishes to you all.

Bill Carlson
MSA President

In Memoriam

We regret to announce the passing of the following MSA ...ember. The Society extends its condolences to the family and friends of these scientists.

Bernard L. Murowchick, Life Member, 1950

The Lattice is published quarterly (February, May, August, November) by the Mineralogical Society of America. It is distributed to MSA members as a service. Articles and letters are welcome.

The Mineralogical Society of America is composed of individuals interested in mineralogy, crystallography, and petrology. Founded in 1919, the Society promotes, through education and research, the understanding and application of mineralogy by industry, universities, government and the public.

Membership benefits include: *American Mineralogist*, published bi-monthly; 25% discount on volumes in the Reviews in Mineralogy series; *The Lattice*; special subscription rates for *Mineralogical Abstracts, Physics and Chemistry of Minerals*, *Journal of Petrology*, and *Journal of Metamorphic Geology*; reduced registration fees at MSA short courses; member rates for the MSA/Geological Society of America annual meeting and member rates at MSA's spring meeting with the American Geophysical Union; participation in a Society that supports the many facets of mineralogy.

Dues for 2000 are $80 for professional members who elect to receive *American Mineralogist* and $50 for those who elect not to receive the journal, but who do receive all other membership benefits; membership is $30 for students. Membership is on a calendar year basis. Individuals who join after January 1, 2000 will be sent all back issues of volume 85, 2000.

For additional membership information and an application, and/or to receive a price list of the Society's publications, contact the Business Office.

Institutions may subscribe to the 2000 volume of *American Mineralogist* for the annual rate of $430 in the US and $440 for non-US addresses. The subscription price includes any new volumes of the *Reviews in Mineralogy* series published during the calendar year of the subscription. Payment must be received in full before a subscription will be started.

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Notes from Washington

• Ballots for the 2000 election of 2001 MSA officers and councillors were mailed to members at the end of April, 2000. They are due back in the Business Office by August 1, 2000. Voting is an important and the least painful way of participating in your Society. Third dues renewal notices were sent with the ballots to those 1999 members from whom we had not received a 2000 renewal through April 10, 2000. If you have not yet received a ballot, or a renewal notice if you need one, please contact the Business Office. This will be the last Lattice mailing to members who have not renewed for 2000.

• There is a new volume in the *Handbook of Mineralogy* series: Volume IV: Arsenates, Phosphates, Vanadates. More detailed descriptions about the series is at http://www.mineraldata.com/. Some MSA members may have gotten notice about this new book through the mail. One thing that notice did not say: MSA members can get a 25% discount on this volume, as well as the previous volumes, if ordered through MSA. Ordering details are on the Publication Order form elsewhere in this issue of *The Lattice*.

• More sections of the MSA website (www.minsocam.org) continue to come online.

The **Short Course** section contains a list of all upcoming short courses approved by Council, course descriptions once finalized with the organizers, course registrations for open courses, and any updates received from the course organizers.

Events Calendar is limited specifically to MSA events and deadlines. However, the section contains links to **The Lattice** online with its Meetings Calendar, as well as links to the more comprehensive American Geological Institute's (professional meetings, conferences, workshops, etc.) and *Lapidary Journal* (mineral shows) events pages.

Meetings section contains a list of all upcoming meetings at which MSA is scheduled to have an official presence, specific MSA events at those meetings, and links to pages giving a broader description of the meeting as well as registration and accommodation information.

The **Job Board** has employment opportunities in mineralogy and petrology, crystallography, geochemistry, and related fields. If you have a job announcement, please send it to the Business Office. There is no cost for posting it. Use the current job postings to format your ad.

The **American Mineralogist** section has been around for some time, but there have been some additions and changes. There are **instructions** for submitting **technical articles** and **memorials**. There are **table of conte** 's since the Nov/Dec 1994 issue, **full abstracts** since Jan/Feb 1997 issue, author/subject index since 1997, and the complete **New Mineral Names** feature since the Jan/Feb 1999 issue. **Unpublished depository documents**, if received in electronic form, are posted since the Jan/Feb 1998 issue. Shortly all the abstracts should be searchable. Council is to explore how to make the full text of articles available online to members.

The **Lecture Program** section contains a description of the current and next years Distinguished Lecturer series, the Lecture Program schedule, instructions on how to request a lecture visit for your school, and a list of past Distinguished MSA Lecturers.

The section for **MSA-Talk** contains instructions on how to subscribe, unsubscribe, and send a message to the list serve. If you have not subscribed, consider doing so. It is a source of interesting questions and answers, as well as useful notices.

The **Searchable Membership Directory** has been operational for several months. It is updated from the Business Offices records about once a month. Sometimes it freezes, but usually it is problem-free. Let us know if you encounter problems, we will unfreeze it. Also check your entry, and update it. Especially important are phone numbers and e-mail. Unlike snail mail, there is no organization like the US Postal Service to tell us that you have changed phone numbers or e-mail and what they may be. **Updating** can be done online.

Interested in what Council has done or decided? The **Council Minutes** section contains minutes of MSA council meetings and annual business meetings since the end of 1998.

We are slowly building the section on **Links to Mineralogical Societies/Publications**. If you have a useful link, please forward it to us.

The **Crystal Structure Database** has been compiled by Bob Downs and Paul Heese of the University of Arizona. It covers crystal structures reported in the *American Mineralogist* from 1935 to the present. The data is retrieved via a compound query using pop-up windows with the fields "Mineral Name", "Author", "Title", "Year", or "Volume". Actually the database is more than just a reporting of what was in the journal. The data for each mineral has been extensively checked a' ' tested for errors.

Awards and Grants section describes each, lists past recipients, and gives instructions about how to apply or nominate individuals. The Roebling and Distinguished

Public Service Medals sections even contain pictures of the medals, in case you are curious what these look like.

Elected MSA Officers contain the names and contact information for current officers as well as lists of previous officers. We are working backwards to compile a complete list of these since 1920.

For people who feel comfortable with online commerce with a credit card, you can now **register** for the MSA short course online and **order** publications using our secure server. By summer you will be able to **renew** your MSA memberships and subscriptions as well. Traditional methods by mail, phone, fax, and e-mail will always be available for those with some skepticism about online commerce.

If you have suggestions for any of the above, or spot errors, please let us know. MSA is for the most part a volunteer organization. You are welcome in constructing, adding, or keeping current any of these sections. If you have write-ups about MSA that we could add to any of these sections, please consider allowing us to post them.

- A book review by J. Richard Wilson of *N. L. Bowen and crystallization-differentiation: the evolution of a theory* by D. A. Young appeared in *Lithos* 50, 255-256 (2000). Bowen refused to require his students at Chicago to purchase his 1928 *Evolution of the Igneous Rocks* because of its exorbitant U5$5 price (=$49 in 1999 $). However, Wilson thoroughly recommends Young's informative and entertaining book about Bowen's petrological career and impact on modern petrology at US$16 more than 50 years later.
- We have a new part-time Editorial Assistant for *The American Mineralogist*. James M. Wenger, a geology student at George Washington University, began work with us in February.

J. Alex Speer, MSA Administrator
j_a_speer@minsocam.org

Members in the News

Alexandra Navrotsky, University of California – Davis and past president of MSA, was awarded the CEC Outstanding Educator Award by the American Ceramic Society on April 30, 2000. Alex will also be awarded the Huffman Award by the Board of Directors of Calcon'2000, and is the A. M. Cruickshank Lecturer at the Gordon Conference on July 23-28, 2000.

David Mogk, Montana State University, will be awarded the AGU Award for Excellence in Education at the Spring 2000 AGU meeting.

2000-2001 MSA Distinguished Lecturers

Since its inception the Lecture Program of the Mineralogical Society of America has proven to be a great success. The varied and interesting lectures presented by MSA Distinguished Lecturers have been appreciated by students and faculty at many colleges and universities. The Council of the Mineralogical Society is again offering the program for the 2000-2001 academic year with the arrangement that the MSA will pay travel expenses of the Lecturers, and the host institutions will be responsible for local expenses, including accommodation and meals. For the first time this year MSA has expanded the program to include 3 lecturers, one of whom resides in Europe. Because MSA membership is increasingly international, we are encouraging our Canadian, Mexican, and European colleagues to request lecturers. Depending on the response, one or more lecture tours will be arranged outside MSA's traditional geographic venues. The Mineralogical Society of America is pleased to announce that its Distinguished Lecturers for 2000-2001 are:

DR. RHIAN JONES, Institute of Meteoritics, University of New Mexico, who will offer lectures on

From stardust to asteroids: Meteorites and their record of solar system formation. and

Martian meteorites: A sneak preview of samples from our neighbor planet

DR. IAN PARSONS, University of Edinburgh, Scotland who will offer lectures on

Self-organization in crystals: Feldspar weathering, and the origin of life and

Twelve orders-of-magnitude: How nanoscale features of minerals solve problems on the kilometer scale: . Klokken intrusion, South Greenland

DR. JOHN HOLLOWAY, Arizona State University who will offer lectures on

Mid-Ocean Ridge Black Smokers: Biogeochemical Cauldrons on the Seafloor and

The Upside-down World of Subduction Zones: Cold Slabs to Explosive Volcanoes

If your institution is interested in requesting the visit of a MSA Distinguished Lecturer, please contact the Lecture Program Administrator: *Dr. Helen M. Lang, Department of Geology & Geography, P.O. Box 6300, West Virginia University, Morgantown, WV 26506-6300 USA, e-mail: hlang@wvu.edu, Tel: 304-293-5603 ext. 4312, Fax: 304-293-6522.* The Lecture Program is designed to run from late September, 2000, through April, 2001. Lecturer requests received by May 8, 2000, will be given priority. Late applications will be considered on a space-available basis. In making your request please include (1) airport proximity from, and travel time to, your institution, (2) the name of a contact person at your institution for the month of May and Ju (when Lecturer schedules will be assembled), (3) contact e-mail addresses and phone numbers, and (4) flexibility on Lecturer preference. (5) Schools outside the U.S. should indicate the end date for spring-term 2001 classes. Please note that because of travel and schedule constraints it is normally not possible to satisfy requests for tightly constrained dates such as seminar days.

