

The Lattice

MSA AWARDS LUNCHEON AT THE 1996 ANNUAL GSA MEETING

The Mineralogical Society of America recognized the accomplishments of several of its members at the annual awards luncheon held on October 29th during the 1996 annual Geological Society of America meeting in Denver, Colorado.

Donald H. Lindsley received the Roebling Medal for distinguished research in a wide range of mineralogical and petrological research ranging from experiments in Fe-Ti oxides to field studies of anorthosites. Don Lindsley was introduced by B. Ron Frost who expounded on the medalist's pyrotechnic abilities.

Donald B. Dingwell was presented with the Mineralogical Society of America Award for outstanding research contributions prior to his 35th birthday. In introducing the awardee, David Virgo highlighted research accomplishments, especially with respect to silicate melts and glasses.

Robert I. Tilling was awarded the Distinguished Public Service Medal for contributions to public policy and awareness about mineralogical topics. Tilling was introduced by L. J. Patrick Muffler who explained the critical role the awardee played as the interface between scientists and the public in explaining volcanic and earthquake hazards.

William D. Carlson and Peggy A. O'Day were recognized for their service as the 1995-6 MSA Lecturers. They represented the society with numerous lectures given to a variety of colleges and universities.

Finally, according to tradition, the gavel of the presidency of MSA was passed from Gordon E. Brown, Jr. to David R. Veblen who closed the luncheon. *(photos continued next page)*



Donald H. Lindsley, 1996 Roebling Medalist

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President Gordon Brown presenting Donald Dingwell with the 1996 MSA Award in the presence of the award citationist David Virgo



Gordon Brown congratulating 1996 Distinguished Public Service medalist Robert Tilling with citationist Patrick Muffler

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 from readers 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*; Membership Directory; 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 1996 are \$60 for professional members who elect to receive *American Mineralogist* and \$30 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, 1996 will be sent all back issues of the journal for volume 81, 1996.

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 1996 volume of *American Mineralogist* for the annual rate of \$295 in the US, \$300 in Canada and Mexico and \$305 in all other countries. 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.

1996 President: Gordon E. Brown, Jr.
Stanford University

Past-President: James J. Papike
University of New Mexico

Vice President: David R. Veblen.
The Johns Hopkins University

Secretary: Barbara L. Dutrow
Louisiana State University

Treasurer: Rosalind T. Helz
U.S. Geological Survey

Editor of *The Lattice*: Darrell J. Henry
Louisiana State University

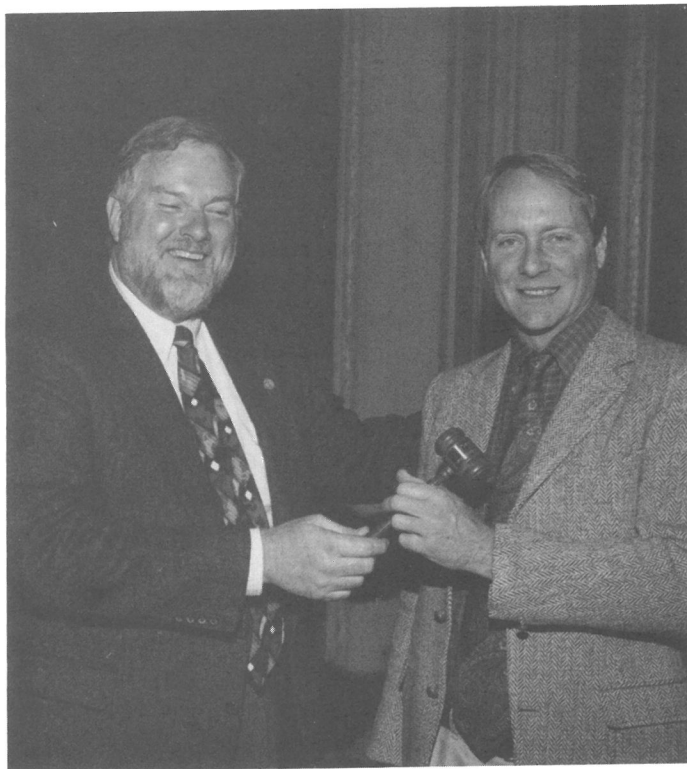
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From the President

In one of his letters appearing in *The Lattice*, President Gordon Brown celebrated the 100th anniversary of the discovery of X-rays. Of course, the biggest explosion in X-ray science occurred after the discovery of X-ray diffraction in 1912. If you peruse one of my favorite books, the 1924 first edition of *The Structure of Crystals*, by Ralph Wyckoff of the Geophysical Laboratory, the immediate scientific impact of X-ray diffraction is clear. In little more than a decade after its discovery, X-ray diffraction resulted in structure determinations for approximately 140 inorganic materials, many of them minerals--an immense flood of information that filled a complete void in our understanding of solids. Furthermore, diffraction data were collected for numerous additional structures, and X-ray scattering studies produced revolutionary insights into the structure of gases, liquids, glasses, defective crystals, and liquid crystals. As pointed out by Gordon, recent advances in X-ray sources, detectors, and other technology are multiplying our capabilities in both structure determination and X-ray spectroscopies.

But this year marks another scientific anniversary of sorts (a 75th). In 1921, Davisson and Kunsman performed the first experiment that, in retrospect, probably showed the effects of diffraction not of X-rays, but of electrons. For good reason, however, this event is virtually unknown in the mineralogical community. At the time of these experiments, electrons were still considered strictly to be particles (in other words, they were thought to be purely corpuscular, not a wave form of radiation). It was not until 1924 that Louis de Broglie, in his Ph.D. thesis, advanced his theory of the wave-particle duality of the electron. Electron diffraction was first suggested in 1926 by another European graduate student, Walter Elsasser (whom most of you probably know instead as the father of the dynamo theory for Earth's magnetic field, among other things). Not until 1927 did Davisson finally accept the wave nature of the electron, and Davisson and Germer conclusively demonstrated electron diffraction in the laboratory.

Not only did electron diffraction get off to a somewhat shaky start fifteen years after X-ray diffraction had started to produce spectacular results, but problems related to dynamical diffraction (multiple scattering) long relegated electrons to a subservient role



Outgoing MSA President Gordon Brown cheerfully passing the gavel to new President David Veblen

in the mineralogical sciences. Of course, all this has changed, and electron diffraction, imaging, and spectroscopy of various sorts now play a key role in mineralogy and related fields. In my next letters in *The Lattice*, I will try to bring you a bit more of the history of electron scattering, as well as some of the important lessons that electron microscopy, diffraction, and spectroscopy have taught us about the world of minerals. And, of course, I also will be reminding you of important MSA news, the benefits that membership brings to you, and ways in which you can become more active and help the society move into the 21st century (sound familiar?).

