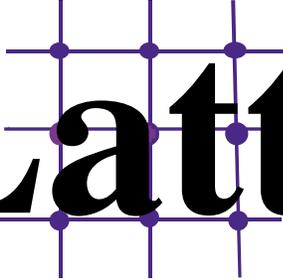


# The Lattice



The Newsletter of the  
Mineralogical Society  
of America

Subscription and membership  
information  
is on page three.

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## MSA and the Geochemical Society offer short course on molecular modeling theory

by Randall T. Cygan

The Mineralogical Society of America and the Geochemical Society are combining efforts in offering the opportunity for students and professionals to learn about the role of molecular modeling in mineralogical and geochemical systems. A short course entitled "Molecular Modeling Theory and Applications in the Geosciences" will be held in Roanoke, Virginia on May 19–20, 2001. The organizers of the course are Randall Cygan of Sandia National Laboratories and James Kubicki of Pennsylvania State University. The short course, which will precede the 2001 Goldschmidt Conference in Hot Springs, Virginia, will cover some of the most important and timely information on atomistic and molecular simulations of mineral systems.

Molecular modeling methods have become important tools in many areas of geochemical and mineralogical research. The purpose of this course will be to help introduce molecular modeling to researchers considering moving into this expanding field and to familiarize experimentalists with the type of information available from computer simulations. The short course will focus on techniques and applications for modeling a wide variety of problems in mineralogy and geochemistry. Techniques covered will include energy minimization, lattice dynamics, Monte Carlo methods, and molecular dynamics. Important concepts of quantum mechanics and electronic structure calculations, includ-

ing both molecular orbital and density functional theories, will be introduced. Applications will cover a broad range of mineralogy and geochemistry topics—from atmospheric reactions to properties of mantle and core phases. Throughout the course, emphasis will be placed on the comparison of molecular simulations with experimental data and the synergy that can be generated by using both approaches in tandem. Those interested in using molecular modeling in research or understanding papers in computational chemistry should attend. This short course will provide a lively forum for discussions of theory, simulations, computers, spectroscopy, experiments, and their link with field observations.

For additional information and registration materials for this short course, see pages 8–9 of this issue of *The Lattice*, or visit the short course web page at [www.sandia.gov/eeseector/GScourse.htm](http://www.sandia.gov/eeseector/GScourse.htm). □

## 2001 Nominees for MSA Office

The following is the slate of officer nominees for the Council year 2002:

### Vice Presidential nominees:

Stephen J. Guggenheim (University of Illinois-Chicago)  
Douglas Rumble (Carnegie Institution, Geophysical Lab)

### Secretary:

David M. Jenkins (State University of New York-Binghamton)

### Councillors: (in alphabetical order)

James M. Brenan (University of Toronto)  
Peter J. Heaney (Pennsylvania State University)  
Nancy L. Ross (Virginia Polytechnic Institute)  
Bernard J. Wood (University of Bristol)

Letter from the President



## Changes in *The Lattice*; thoughts on undergraduate mineralogy

by Cornelis ("Kase") Klein, MSA President

Recipients of the November 2000 issue of *The Lattice*, which arrived probably sometime in early February 2001, will have noticed that it has a quite different look from earlier issues. This is the result of two factors: a change-over in editors, as well as the decision to do the complete lay-out of the newsletter in the editorial offices of MSA in Washington, D.C. Let me express our collective gratitude, on behalf of MSA, to the editor of *The Lattice* for the past five years, Darrell Henry of Louisiana State University, Baton Rouge. He has given very generously of his time to provide MSA with a most informative newsletter. Many thanks, Darrell. Let me also remind you

that another member of the Geology Department at Louisiana State has also shown great commitment to the Society, namely Barb Dutrow. She was the Secretary of the Society for four years, between 1996 and 1999. These two members of the same department have done yeoman service for the Society. Many, many thanks to both of you!

Our new editor, beginning with this February issue, is Andrea Koziol of the University of Dayton, Ohio. We look forward to many more years of successful issues under her editorship.

Let me now bring up an issue that, I think, has been of serious concern for many years with a considerable segment of the membership of MSA. I will

introduce it as "Some thoughts about the teaching of the undergraduate mineralogy course in North American Universities." Others have addressed this issue in earlier years. A good example is the Comments column, written by John Brady of Smith College in 1995 in *Geotimes* (Sept. issue, p. 5) entitled "Confessions of a Mineralogy Professor." He begins with a statement of a well-known secret: *Minerals are the most interesting objects on Earth, and they are fun to study.* He continues by asking the question "why then do geologists feel such a lack of enthusiasm for mineralogy?" His quick answer is "Because most geologists once took a course in mineralogy—and it was not very

good." This is a serious issue and the quality of the undergraduate mineralogy course very much affects the student's enthusiasm (or the lack thereof) for mineralogy, which in turn has a strong influence on the future path that is selected in further professional training. In the long run it affects what students will do in graduate school and even, whether or not they will join a society such as ours, the Mineralogical Society of America. Here follow some of my thoughts on the subject.

Over the last twenty years or so, Geology (or Earth Science, or Earth and Planetary Science, and so on) undergraduate curricula have undergone major

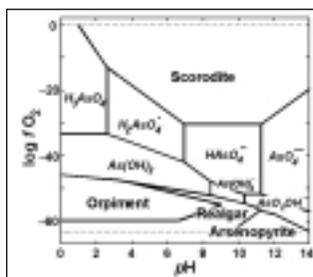
Continued on page 16

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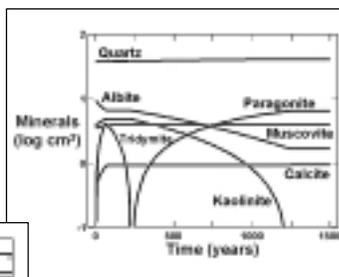
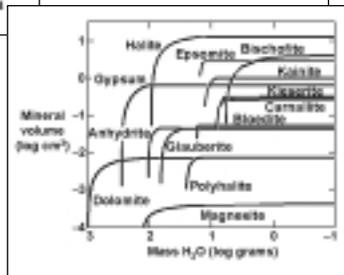
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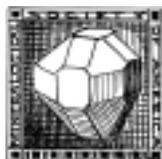
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## Notes from Washington

by J. Alexander Speer, MSA Executive Director

- Renewal Notices for 2001 were sent to members and subscribers in November 2000. If you did not receive yours, please contact the Business Office. If you did, and have not yet returned it, please renew as soon as possible to save your Society the expense of a second renewal notice. You can renew online if you pay by credit card, or by returning the paper renewal notice with payment. When you renew, please check to make sure your e-mail address printed on your renewal form is correct. You can also check to see what e-mail address we have for you in the online MSA membership Directory and, if incorrect, you can send us an update online. MSA would like to take better advantage of electronic communications with its members but cannot do so if a third or more of its members cannot be reached that way.