MSA-sponsored Symposium on Advances in Mineral Structure Analysis at AGU

The Mineral Structures Interest Group of MSA is sponsoring a symposium at the Spring AGU in Washington, DC entitled "Advances in Mineral Structure Analysis." We hope to highlight some of the most exciting techniques and observations that have emerged over the past decade, and we encourage papers from a broad range of research areas involving minerals and mineral-related materials. Examples would include powder and single-crystal diffraction (at all temperatures and pressures), surface crystal structures and reactions, spectroscopy, phase transitions, electron microscopy, structure modeling, etc. This session will complement two other MSA-sponsored symposia: "Mineral Physics and Chemistry: A Symposium in Honor of William A. Bassett," organized by Dave Mao & Russ Hemley; and "Mineral Surface Chemistry and the Origin of Life," organized by Joakim Bebie & Timothy Filley.

We also are planning other activities to celebrate mineralogy at the beginning of the millennium. We hope to hold a one-day workshop at the Carnegie Geophysical Laboratory to provide a hands-on introduction to Rietveld analysis of powder diffraction data, from sample preparation to structure analysis. In addition, Jeff Post is working with the Smithsonian administration to arrange an evening reception in the National Museum of Natural History. More information about these activities will be forthcoming as our plans develop.

We hope to see a large contingent of MSA membe in Washington this spring. If you have questions, please contact Jeff Post, Peter Heaney (814-865-6821) or Charlie Prewitt.

Holdaway Session at 2000 GSA Meeting in Reno, Nevada

Prof. Michael J. Holdaway, one of the leaders in the field of metamorphic petrology, is retiring from academic life. To honor his many contributions to academia, to the study of metamorphic petrology and to the Mineralogical Society of America (as Editor of American Mineralogist and President of the Society), an MSA-sponsored session will be held at Geological Society of America meeting in Reno, NV (Nov. 13-16, 2000). The topical session is No. 45: "Metamorphic Petrology from Experiments to the Field: A session honoring M.J. Holdaway".

During his nearly 30 year career, painstaking and slow experiments were undertaken that today remain fundamental to our understanding of many metapelitic minerals (e.g. determination of the Al-silicate phase diagram, cordierite and staurolite stabilities). This expert experimental work has been guided by, and intimately related to, detailed field observations that were then linked with theoretical analyses of minerals in order to more accurately quantify pressures and temperatures of metamorphic terranes. He was one of the first to demonstrate the importance of light-elements in effecting mineral stabilities, after the widespread use of the electron microprobe effectively eliminated these elements from consideration. This also lead to the discovery of staurolite as a major sink for Li in the middle crust. In addition, he demonstrated that this major index mineral, thought to have a constant H value did not, and that this variability must be taken into account when deriving thermodynamic properties thus providing a partial resolution to the staurolite enigma. This work highlighted the necessity of minor elements as a determining factor in the stability of metamorphic minerals. Recently his work has been closely allied to theoretical analyses of geothermobarometers. His experimental work was closely associated with field studies in NW Maine and New Mexico. His careful study of rocks from Maine (together with C. Guidotti) elucidated the polymetamorphic nature of the mountain belt and lead to a reinterpretation of Acadian metamorphism in this area. Clearly, M. J. Holdaway is a leader the area of experimental petrology and linking experiments to the field and to the complex mineral chemistry of rocks.

In addition to his distinguished scientific career, M.J. Holdaway promoted and nurtured the field of metamorphic petrology through the training of graduate students, by opening his experimental lab to colleagues and by his active participation in professional societies. Most notably, he served as Vice-President, President (1992) and Past President of the Mineralogical Society of America from 1991-1993 and as Editor of the prestigious American Mineralogist from 1980-1985. He continues to be active on many other MSA committees and participant in GSA annual meetings.

To celebrate the career of M. J. Holdaway on the occasion of his retirement, a topical session emphasizing his primary interests in metamorphic petrology will be held at GSA. The session in metamorphic petrology focuses on all aspects of field, theoretical, and experimental petrologic studies. In particular, papers are welcomed which emphasize metamorphic petrology of Maine, geothermobarometry, crystal chemistry of metamorphic minerals and experimental determination of mineral stabilities. For more information contact Barb Dutrow (dutrow@geol.lsu.edu). Contributions are welcome.

22nd FM-TGMS-MSA Mineralogical Symposium

THE MINERALS OF RUSSIA

In conjunction with the Friends of Mineralogy, Tucson Gem and Mineral Show

Saturday February 10, 2000

The twenty-second annual Mineralogical Symposium will be held on February 10, 2001at the Tucson Gem and Mineral Show. The Friends of Mineralogy, the Tucson Gem and Mineral Society, and the Mineralogical Society of America cosponsor it. The topic of the symposium is Minerals of Russia, the Tucson Show's theme for 2001. Papers on descriptive mineralogy, paragenesis, classic and new locations, and related subjects about the minerals of Russia are welcome. An audience of amateur and professional mineralogists and geologists is expected.

Anyone wanting to present a paper should submit a 200 to 300 word abstract to: Raymond W. Grant, Mesa Community College,1833 W. Southern Ave.,Mesa, AZ 85202; (480) 461-7008 (phone),(480) 461-7234 (fax) rwgrant@mail.mc.maricopa.edu (e-mail)

Presentations will twenty minutes, followed by a period for questions. Abstracts must be submitted by September 10, 2000. The abstracts will be published in the January/February 2001 issue of the *Mineralogical Record.*

All About References

By Rachel A. Russell, American Mineralogist Managing Editor

References are very important because they help you prove your arguments, document the research, provide background, and so on. I am sure all scientists understand their value so I will not go into that. What is dismaying is how often the reference section and the citations in the paper have problems.

The key point with references is to allow the reader to find your background material. If you do nothing else, supply too much information rather than too little! Think to yourself, can someone find the book "Geology Today" with just an author name and year? Probably not. Can they find it with a publisher's name? Maybe. But throw in the city where the publisher is located (the main sales office) and then they can certainly track down that book.

The first way that American Mineralogist, like all journals, aids this process is by having a standard style. Because I go through and apply our style to your references, I quickly can figure out what information is missing and ask you for it. I can also quickly determine if citations in the text and the references don't match or are missing and ask you about that as well.

Therefore, we ask that authors at least try to put the references into our style. If authors took a moment to polish their references, I think it would make for stronger papers. Ultimately readers will benefit, because they will be able to find the references they need. Understanding our style is not hard, but there are a lot of details. Here I am going to discuss the order of references, the basic journal citation format, and discuss a few variations of the basic.

Ordering References

There are 3 basic types of references to order: one-author documents, two-author documents, and three-author documents. One-author and two-author documents go alphabetical, with one-author documents first. If there are exact doubles, then it goes chronologically.

Multiple author documents go last and by date. Think about the citations. If the references for the citations "Chrisman et al. 1990; Chrisman et al. 1995" were in alphabetical order you might take several minutes to find them because you don't know the second author. So instead you just look for the Chrisman multiple author listings and then the dates. Easy.

Here are (made-up) examples:

Smith, R. (1990) Under your feet: Geology today. McMasters, New York.

Smith, R. (1991) Below the ground: Our hidden riches. McMasters, New York.

Smith, R. and Dymek, R. (1980) Gold, my favorite mineral. Science, 65, 567570.

Smith, R. and Dymek, R. (1990) Gold, my favorite mineral-Revisited. Science, 75, 367-370.

Smith, R. and Jones, D. (1970) Silver, the new favorite. Science, 75, 367370.

Smith, R., Dymek, R., Anderson, B.P., and Jones, D. (1989) Zeolites. American Mineralogist, 75, 367-370.

Smith, R., Anderson, B., and Jones, D.H. (1992) The high-pressure studies of crystal chemistry at high pressures. American Mineralogist, 75, 367370.

So, start at the top: naturally the single Smith's are first, and in order of date with the oldest material first. The doubles are next, with the oldest of the Smith and Dymek entries going first. The Smith and Jones entry follows the two Smith and Dymek entries because of alphabetical order.

The multiple Smith entries follow and here t. alphabetical order does not matter, just put the earliest date first.

More Details

Note a few other things about those made-up entries. There are commas after each last name, and commas in a series. There is a comma before "and" only when it is more than two. When double initials are used there are no spaces. The year is in parentheses, with no colons. The titles are not in italic, no numbers are in bold, and issue numbers are only needed when the pages start at 1 for each issue. Titles end in periods. Our style is very uncluttered.

The journal name is fully spelled out! This is the most common and most tedious mistake to fix. I have been in publishing a long time, and my experience is that abbreviating journal names is more trouble than the tiny amount of space saved is worth. Trust me, all of you would abbreviate the journal name differently, and I would have to come up with standards and fix them all. But most importantly, what we want is for the reader t be able to find the reference. Spelling out the nam prevents any confusion whatsoever.