Meanwhile, I thank all of you who took the time to renew your memberships on a timely basis. This is one of the many ways in which you help to keep the society healthy.

With best wishes for the new year,

David R. Veblen

President

Notes from Washington

■ Renewal notices were sent to members and subscribers in October, 1996. If you have not received yours by now, contact the Business Office. Please renew before the end of the year. Mailing labels for the January-February issue of the *American Mineralogist* are printed in mid-January. If we do not receive your renewal by then, your issues must be shipped to the Business Office, stored, then mailed from here when you renew. You can save your Society money by renewing early.

■ Blackwell will be directly contacting members who previously subscribed to the *Journal of Metamorphic Geology* through MSA about renewing their subscriptions. Subscriptions will no longer be available through MSA because there was no benefit to members or MSA. However, subscriptions to *Mineralogical Abstracts*, *Journal of Petrology*, and *Physics and Chemistry of Minerals* are still available to members through MSA at reduced rates.

■ The MSA Spring Council Meeting will be in Baltimore. But, rather than being the Sunday before the AGU meeting (May 27-30, 1996), it will be the Saturday following the meeting, May 31, 1996.

■ Next year marks a change in MSA's research grant program. In 1997, grants will be made from both the Edward H. Kraus Crystallographic Research Fund and the Mineralogy/Petrology Research Fund. At its Fall, 1996 meeting, the MSA Council approved a recommendation to make a grant from the Mineralogy/Petrology Fund each year, rather than every other year. Because of the generosity of contributors, the Fund has grown sufficiently to do this. With continuing support, the Fund could make additional grants each year. Detailed information about applying for these grants will appear in the next *Lattice*.

■ MSA has several special interest groups. These are informal groups, but have been active:

- The **Environmental Mineralogy group** organized a joint Symposium and Theme Session with the Clay Mineral Society titled "Environmental Mineralogy: Science and Politics" at the 1996 GSA Meeting in Denver. There were 32 talks given, and the Council would like to encourage the group to make this an annual event.
- The **Mineral Surfaces group** have encouraged authors writing on the topic to publish in the *American Mineralogist* (with some results) and for the journal to have an Associate Editor with the requisite background.
- The **Pegmatite Interest group** was involved with the Symposium on "Mineralogy and Petrology of

Granitic Pegmatites" at the GAC-MAC Annual Meeting in Winnipeg, Manitoba, May 26-29 and an accompanying trip underground to the Tanco rare-metals mine.

- The **Planetary Materials group**, with the Planetary Geology Division of the GSA, organized a Theme Session at the 1996 GSA Meeting on "Mineralogy of Planetary Surfaces using in-situ Analysis and Remote Sensing". A session tentatively titled "Volatiles in planetary mantles and planetary basalts" is planned for the 1997 GSA Meeting in Salt Lake City. Additionally, the members have proposed, and the Council approved, a *Reviews in Mineralogy* volume on "Planetary Materials". It should be published in early 1998.
- The **Teaching Mineralogy group** participated in the Teaching Mineralogy Workshop at Smith College, June 21-30. They have requested, and the Council approved, publishing a workbook of the mineralogy exercises that were presented at the workshop. It is hoped that it will appear in time for the 1997 Fall semester.
- If you would like to learn about or participate in the activities of a special interest group, or organize an activity yourself, speak with their contact individuals: Industrial Mineralogy (Fred Allen, 908-205-6042), Environmental Mineralogy (George Guthrie, 505-665-6340), Mineral Surfaces and Interfaces (Michael F. Hochella, Jr., hochella@vt.edu), Pegmatite (David London, 405-325-3253), Planetary Materials (Brad Jolliff, blj@levee.wustl.edu), Teaching Mineralogy (John Brady, jbrady@science.smith.edu). The Council is always receptive to new interest groups as well.

Alex Speer (minrlsocam@aol.com)

Members in the News

Emil Constantinescu, MSA fellow, was elected as President of Romania.

Barb Dutrow (Louisiana St Univ and MSA Secretary) received the Distinguished Alumnus Award from Chadron State College, Nebraska, where she was an undergraduate student 1974-7.

Advertisements in *The Lattice*

The Lattice accepts paid advertisements. All items advertised must relate to mineralogy, crystallography, or petrology or use of these disciplines in other sciences, industry, technology, or the arts. Rates:

Full page:\$400 Half page:\$200
Quarter page:\$100 Eighth page: \$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.

Only camera-ready copy of advertisements can be accepted, and should be sent directly to the editor of *The Lattice*: Darrell J. Henry, Dept. of Geology and Geophysics, Louisiana State University, Baton Rouge, LA 70803. Phone: 504-388-2693; fax: 504-388-2302.

Report of the Secretary for 1996

The seventy-seventh annual meeting of the Society was held 27-31 October 1996 in Denver, CO. Presentations sponsored by MSA were organized into two symposia, three theme sessions, and seventeen technical sessions. As is usual, the technical sessions were divided into disciplines: two on experimental petrology, four on igneous petrology, three on metamorphic petrology, six on mineralogy/crystallography, and two on volcanology, inclusive of five poster sessions. The Societies representative to the GSA Joint Technical Program Committee were Lawrence Anovitz, Raymond Joesten and Tamsin McCormick.

The two MSA Symposia were "Applications of Reactive Transport Modeling to Natural Systems" organized by Carl Steefel, Peter Lichtner and Eric Oelkers in conjunction with the MSA Short Course on the same topic, and "Environmental Mineralogy: Science and Politics" organized by George Guthrie and David Bish, cosponsored by the Clay Minerals Society. Each of these topics was very popular, also requiring an additional theme session on the topic. The additional theme session was "Mineralogy of Planetary Surfaces Using In Situ Analysis and Remote Sensing" organized by Brad Jolliff and Cassandra Coombs, co-sponsored by the Planetary Division.

Gordon Brown, MSA retiring President, presented his presidential address to the Society entitled "From Minerals and Melts to Minerals Surfaces and Molecular Environmental Science - Adventures of a Wayward Mineralogist" on Tuesday, 29 October 1996. After the address, President Brown called the annual business meeting of the Society to order. Verbal (and short) reports of the Secretary, Treasurer and Editors were given to the membership. President Brown also highlighted discussions at the Past President's Breakfast which involved revisiting/reconsidering a name change for the Society's Journal *American Mineralogist*. Discussion by the members followed and continue.