- There have been some staff changes in the MSA Editorial Office. Lisa M. Koch, the *American Mineralogist* Production Editor, left us on 9/8/2000 to work in the telecommunication industry. Eric T. Baker, who joined us on 10/16/2000 is now the journal's Production Editor.

- Reviews in Mineralogy and Geochemistry (RiMG) volume 40, *SULFATE MINERALS - Crystallography, Geochemistry, and Environmental Significance*, is now available. A general description of the book and the Table of Contents are given on the MSA website at [www.minsocam.org](http://www.minsocam.org). The book accompanies the short course of the same name on November 11-12, 2000. C.N. Alpers, J.L. Jambor and D.K. Nordstrom are the editors of this newest RiMG volume. You can order your copy using the order form elsewhere in this issue, online, or by mail, e-mail, phone, or fax. □

## “Mineral Structures and Behaviors” Special Session at Goldschmidt 2001

The Mineral Structures Special Interest Group of MSA is sponsoring a special session at Goldschmidt 2001 (May 20-24, 2001) on “Mineral Structures and Behaviors.” The keynote speaker is Alain Baronnet, and response to date suggests that this will be a very exciting session. Anyone working in the area of structures and behaviors of minerals and related materials, including: spectroscopy, high pressure/temperature mineralogy, phase transitions, X-ray and neutron diffraction, mineral surfaces, TEM, X-ray spectroscopy, etc. is encouraged to submit an abstract to this session. The deadline for abstracts is Feb. 9th by paper and Feb. 16th for electronic submissions. For additional information see the Goldschmidt website: <http://www.lpi.usra.edu/meetings/gold2001/>.

This should be an excellent meeting for those interested in mineral structures; we hope to see you in May. For information on the Mineral Structures session, please feel free to contact the co-organizers: Jeffrey Post ([post.jeffrey@nmnh.si.edu](mailto:post.jeffrey@nmnh.si.edu)) and David Veblen ([dveblen@jhu.edu](mailto:dveblen@jhu.edu)). □

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 and Geochemistry* series; *The Lattice*; special subscription rates for *Mineralogical Abstracts*, *Physics and Chemistry of Minerals*, *Journal of Petrology*, and *Rocks and Minerals*; 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 2001: professional members \$50; student members \$5. *American Mineralogist* subscription: professional members add \$30; student members add \$25. Membership is on a calendar year basis. Individuals who join after January 1, 2001 will be sent all back issues of volume 85 for 2001.

Additional membership information and an application, and/or a price list of the Society's publications are elsewhere in this newsletter, or contact the Business Office.

Institutions may subscribe to the 2001 volume of *American Mineralogist* for the annual rate of \$480 in the US and \$490 for non-US addresses. The subscription price includes any new volumes of the *Reviews in Mineralogy and Geochemistry* 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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**MSA Executive Director:** J. Alexander Speer  
**Production Manager:** Rachel A. Russell

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## MSA Award and Office and Nominations

Member participation is essential to the formation and continuation of MSA programs. Involvement can take several forms: nominate a candidate for an award, volunteer to serve on a committee next year, or offer your name or that of a colleague as a possible candidate for office. It is through the involvement of individual members that the Society's programs develop to meet the needs of its members. Please take a minute to read the brief committee descriptions below and consider getting involved. More information about each award and the list of 2001 MSA Committee members are available at the MSA website at [www.minsocam.org](http://www.minsocam.org). Contact the appropriate Committee Chair with your recommendations.

Award/Office	Deadline	Committee Chair
The Roebbling Medal is MSA's highest award and is given for eminence as represented by outstanding published original research in mineralogy.	June 1	Michael A. Carpenter Univ of Cambridge Dept Earth Sciences Downing St Cambridge, CB2 3EQ ENGLAND Tel: +44 (1223) 33-3483 Fax: +44 (1223) 33-3450 E-mail: mc43@esc.cam.ac.uk
The Dana Medal is intended to recognize continued outstanding scientific contributions through original research in the mineralogical sciences by an individual in the midst of their career.	June 1	Sorena S. Sorensen Smithsonian Institution Mineral Sciences NHB119 Washington, DC 20560-0119 Tel: (202) 357-4010 Fax: E-mail: sorena@volcano.si.edu
Mineralogical Society of America Award is give for outstanding published contribution(s) prior to 35th birthday or within 7 years of the Ph.D.	June 1	David L. Bish Geology and Geochemistry Los Alamos National Laboratory, Mail Stop D469 Los Alamos, NM 87545 ph: (505) 667-1165 fax: (505) 665-3285 e-mail: bish@lanl.gov
Distinguished Public Service Medal is awarded for distinguished contributions to public policy and awareness about mineralogical topics.	June 1	W. Gary Ernst Stanford University Dept Geol & Environ Sci Stanford, CA 94305-2115 Tel: (650) 723-2750 Fax: (650) 725-0969 e-mail: ernst@pangea.stanford.edu
Society Fellowship is the recognition of a member's significant scientific contributions. Nomination is undertaken by one member with two members acting as co-sponsors. Form required, contact committee chair or MSA home page.	June 1	Robert J. Bodnar Virginia Polytech Inst Dept Geological Sciences Blacksburg, VA 24061-0420 Tel: (540) 231-7455 Fax: (540) 231-3386 e-mail: bubbles@vt.edu
MSA Office is open to any non-student member or fellow of the Society. One-year terms for President and Vice-President; two-year terms for treasurer and secretary; three-year term for Councillors.	June 1	Kathryn Nagy University of Colorado Dept Geological Sci Campus Box 399 Boulder, CO 80309-0399 Tel: (303) 492-2763 Fax: (303) 492-2606 E-mail: kathryn.nagy@colorado.edu
Committee membership is open to any member or fellow of the Society. Terms usually from one to six years. In addition to above committees, there are committees on Management, Meetings, Financial Advisory, Publications, Short Course, Tellers, Committee on Committees, Outreach, Arts Council. If you are interested in serving, contact the chair.	April 30	Rodney C. Ewing Univ of Michigan Dept Nuclear Engineering 2355 Bonisteel Blvd Ann Arbor, MI 48109-2104 ph: (734) 647-8529 fax: (734) 647-8531 e-mail: rodewing@umich.edu