Also note that the title of the article or book or whatever should be exactly whatever it is. This is "quoted terial" so I do not alter it in anyway and I assume that you have quoted it correctly, right down to misspellings, British spellings, or whatever.

Citations

In the text, the first basic thing is to use "et al." for multiple authors (do not write "Smith, Jones, and Dymek (1990) discovered" instead write "Smith et al. (1990) discovered"). The second basic thing is to use a semi-colon between multiple citations with commas between citations for the same author set (e.g., Smith 1999; Jones 1929; Conway and Dymek 1980, 1984; Jones et al. 1988, 1994). The two Jones may have completely different authors, but it doesn't matter because the reader will be able to quickly find them both chronologically.

Your attention to details will be greatly appreciated by your editor. As time goes by, I'll put examples of more types of references in the web version of this article (http://www.minsocam.org then click on American Mineralogist!).

MSA Award Nominations Requested

This is a reminder to all MSA members to please make nominations for the MSA award. This is an excellent opportunity to support and recognize outstanding young scientists working in areas related to the mineralogical sciences. The nomination deadline is June 1.

The Mineralogical Society Award is intended to recognize one or more outstanding published contributions to the science of "mineralogy" by a relatively young individual. The work must have been accomplished either [1] before the age of 35 and the candidate must be less than 37 on Jan. 1 of the year the award is given, or [2] within 7 years of the awarding of their degree. Mineralogy is broadly defined and her/his published record should be related to the mineralogical sciences and should make some outstanding contribution to them.

MSA members are urged to submit nominations for the MSA Award. There is no nomination form. A letter of nomination and a curriculum vitae for the candidate are all that is needed. Additional letters of support (typically one to three) are welcome. The deadline for nominations is June 1. It would be appreciated if the nominator, and all individuals writing letters of support, would send one original and an e-mail version of their correspondence to the Committee Chair. In that way much of the committee work can then be done by e-mail. This makes it easier for the committee members, who are increasingly international, to their work. Otherwise, the original and 5 copies should be sent to the Committee chair: Jeffrey E. Post, Chair Smithsonian Institution, Washington, DC 20560-0119 ph:(202) 357-4009; fax: (202)357-2476 e-mail: post.jeffrey@nmnh.si.edu

Preparing Manuscripts for Electronic Publishing in GMR

By Frank Spear and John Brady, GMR Editors

The mission of MSA's electronic journal Geological Materials Research (GMR) is "...to provide a means for authors to utilize the capabilities of electronic publication for the enhancement of scientific communication through the use of color, animations, and interactive design elements". Whereas the benefits of color figures are obvious, many authors may be intimidated by the prospect of electronic publishing, and feel they do not have the computer skills to achieve satisfactory results. Our goal as editors is to facilitate the production of electronic manuscripts and the goal of this letter is to provide a few tips on some of the methods we have found to work best.

Manuscripts in GMR are published in "Portable Document Format" (pdf). This preserves the formatting of the original, and is viewable (and printable) on any computer that has a copy of Adobe's free Acrobat Reader software. Production of pdf documents is also easy, but requires purchase of Adobe Acrobat. Authors who do not own Adobe Acrobat should prepare manuscripts with word processing software, such as Microsoft Word. When accepted, the manuscript will be converted to pdf format by the editors.

Color figures are easily embedded into word processing documents. Photographs are placed as TIFF images, with an image size (read number of pixels) adjusted to match the information content of the image. Although computer screen resolution is 72 dpi, the standard for images published in GMR is 144 dpi so that the reader can zoom in for more detail. Higher resolutions can be used if there is a scientific justification for more detail. Line drawings, such as graphs, maps, or diagrams, should not be converted to bitmapped images. Using Microsoft Word as an example word processing program, we have found that embedding diagrams as encapsulated postscript (eps) graphics provides superior results to embedding figures as bitmapped images. With an eps graphic, WORD displays a bitmapped version for viewing within the document, which can be moved and scaled as desired. On printing or pdf production, WORD uses the eps version to produce a postscript graphic. In the final pdf document, the image is displayed in its original postscript, so there are no "jaggies" and enlarging the image onscreen results in progressively finer detail. Most drafting programs (for example, Adobe Illustrator) are capable of producing eps versions of a graphic (be sure to include a "preview" of the graphic, or WORD will not be able to display the graphic onscreen). On Macintosh computers, EPS versions of images can also be created by printing software, such as Laserwriter 8, by selecting the "print to file" option and choosing the eps format.

One advantage of electronic publishing is the availability of interactive figures. Any figure can be made interactive, so that when the user clicks on the image, something happens. For example, "hot spots" in a small scale map might be linked to enlargements of particular regions, or a photomicrograph in plane light might be linked to its counterpart in crossed polarized light so that clicking on the image would switch between the two. In a GMR article published last year (Spear, 1999), the author linked a figure of a petrogenetic grid to the AFM diagrams corresponding to the stability fields for different mineral assemblages. These sorts of interactive viewing capabilities are easily incorporated into simple HTML code and modern web-page software makes this especially easy. GMR papers that include interactive figures link to a web page with the figure that will open in a browser window.

Another unique feature of electronic papers that is not available in print journals is the inclusion of movies or animations that show processes, experiments, or models in action. Several methods are available for producing animations over the world wide web. We have found that Quicktime movies provide the required cross-platform viewability, offer the reader some control over how the animation will be viewed (start, stop, single frame, etc. controls) and are easy to produce. Animated GIFF files also work well, but the reader has less control on how the image will be viewed. There are many commercial programs available for production of Quicktime movies, but the first step in every case is to create a series of images that, when shown sequentially, will display the desired animation. For example, the image of a rotating crystal might be created by drawing a series of views in different orientations or the results of a 2-dimensaional thermal model might be displayed by creating a series of images (in color, of course) showing the temperature distribution in the crust. The images must then be imported into a program that can create an animation sequence. If GIFF files are to be used, the freeware program "GiffBuilder" for the Macintosh works well. For creation of Quicktime movies, the freeware program NIH Image has the capability of reading a sequence of images and converting the sequence into a "stack", which can then be saved as a Quicktime movie. The movie or

animated GIFF is then linked to the appropriate figure in the pdf document and displayed in a web browser.

Other technologies are available, or are on the horizon for producing even more sophisticated graphics output as part of electronic papers. Virtual Reality (VR) drivers are already available (e.g. QuicktimeVR), and provide means for viewing an object or a scene from any direction with the user controlling the view point with simple mouse drags. VRML (Virtual Reality Modeling Language), which will allow 3-dimensional vector graphics to be rendered in real time, may soon be a standard on web browsers. As the technology for electronic communication advances, the opportunities for scientists to utilize better ways to communicate their scientific results are expanding enormously. We all want our work to be read and understood. Electronic publishing can help this effort, and it can be fun!

Call for Nominations for the Mineralogical Society of America Mid-Career Award

The Mid-Career Award of the Mineralogical Society of America recognizes outstanding scientific contributions through original research in mineralogy by a mid-career scientist. The science of mineralogy is defined broadly, and the awardee's published research should be related to the mineralogical sciences and should make some outstanding contribution to them. Service to mineralogy, teaching, and administrative accomplishment are not to be considered primary merit for the award. Nominees should not be eligible for the MSA Award (the MSA award is for research before the age of 35 or for research completed within 7 years of the degree award date), nor should they be a logical candidate for the Roebling Medal (the highest award of the society for scientific eminence, typically presented to later-career scholars).

MSA members are urged to submit nominations, consisting of a cover letter outlining the candidate's qualifications in light of the above criteria, two to five supporting letters, and the nominee's curriculum vitae. The nomination materials must be received no later than June 1.

We request that one hard copy plus an electronic copy of these materials be sent by e-mail to the committee chair, David Bish (BISH@LANL.GOV), so the committee work can be done by e-mail (otherwise, send the original and 5 hard copies). This is especially important in light of the involvement of international committee members and nominators. Nomination materials should be sent by mail to: David L. Bish, Chair, MSA Mid-Career Award Nomination Committee, Geology and Geochemistry, Los Alamos National Laboratory, Mail Stop D469, Los Alamos, NM 87545, Phone: 505-667-1165, Fax: 505-665-3285

MSA grant for research in crystallography

MSA invites applications for a $3500 grant for research in crystallography. The award selection will be based on the qualifications of the applicant, the quality, innovativeness, and scientific significance of the proposed research, and the likelihood of success of the project. There are no restrictions on how the grant funds may be spent, as long as they are used in support of research. The only restrictions on eligibility for the grant are that the applicant must have reached his or her 25th birthday but not yet reached his or her 36th birthday on the date the grant is awarded, and that the person is not a MSA Councillor. The award will be made in January, 2001.

A list of past recipients of this grant and the titles of their projects is available for inspection at http://www.minsocam.org/MSA/Crystallography_Award.html. Application forms are available from the same site.

The deadline for the return of applications to the MSA Business Office is June 1, 2000.