Council Meetings

The first meeting of the 1996 Council was held in the evening of 5 November 1995 in New Orleans, LA; the second was on 2 May 1996 at MSA Offices in Washington, D.C.; and the third was held on 27 October 1996 in Denver, CO. The first council meeting of 1997 was also held on 27 October 1996. A summary of discussions and actions by the Council, as summarized from minutes of the three council meetings for 1996, is given below.

Results of the 1996 Election

The voting for 1997 Society officers and council members took place during the summer of 1996 by mail. The following were elected to office:

President: David Veblen (1997)

Vice President: E. Bruce Watson (1997)

Treasurer: Brooks Hanson (1997)

Councilor: Jillian Banfield (1997-1999)

Councilor: John Holloway (1997-1999)

The 673 ballots were certified by Tellers Harvey Belkin and Richard Abbott. Approximately 33% of the membership eligible to vote cast their ballots. Thanks to all who took time to vote.

Membership Statistics

As of 31 September 1996, the total membership for the Society is 2059. These include: 1233 Regular and 81 Life Members, 325 Regular and 154 Life Fellows, 19 Affiliated Members, 242 Students, and 5 Spouses. These statistics indicate that both our student and regular membership has decreased. Remember to remind your students and colleagues to join MSA, it is a great deal! You do get more for less!

Recognition of 25 and 50 year members

The MSA would like to recognize its numerous 50 and 25 year members. In order to do so, the Arts Council has designed a silver 25 and gold 50 year pin in the form of the MSA logo, to honor these members. These pins were given to members at the Denver meeting or will be mailed.

1997 MSA Award

Congratulations to the 1997 Medalists and Research Grant Recipient. The 1997 Roebling Medal will be awarded to Prof. Ian Carmichael, University of California, Berkeley, and the 1997 Mineralogical Society of America Award to Dr. Jillian Banfield, University of Wisconsin. The recipient of the 1997 Mineralogy/Petrology Research Grant is Mr. Alkiviathes "Al" Meldrum of the University of New Mexico. We encourage you all to nominate future Medalists.

The MSA Undergraduate Award was presented to eleven outstanding mineralogy students across the nation. Faculty, don't forget to nominate your students. They receive a certificate and a complimentary student membership, including the *American Mineralogist*.

Fellowship

The following members were approved for fellowship by the Council:

Charles Bacon
Jillian Banfield
Reid Cooper
Richard Eggleton
Gerhard Franz
George Guthrie
George Harlow
Anne Hofmeister

Michael Bancroft
Robert L. Christiansen
Michael Czank
Andre Mathieu Fransolet
Bruno Giletti
Brooks Hanson
CMB Henderson
Stephen Kirby

The Lattice/5

Zdenek Johan
 Stephen Mackwell
 Alberto Dal Negro
 Roberta Oberti
 Tore Prestvik
 Donald Rimstidt
 Steven Shirey
 Frank Spera
 Johan Pieter Roos de Villiers
 Art White

John Jones
 Bruce Marsh
 Kirk Nordstrom
 Horst Pentinghaus
 Geoffrey Price
 David Sherman
 Alex Speer
 Shigeo Sueno
 Donald Weidner

Web site

John Brady continues to do a superb job maintaining the MSA web site and listserver which has over 250 members. Visit the web for more updates, committee lists, applications, forms, etc. at <http://geology.smith.edu/msa/msa.html>.

New Publications

New books have hit the MSA Shelves. In addition to the new RIM volume on "Reactive transport in porous media" which accompanied the short course, the complete new works of "Boron" has appeared. The proud Editors, Ed Grew and Larry Anovitz, have compiled and brought forth a fabulous volume, weighing in at 3 lbs., 2 oz. in standard RIM size. Both editors as well as the RIM series editor, Paul Ribbe, are doing well but have been reported to be suffering from post partum anxiety. Also out is a new monograph by O'Keefe and Hyde on Crystal Structures. As usual, these are the best priced books on the market.

Short Courses

This year's short course "Reactive Transport in Porous Media" was held prior to the GSA meeting in Golden, CO and was a sellout. There were 101 participants and a significant waiting list. The organizers were Peter Lichtner, Carl Steefel, and Eric Oelkers. A hands-on computer jamboree was held on the last day of the course at The Colorado School of Mines.

Necrology

It is with regret and sadness that the Society announces the deaths of the following Fellows and Members reported to us during the past year:

John W. Adams, Life Fellow (1936)
Stuart O. Agrell, Life Fellow (1940)
Trueheart Brown, Life Member (1951)
Frantisek Cech, Life Fellow (1956)
George E. Ericksen, Life Fellow (1954)
Jean Girault, Life Member (1950)
Donald H. Johnson, Life Member (1953)
Tracy Tingle, Member (1981)

Anyone who wishes to honor a deceased Fellow by preparing a memorial should contact our Memorialist, Brian Mason.

MSA Lecture Program

The very popular MSA Lecture programs continues. During the 1995-96 academic year William D. Carlson and Peggy O'Day were lecturers. For the 1996-1997 academic year, Rosalind Helz is giving lectures entitled "How do we see into magma chambers?" and "Glass geothermometry; Using glass compositions to quantify volcanic processes". Mark Ghiorso is speaking on "Modern approaches to understanding magmatic evolution through computer modeling" and "Energetic simplicity: A thermochemical tale about the rock forming minerals".

This continues to be a very popular program. Forty-six institutions requested lecturers. Each speaker visits approximately 12 institutions. Guy Hovis continues in his role to coordinate the series.



Gordon Brown presenting 1996 MSA Lecturer William Carlson with a plaque of appreciation. MSA Lecturer Peggy O'Day was not shown.

The MSA short course to be held prior to the 1997 Annual GSA meeting in Salt Lake City is "Geomicrobiology; Interactions between Microbes and Minerals" organized by Julian Banfield and Ken Nealson.

MSA has a terrific list of additional short courses that are being considered to be held in conjunction with not only GSA, but also IMA, AGU, and Tucson Gem and Mineral Show.

Other

A new initiative will be undertaken by the Arts Council, in conjunction with major museums. This is the production of a

minerals calendar for 1998 with fabulous mineral photos by the van Pelt.

Again this year, MSA held a joint reception with the Geochemical Society on Tuesday evening, Oct. 29 at GSA. This provided a great atmosphere, with food and libations, over which to discuss common interests and the future of MSA.