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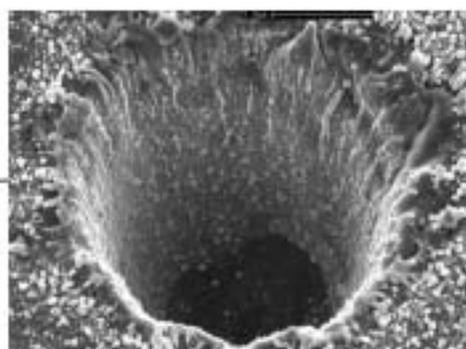
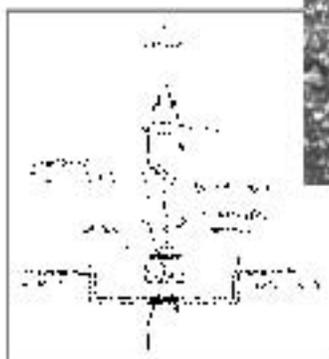
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Technical topics discussed include: Nd-YAG and excimer laser instrumentation; laser beam delivery systems; ablation cell design; quadrupole, magnetic sector and time-of-flight ICPMS instrumentation; collision cell technologies; sample preparation; data acquisition, calibration and quantification strategies; laser ablation phenomena and element fractionation.

Examples of Earth sciences applications: whole rock geochemistry using fusion disk analyses; lithophile element studies of silicate and oxide minerals in the mantle and crust; noble metal element studies of sulphides, oxides and metals in ores and rocks; experimental mineral-melt partitioning; melt inclusions and magmatic processes; fluid inclusions and ore genesis; metamorphic minerals and diffusion-rate processes; trace-element geothermometry/geobarometry; environmental pollution tracing and monitoring; radiogenic isotope systematics of minerals; U-Pb accessory mineral geochronology.



**Registration costs:** CAN\$250 for professionals and CAN\$150 for students (includes short-course volume and two cold lunches).

To register and for other information, visit the St. John's 2001 GACMAC website at [www.geosurv.gov.nf.ca/stjohns2001](http://www.geosurv.gov.nf.ca/stjohns2001) or contact Dr Paul Sylvester at [pauls@sparky2.esd.mun.ca](mailto:pauls@sparky2.esd.mun.ca) for answers to specific questions. Online registration will commence on 1 March 2001.

### Scheduled Lecturers

**Detlef Günther**, Professor für Analytische Chemie und Spurenanalytik, ETH Zürich, Switzerland

**Simon Jackson**, Lecturer, School of Earth Sciences, Macquarie University, Australia

**Jan Kosler**, Lecturer, Department of Geochemistry, Charles University, Czech Republic; and Research Associate, Department of Earth Sciences, Memorial University of Newfoundland

**Henry Longrich**, Professor Emeritus, Department of Earth Science, Memorial University of Newfoundland

**Nuno Machado**, Professeur associé et Agent de recherche et de planification, Sciences de la Terre, Université du Québec à Montréal

**Paul Mason**, Research Officer, Faculty of Earth Sciences, University of Utrecht, The Netherlands

**Marc Norman**, Senior Research Fellow, School of Earth Sciences, University of Tasmania, Australia

**Paul Sylvester**, Associate Professor, Department of Earth Sciences, Memorial University of Newfoundland

**Geoff Veinott**, Research Scientist, Department of Fisheries and Oceans, Environmental Sciences Division, Northwest Atlantic Fisheries Centre

### Student Registration Grants

A limited number of awards is available to students to cover the registration fee. Applicants should send a brief statement outlining their interest in the short course and explaining how their attendance will enhance their academic studies or research to Dr Paul Sylvester by email at [pauls@sparky2.esd.mun.ca](mailto:pauls@sparky2.esd.mun.ca). APPLICATIONS MUST BE RECEIVED BY 1 MARCH 2001.



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## All About Color

By Rachel A. Russell, Managing Editor, *American Mineralogist*

The MSA Council has recently approved a plan to facilitate and encourage the use of color in manuscripts published in the *American Mineralogist*. A special Color Fund has been established, to be used at the Editors' discretion, to support the use of color figures in the manuscripts. Authors are still encouraged to cover a part of the cost, as funds are limited, but the use of color when needed is encouraged.

However, even better news is that the cost of color printing in *American Mineralogist* seems to be considerably less than most Earth Sciences journals. Right now, authors pay only what is clearly indicated on the printer's bill to be the extra costs associated with color. This could include a color separation, the film output, and the actual cost of the color printing. Although the size of the image plays a large factor, the last several bills have been about \$800. The even better news, and little known, is that once color is "open" on a signature of paper, there will be several other pages of color available to that author. Additional figures would be just the cost of separations, perhaps \$100 or so, all depending on size.

And that separation fee can be almost eliminated by submitting a high-quality electronic file. I strongly prefer the tiff files, saved at 300 dpi. If the figure has labels or arrows, the dpi probably should be higher. Right now, the printer can send us a color "proof" of an electronic file for about \$15. Many journals skip this step completely, because if the authors provide the color image file, then presumably it is exactly how they want it. We are still working out how to process electronic color art on a case by case basis, but it seems much easier than hardcopy! I strongly encourage this trend.