Advertisements in The Lattice

The Lattice accepts paid advertisements. Rates:

Ad frequency:	1 time	4 times
Ad type	*(per insertion)*	
Full page:	**$500**	**$400**
Half page:	**$250**	**$200**
Quarter page:	**$125**	**$100**
Eighth page:	**$75**	**$50**

Details may be obtained from the MSA Business Office: J. Alex Speer, Mineralogical Society of America, 1015 Eighteenth Street, N. W., Suite 601,Washington D. C. 20036, Telephone: 202-775-4344, Fax: 202-775-0018, E-mail: business@minsocam.org. Only camera-ready copy of advertisements can be accepted, and should be sent directly to the MSA Business Office

WORLD'S LARGEST (mineralogy-containing) GEOLOGY COURSE WINS EUROPRIX MULTIMEDIA AWARD

The Open University, Milton Keynes, United Kingdom was awarded the 1999 EuroPrix in the "Knowledge and Discovery" category for its new CD-ROM-based mineralogy and geology multimedia. It is used in the university's "S260 Geology" course, a second-level undergraduate "distance-learning" course with over 800 students a year. A large proportion of the course (4 out of 7 CD-ROMs) covers mineralogy and "Earth Materials".

The EuroPrix 99 contest had 442 entries from 28 countries. Entries were evaluated for "their interactivity and brilliant technical implementation that hold to the premise of use and promotion of new technologies and content" (http://www.europrix.org). The judges concluded that "S260 Geology" brings together an impressive depth of earth science knowledge and offers a rich and diverse set of learning materials and discovery routes through a relatively simple interface. Given that distance learning materials have to be clear and easy to understand because tutors are not available to assist the student, "S260 Geology" was viewed as one of the best seen to date. The judges found that "S260 Geology" is an example for potential authors of educational products of how education and science can benefit from multimedia. (http://www.europrix.org/winners/knowledge/facts.html)

"S260 Geology" is in its second year of being taught and widely viewed as a success. According to MSA member David Palmer, one of the authors, the significance of the accompanying multimedia is that it represents a renaissance in teaching mineralogy and crystallography - and all within the confines of a mainstream "Geology" course. When many universities are drastically curtailing the teaching of "difficult science", this re-invention of a traditional subject may provide some hope for the future: surmounting perceived barriers and lifting mineralogy into a wider, more accessible student market for the twenty-first century.

In the course, basic crystallography is introduced in a "Virtual Crystals" multi-media package. A series of annotated QuickTime movies, punctuated by fully-rotatable QuickTime "Virtual Reality" objects, allow students to explore close-packed planes and three-dimensional packing sequences. Focussing on the interstices between close-packed planes leads to a discussion of halite, sphalerite and more complex structures. Physical properties that result from crystal structures are explored in "Properties of Minerals". A simple, tabbed interface lets students browse "hardness", "color", "cleavage", "acid test", "shape", "twinning", etc. Examples of these properties are illustrated with movies, animations and sound, and related, where possible, to underlying structural control. A second "Virtual Crystals" package provides a detailed insight into the crystal structures of ten rock-forming minerals. Each mineral is "constructed" in a series of steps, taking basic building blocks (e.g., SiO_4 units), assembling them into various geometries (e.g., chains or rings) and analyzing the properties of the final structure (e.g., 60° cleavage in amphibole, contrasted with 90° cleavage in pyroxene).

A "Digital Lightbox" provides a basis for understanding optical properties of minerals, including the origin of interference color. Students begin with a real-life experiment, viewing a cleavage flake of gypsum between two polaroid sheets; this is then replicated in a simple computer experiment which serves to introduce the computer "lightbox" interface. Next, students can vary the wavelength of light passing through a simulated quartz wedge. Interference fringes can be observed, which change in real time as the wedge is rotated or wavelength altered. Finally, white light can be simulated, giving the familiar "Newton's Scale of Colours".

A multimedia "Digital Microscope" complements the traditional microscope, providing a set of interactive virtual thin sections. These are fully rotatable with simultaneous viewing of both plane-polarized and crossed-polars images. Originally developed for visually-impaired students, this has proved popular with all students; it also has the advantage that all students and tutors see exactly the same thin section images.

As an appendix, the Earth Materials module includes a "Digital Kit" CD-ROM, with interactive (QuickTime Virtual Reality) specimens of all rocks, minerals, and fossils encountered in the course.

Technical specifications and information for obtaining The Open University "S260 Geology" CD's can be found at http://www.ouw.co.uk/ouw/software/MFr.htm (follow the "Geology" link in the left-hand frame).

THE DEADLINE FOR THE AUGUST LATTICE IS AUGUST 20

Contributions may be sent to Darrell Henry via surface mail Department of Geology and Geophysics, Louisiana State University, Baton Rouge, LA 70803 or via e-mail at glhenr@unix1.sncc.lsu.edu.

Ludo Frevel Crystallography Scholarship Award

The science of crystallography has played a key role in the development of X-ray diffraction, electron diffraction, and neutron diffraction for the elucidation of the atomic structure of matter. Crystallography is an interdisciplinary branch of science taught in departments of physics, chemistry, geology, molecular biology, metallurgy, and materials science. To encourage promising graduate students to pursue crystallographically-oriented research, the International Centre for Diffraction Data (ICDD) has established the Crystallography Scholarship Fund. Now known as the Ludo Frevel Crystallography Scholarship Fund, its new name was recently adopted to honor the founder of the fund, Dr. Ludo Frevel. While the Ewald Prize is awarded every three years to an internationally recognized crystallographer, little effort has been made by science departments to cultivate aspiring crystallographers. Convinced of the beneficial scientific impact of the proposed scholarships for crystallographically-oriented research, the ICDD has solicited funds from private and industrial sectors to support this program. The ICDD has awarded 33 scholarships since 1992. The year 2000 Scholarship Awards were in the amount of $2,250 each.

Applicant Qualifications: The applicant should be a graduate student seeking a degree with major interest in crystallography, e.g., crystal structure analysis, crystal morphology, modulated structures, correlation of atomic structure with physical properties, systematic classification of crystal structures, phase identification, and materials characterization. There are no restrictions on country, race, age, or sex. The term of the scholarship is one year. The recipient may make application for one renewal at the end of the first year. Because a limited number of scholarships are awarded, renewal applications will be considered on a competitive basis in conjunction with all applications that have been submitted up to the closing date. The scholarship stipend is to be used by the graduate student to help defray tuition and laboratory fees. A portion of the stipend may be applied to registration fees to accredited scientific meetings related to crystallography. No more than one scholarship will be awarded to applicants at any one accredited institution per year. The funds of the scholarship are not to be used for travel

Applications for the year 2001 awards must be received by the ICDD no later than 31 October 2000. Submit: [1] Curriculum Vitae, listing degree(s) held and degree(s) sought. [2] A one-page proposal by the graduate student describing the type of crystallographic research to be partially supported by the scholarship. [3] A supportive letter from the sponsoring professor of an accredited university or an institute of technology on institution letterhead. Please mail to: Scholarship Awards Committee, c/o Secretary, ICDD, 12 Campus Blvd, Newtown Square, PA 19073-3273 U.S.A.

Check MSA's Website

The MSA website (www.minsoc.org) is a window into our organization. As mentioned in the "Notes from Washington" section, the website continues to improve and provide timely information on MSA and the geosciences in general. It will continue to improve with the input of the MSA members – so get involved.

Goldschmidt 2001

Planning is underway for Goldschmidt 2001, to be held at the historic Hotel Roanoke and Conference Center, May 20-24, 2001. As co-sponsor of Goldschmidt 2001, the Mineralogical Society of America invites its members to participate and to propose and organize technical sessions. Additional information, including a preliminary listing of symposia and technical sessions, is available on the MSA website at: http://www.minsocam.org/

The Hotel Roanoke and Conference Center (HRCC) is a turn-of-the-century hotel that has been completely renovated and modernized, with the addition of a state-of-the-art conference facility. All technical sessions a social activities will be held in the HRCC, and 250+ lodging rooms have been reserved for conference attendees. Additional lodging will be available at several nearby hotels, many of which are within easy walking distance of the HRCC. Interested persons should visit the HRCC website at: http://www.hotelroanoke.com/

Additional information may be obtained from either of the co-chairs of Goldschmidt 2001, Bob Bodnar (bubbles@vt.edu) or Mike Hochella (hochella@vt.edu).

1st International Professional Geology Conference

The Spanish Official Association of Geologists (ICOG), the European Federation of Geologists (EFG), the American Institute of Professional Geologists (AIPG), the Canadian Council of Professional Geoscientists (CCPG), the Spanish Geological Society (SGE) and the University of Alicante (UA) are pleased to present the 1st International Professional Geology Conference, to be held in Alicante (Spain), from 11 to 14 July 2000.

Professional geology has definitively taken a place in Society. Geological hazards, geotechnical engineering, hydrogeology, environment, exploration and exploitation of mineral resources, waste disposal, etc are geological disciplines that have brought geology into the forefront of social preoccupation. The recent natural disasters all over the world enhance the need of geological knowledge in everyday life. This new view of geology as a social service requires to know the real situation of geologists in society.

This 1st Conference on Professional Geology is a magnificent opportunity to draw the attention of society in general and those responsible for the geological management in particular, to the geological problems of the world. It also intends to be a forum to debate all aspects of professional activities in the field of Earth Sciences and a suitable place to exchange experiences and ideas among participants. The venue also aims to the formulation of initiatives leading to create a World Professional Geology Organisation whose objective is use the geological knowledge to serve the society thus fulfilling the motto of this conference "Geology serving society in the XXI century"

The Conference will have six general sessions, nine round tables and six short courses, featuring all the relevant aspects of professional geology in the world. The Conference will be held in morning and afternoon sessions, each with a coffee break. An exhibition titled GeoExpo-2000 will be part of the event and so will be various thematic courses.