Barb Dutrow (dutrow@geol.lsu.edu)
MSA Secretary

From the Editors of American Mineralogist

The Editorial Office of *American Mineralogist* is on the move! Most members will know of the plans to transfer the Editorial Office to the Washington, DC, office space now occupied by MSA's Business Office. By the end of December 1996, the move to the Washington DC location will be complete. This consolidation should benefit both offices and facilitate communication within the society. Tom Cichonski, our capable Managing Editor for the last two years, will not be moving, however, and we will miss him greatly. Tom guided *American Mineralogist* through a critical period in which numerous changes were introduced to modernize production. We owe Tom a huge debt of gratitude for his contributions. We will also miss Assistant Editor Teresa Rogers, who is remaining in Ann Arbor.

Authors may rest assured, however, that production of *American Mineralogist* will not be affected by the transfer of the Office. Our incoming Managing Editor, Rachel Russell, has already set up operations in the Washington office and is coordinating the transition directly with Tom.

As of December 15, 1996, all new manuscripts should be sent to:

American Mineralogist
Suite 601
1015 Eighteenth St., NW
Washington, DC 20036

Another development that should interest authors relates to efforts to reduce the amount of time involved between submission and publication of papers. The median "sub-to-pub" period has long been on the order of 12 months, a length not atypical for other journals in the earth sciences. Whereas it may be tempting to identify a single cause for a lengthy sub-to-pub period, closer examination by us (and previous editors) shows that many

factors are involved. We have found that one area in which significant reductions in time may be achieved is the production schedule that Allen Press maintains. We have now obtained agreement from Allen Press to introduce an accelerated production schedule that, after fully implemented, should take at least 4 weeks off the overall sub-to-pub period. The remainder of the time rests in the hands of authors and reviewers. Through the Associate Editors, we are urging promptness by all.

We continue to encourage your submissions, both in our traditional areas of strength and in any related fields in which mineral sciences play a role. The addition of associate editors in rapidly developing areas - including mineral surfaces and mineral-water interactions, environmental mineralogy, planetary materials, computational mineralogy, and glass and mineral physics - makes *American Mineralogist* ideally suited to expand even further into rapidly evolving areas. If you have any comments or suggestions for more improvements to the journal, please let us know.

Ted Labotka (tlabotka@utk.edu)
Rich Reeder (rjreeder@cmail.sunysb.edu)

IN MEMORIAM

We regret to announce the passing of the following MSA Member. The Society extends its condolences to the family and friends of this scientist.

Tracy Tingle, Member (1981)

THE DEADLINE FOR THE FEBRUARY ISSUE OF THE LATTICE IS FEBRUARY 10

Contributions may be sent to Darrell Henry via surface mail at Department of Geology and Geophysics, Louisiana State University, Baton Rouge, LA 70803 or via e-mail at g1henr@lsuvax.sncc.lsu.edu

Petrology Curriculum Development Project

As a follow-up to the "Teaching Mineralogy" workshop held last June at Smith College, I would like to submit a proposal to the NSF Course and Curriculum Development program sponsored by the Division of Undergraduate Education. The focus of the project will be "Petrology in Context". I would like to organize 10-15 working groups of 3-4 participants to collect and organize petrologic datasets from different tectonic settings that will be developed as curricular modules. Each module might include satellite imagery, geologic maps, digital images of outcrops and hand samples, photomicrographs, and mineral, whole-rock, and stable and radioisotope analyses. The products of the project would be a workbook of exercises and a set of CD-ROMs with the datasets, which would allow students to simulate research experiences through analysis and interpretation of these materials, and faculty would have the flexibility to explore these materials at instructional levels that best meet local needs. The Basaltic Volcanism Study Project is a model of how these materials might be organized, and Chris Condit's "dynamic digital map" of the Springerville Volcanic Field is a good example of how these data might be presented using new educational technologies.

The modules should represent petrology in a global "systems" context; demonstrate the conduct of science from formulation of questions, through collection of data, and final interpretation of data; demonstrate natural processes and how we interpret them from the rock record; allow students to interpret the data and compare their results with the published literature; show the relevance and practical applications to societal concerns; and use effective "best practices" in the pedagogical approach. The knowledge base and methods of igneous, metamorphic and sedimentary petrology and geochemistry should be integrated in these modules to address large-scale geologic problems. Systems that might be considered for development include: Yellowstone-Snake River Plain, the Stillwater Complex, mid-ocean ridge, fore-arc basins, a porphyry metal deposit (Butte, MT?), ..., I'm sure you have your own favorites.

The deadline for these proposals is June, 1997. I would hope to have the working groups start to develop their modules during the 97/98 academic year, and I would like to host a conference in Montana during the summer of '98 to have each group demonstrate their modules, and to visit many of the classic petrologic localities that are accessible to us in Montana. The following year would be dedicated to final preparation and production of the materials.

In anticipation of submitting this proposal, I need to know what level of interest there is in the petrologic community. If you have an interest in this project, please provide the following information:

1. Name and institutional affiliation;
2. Tectonic environments that you feel should be included in this project, perhaps with a brief outline of the key topics or questions that should be covered; and
3. Your own interests in participating in this project--what specific contributions you would make in the way of materials, written text, willingness to evaluate the materials, attendance at the field conference, etc.
4. And certainly, you are encouraged to offer any free advice on how we might plan, develop, and implement such a project.

This type of background information is extremely important in preparing a competitive proposal, and I would appreciate hearing from you in the near future so that we have sufficient time to prepare. Please contact me at the numbers below, and thanks in advance for your interest:

David Mogk

Dept. of Earth Sciences
Montana State University
Bozeman, MT 59717
(406) 994-6916
dmogk@montana.campus.mci.net

ICDD Mineral Database

Jeffrey Post, MSA liaison to the ICDD, is currently chair of the minerals subcommittee. This committee deals with all matters concerning the standard powder diffraction patterns for minerals and the range of products related to minerals sold by ICDD. MSA members are encouraged to pass on comments and suggestions regarding the ICDD mineral database to Jeffrey Post so that they might be discussed at the semi-annual meetings. Jeffrey Post can be contacted at Smithsonian Institution, Dept. Mineral Sciences, Nhb 119, Washington, DC 20560; e-mail mnhmssoi@sivm

Useful List Servers and Home Pages

Lattice Home page: <http://scribe.geol.lsu.edu/henry's/lattice.html>.

MSA list server: msa@smith.smith.edu

MSA Home page: <http://geology.smith.edu/msa/msa.html>
(MSA forms and publication price lists on Home page)

American Mineralogist Home page:
<http://ammin.gg.utk.edu>

Clay Mineral Society Home page:
<http://shadow.agry.purdue.edu/clay/claymin/claymins.htm>



Handbook of MINERALOGY

Anthony • Bideaux • Bladh • Nichols

Vol. II - Silica, Silicates
US\$135.00 + \$7.50 S+H
904 p. in 2 books, 1995
(ISBN 0-9622097-1-6)

From the *Mineralogical Magazine*

"This work is thus an extremely comprehensive data source.... The typography is clear, the data are up-to-date and there appear to be almost no errors.... it will surely be an indispensable work for all mineralogists to have available.