The bottom line right now is that if you provide the electronic color file and are flexible about the placement of color in your article, then about \$800 could obtain up to 8 pages to put color figures on. As everyone knows, we send proofs to the authors, so the layout won't be a surprise. In the case of complex color, it could be possible to send another proof, if the layout had to be adjusted because of left/right page alignments. What must be avoided are changes to the color file, whether it is electronic or hardcopy when you submit it. Even the smallest change could be quite expensive! So we try to make sure that the file is good right from the start and get any problems solved before the printer is involved.

Furthermore, if color is necessary to your paper and you have no funds, apply to the Editors for consideration from the Color Fund. I want to encourage authors to add a note to their cover letter, when they initially submit their paper, explaining briefly the importance of the image and how much they could contribute. Right now, if the editors intend for the Color Fund to be used, they let me know when they send me the accepted file. If there is any confusion, I try to clear it up immediately with the authors and editors.

But there is more good news! It turns out that the more

color we use, the cheaper the color is for everyone, due to economies the printer can apply. Occasional pieces of color are expensive, but if it is known that each issue will have, for example, 20 pieces of color or so, then the cheaper it becomes. Much depends on whether few authors use a lot of color (less expensive), or whether many authors use a little (more expensive). MSA could decide to increase the Color Fund, or donations could increase it. Donations can be made to this fund by contacting Alex Speer, MSA's Executive Director, and this would be a tax-deductible type of donation.

We can also consider requests for two colors (versus the 4-color above), and that would be another learning adventure. Another option could be printing a figure in black and white in the journal but providing a color jpeg for the web site. There is a dizzying array of options available right now.

The future of *American Mineralogist* looks to be quite colorful! □

### Call for Papers

## *American Mineralogist* honors Holdaway with Special Issue

Barb Dutrow, Special Associate Editor *American Mineralogist*

As a follow up to the GSA topical session in honor of the retirement of M.J. Holdaway: "Metamorphic petrology from the field to experiments," the *American Mineralogist* has agreed to publish a "Holdaway Issue," to mail March 2002.

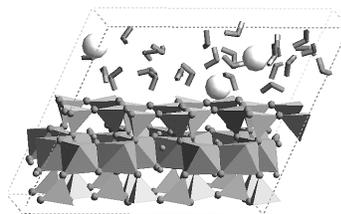
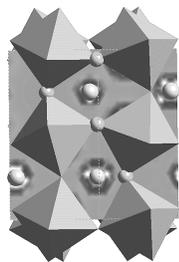
We invite contributions for this volume. Any aspect of original research appropriate for publication in the *American Mineralogist* is welcome. Manuscripts will undergo standard *American Mineralogist* review procedures. Manuscripts can be **submitted from now until about April 30**, but the sooner submitted the more time for revision (if needed). In order for a timely publication, REVISED manuscripts will need to be returned by October 1, 2001.

Manuscripts should be sent to: *American Mineralogist*, 1015 18th St NW Suite 601, Washington, D.C. 20036-5212, USA. Please mention "Holdaway issue" in the cover letter.

If you have any questions concerning submission, please contact me (dutrow@geol.lsu.edu) or the editorial office. Also, please pass this information along to your co-authors. We look forward to your manuscript! □

*Read the American Mineralogist. now 8 times a year!*

## Molecular Modeling Theory and Applications in the Geosciences



**M**olecular modeling has become an important tool in many areas of geochemical and mineralogical research. The purpose of this course will be to introduce molecular modeling to researchers considering moving into this growing field and to familiarize experimentalists with the type of information available from computer simulations. Although one may never become a full-time molecular modeler, it will be increasingly important to understand these techniques in order to merge experiment and theory. This course will focus on techniques and applications for modeling a wide variety of problems in mineralogy and geochemistry. Techniques covered will include energy minimization (determining structures), lattice dynamics (calculating thermodynamic properties), Monte Carlo (generating configurations in complex systems), and molecular dynamics (predicting dynamic properties such as diffusion rate and viscosity). Important theoretical concepts of quantum mechanical calculations (both molecular orbital and density functional theories) will be introduced. Applications will run the gamut of geochemistry—from atmospheric reactions to properties of mantle and core phases. Throughout the course, emphasis will be placed on the comparison of simulations with experimental data and the synergy that can be generated by using both approaches in tandem. Those interested in using molecular modeling in research or understanding papers in computational chemistry should attend.

**Dates:** Saturday and Sunday May 19 and 20, 2001 (preceding the Goldschmidt Conference in Hot Springs, Virginia, USA)

**Location:** Hotel Roanoke and Conference Center in downtown Roanoke, Virginia, USA; 110 Shenandoah Avenue, Roanoke, Virginia 24016, USA; Phone: 540-985-5900; Fax: 540-853-8290

**Conveners:** *Randall T. Cygan*, Geochemistry Department, Sandia National Laboratories, Albuquerque, New Mexico 87185-0750, USA; Phone: 505-844-7216; E-mail: [rtcyan@sandia.gov](mailto:rtcyan@sandia.gov)

*James D. Kubicki* of Pennsylvania State University, University Park, Pennsylvania 16802, USA, Phone: 814-865-3951; E-mail: [kubicki@geosc.psu.edu](mailto:kubicki@geosc.psu.edu)

### Speakers/Authors and Topics:

**Randall T. Cygan** (Sandia National Laboratories): Molecular modeling in mineralogy and geochemistry

**Mihali Felipe** (Yale University): Transition state theory in geochemistry

**Julian D. Gale** (Imperial College): Simulating the crystal structures and properties of ionic materials from interatomic potentials

**Stephen H. Garofalini** (Rutgers University): Molecular dynamics simulations of silicate glasses and glass surfaces

**Gerald V. Gibbs** (Virginia Polytechnic Institute): Quantum chemical study of bonded interactions in earth materials and related molecules

**Andrey G. Kalinichev** (University of Illinois): Molecular simulations of liquid and supercritical water: Thermodynamics, structure, and hydrogen bonding