For further information, please contact: Ms Yolanda Ruiz- Pérez Tels: +34.91.5532403, +34.91.3944868 or +34.626365068. Fax: +34.91.5330343. e-mail: eurgeomr@eucmax.sim.ucm.es or icog@icog.es

Special Issue of Geochimica et Cosmochimica Acta in Honor of Werner Stumm

In October, Geochimica et Cosmochimica Acta published a Special Issue in honor of Werner Stumm, who many of us consider one of the grandfathers of the branch of geochemistry that we call "wet-chemistry". The issue of Geochimica et Cosmochimica Acta (Volume 63, Nos. 19/20) is entitled "Geochemistry in Aqueous Systems". The Guest Editors for this special issue are Susan Stipp, Patrick Brady, K. Vala Ragnarsdottir and Laurent Charlet.

It is a monster issue, 2.5 times thicker than average, containing 53 high quality articles. When it was published, Elsevier agreed to print a limited number of extra volumes at cost, so that authors who are not members of the Geochemical Society and other members of the scientific community would be able to buy it. They have made it available for $40. It is offered at cost, the Geochemical Society is not making any money from it. To order extra copies of this special issue at $40 per copy, there is an order form associated with the onlir version of the Lattice. For more information on this offe to MSA members, please contact Susan Stipp at stipp@geo.geol.ku.dk.

Mineralogical Society of America Short Course Announcement

SULFATE MINERALS: Geochemistry, Crystallography, and Environmental Significance

Dates: Saturday and Sunday November 11-12, 2000 (preceding the Mineralogical Society of America-Geological Society of America Annual meeting in Reno, Nevada)

Location: Short Course sessions are between 8:00 am - 5:00 pm at the Granlibakken Resort and Conference Center, PO Box 6329, Tahoe City, CA 96145-6329 U.S.A. voice: (800) 543-3221, fax: (530) 583-7641, e-mail: reservations@granlibakken.com.

Conveners: *Charles N. Alpers* U.S. Geological Survey, Placer Hall, 6000 J Street, Sacramento, CA 95819-6129, phone: (916) 278-3134, fax: (916) 278-3013, e-mail: cnalpers@usgs.gov.

John L. Jambor, 316 Rose Hill Wynd, Tsawwassen, BC V4M 3L9, Canada, phone: (604) 948-1368, fax: (604) 948-1369, e-mail: jlj@wimsey.com.

D. Kirk Nordstrom. U.S. Geological Survey, 3215 Marine St., Boulder, CO 80303, phone: (303) 541-3037, fax: (303) 447-2505, e-mail: dkn@usgs.gov.

Fees:

		on or before 9/15/2000	*after 9/15/2000*
Professional Registration:	Member	$ 360	$ 410
	Non-member	$ 440*	$ 490*
Student Registration:	Member	$ 120	$ 170
	Non-member	$ 150*	$ 200*
Speaker		none	none

* includes MSA membership dues for 2001.

Registering: Registration forms are available from the MSA Business Office, 1015 Eighteenth St NW Ste 601, Washington, D.C. 20036-5274, USA. Tel: 202-775-4344 Fax: 202-775-0018 E-mail: business@minsocam.org; or the MSA Home Page (http://www.minsocam.org). Registration form with payment must be returned to the MSA Business Office.

Practical: Registration fee includes MSA short course sessions, refreshments at breaks, and *Reviews in Mineralogy and Geochemistry* volume. There is an informal welcoming reception beginning 7:30 pm Friday evening, November 10 at the Granlibakken Resort. Snacks will be provided for those who arrive too late for dinner (6:30 – 8:30 pm). Registration fee does <u>not</u> include room, meals, or transportation costs to or from Reno, NV. Participants must contact the Granlibakken Resort and Conference Center, PO Box 6329, Tahoe City, CA 96145-6329 U.S.A, voice: (800) 543-3221, fax: (530) 583-7641, e-mail: reservations@granlibakken.com to make reservations, pay for rooms, and reserve ground transportation. A block of 100 rooms has been reserved for short course participants at Granlibakken until October 10, 2000. Lodging fees include all meals (Friday dinner through Sunday lunch). A day-use fee including all meals will be charged to local participants who do not wish to stay at Granlibakken.

The most practical airport to reach the site is Reno, NV. Ground transportation to and from Reno, NV is available from the Granlibakken Resort. Please provide your arrival time and request transportation when you register for your room. Cost is $27.50 each way.

Student Scholarships:

A limited number of student scholarships, including registration fee, lodging, meals, and grour transportation, may be available. For information, contact Charlie Alpers (voice: 916-278-3134, fax: 916 278-3013, email: cnalpers@usgs.gov).

Short Course Description

There is considerable scientific interest in the geochemistry, crystallography, and environmental behavior of sulfate minerals. Sulfate minerals form in igneous, sedimentary, hydrothermal, and low-temperature environments and their study will continue to provide important insights into geochemical processes. Minerals of the alunite and jarosite groups are of interest to economic geologists for their use as exploration guides and to hydrometallurgists as vehicles for iron and aluminum removal from leach solutions. Stable isotope research on sulfates has provided insights on volatile evolution and mineral deposition in acid-sulfate hydrothermal systems. In the weathering environment, efflorescent sulfate salts from acid rock drainage affect the storage and release of potentially toxic metals such as aluminum, cadmium, copper, iron, and zinc. In neutral and alkaline environments, sulfate minerals and aqueous sulfate are important in marine and continental evaporite sequences and influence ground water chemistry in some major aquifers through processes of sulfide oxidation and sulfate reduction. This short course, and the related technical sessions at the annual MSA-GSA meeting, will be the most comprehensive group of sessions ever devoted to sulfate minerals.

Topics and Speakers/Authors

The crystal chemistry of sulfate minerals ..... F.C. Hawthorne & P.C. Bur
Spectroscopy of sulfate in natural and contaminated earth materials ..... S.B.C. Myneni
Sulfate minerals in evaporite deposits ..... R.J. Spencer
Barite-celestite geochemistry and environments of formation ..... J. Hanor
The chemistry of sulfate in alkaline environments ..... S.J. Traina & S.B.C. Myneni
Metal sulfate salts from sulfide mineral oxidation ..... J.L. Jambor, C.N. Alpers & D.K. Nordstrom
Iron and aluminum hydroxysulfate minerals from acid sulfate waters ..... J.M. Bigham & D.K. Nordstrom
Alunite and jarosite group minerals: geochemistry, thermodynamic properties, and environments of formation ..... R.E. Stoffregen, C.N. Alpers, J.L. Jambor & G.A. Lager
Jarosites and alunites in hydrometallurgy ..... J.E. Dutrizac & J.L. Jambor
Kinetics and surface energy approaches to the dissolution and precipitation of the sparingly soluble alkaline earth sulfates ..... A. Hina & G.H. Nancollas
Thermodynamic properties of sulfate minerals ..... D.K. Nordstrom, I.-M. Chou, & B.S. Hemingway
Predicting sulfate mineral solubilities in concentrated waters ..... C.J. Ptacek & D.W. Blowes
Solid-solution solubility and thermodynamics of sulfate minerals ..... P.D. Glynn
Stable isotope systematics in sulfates ..... R.R. Seal II, C.N. Alpers, & R.O. Rye

The short course will be held in conjunction with three MSA-sponsored topical sessions November 13-15, 2000 at the Mineralogical Society of America - Geological Society of American Annual Meeting, Reno, NV. The topical sessions are: Sulfate Minerals I. Hydrothermal Systems (a tribute to Robert O Rye), Sulfate Minerals II. Low-Temperature Environments, and Sulfate Minerals III. General (posters). I you submit an abstract for these special sessions, please let the short course convenors know about it.

Registration Form

Mineralogical Society of America Short Course

SULFATE MINERALS: Crystallography, Geochemistry, and Environmental Significance

Tahoe City, California – November 11-12, 2000

Complete and return this registration form to the MSA Business Office, 1015 Eighteenth St NW Ste 601, Washington, D.C. 20036-5274, USA. Telephone: 202-775-4344. FAX: 202-775-0018. Please type or print. Use one form per registrant. Payment must accompany this form. Registration is limited to 100 people on a first-come, first-served basis. Payment must accompany this form, which will be fully refunded if cancellation is received in writing prior to October 10, 2000.

Name _____
(first) (middle) (last)

Address _____

_____

_____
(city) (state) (zip/postal code) (province) (country)

Telephone: (Voice) _____ (Fax) _____

E-mail: _____

Registration fee includes MSA short course session costs, break refreshments, banquet, and *Reviews in Mineralogy* volume. All MSA short course sessions are at the Granlibakken Resort and Conference Center, Tahoe City, CA 96145-6329. There is an informal welcoming reception 5:30 pm Friday evening, November 10 at the Granlibakken Resort. Registration fee does not include room, other meals, or transportation costs to or from Reno. A block of rooms have been reserved for short course participants at the Granlibakken Resort and Conference Center, PO Box 6329, Tahoe City, CA 96145-6329 U.S.A. voice: (800) 543-3221, fax: (530) 583-7641, e-mail: reservations@granlibakken.com.until 10/10/2000. Participants must contact the hotel to make reservations and pay for rooms. Information on the short course, lodging, ground transportation, and course updates are on the MSA Home Page (http://www.minsocam.org).