The price is very reasonable for the size and for the standard of the production and this should help make it available in all earth science libraries and on the personal shelves of working mineralogists."

and from the *Canadian Mineralogist*

"This is an immensely useful reference work... Between four covers, one has an unprecedented concentration of mineralogical information... For the mineralogical and petrological fraternity, this volume will quickly assume the role of a standard essential reference."

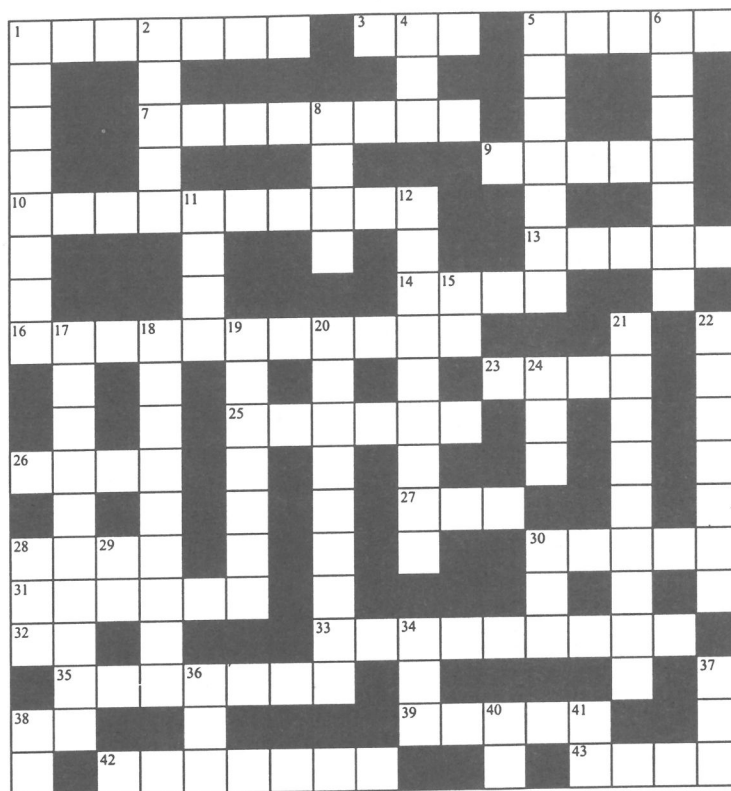
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Vol. I - Elements, Sulfides,
Sulfosalts - 588 p.
US\$90.00 + \$6.00 S+H
(ISBN 0-9622097-0-8)

MINERAL DATA PUBLISHING
P. O. Box 37072

Tucson, Arizona 85740 USA
Tel: (520) 297-4862 FAX: (520) 297-6330

A Mineralogical Puzzle



submitted by E.A. Smelik

Across	Down
1. a fiber optic mineral	1. fundamental building block of all crystals
3. diagram for displaying the progress of phase transformations	2. electromagnetic radiation with wavelength between 0.1 and 100 Å
5. symmetry element combining reflection and translation	4. cassiterite is an ore of this element
7. Fe-rich pyroxene found in alkaline rocks	5. Al-rich orthoamphibole
9. crystal form with parallel sides	6. hardest substance known to mankind
10. (Mg, Fe) ₁₇ Si ₂₀ O ₅₄ (OH) ₆	8. meteoric water
13. may form during deformation	11. porous, friable counterpart of travertine
14. average position of an atom in a crystal structure	12. pyroxene with space group <i>Pbca</i>
16. iridescent mineral	15. that is
23. gem mineral prized by Montezuma	17. occurs on one limb of the calcic amphibole solvus
25. breaks down to jadeite plus quartz at high pressure	18. chain silicate with <i>fünferketten</i> arrangement of tetrahedra
26. symmetry axis requiring 180° rotation	19. NaMg ₃ Al ₆ B ₃ Si ₆ O ₂₇ (OH,F) ₄
27. acronym for transmission electron microscopy	20. varietal name for pink elbaite
28. rocks from this locality caused a flurry of interest in the 1970s	21. a bluish dichroic ring silicate
30. mineral-lined concretion	22. devised X-Ray precession camera
31. an interlayer-deficient T-O-T layer silicate	24. separates two regions of structure that are out of phase
32. mined at Sudbury, Ontario	28. abbreviation for our science
33. least-dense silica polymorph	29. first phase to appear in Bowen's reaction series
35. occurs as exsolved phase in iron meteorites	30. a cut and polished mineral
38. element that outwits electron microprobes	34. any charged atom
39. saltpeter	36. technique used to study the structure of silicate melts
42. orthosilicate of Ca and Si	37. can measure atomic steps on a crystal surface
43. Bohr - early modeler of	38. Mg-endmember of 29 down
	40. anatase and brookite have this in common
	41. element found in all uranium minerals

Meeting Calendar 1997-1998

1997

February

2-7 Island Arc Magma Genesis Workshop. Adelaide, Australia. *Details:* G. Buttfield, Dept. of Geology and Geophysics, The Univ. of Adelaide, South Australia 5005, Australia. Tel.: 61-8-303-5844; Fax: 61-8-303-4347; E-mail: gbuttfield@geology.adelaide.edu.au; WWW: <http://www.geology.adelaide.edu.au>.

3-16 Flood Basalts, Rifting and Paleoclimates in the Ethiopian Rift and the Afar Depression. Addis Ababa, Ethiopia. *Details:* S. Nadir, INSU, 3 rue Michel-Ange 75016, Paris, France. Tel.: 33-1-44-96-43-72; Fax: 33-1-44-96-49-65; E-mail: sofia.nadir@cnr.fr.

12-13 "Composition and Structure of the Continental Lithosphere from Petrology and Geophysics" - Joint Meeting with the Joint Association for Geophysics. Cambridge, England. *Details:* Drs. Richard England and Richard Hobbs, BIRPS, Byullard Laboratories, Madingley Road, Cambridge CB3 0EZ England. Tel.: 44 (0) 1223 360376; Fax: 44 (0) 1223 360779; E-mail: england@esc.cam.ac.uk.

March

17-20 28th Annual Lunar and Planetary Science Conference. Houston, Texas. *Details:* L. Simmons, LPI Publications and Program Services Department, 3600 Bay Area Blvd., Houston, TX 77058. Tel.: 713-486-2158; E-mail: simmons@lpi.jsc.nasa.gov.