**James D. Kubicki** (Pennsylvania State University): Calculation of vibrational properties for geoscience applications

**Steve Parker** (University of Bath): The application of lattice dynamics and molecular dynamics techniques to minerals and their surfaces

**Kevin M. Rosso** (Pacific Northwest National Laboratory): Structure and reactivity of semiconducting mineral surfaces: Convergence of molecular modeling and experiment

**James R. Rustad** (Pacific Northwest National Laboratory): Molecular models of surface relaxation, hydroxylation, and surface charging at oxide-water interfaces

**David Sherman** (Bristol University): Quantum chemistry and classical simulations of metal complexes in aqueous solutions

**Lars Stixrude** (University of Michigan): First principles theory of mantle and core phases

**John A. Tossell** (University of Maryland): Calculating the NMR properties of minerals, glasses and aqueous species

**Yitian Xiao** (ExxonMobil Research): Modeling petroleum and natural gas generation: A first principles approach

**Short Course Volume:** As customary for Geochemical Society and Mineralogical Society of America short courses, a short course volume will be published and will be distributed at the course. The book *Molecular Modeling Theory and Applications in the Geosciences* includes fourteen chapters authored by the speakers.

### Schedule

Friday evening, May 18: Welcoming reception, 7:00 PM – 9:00 PM

#### Saturday May 19:

Continental breakfast, 8:00–8:30 AM  
Morning session, 8:30 AM – 12:00 PM  
Buffet lunch, 12:00–1:30 PM  
Afternoon session, 1:30–5:00 PM  
Evening open

#### Sunday May 20:

Continental breakfast, 8:00–8:30 AM  
Morning session, 8:30 AM – 12:00 PM  
Buffet lunch, 12:00–1:00 PM  
Transport to Goldschmidt Conference

Fees	by April 2, 2001	after April 2, 2001
Professional registration	\$150	\$200
Student registration	\$100	\$150

### Practical Information

Registration fee includes GS-MSA short course session costs, welcoming reception, breakfasts, lunches, break refreshments, and *Reviews in Mineralogy and Geochemistry* volume. All short course sessions will be at the Hotel Roanoke and Conference Center. There will be an informal welcoming reception at 7:00 PM Friday evening May 18, 2001 at the same location. Complimentary bus service to the Hotel Roanoke is available from the Roanoke airport. Registration fee does NOT include room costs, other meals, or transportation costs to or from the main Goldschmidt Conference at The Homestead. Short course attendees planning on attending the Goldschmidt Conference and needing bus transportation should make bus reservations using the conference web page (<http://www.lpi.usra.edu/meetings/gold2001/>). These buses will be picking up short course attendees at the Hotel Roanoke after lunch on Sunday May 20. A block of discounted rooms at the Hotel Roanoke are available for both Friday and Saturday nights. Rates are \$92.00 plus taxes per night (single occupancy), \$102.00 plus taxes per night (double occupancy), plus \$10.00 per night (plus taxes) for each additional person. Attendees must make their own room reservations by calling the hotel at 540-985-5900 and asking for the Molecular Modeling Short Course room block, or by making a reservation via the hotel web site (<http://www.hotelroanoke.com/>). Reservations must be made by Friday April 20, 2001 in order to guarantee the discounted room rates. All short course information and registration materials can be obtained at the short course web site (<http://www.sandia.gov/eesection/GScourse.htm>).

**Goldschmidt Conference Session:** A session entitled *Molecular Modeling in Geochemistry* will be scheduled for Monday and Tuesday May 21 and 22, 2001 as part of the Goldschmidt Conference. You are welcome to submit a contributed abstract and participate in the formal meeting.

**Short Course Registration Form** see next page



## A new e-mail list for experimental petrologists

**D**r. David Draper wishes to announce that an e-mail list has formed for experimental petrologists and other interested geoscientists. The list is the successor to an earlier version administered by Dr. Henry Shaw, who originated the idea in the early 1990s. Its purpose is to serve as a central point for the sharing of information on experimental materials, techniques, and results.

In addition to simple emails sent to all list members, this new version has additional features, including a calendar on which meeting information is stored, a files section where all manner of information can be housed, and sections for collections of useful links and other items.

The "owner" of the list, David Draper of NASA Johnson Space Center, Houston, Texas, can be reached for further information at [david.s.draper1@jsc.nasa.gov](mailto:david.s.draper1@jsc.nasa.gov). The URL for the group is <http://groups.yahoo.com/group/ExPet>. Users following that link who do not yet have an account with Yahoo register for a free account, and membership in the list is granted automatically. Draper does not moderate or filter posts to the group in any way, and all group features are accessible to all group members. Yahoo has a robust privacy policy, and so far there have been no reports of anyone's email address falling into the hands of spammers. All geoscientists with an interest in experimental work are encouraged to join the list. □

## Workshop on Solid Solutions in Silicate and Oxide Systems of Geological Importance

**2001, June 24–29**

Lübeck, Germany

**Organizer:** Charles A. Geiger

**Sponsor:** European Mineralogical Union and European Union (Socrates Program)

**Recognized by:** Mineralogical Society of America and International Mineralogical Association

This workshop will address the physical and chemical properties of rock-forming solid solutions from the microscopic to macroscopic level. Topics include basic theory and quantum mechanics, atomistic modeling and empirical pair potentials, solution modeling and macroscopic thermodynamic properties, long- and short-range ordering, phase equilibrium and thermodynamic databases, direct experimental measurements (calorimetry), and TEM/trace elements/glasses.

More info: [www.minsocam.org](http://www.minsocam.org) under "Short Courses"

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MSA Grants for Student Research in Mineralogy and Petrology are two US\$5000 grants for student research in mineralogy and petrology. Students, including graduate and undergraduate students, are encouraged to apply. There are no restrictions on how the grant funds may be spent, as long as they are used in support of research.

Selection will be based on the qualifications of the applicant, the quality, innovativeness, and scientific significance of the research, and the likelihood of success of the project. Grants will be made in January 2002. There are no restrictions on how the grant funds may be spent, as long as they are used in support of research. Application instructions and forms for the grants may be obtained from the MSA worldwide web home page, <http://www.minsocam.org> or Dr. J. Alex Speer, MSA Business Office, 1015 Eighteenth St NW Ste 601, Washington, DC, 20036-5212, USA (ph: 202-775-4344, fax: 202-775-0018, e-mail: [j\\_a\\_speer@minsocam.org](mailto:j_a_speer@minsocam.org)). Completed applications must be returned by June 1, 2001.