Registration. Mark the appropriate registration category [X] and write the appropriate fee on the cost line:

	on or before 9/15/2000	*after 9/15/2000*	**cost**
Professional Registration:			
[ ] Member	$360	$410	_____
[ ] Non-member	$440*	$490*	_____
[ ] Speaker	no cost	no cost	_____
Student Registration:			
[ ] Member	$120	$170	_____
[ ] Non-member	$150*	$200*	_____
		Total Due	$_____

* includes MSA membership dues for 2001.

Amount Enclosed (Indicate payment method and amount of payment enclosed)

[ ] Enclosed is a check (in US $ drawn on a US bank) or money order in the amount of $_____

[ ] Charge my: ____ Visa ____ Mastercard ____ Diner's Club ____ American Express card
(Your credit card will be charged when the registration form is received) in the amount of $_____

_____ _____
(card number) (name on card -- please print)

_____ _____
(signature) (exp. date)

Mineralogical Society of America Short Course Announcement

Transformation Processes in Minerals

Dates: Friday and Saturday September 1-2, 2000 (preceding the Goldschmidt 2000 Meeting in Oxford. That meeting is organized by the Geochemical Society and European Association for Geochemistry)

Location: Short Course sessions are between 9:00 am - 5:00 pm at the Department of Earth Sciences, University of Cambridge, Cambridge, United Kingdom (http://www.esc.cam.ac.uk, postal address below) with accommodations at Queens' College, Cambridge (http://www.quns.cam.ac.uk/).

Conveners: *Simon Redfern, Michael Carpenter, Ekhard Salje* Department of Earth Sciences, University of Cambridge, Downing Street, Cambridge, CB2 3EQ, United Kingdom. Phone (+44)1223 333400, fax (+44)1223 333450, e-mail: satr@cam.ac.uk
Friedrich Seifert, Bayerisches Geoinstitut, Universität Bayreuth, D-95440 Bayreuth, Germany

Fees:

		on or before 6/30/2000	*after 6/30/2000*
Professional Registration:	Member	$235	$295
	Non-member	$325*	$385*
Student Registration:	Member	$135	$195
	Non-member	$165*	$225*
Speaker		none	none

* includes MSA membership dues for 2001.

Registering: Registration forms are available from the MSA Business Office, 1015 Eighteenth St NW Ste 601, Washington, D.C. 20036-5274, USA. Tel: 202-775-4344 Fax: 202-775-0018 E-mail: business@minsocam.org; or the MSA Home Page (http://www.minsocam.org). A registration form with payment must be returned to the MSA Business Office for each participant.

Practical: Registration fee includes MSA short course sessions, lunches, refreshments at breaks, Friday evening banquet, and the *Reviews in Mineralogy* volume. There is an informal welcoming reception beginning 5:30 pm Thursday evening, August 31, 2000 at Queens' College. Registration fee does not include room, other meals, or transportation costs to or from Cambridge. Participants will be sent room reservation details with their registration confirmation. A block of 100 rooms have been reserved for short course participants at Queens' College, Cambridge.

There are frequent bus and rail links to London's three main international airports (Heathrow, Gatwick and Stansted). Directions to the Department of Earth Sciences at Cambridge University can be found via the web at http://www.esc.cam.ac.uk under "about us > finding us".

Student Scholarships: Support from the Mineralogical Society of Great Britain and Ireland, the European Mineralogical Union, the EU TMR on Mineral Transformations and the N.E.R.C. will provide bursaries to support student attendance. Students must provide a one-page summary of why attending the short course will be beneficial to their professional development with their registration form. Deadline for receipt of requests for support is June 30, 2000. Successful applicants will b selected by the organizers of the course.

Short Course Description: Minerals commonly respond to changes in pressure and temperature through phase transformations, thereby extending the limits of their stability. Understanding such transformations is crucial to appreciating the controls on mineral stability as well as to effectively interpreting the history locked up in their ordering patterns and microstructures. Techniques of experimental observation and methods of theoretical analysis of time-temperature-pressure transformation processes in minerals have now reached a state of maturity, following intensive research in these areas over the last decade or so. This short course reviews the advances in both the experimental observation of transformation processes as well as the theory and computational study of these processes. The essential focus of the course relates to the mechanisms and kinetics of structural changes in Earth materials. Starting from a solid knowledge of bulk properties of minerals and model substances (including the consequent thermodynamic stabilities) the course will concentrate on the atomic-scale mechanisms and dynamic aspects of processes in mineral end members and binary solid solutions. The implications for the development of microstructure will be addressed, and the controls imposed by elastic properties and structural topology will be discussed. The bearing of these on the response of minerals to changing temperature, pressure and chemical composition will then be outlined, with the application of experimental methods forming a further significant component of the course. The lectures, however, also extend away from the discussion of simple polymorphic transitions to aspects of amorphisation and glass transformations. This short course will provide a lively forum for cross-discipline discussion of these topics.

Topics and Speakers/Authors

Mineral transformations and microstructure..... *Ekhard Salje*

Elastic anomalies at phase transitions..... *Michael Carpenter*

Rigid unit modes and dynamics..... *Martin Dove*

High-pressure transformation behaviour..... *Ross Angel*

Transformations and solid solutions..... *Peter Heaney*

Order-disorder phase transitions..... *Simon Redfern*

Magnetic transitions in minerals..... *Richard Harrison*

Insights from NMR spectroscopy..... *Brian Phillips*

Insights from Mössbauer spectroscopy..... *Catherine McCammon*

Hard-mode spectroscopy of phase transitions..... *Ulli Bismayer*

Synchrotron studies of mineral transformations..... *John Parise*

Radiation-induced transformations..... *Rod Ewing*

Glass transitions..... *Don Dingwell*

The short course immediately precedes the Goldschmidt 2000 meeting in Oxford (September 3-8, 2000) organized by the Geochemical Society and European Association for Geochemistry. Transport to Oxford will be available for those who wish to travel on to the Goldschmidt meeting on Saturday September 2, 2000.

Registration Form

Mineralogical Society of America Short Course

Transformation Processes in Minerals

Cambridge, United Kingdom - September 1-2, 2000

Complete and return this registration form to the MSA Business Office, 1015 Eighteenth St NW Ste 601, Washington, D.C. 20036-5274, USA. Telephone: (202) 775-4344. FAX: (202) 775-0018. Please type or print. Use one form per registrant. Registration is limited to 100 people on a first-come, first-served basis. Payment must accompany this form, which will be fully refunded if cancellation is received in writing prior to July 28, 2000.

Name _____
(first) (middle) (last)

Address _____

_____

_____
(city) (state/Province) (zip/postal code) (country)

Telephone: (Voice) _____ (Fax) _____

E-mail: _____

Registration fee includes MSA short course session costs, break refreshments, lunches, banquet, and *Reviews in Mineralogy* volume. All MSA short course sessions are at the Department of Earth Sciences, University of Cambridge. There will be an informal welcoming reception at 5:30 pm Thursday evening, August 31, 2000 in Queens' College. Registration fee does <u>not</u> include room, other meals, transportation costs to or from Cambridge. A block of rooms has been reserved for short course participants until 6/30/00 at Queens College, Cambridge. Accommodation booking information will be sent to all registrants. Information on the short course, accommodation, ground transportation, and course updates is on the MSA Home Page (http://www.minsocam.org).

Registration. Mark the appropriate registration category [X] and write the appropriate fee on the cost line:

	on or before 6/30/00	*after 6/30/00*	**cost**
Professional Registration:			
[ ] Member	$235	$295	_____
[ ] Non-member	$325*	$385*	_____
[ ] Speaker	no cost	no cost	_____
Student Registration:	*on or before 6/30/00*	*after 6/30/00*	
[ ] Member	$135	$195	_____
[ ] Non-member	$165*	$225*	_____

* includes MSA membership dues for 2001.

Total Due $_____

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[ ] Charge my: ____ Visa ____ Mastercard ____ Diner's Club ____ American Express card
(Your credit card will be charged when the registration form is received) in the amount of $_____

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(card number) (name on card -- please print)

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Mineralogical Society of America Membership Application

To join the MSA, please send a completed copy of the application below, along with the required payments in U.S. funds, to the Mineralogical Society of America, 1015 Eighteenth St NW Ste 601, Washington DC 20036-5274, USA phone: (202) 775-4344; fax: (202) 775-0018; e-mail: business@minsocam.org website: www.minsocam.org

Preferred Mailing address:

Name: _____ Telephone: _____
First Middle Last

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☐ Prof. First Line of Address
☐ Mr. _____ E-mail: _____
☐ Ms. Second Line of Address
☐ Other: Specify _____ Birth Date: _____
Third Line of Address

Membership Category: ☐ Member ☐ Life Member ☐ Student Member

Areas of Interest: (Circle main, check secondary)

[ ] Mineralogy (MI), [ ] Crystallography/Crystal Chemistry (CC), [ ] Material Properties (PP), [ ] Igneous Petrology (IP), [ ] Metamorphic Petrology (MP), [ ] Sedimentary Petrology (SP), [ ] Geochemistry (GE), [ ] Phase Equilibria (PE), [ ] Economic Geology (EG), [ ] Clay Mineralogy (CM), [ ] Industrial Mineralogy (IM), [ ] Environmental Mineralogy (EM), [ ] Gems GM, [ ] Planetary Materials (PM), [ ] Teaching (TC), [ ] Topologic (Descriptive) Mineralogy (TP), [ ] Mineral Surfaces (MS), [ ] Biological-Mineral Interactions (BM), [ ] Others (Please indicate)

Personal Information:

Highest Degree earned: ☐ Doctorate ☐ Masters ☐ Bachelors ☐ No College Degree

Institution at which Highest Degree was earned _____ Year _____

Employer _____ Job Title _____

Job Function(s): _____

What other professional societies do you belong to? _____

Student Certification: (Applicants for student membership must supply the following certification of status.)