23-27 9th Biennial Meeting of the European Union of Geosciences (EUG 9). Strasbourg, France. *Details:* A. W. Hofmann, Max-Planck-Institut für Chemie, 55020 Mainz, Germany. Tel.: 49-6131-305-280; Fax: 49-6131-371-051; E-mail: hofmann@geobar.mpg-mainz.mpg.de.

March-April

31-4 Materials Research Society 1997 Spring Meeting. San Francisco, California. *Details:* Linda G. Griffith-Cima, Room 66-556, 77 Massachusetts Ave., Cambridge, MA 02139. Tel.: (617)-253-0013; Fax: (617)-258-8224; E-mail: griff@mit.edu.

April

8-10 Principal Genetic Problems Related to Mineral Deposits of Magmatic Affiliation. Moscow, Russia. *Details:* Nick S. Bortnikov, IGM RAS, Staromonetny per., 35, Moscow 109017, Russia. Tel.: (007) 095-230-8259 or 230-8244; Fax: (007) 095-230-2179; e-mail: symposium@igem.msk.su. (Abstract deadline: Feb. 1, 1997.)

14-18 Plumes, Plates and Mineralization. Pretoria, South Africa. *Details:* S. de Waal, Tel.: (012)-4202454; Fax: (012)-433430; E-mail: ppm97@scientia.up.ac.za.

May

19-21 Geological Association of Canada/Mineralogical Association of Canada. Ottawa, Canada. *Details:* GAC, Room 757, 601 Booth St., Ottawa, Ontario K1A 0E8. Tel.: (613) 947-7649; Fax: (613) 947-7650; WWW: <http://www.NRCan.gc.ca/~ottawa97>.

27-30 AGU Spring Meeting. Baltimore, Maryland. *Details:* AGU Meetings Dept., 2000 Florida Ave., Washington, D.C. 20009. Tel.: 202-462-6900.

1997 SPRING MEETING

May 27 - 30, 1997 ➤ Baltimore, Maryland

American Geophysical Union ➤ Mineralogical Society of America
Geochemical Society

ABSTRACT DEADLINE DATE: FEBRUARY 27
PREREGISTRATION DEADLINE DATE: APRIL 25

Tuesday through Friday
(A Shift in Day Format From Previous Meetings)

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OTTAWA '97 – SHORT COURSE BIOLOGICAL/MINERALOGICAL INTERACTIONS

Date: 16-17 May 1997

A two-day Short Course organized by Julie M. McIntosh and Lee A. Groat (Department of Earth and Ocean Sciences, University of British Columbia) and sponsored by the Mineralogical Association of Canada, will provide an introduction and review of the rapidly expanding field of geomicrobiology. Topics will include a review of bacteria, growing and maintaining bacterial cultures, techniques used to study bacterial/mineralogical interactions, bacteria and the breakdown of sulfide minerals, bacteria and acid rock drainage, bacteria and the weathering of silicate mineral, biomineralization, and lichens. This course will be relevant to researchers from academia and government, and to geoscience professionals. Discussion among the speakers and attendees will be an important component of the course. Participants will include B.S. Davis, M. Easton, F.G. Ferris, G.D. Ferroni, L.G. Leduc, D. Gould, R. Guay, and H.W. Nesbitt. Registration \$350 CAD for professionals, \$200 for students.

For additional information;

Julie M. McIntosh or Lee A. Groat, Earth & Ocean Sciences, University of British Columbia, Vancouver, B.C. V6T 1Z4. Ph. (604) 822-8238; Fax (604) 822-6088, email jmcintos@eos.ubc.ca; email lgroat@eos.ubc.ca

June

2-6 7th Annual V. M. Goldschmidt Conference. Tucson, Arizona. *Details:* Michael Drake, Dept. of Planetary Sci., Lunar and Planetary Inst., Univ. of Arizona, Tucson, AZ 85721. Tel.: (520) 621-6962; Fax: (520) 621-4933; E-mail: goldconf@lpl.arizona.edu; WWW: cass.jsc.nasa.gov/meetings/gold/gold.intro.html. (*abst deadline: Feb. 21*).

15-21 The 11th International Clay Conference and The 34th Annual Meeting of the Clay Minerals Society. Ottawa, Ontario, Canada. *Details:* Jeanne B. Percival, Secretary-General, 11th ICC, Geological Society of Canada, 601 Booth St., Ottawa, Ontario K1A 0E8, Ontario, Canada. Fax: (613) 943-1286; E-mail: icc97@gsc.emr.ca.

20-25 "Tourmaline 1997" - International Symposium on Tourmaline. Moravia, Czech Republic. Technical Session (June 20-22) and Field Trip (June 23-25). *Details:* M. Novák, Dept. of Mineralogy and Petrography, Moravian Museum, Zelný trh 6, 659 37 Brno, Czech Republic. Fax: (05) 4221 2792; E-mail: mzm@mzm.anet.cz and F. C. Hawthorne, Dept. of Geological Sci., Univ. of Manitoba, Winnipeg, R3T 2N2, Manitoba, Canada. Fax: (204) 261-7581; E-mail: fchawthorn@bldgwall.lan1.umanitoba.ca

July

15-21 5th International Symposium on Hydrothermal Reactions (ISHR '97). Gatlinburg, Tennessee. *Details:* ISHR '97, ORNL, P.O. Box 2008, Building 4500S, MS 6110, Oak Ridge, TN 37831-6110. Tel.: (423)-576-5109; Fax: (423)-574-4961; E-mail ddp@ornl.gov; WWW: http://flory.engr.utk.edu/ishr97.

November, 1996

August

10-15 Gordon Research Conference on Inorganic

Geochemistry: Ore Deposits. New Hampton School, New Hampton, New Hampshire. *Details:* Mark Reed, Dept. of Geological Sciences, Univ. of Oregon, Eugene, OR 97403-1272. Tel.: (541) 346-5587; Fax: (541) 346-4692; e-mail: mhreed@oregon.uoregon.edu; or Kevin Shelton, Dept. of Geological Sciences, Univ. of Missouri, Columbia, MO 65211. Tel.: (573) 882-6568, Fax: (573) 882-5458; e-mail: geosckls@showme.missouri.edu; or Robert Schafer, BHP Minerals International Exploration, Inc., 5330 South 900 East, Suite 200, Salt Lake City, Utah 84117, Tel.: (801) 261-1103.