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## Welcome New Members

The following individuals joined (or rejoined after a long hiatus) MSA during January 2, 2001 through January 28, 2001. 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 or Descriptive Mineralogy (TP), Biological-Mineral Interactions (BM), and others as indicated.

If you know of someone who would like or should join MSA, give them the membership application that appears in this issue of *The Lattice*, or is available from either MSA's web site (<http://www.minsocam.org>) or the MSA Business Office, 1015 Eighteenth St NW Ste 601, Washington, DC 20036-5212, USA.

**Arediningsih, Miss Yulini**, KAVLING TNI-AL, Jalan Teluk Palu Blok A/3 No. 16, Pondok Bambu, Jakarta 13430, INDONESIA. Ph: +62 (21) 8620393. E-mail: [y.arediningsih@auckland.ac.nz](mailto:y.arediningsih@auckland.ac.nz) (S-01). MI, IP, GE, EG, IM,

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**Bennett, Mr. Ryan T.**, 818 Partridge Cir, Golden, CO 80403-1544. Ph: (303) 384-3392. E-mail: [rtb@rmi.net](mailto:rtb@rmi.net). (11-01). IP, EG, IM.

**Boffa Ballaran, Dr. Tiziana**, Univ Bayreuth, Bayerisches Geoinstitut, Bayreuth D-95440,

GERMANY. Ph: +49 (921) 553738. Fax: +49 (921) 553769. E-mail: [tiziana.boffa-ballaran@uni-bayreuth.de](mailto:tiziana.boffa-ballaran@uni-bayreuth.de) (M-01). MI, CC, PP, PE,

**Byrne, Mr. Patrick J.**, 2431 Lancashire Dr Apt 2A, Ann Arbor MI 48105-1361. Ph: (734) 623-6310. E-mail: [pjbyrne@engin.umich.edu](mailto:pjbyrne@engin.umich.edu) (S-01). MI, EM, OTHER, NUCLEAR TOPICS

**Campbell, Mr. Brian J.**, 608 E Lindsey St Apt B, Norman OK 73069-4776. Ph: (405) 325-9489. E-mail: [applecore@ou.edu](mailto:applecore@ou.edu) (S-01). MI, GE, EM, GM, PM, BM,

**Carter, Mr. Jerry K.**, 38 Day St Apt 42, Somerville MA 02144-2855. Ph: (617) 428-4444. Fax: (617) 428-1122. E-mail: [heliodor@earthlink.net](mailto:heliodor@earthlink.net) (M-01). MI, GM, PM, BM,

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**Davis, Mr. Kevin James**, Virginia Tech, 4044 Derring Hall, Blacksburg VA 24061-0000. Ph: (540) 231-8074. Fax: (540) 231-3386. E-mail: [kdavis2@vt.edu](mailto:kdavis2@vt.edu) (S-01). GE, MI, CC, PP, BM,

**De Azevedo, Mr. Antonio C.**, Purdue University, Agronomy Department, 1150 Lilly Hall, West Lafayette IN 47907-0000. Ph: (765) 494-4773. Fax: (765) 496-2926. E-mail: [aazevedo@purdue.edu](mailto:aazevedo@purdue.edu) (S-01). MI, CC, GE, PE, CM, EM, TC, BM, OTHER, S OIL MINERALOGY

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**President's Letter, Continued from page 2**

changes in most North American universities. Originally the undergraduate course sequence may have included mineralogy (as a first requirement in the major), optical mineralogy (as a prerequisite to subsequent petrology/petrography courses), igneous and metamorphic petrology, sedimentary petrology, and elective offerings in X-ray diffraction techniques, and advanced mineralogy (generally at the senior level). Since then, many departments have reduced the mineralogy core sequence to a one-semester course in mineralogy, with a required laboratory. If such a single course (including the laboratory) comes with an increased number of credits, such as 5 or 6 credits, much of what is basic to mineralogy can still be taught. However, if the total number of credits has been reduced (in the single mineralogy offering) to something like 3 credits (including a laboratory), or if the subject matter emphasizes mainly "minerals and rocks" (with laboratories that stress only hand specimen identification) much of what are considered basic concepts in mineralogy, crystal chemistry, and crystallography cannot be covered.

These changes were brought about, I believe, because some of our colleagues simply think that the subject of mineralogy is outdated or irrelevant, and because of a common desire to accommodate new course offerings. But because the required number of courses (in a core curriculum) is generally fairly fixed, and cannot be expanded (within a four-year degree program) subject matter that was originally part of the core was eliminated or de-emphasized. Almost everywhere, the well-established course sequence in mineralogical and petrological subjects was severely reduced in order to make room for new offerings.

This then raises the broader question of "what should be taught" in a basic, one-semester mineralogy course. This might be addressed by asking the question of "what should a geology (or environmental science) B.A. or B.S. recipient be prepared to deal with?," be

it in subsequent graduate school, or as a professional in the work force. My own, short answer to this, is that any student who has taken a single undergraduate mineralogy course, should be reasonably comfortable in dealing with most of what appears in *Reviews in Mineralogy* (published by the Mineralogical Society of America) and such reference volumes as those written by W.A. Deer, R.A. Howie, and J. Zussman (the various volumes that are part of *Rock-forming Minerals*). To be reasonably comfortable in consulting any of these volumes, the new graduate must have had considerable grounding in crystal chemistry, crystal structure, mineral behavior, and crystallography, and he or she must have some fundamental understanding of mineral stability and/or mineral assemblage diagrams. As part of this background, I think, a new graduate should have some familiarity with space groups and their notation, which is interwoven into all mineral descriptions in every one of the references mentioned above.