The applicant is known to me and is a bona fide student at (Name of School): _____

Address of School (Please Print): _____

_____

Faculty Member (Please print): Signature (you need not be a member of the Society):

Payment:

$ _____ enclosed (money order, check in US dollars drawn on a US bank and payable to the Mineralogical Society of America)

Please charge my: ☐ Mastercard ☐ Visa
$ _____ ☐ Diners Club ☐ American Express

Signature: _____

Card # _____

Exp. Date: _____

Cardholder: _____

2000 Fee Schedule

Memberships are entered and renewed on a calendar basis. You will receive all publications for the year you join. Membership applications received after October 1 will be made effective January 1 of the following year unless otherwise requested. Members will receive the newsletter, *The Lattice*, as part of their dues. As an additional benefit, members may elect to receive the *American Mineralogist*, as well as some related publications, at substantially reduced rates. Please indicate all options that apply in the box to the right. Members are entitled to a 25% discount on other MSA publications given on our Publication List.

	Member Dues	$50.00
	American Mineralogist (price to members)	$30.00
	International surface airlift service for above	$40.00
	Life Membership Dues (with journal)	$2000
	Student Member Dues (includes *American Mineralogist*)	$30.00
	Mineralogical Abstracts, published quarterly by the Mineralogical Society of Great Britain & Ireland	$48.00
	Physics and Chemistry of Minerals, published eight times a year by Springer-Verlag	$475
	Journal of Petrology, published twelve times a year by Oxford University Press	$355
	TOTAL	

Mineralogical Society of America

Publications Price List and Order Form

Reviews in Mineralogy (25% member discount)

___v. 08: Kinetics of Geochemical Processes (1981) **$20**
___v. 9A: Amphiboles and Other Hydrous Pyriboles - Mineralogy (1981) **$20**
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___v. 18: Spectroscopic Methods in Mineralogy and Geology (1988) **$28**
___v. 19: Hydrous Phyllosilicates (Exclusive of Micas) (1988) **$28**
___v. 20: Modern Powder Diffraction (1989) **$28**
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___v. 22: The Al_2SiO_5 Polymorphs (1990) **$24**
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___v. 25: Oxide Minerals: Petrologic and Magnetic Significance (1991) **$28**
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___v. 31: Chemical Weathering Silicate Minerals (1995) **$32**
___v. 32: Structure, Dynamics, and Properties of Silicate Melts (1995) **$30**
___v. 33: Boron: Mineralogy, Petrology and Geochemistry (1996) **$32**
___v. 34: Reactive Transport in Porous Media (1996) **$32**
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___v. 37: Ultra-High Pressure Mineralogy (1998) **$32**
___v. 38: U Minerals & Chemistry (1999) **$32**

Monographs (25% member discount, except shipping)

___Crystallography & Crystal Chemistry, F. D. Bloss **$32**
___v. 1: Metamorphic Phase Equilibria and Pressure-Temperature-time-Paths, Spear ..... **$48+$5** shipping
___v. 2: Crystal Structures v. 1, O'Keeffe & Hyde **$36**
___v. 3: Teaching Mineralogy **$28**
___v. 4: Bowen, Crystallization-Differentiation, D.A. Young **$16**
___v. 5: Optical Crystallography, F. D. Bloss **$32**

Handbook of Mineralogy (25% member discount, except shipping)

___v. I: Elements, Sulfides, Sulfosalts... ..... **$94+$6** shipping
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___Fifth International Kimberlite Conference Proceedings . **$45** + postage: U.S.-**$3.75**/set, Canada -**$12**/set, Other-**$6.75**/set.
___Centennial History Geological Society of Washington **$10**
___MSA Membership Directory (available to members only) **$15**

American Mineralogist - back issues

Vol.	Member	Nonmember
1-64	Contact Periodicals Service Company, 11 Main St., Germantown, NY 12526 (518)537-4700	
66-76	$3/issue, $18 vol.	$ 5/issue, $ 30 vol.
77-82	$5/issue, $30 vol.	$45/issue, $250 vol.
83	$5/issue, $30 vol.	$55/issue, $350 vol.

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To Order: Indicate quantity, shipping, and cost information. Only MSA Members may take the 25% discount where noted. Prepay orders under $300. Publications may not be returned for refund or credit. Send entire form to: Mineralogical Society of America, 1015 18th Street NW Ste 601, Washington, DC 20036-5274 USA. Phone: (202) 775-4344; Fax: (202) 775-0018 E-mail: business@minsocam.org

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Meeting Calendar 2000

2000

May-June

27–1 Mineral Surface Reactivity: EuroConference on the Interaction of Mineral Surfaces with Organic and Inorganic Species in Aqueous Solution. San Feliu de Guixols, Spain, *Sponsor*: European Science Foundation, *Details:* S. Lewis, European Science Foundation, 1, Quai Lezay-MarnEsia, 67080 Strasbourg Cedex, France ; Phone: +33-388-76-71-35; Fax: +33-388-36-69-87; E-mail: slewis@esf.org; Web Site: www.esf.org/euresco/00/lc00154a.htm

29-2 GeoCanada 2000. Calgary, Alberta, Canada. *Details*: John Varsek (technical program chair), Tel.: 403-233-1679 E-mail: varsekjl@bp.com, WWW: www.geocanada2000.com.

30-3 AGU Spring Meeting. Washington DC. *Details*: AGU Meeting Department, 2000 Florida Ave., NW Washington, DC 20009. Tel.: 202-462-6900: Fax: 202-328-0566, E-mail: meetings@kosmos.agu.org, WWW: http://www.agu.org/meetings.

June

11-16 From Continental Breakup to Collision. Dead Sea, Isreal. *Details*: . Ben-Avrahim, Department of Geophysics and Planetary Sciences, Dead Sea Research Center, Tel Aviv, ISRAEL. Fax: +972-3-640-9282, E-mail: zvi@jupiter1.tau.ac.il; , WWW: www.tau.ac.il/~zviba/conference.html

11-18 IMA – Commission on Ore Mineralogy: Short Course – Modern Approaches to ore and environmental mineralogy. Helsinki, Finland. *Details*: C. J. Stanley, Natural History Museum; London SW7 5BD, England, E-mail: C.Stanley@nhm.ac.uk, WWW: www.hut.fi/ Units/Geophysics/kojonen/ilmoitus.html.

11-23 Lehigh Microscopy School Short Courses. Bethlehem, Pennsylvania. *Details*: Professor David B. Williams, Department of Materials Science and Engineering, Lehigh University, 5 E. Packer Avenue, Bethlehem, PA 18015;. Tel.: 610-758-5133: Fax: 610-759-4244, E-mail: sharon.coe@lehigh.edu, WWW: www.lehigh.edu/~inmatsci/Microscourses.html.

24-29 Physical and Chemical Effects of Mantle Plume – Spreading Ridge Interaction. Troutdale, Oregon. *Details*: R. Keller , RIDGE Office, College of Oceanic and Atmospheric Sciences, Oregon State University , Corvallis , OR 97331 USA ; Phone: +1-541-737-8141; Fax: +1-541-737-8142; E-mail: ridge@oce.orst.edu; Web Site: ridge.oce.orst.edu;

26-28 The Clay Minerals Society 37th Annual Meeting. Chicago, Illinois. *Details*: Dr. Alanah Fitch, Loyola University of Chicago, 6525 N. Sheridan Road, Chicago, IL 60626;. Tel.: 773-508-3119: Fax: 773-508-3086, E-mail: afitch@luc.edu.

July

3-7 Ron Vernon Symposium – at the 15th Australian Geological Convention Sydney, Australia. *Details*: WWW: www.science.uts.edu.au/agc/agchome.html

4-8 15th International Conference on Basement Tectonics: Variscan-Appalachian Dynamics: The Building of the Upper Paleozoic Basement A Coruna, Spain. *Details*: Florentino Diaz Garcia, Departmento de Geologia, Universidad de Oviedo, Arias de Velasco s/n, 33005 Oviedo, Spain. Tel.: 34-98-5103114; Fax: 34-98-5103103; E-mail: bt15@asturias.geol.uniovi.es; WWW: www.geol.uniovi.es/bt15.html

11-14 1st International Professional Geology Conference. Alicante, Spain. *Details*: Yolanda Ruiz Perez, e-mail: icog@icog.es, Tel.: 3491 5532403. WWW: www.sri.ua.es/congresos/lipgc/ 1IPGC.htm

16-22 6th International Council for Applied Mineralogy (ICAM 2000). Gottingen and Hannover, Germany. *Details*: ICAM 2000 Office, P. O. Box 510153, D-30631 Hannover, Germany. WWW: http://www.bgr.de/ICAM2000

18-22 **International Association of Volcanology and Chemistry of the Earth (IAVCEI) General Assembly 2000.** Bandung, Indonesia. *Details*: Secretariat, Volcanological Survey of Indonesia, Jalan Diponegro 57, Bandung 40122, Indonesia. Tel.: 62-22-772606, Fax: 62-22-702761, E-mail: iavcei@vsi.dpe.go.id WWW: http://www.vsi.dpe.go.id/iavcei.html.