19-20 IMA Working Group in Mineral Equilibria and Data

Bases. Helsinki, Finland. *Details:* Pentti Holtta, Geol. Surv. Finland, SF-02150 Espoo, Finland. Tel.: 358-0-469323-12; Fax: 358-0-462205; e-mail: pentti.holtta@gsf.fi or Leonid L. Perchuk, Geological Faculty, Moscow State Univ., Vorobievsky Gory 119899, Russia. Tel.: 7-095-913-2112; Fax: 7-095-939-1395; e-mail: llp@geol.msu.ru or llp@p1854.home.chg.ru.

September

1-5 "Challenges to Chemical Geology" - 10th Meeting of the European Geological Societies. Carlsbad, Czech Republic. *Details:* M. Novák, Czech Geol. Survey, Geologická 6, 15200 Prague 5, Czech Republic. Tel.: 42-2-581-71-20; Fax: 42-2-581-87-48; E-mail: novak@cgu.cz.

1-7 Fifth International Eclogite Conference. "Centro Stefano Franscini", Monte Verita, Ascona, Switzerland. *Details:* Dr. Rolf Schmid, Mineralogy, IEC 97, ETH-centre, NO E43, 8092 Zurich, Switzerland. Tel. direct: XX41 1 6323791, Tel. secr.: XX41 1 6323779; Fax: XX41 1 6321088; E-mail: rolf@erdw.ethz.ch; WWW: http://www.erdw.ethz.ch/~rolf/pre_reg.html. *Preliminary registration:* Oct. 31, 1996, *Registration due:* May 31, 1997; (*Abstr due:* May 31)

4-5 Metamorphic Studies Group and Applied Mineralogy Group Workshop on "Applying Hydrogeology and Fluid Flow Modelling to Metamorphic and Ore Systems" Leeds, UK. *Details:* Bruce Yardley, Dept. of Earth Sciences, University of Leeds, Leeds LS2 9JT, UK. Fax: +44 (0)113 2335259, email:bruce@earth.leeds.ac.uk

8-10 COM/IMA short course: "Modern Approaches to Ore and Environmental Mineralogy". S. Mamede de Infesta, Portugal. *Details:* Dr. Orlando C. Gaspar, Laboratório do IGM, Apartado 89,4465 S. Mamede de Infesta, Portugal. Tel. +351 2 951 19 15, Fax +351 951 40 40

October

20-23 Geological Society of America Annual Meeting. Salt Lake City, Utah. *Details:* GSA, P.O. Box 9140, Boulder, CO 80301. Tel.: (303) 447-2020.

1998

April

13-17 7th International Kimberlite Conference. Rondebosch, South Africa. Field trips April 6-12 and April 19-24. *Details:* J. Gurney, 71KC, Dept. of Geol. Sci., University of Cape Town, Private Bag, Rondebosch, 7700, South Africa. Tel.: 27-21-531-3162 or 27-82-550-2004; Fax: 27-21-650-3783; E-mail: 71kc@geology.uct.ac.za; WWW: <http://www.uct.ac.za/depts/geolsci/71kc/>.

May

18-20 Geological Association of Canada/Mineralogical Association of Canada. Quebec, Canada. *Details:* A. Morin, Dept. Geologie et de genie geologique, Universite Laval, Pavillon Adreïn-Pouliot Sainte-Fay, Quebec, G1K 7P4 Canada. Tel.: (418) 656-2193; Fax: (418) 656-7339; E-Mail: quebec1998@ggl.ulaval.ca; WWW: <http://www.ggl.ulaval.ca/quebec1998.html>.

June-July

29-15 8th International Platinum Symposium (IAGOD/CODMUR). Johannesburg, South Africa. *Details:* Dr. C. A. Lee, P.O. Box 68108, Bryanston, South

Africa. Tel.: 27-1127-373-2580; Fax: 27-1127-836-0371; E-mail: clee@amplats.co.za.

August

10-14 17th General Meeting of the International Mineralogical Association. Toronto, Canada. *Details:* E. Schandl, Dept. of Geology, University of Toronto, Toronto, Canada M5S 3B1 Tel.: (416) 978-7084; Fax: (416) 978-3938; E-mail: ima98@quartz.geology.utoronto.ca; WWW: <http://www.geology.utoronto.ca/IMA98>.

10-16 International Ophiolite Symposium and Field Excursion: "Generation and Emplacement of Ophiolites through Time". Oulu, Finland. *Details:* J. Vuollo, Dept. of Geology, University of Oulu, FIN-90570 Oulu, Finland. Fax: 358-81-5531484; E-mail: vuollo@sveka.oulu.fi or E. Hanski, Geol. Survey of Finland, P.O. Box 77, FIN-96101 Rovaniemi, Finland. Fax: 358-60-3297289; E-mail: eero.hanski@gsf.fi.

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If you know of someone who would like to join MSA, or should join MSA, use the membership application appearing elsewhere in this issue of *The Lattice* or obtain one from either MSA's home page (<http://geology.smith.edu/msa/msa.html>) or the MSA Business Office, 1015 Eighteenth Street, N.W., Suite 601, Washington, DC 20036-5203.

Abbott, Mr. Michael David, Perkins Geology Hall 102A, University of Vermont, Burlington, VT 054050-0122, USA. Ph: 802-656-8003. Fax: 802-656-0045. E-Mail: mdabbott@zoo.uvm.edu. (S-96) GE PE EM PM TC. Sponsor: MSA

Brey, Prof. Gerhard Peter, Institute of Mineralogy, J.W. Goethe - Universität, Senckenberganlage 28, D-60054 Frankfurt, GERMANY. Ph: 069-798-22102. (M-96) MI PE. Sponsor: MSA.

Denison, Dr. Cambria, 164 Strathbury Circle SW, Calgary, Alberta T3H1P9, CANADA. Ph: 403-686-3421. E-mail: denison@geo.ucalgary.ca. (M-96) MP. Sponsor: MSA.