The reduction in mineralogical subject matter in the undergraduate curriculum has come about even though mineralogy is extremely closely tied, and is indeed a necessary prerequisite, to subsequent courses in petrology, economic geology, geochemistry, and environmental mineralogy. As Frank Hawthorne stated so clearly in his 1993 paper entitled "Minerals, mineralogy, and mineralogists: past, present, and future" (*The Canadian Mineralogist*, v. 31, p. 253-296) *Minerals are the basic stuff of the Earth, and their study will always remain at the core of the Earth Sciences*. Anyone who teaches mineralogy in a geology department will agree with this statement, but nonetheless mineralogy has a much smaller presence (or visibility) in the core curriculum than it had twenty years ago.

There is yet another factor that affects the quality of teaching of mineralogy. Fewer and fewer mineralogists (and/or crystallographers) are being trained at the Ph.D. level. Further-

Continued on page 17

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### Continued from page 16

more, departmental advertisements for a new hire in Geology may read: "Ph.D. in hydrology required. Candidate will be required to develop a vigorous research program in this field of expertise. The candidate will also be responsible for the undergraduate mineralogy course." The reduction in training and research in mineralogy and/or crystallography at the Ph.D. level, and the assignment of instructors who have quite different research interests from that which relates to mineralogy, generally means that the subject of mineralogy is probably not taught at the level and to the depth that it should be.

All of the above trends have affected the undergraduate mineralogy course as it is now offered. Mineralogy can be a very stimulating and exciting field to undergraduates if it is well taught. It can open venues to materials science if the subject matter is taught with integrity. I trust that we all agree that a 3-credit course on "Rocks and Minerals," or "Earth Materials" (with the main emphasis on descriptive aspects of the subject,

as well as hand specimen identification) is not the correct preparation for graduate school or employment after graduation. If the lectures in the undergraduate mineralogy course are not centered on concepts in crystal chemistry, crystal structure, crystallography, and paragenesis, I conclude that we are not doing our undergraduates any favors.

What must we conclude from all this? Even though we as mineralogical professionals may be able to convince our students of the significance and relevance of mineralogy to the overall field of earth science, it appears that we have been remiss in not convincing our departmental colleagues of the central and highly significant role of mineralogy to the curriculum. Examples of the immediate applicability of mineralogic/crystallographic and crystal chemical concepts to topics of great current interest and excitement are biomineralogy, behavior of mineral surfaces, nanoscale processes, and mineral-fluid interactions. Clearly, we must do a much better job, in the future, of convincing our colleagues of the need for maintaining a rigorous mineralogic curriculum at the undergraduate level. □

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MSA members have taken advantage of the Society's American Mineralogist Undergraduate (AMU) Award program to recognize outstanding students who have shown an interest and ability in the discipline of mineralogy. Each student was cited by his or her department for outstanding achievement in mineralogy-related courses. The AMU Awards allow MSA to join with the individual faculty to formally recognize outstanding students. Each student is presented a certificate at an awards ceremony at his or her university or college. In addition, each recipient receives a *Reviews in Mineralogy and Geochemistry* or *Monograph* volume chosen by the sponsor, student, or both. Past AMU awardees are listed on the MSA website.

Deadlines for nominating students are January 1 and July 1 of each year. Mark these dates on your calendars and let us know about your exceptional student. If you are interested in presenting the award at a particular ceremony, please remember that time is required to produce certificates and have letters signed. To nominate a student, send a letter on departmental letterhead to Dr. J. Alexander Speer, MSA Business Office, 1015 Eighteenth St. NW Ste 601, Washington, DC 20036-5212. With the nomination, please include the student's full name that would be suitable for the certificate, a mailing address for the student that will be current at the time the award is made, year in school, the MSA sponsor's name, **the choice of *Reviews in Mineralogy and Geochemistry* or *Monograph***, and the date and brief description of the award ceremony at which the certificate will be presented. The letter must be signed or co-signed by the department chair.

The Society welcomes the following exceptional students to the program's honor roll and wishes to thank the sponsors for enabling MSA to recognize these outstanding individuals.

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Submit by mail or electronically to Jinny Sisson, Dept of Geology and Geophysics, MS-126, Rice University, Houston TX 55251-1892 or jinnys@rice.edu. **Deadline is March 15, 2001.** □

## Meeting Calendar 2001

### April

**8–12 Symposium on “Transformation Processes in Minerals” at the European Union of Geosciences meeting.** Strasbourg, France. Details: WWW: <http://eost.u-strasbg.fr/EUG>

### May

**20–24 11<sup>th</sup> Annual V. M. Goldschmidt Conference.** Roanoke, VA. Details: Bob Bodnar ([bubbles@vt.edu](mailto:bubbles@vt.edu)) or Mike Hochella ([hochella@vt.edu](mailto:hochella@vt.edu)).

**27–30 St. John’s 2001, Geological Association of Canada–Mineralogical Association of Canada Annual Joint Meeting.** St. John’s, New Foundland, Canada. Details: St. John’s 2001, c/o Department of Mines and Energy, St. John’s, New Foundland, A1B 4J6; Tel: 709-729-2301; Fax: 709-729-3493; E-mail: [dmp@zeppo.geosurv.gov.nf.ca](mailto:dmp@zeppo.geosurv.gov.nf.ca).

### June

**9–24 Field Course on Rare Earth Pegmatites.** Madagascar. Details: Federico Pezzotta - Museo Civico di Storia Naturale, Corso Venezia 55, 20121 Milan, Italy. E-mail: [fpezzotta@yahoo.com](mailto: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](mailto:wsimmons@uno.edu), FAX: (504) 280 7396, Phone: (504) 280 6791

**24–28 Earth Systems Processes–A Global Meeting.** Edinburgh, Scotland. Details: Ian Dalziel, E-mail: [Ian@utig.ig.utexas.edu](mailto:Ian@utig.ig.utexas.edu) or Ian Fairchild, E-mail: [i.j.fairchild@keele.ac.uk](mailto:i.j.fairchild@keele.ac.uk), WWW: <http://www.geolsoc.org.uk>.

