

The Lattice

URANIUM: MINERALS, CHEMISTRY AND THE ENVIRONMENT – MSA SHORT COURSE FOR 1999

The low crustal abundance of uranium belies its mineralogical and geochemical significance; over five percent of minerals known today contain uranium as an essential constituent. Once thought to be rare, uranium is more abundant than mercury, antimony, silver, or cadmium. Uranium is a geochemical and geochronological indicator, and the U-Pb decay series has long been one of the most important systems for dating rocks and minerals. Uranium is also an energy source, and the uranium fuel cycle has generated a great deal of interest in uranium mineralogy and geochemistry since the first controlled nuclear fission reaction nearly sixty years ago. Current interest in uranium geochemistry stems in a large part from the energy cycle, especially with regard to environmental issues such as coping with uranium mine and mill tailings and other uranium-contaminated sites, as well as permanent disposal of highly radioactive uranium-based fuels in deep geologic repositories. More than twenty years have passed since the 1978 MAC Short Course in Uranium Deposits. Since then much of the research related to uranium geochemistry has shifted focus, from exploration and exploitation to environmental remediation and geological "forecasting" of the potential future impact of decisions made today. In addition, the last twenty years have produced remarkable advances in our understanding of uranium mineralogy and geochemistry, as well as technological and theoretical advances in analytical techniques, revolutionizing research of trace-elements, including uranium. Continued interest in uranium mineralogy and geochemistry makes this an auspicious time for a short course about a truly fascinating element. The MSA Short Course, Uranium: Mineralogy, Geochemistry and the Environment, will address fundamental issues such as uranium crystal chemistry, systematic uranium mineralogy, aqueous chemistry of uranium, uranium-ore genesis, and isotopic systems. More specialized subjects will also be addressed,

including microbial influences on uranium geochemistry, remediation of uranium-contaminated sites, applications to radioactive waste disposal, and the natural fission reactors in Gabon, Africa. The accompanying Reviews in Mineralogy volume also addresses analytical methods useful for mineralogical and geochemical research on uranium.

The MSA short course will be held in Golden, Colorado on Friday and Saturday, October 22-23, 1999 preceding the Mineralogical Society of American-Geological Society of America Annual meeting in Denver, Colorado. Peter Burns and Robert Finch are co-conveners of this latest MSA short course. There is also support from the University of Notre Dame to provide short course registration fee waivers for students. See pages 4-6 of this Lattice for more information and application forms.

GEOLOGICAL MATERIALS RESEARCH IN PUBLICATION

MSA's new electronic journal, Geological Materials Research (GMR), has begun publication of high quality reviewed articles on the World Wide Web. There are currently two published articles on the web-site (<http://www.minsocam.org/gmr/>) that take advantage of the rich environment the WWW has to offer. This electronic journal is readily accessible to anyone with a web browser. MSA members should take advantage of this latest service that MSA has to offer.

Also in this issue

Notes from Washington	2
MSA Grant for Research in Crystallography and Student Research in Mineralogy and Petrology	3
Uranium Short Course Description	4
Uranium Short Course Registration.....	6
Meeting Calendar.....	7
New MSA Members	11

Notes from Washington

- Ballots for the 1999 election of 2000 MSA officers and Councillors were mailed at the end of April, 1999. They are due back in the Business Office by August 1, 1999. Voting is an important and the least painful way of participating in your Society. Second dues renewal notices were sent with the ballots to those 1998 members from whom we had not received a 1999 renewal through April 15, 1999. If you have not yet received a ballot, or a second renewal notice if you need one, please contact the Business Office.
- Another member responded to the call for donations of earlier publications so that MSA has reference copies of its early publications. Raymond Joesten supplied us with a number of unbound single issues of *American Mineralogist* between volumes 7 and 17. We appreciate his efforts and generosity. We are still interested in most issues of unbound and bound *American Mineralogist* of volumes 1-32, and unbound issues for volumes 33 through 37. As I have noted before, it appears that complete sets are rather rare for these early volumes, so we welcome even single numbers of scattered issues before volume 37.
- It has been some time, but a *Reviews in Mineralogy* volume has gone out of print. Volume 23, *Mineral-Water Interface Geochemistry*, that appeared in 1990, will not be reprinted. The authors promise a completely revised edition in 2000 as the first in the renamed *Reviews in Mineralogy and Geochemistry* series.
- MSA received a fax from Dr. Adrian Lloyd-Lawrence, Executive Secretary of the Mineralogical Society of Great Britain. MinSource, the CD-ROM version of *Mineralogical Abstracts* that was available to members through MSA at a discount, is being discontinued. They are looking into an online version of the abstracts, but there were no details. The print *Mineralogical Abstracts* is still available to MSA members at a substantial discount.
- As a result of our list of 50 or 25 years of continuous membership in the Society in the February, 1999 *Lattice*, Nabil Z. Boctor writes to tell us he was omitted as a 25-year member.
- Book reviews of *Reviews in Mineralogy* volume 36, *Planetary Materials*, appeared in *Meteoritics & Planetary Sciences* 34, 303-306 (1999) and *EOS* 80, 222 (1999). The reviewers were very impressed with the text, and Jim Papike's efforts to produce it. However, both chide MSA for the quality of some photomicrographs. In addition to the large number