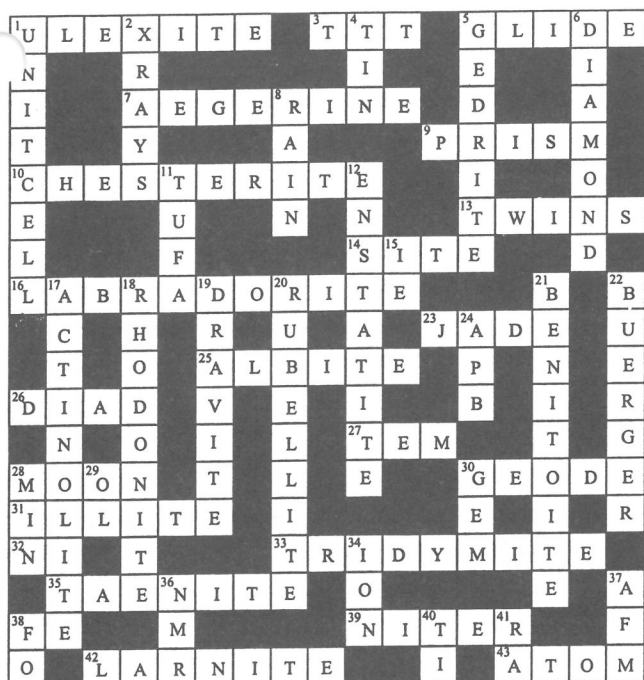
Esch, Dr. William Lee, 26 Tender Violet Pl., The Woodlands, TX 77381, USA. Ph: 713-966-6164. Fax: 713-966-6193. (M-96) SP GE. Sponsors: Robert Klimentidis and Darrell Henry.

Dorogokupets, Dr. Peter I., Institute of the Earth's Crust, Siberian Branch, Russian Academy of Sciences, 128 Lermontov Str., Irkutsk, 664033 RUSSIA. Ph: 3952-46-4391. F: 3952-46-2900. E-mail: dor@crust.irkutsk.su. (M-96) PE. Sponsor: MSA.

Goreva, Ms. Julia, California Institute of Technology, Division of Geological and Planetary Sciences, Mail Code 170-25, Pasadena, CA 91125, USA. Ph: 818-395-6135 Fax: 818-568-0935. E-mail: julia@legs.gps.caltech.edu. (S-96) MI IP MP GE PE PM. Sponsor: MSA.

Hauser, Mr. Markus, Albrechtstr. 58A, D-12167, Berlin, GERMANY. Ph: 030-838-6536. Fax: 030-838-3469. (S-96) PP MP GE. Sponsor: MSA.

Hildreth, Mr. Stephen C., Jr., 1132 Paces Run Ct., Columbia, SC 29223, USA. Ph: 803-741-1361. E-mail: hildret@vm.sc.edu. (M-96) IP EG. Sponsors: MSA.



Höfer, Dr. Heidi, Bergstr. 30, D-67593 Westhofen, GERMANY.
Ph: +49-69-798-23382. Fax: +49-69-798-28066. E-mail:
hofer@em.uni-frankfurt.de. (M-96) MI PP. Sponsors: MSA.

Holloway, JoAnn Michele, Land, Air and Water Resources,
Hoagland Hall, University of California, Davis, CA 95616, USA.
Ph: 916-752-3073. E-mail: jmholloway@ucdavis.edu. (S-96)
GE EM. Sponsor: MSA.

Lengke, Ms. Maggy Francis, 909 13th Street #15, Golden, CO
80401, USA. Ph: 303-384-9105. E-mail: mlengke@mines.edu.
(S-96) MI IP EM GM IM. Sponsor: MSA.

Newcomer, Ms. Paula Provencio, Sandia Nat. Lab, MS 1421,
P.O. Box 5800, Albuquerque, NM 87185, USA. Ph: 505-844-
6337. Fax: 505-844-4045. E-mail: ppnewco@sandia.gov. (M-
96) CC MI PE CM EM. Sponsors: P.C. Ewing and MSA.

Ostergren, John D., Department of Geological and
Environmental Sciences, Stanford University, Building 320,
Room 118, Stanford, CA 94305-2115, USA. Ph: 415-723-7513.
E-mail: johno@pangea.stanford.edu. (S-96) GE EM. Sponsors:
Gordon E. Brown, Jr., and MSA.

Patel, Dr. Atul, Dept. of Geological Sciences, University College
London, Gower Street, London WC1E 6BT, UNITED
KINGDOM. Ph: 44-0171-380-7777 x2361. F: 44-0171-387-
1612. E-mail: a.patel@ucl.ac.uk. (M-96) MI CC PP EM.
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Rettinger, Mr. Rolf, Südendstr. 56, D-12169 Berlin,
GERMANY. Ph: 0049-331-977-2896. Fax: 0049-331-977-2087.
E-mail: retti@rz.uni.potsdam.de. (S-96) MI MP PE Mineral
Physics. Sponsor: MSA.

Robarge, Dr. Wayne P., North Carolina State University, Box
7619 Soil Science, Raleigh, NC 27695, USA. Ph: 919-515-1454.
Fax: 919-515-2167. E-mail: wayne_robarge@ncsu.edu. (M-96)
CM EM. Sponsor: MSA.

Steefel, Dr. Carl, Dept. of Geology, University of South Florida,
4202 E. Fowler Ave., Tampa, FL 33620, USA. Ph: 813-974-
9674. Fax: 813-974-2654. E-mail: steefel@margaux.cas.usf.edu.
(M-96) Sponsor: MSA.

Stølen, Dr. Svein, Department of Chemistry, University of Oslo,
Post Box 1033, N-0315 Oslo NORWAY. Ph: 22-85-56-01 Fax:
22-85-54-41. E-mail: svein.stolen@kjemi.uio.no. (M-96) PE
PP. Sponsor: MSA.

Wilding, Martin C., Dept. of Geological and Geophysical
Sciences, Princeton University, Princeton, NJ 08544, USA. Ph:
609-258-1279. Fax: 609-258-1274. E-mail:
wilding@geo.princeton.edu. (M-96) PP MP. Sponsor: MSA.

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☐ Prof. _____ First Line of Address
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Education Information:

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

Institution at which Highest Degree was earned _____ Year _____

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<i>Mineralogical Abstracts</i> , published quarterly by the Mineralogical Society of Great Britain & Ireland	\$36.00
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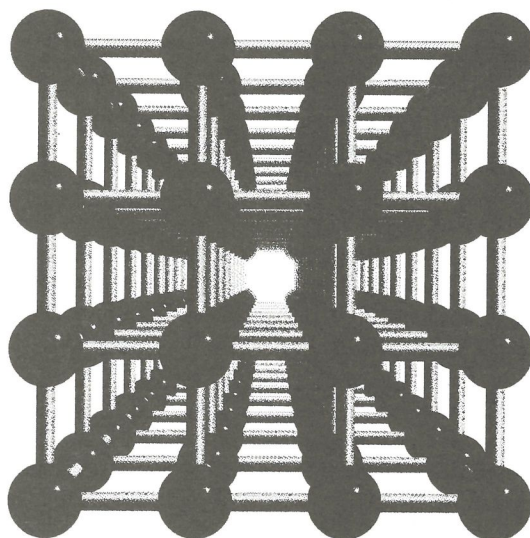
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