**24–29 Workshop on Solid Solutions.** Lubeck, Germany. Details: Charles Geiger. E-mail: [chg@min.uni-kiel.de](mailto:chg@min.uni-kiel.de), WWW: [www.ifg.uni-kiel.de/Veranstaltungen/mader.html](http://www.ifg.uni-kiel.de/Veranstaltungen/mader.html).

### July

**1–6 Advances in Environmental Materials.** Singapore. Details: Tim White, Environmental Technology Institute, Innovation Centre, NTU, Block 2, Unit 237, Nanyang Drive, Singapore 637723. E-mail: [tjwhite@eti.org.sg](mailto:tjwhite@eti.org.sg), FAX: 65-792 1291, Phone: 65-794 1509; WWW: <http://www.mrs.org.sg/icmat2001>.

### August

**26–29 6<sup>th</sup> Biennial SGA meeting.** Krakow, Poland. Details: Wojciech Mayer, University of Mining and Met-

allurgy, 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](mailto: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](mailto:enami@eps.nagoya-u.ac.jp); WWW: [ganko.eps.nagoya-u.ac.jp/iec2001/index.html](http://ganko.eps.nagoya-u.ac.jp/iec2001/index.html).

**6–8 CL 2001 – Cathodoluminescence in Geosciences: New Insights from CL in combination with other techniques.** Freiberg, Germany. Details: CL 2001 Secretariat, Freiberg University of Mining and Technology, Department of Mineralogy, Brennhaus-gasse 14, D-09596 Freiberg, Germany; Tel.: +49-(0)3731-392628, Fax: +49-(0)3731-393129 E-mail: [goetze@mineral.tu-freiberg.de](mailto:goetze@mineral.tu-freiberg.de); WWW: [www.mineral.tu-freiberg.de](http://www.mineral.tu-freiberg.de) □

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## Geological Materials Research Contents

### VOLUME 2 2000

**v2n1** Richard A. Ketcham, Raymond A. Donelick, and Margaret B. Donelick, *AFTSolve: A program for multi-kinetic modeling of apatite fission-track data* (Published 15 March 2000, 18 pages, 2 tables, 12 figures)

**v2n2** J.L. Crowley, E.D. Ghent, S.D. Carr, P.S. Simony, and M.A. Hamilton, *Multiple thermotectonic events in a continuous metamorphic sequence, Mica Creek area, southeastern Canadian Cordillera* (Published 24 May 2000, 23 pages, 2 tables, 14 figures)

**v2n3** David M. Hirsch, Richard A. Ketcham, and William D. Carlson, *An evaluation of spatial correlation functions in textural analysis of metamorphic rocks* (Published 2 June 2000, 21 pages, 1 table, 20 figures, 5 3DMF figures, 3 appendices)

### VOLUME 1 1998-1999

**v1n1** Frank S. Spear, Christopher G. Daniel, *3-dimensional imaging of garnet porphyroblast sizes and chemical zoning: Nucleation and growth history in the garnet zone* (Published 30 October 1998, 17 pages, 3 tables, 19 figures, 4 movies)

**v1n2** John B. Brady, John T. Cheney, Amy Larson Rhodes, Angela Vasquez, Chris Green, Mathieu Duvall, Ari Kogut, Lewis Kaufman, Dana Kovaric, *Isotope geochemistry of Proterozoic talc occurrences in Archean marbles of the Ruby Mountains, southwest Montana, U.S.A.* (Published 31 December 1998, 16 pages, 3 tables, 19 figures)

**v1n3** Frank S. Spear, *Real-time AFM diagrams on your Macintosh* (Published 25 May 1999, 10 pages, 8 figures, 1 interactive figure, 3 movies)

**v1n4** J. Alcock, Kevin Myer, P.D. Muller, *Three-dimensional model of heat flow in the aureole of the Marcy anorthosite, Adirondack Highlands, New York: Implications for depth of emplacement* (Published 22 September 1999, 11 pages, 1 table, 7 figures)

**v1n5** Barry R. Bickmore, Eric Rufe, Steve Barrett, and Michael F. Hochella, Jr., *Measuring Discrete Feature Dimensions in AFM Images with Image SXM* (Published 23 November 1999, 10 pages, 9 figures, 1 movie)

**v1n6** Joseph M. Pyle and Frank S. Spear, *Yttrium zoning in garnet: Coupling of major and accessory phases during metamorphic reactions* (Published 14 December 1999, 23 pages, 2 tables, 21 figures)

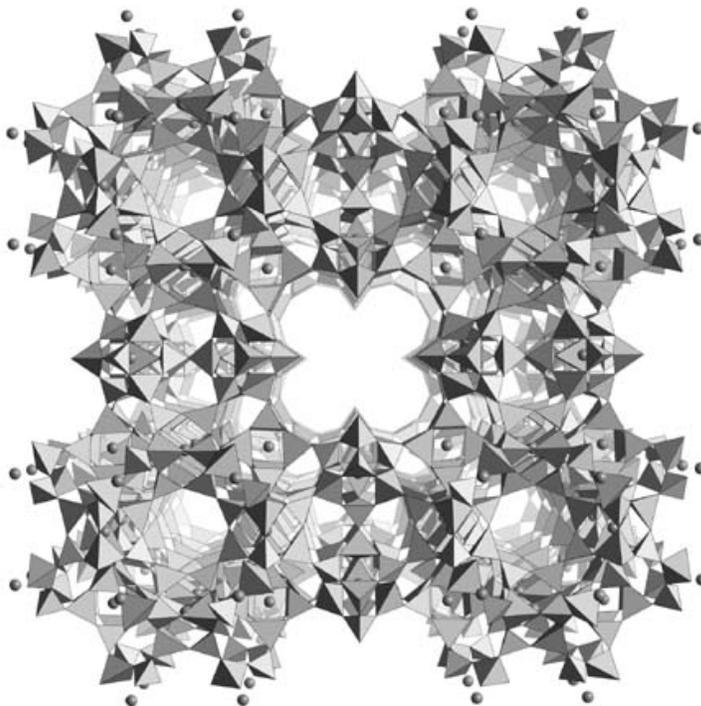
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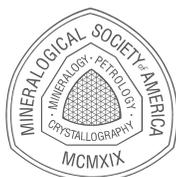
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