26-30 **Mineralogical Museums in the 21st Century.** St. Petersburg, Russia. Details: Galina, F. Anastasenko, Vladimir G. Krivovichev, Faculty of Geology, St. Petersburg University, Universitetskaya Emb., 7/9, St. Petersburg 199034, Russia. Tel.: (812)-328-94-81, Email: dept@mineral.geol.pu.ru.

August

3-5 **11th International Conference on Heavy Metals in the Environment.** Ann Arbor, Michigan. *Details*: J. Nriagu, Department of Environmental and Industrial Health, School of Public Health, University of Michigan, 109 Observatory Street, Ann Arbor, MI 48109-2029 USA ; Phone: +1-734-936-0706; Fax: +1-734-764-9424; E-mail: Heavy.metals.conference@umich.edu; Web Site: www.sph.umich.edu/eih/heavymetals/;

6-10 **Conference on the History of Geologic Pioneers.** Troy, New York. *Details*: Gerald Friedman, Rensselaer Center of Applied Geology, P.O. Box 746, Troy, New York 12181, Fax: 518-273-3249, E-mail: gmfriedman@juno.com.

6-17 **31st International Geological Congress.** Rio de Janeiro, Brazil. *Details*: Secretariat Bureau, 31st International Geological Congress, Av. Pasteur, 404, Anexo 31 IGC, Urca, Rio de Janeiro, RJ, CEP 22.290-240, Brazil. Tel.: 55-21-295-5847, Fax: 55-21-295-8094, E-mail: 31igc@31igc.org.br.

20-25 **MARGINS: Theoretical and Experimental Institute: Inside the Subduction Factory.** Eugene, Oregon. *Details*: Marc Hirschmann, Dept. of Geology and Geophysics, University of Minnesota, Minneapolis MN 55455; e-mail: Marc.M.Hirschmann-1@umn.edu

September

3-8 **Goldschmidt 2000.** Oxford, UK. *Details*: P. Beattie, Cambridge Publications, Publications House, PO Box 27, Cambridge, UK CB1 4GL. Tel.: 44-1223-333438, Fax: 44-1223-333438, E-mail: gold2000@campublic.co.uk , WWW: http://www.campublic.co.uk/science/conference/gold2000/

6-8 **3rd Conference on Tectonic Problems of the San Andreas Fault System.** Stanford, California. *Details*: B. Kovach, Department of Geophysics, Mitchell 360, Stanford University, Stanford, California, 943005-2215. Tel. 650-723-4827;Fax: 650-725-7344; E-mail: kov@pangea.stanford.edu. WWW: pangea.stanford.edu/GP/sanandreasconf.html.

11-12 **Conference on Environmental Chromium Contamination and Remediation.** Glasgow, UK. *Details*: John Farmer, Department of Chemistry, The University of Edinburgh, West Mains Road, Edinburgh EH9 3JJ, UK. E-mail: J.G.Farmer@ed.ac.uk.

25 **The mineralogy of Waste and Waste Disposal.** Keyworth, UK. *Details*: Dr. Adrian Lloyd-Lawrence, Mineralogical Society, 41 Queen's Gate, London SW7 5HR, UK. E-mail: Adrian@minersoc.demon.co.uk.

November

8-10 **Conference on the Earth-Moon Relationship.** Padova, Italy. *Details*: GSA Meetings Dept. Boulder, CO 80301-9140. Tel.: (303)-447-2020, Fax: (303)-447-1133. WWW: C. Barbieri , Department of Astronomy, University of Padova, Vicolo Osservatorio 5 , Padova 35122 ITALY ; Phone: +39-049-8293434; Fax: +39-049-8293507. E-mail: cbarbier@ux1.unipd.it; barbieri@pd.astro.it

13-16 **GSA Annual Meeting.** Reno, NV. *Details*: GSA Meetings Dept. Boulder, CO 80301-9140. Tel.: (303)-447-2020, Fax: (303)-447-1133. WWW: http://www.geosociety.org/meetings/index/htm

December

2-7 **Geochemistry of Crustal Fluids – Fluid in the Crust and Chemical Fluxes at the Earth's Surface (EURESCO Conference).** Granada, Spain. *Details*: Dr. J. Hendekovic, European Science Foundation, 1 quai Leay-Marnésia. 67080

Strasbourg Cedex, France. Tel.: 33 388 76 71 35: Fax: 33 388 36 69 87, E-mail: euresco@esf.org, WWW: http://www.esf.org.euresco.

4-7 **4th International Mineralogy and Museums Conference.** Melbourne, Australia. *Details*: Bill Birch, Museum Victoria, GPO Box 666E, Melbourne, Victoria, 3001, Australia., WWW: www.mov.vic.gov.au/mineralogy/welcome.html

15-19 **AGU Fall Meeting.** San Francisco, CA. *Details*: AGU Meeting Department, 2000 Florida Ave., NW Washington, DC 20009. Tel.: 202-462-6900: Fax: 202-328-0566, E-mail: meetings@kosmos.agu.org, WWW: http://www.agu.org/meetings.

2001

January

3-5 **Mantle Materials, Processes and Products.** Durham, UK. *Details*: Dougal Jerram, E-mail: D.A.Jerram@durham.ac.uk.

11-12 **S-type Granites and Related Rocks: the Allan White Symposium.** Melbourne, Australia. *Details*: Peter D. Fleming, Dept. of Earth Sciences, La Trobe University, Bundoora, Australia 3083; Tel. 61-3-9479-1649 E-mail: p.fleming@latrobe.edu.au, WWW: www.geology.latrobe.edu.au.

15-18 **Tailings and Mine Waste 01.** Fort Collins, Colorado. *Details*: L. Hinshaw, Department of Civil Engineering, Colorado State University, Fort Collins, Colorado 80523-1372, Tel.: 970-491-6081; Fax: 970-491-3584; E-mail: lhinshaw@engr.colostate.edu

August

26-29 **6th Biennial SGA meeting.** Krakow, Poland. *Details*: Wojciech Mayer, University of Mining and Metallurgy, Faculty of Geology, Geophysics and Environmental Protection, av. Mickiewicza 30, 30-059 Krakow, Poland. Tel.: 48-12-6172385, Fax: 48-12-63332936, E-mail: wmayer@geol.agl.edu.pl, WWW: http://galaxy.uci.agh.edu.pl/~sga.

September

1-7 **Sixth International Eclogite Conference in Japan.** Niihama, Ehime, Japan. *Details*: Masaki Enami, Department of Earth and Planetary Sciences, Graduate School of Science, Nagoya University, Nagoya 464-8602, Japan; Tel. and fax 81-52-789-3005 E-mail: enami@eps.nagoya-u.ac.jp; WWW: ganko.eps.nagoya-u.ac.jp/iec2001/index.html.

Field Course on the Rare Element Pegmatites of Madagascar

Approximate Dates: June 9 - June 24, 2001

Organized by Museum of Natural History of Milan (Italy), University of New Orleans, Dept. of Geology & Geophysics (LA – USA), Direction of the Geological Survey, Ministry of Energy and Mines, Antananarivo (Madagascar) Pyramide Company, Antananarivo (Madagascar)

This field course will be an excursion to the rare element pegmatites in the highlands of Madagascar in the Antsirabé - Betafo, Ambatofinandrahana and Betroka areas. The trip will include several days of presentations concerning the general geology of the areas to be visited and the specific geology, petrology, mineralogy and genetic interpretations of the pegmatites that will be examined. Some of the most famous pegmatite districts for the production of gemstones and rare minerals will be visited. At the end of the excursion we will visit the new world-famous gemstone deposit of Ilakaka and we will also be able to view the total eclipse of the sun on June 21.

The field course will be limited to 40 participants and pre-registration and a deposit is essential for organizing the excursion. Pre-registration must be completed and signed, and returned to Prof. Wm. B. "Skip" Simmons by June 30, 2000. Pre-registrations by fax or e-mail are also acceptable, provided that a signed application is sent by mail. Return the application form with a deposit check of $100.00 USD.

For any additional information contact:

Federico Pezzotta - Museo Civico di Storia Naturale, Corso Venezia 55, 20121 Milan, Italy. E-mail: fpezzotta@yahoo.com, FAX: (++39) 02 76022287, Phone: (++39) 02 781312

Wm. B. "Skip" Simmons – University of New Orleans, Department of Geology & Geophysics, New Orleans, LA 70148, USA. E-mail: wsimmons@uno.edu, FAX: (504) 280 7396, Phone: (504) 280 6791

NEW MEMBERS WELCOME!

The following individuals joined (or rejoined after a long hiatus) MSA during January 21, 2000 through April 21, 2000. We welcome them to the Society. The areas of interest are: Mineralogy (MI), Crystallography/Crystal Chemistry (CC), Material Properties (PP), Igneous Petrology (IP), Metamorphic Petrology (MP), Sedimentary Petrology (SP), Geochemistry (GE), Phase Equilibria (PE), Economic Geology (EG), Clay Mineralogy (CM), Industrial Mineralogy (IM), Environmental Mineralogy (EM), Gems (GM), Planetary Materials (PM), Teaching (TC), Topologic Descriptive Mineralogy (TP), Biological-Mine.. Interactions (BM), and others as indicated.

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