of pages (1056), this volume had more half-tone figures (156) than any previous RiM volumes. Most were re-shot in an attempt to improve their appearance, but they did not resolve the problems given the limits of time, page length, and existing technology. Options in maximizing photo quality of a large publication would have required a significant delay in publication to start over, and probably lead to two volumes with a sales price near \$100. MSA's experience shows that as the price of books of this type pass through an ill-defined region of \$45-\$60, sales drop by up to an order of magnitude. The RiM series program goal is affordable publications to reach widest possible readership. MSA is looking at methods of enhancing halftones, but balancing this with the goal of widely affordable publications.

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

Advertisements in The Lattice

The Lattice accepts paid advertisements. Rates:

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

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

THE DEADLINE FOR THE AUGUST LATTICE IS JULY 20

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 glhenr@unix1.sncc.lsu.edu.

Correction to the February Lattice

In the February 1999 issue of the *Lattice* Dr. Shu-Chun S name was inadvertently misspelled in the "In Memoriam Revisited" section. Unfortunately, this error was not detected before the *Lattice* went to press.

The Mineralogical Society of America

Announces the 2000

GRANT FOR RESEARCH IN CRYSTALLOGRAPHY

*From the Edward H. Kraus Crystallographic Research
Fund with contributions from MSA membership and
friends*

And the 2000

MSA GRANT FOR STUDENT RESEARCH IN MINERALOGY AND PETROLOGY

*from an endowment created by contributions from the
MSA membership*

The Grant for Research in Crystallography is a \$3500 grant for research in crystallography. There are no restrictions on how the grant funds may be spent, as long as they are used in support of research. The only restrictions on eligibility for the grant are that the applicant must have reached his or her 25th birthday but not yet have reached his or her 36th birthday on the date the grant is given, and that the person is not a MSA Councillor.

MSA Grant for Student Research in Mineralogy and Petrology is a \$3500 grant 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, innovation, and scientific significance of the research, and the likelihood of success of the project. Grants will be made in January 2000. There are no restrictions on how the grant funds may be spent, as long as they are used in support of research. Application forms for the grant 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, Suite 601, Washington, DC, 20036-5274, USA (phone: 202-775-4444, fax: 202-775-0018, e-mail: J_a_speer@minsocam.org). Completed applications must be returned to the MSA Business Office by June 1, 1999.



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

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

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

Dues for 1999 are \$80 for professional members who elect to receive *American Mineralogist* and \$50 for those who elect not to receive the journal, but who do receive all other membership benefits; membership is \$30 for students. Membership is on a calendar year basis. Individuals who join after January 1, 1999 will be sent all back issues of the journal for volume 84, 1999.

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 1999 volume of *American Mineralogist* for the annual rate of \$350 in the US, \$325 in Canada and Mexico and \$360 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.

1999 President: John M. Ferry

The Johns Hopkins University

Past-President: E. Bruce Watson

Rensselaer Polytechnic Institute

Vice President: William C. Carlson

University of Texas - Austin

Secretary: Barbara L. Dutrow

Louisiana State University

Treasurer: R. Brooks Hanson

Science Magazine

Editor of *The Lattice*: Darrell J. Henry

Louisiana State University

MSA Administrator: J. Alexander Speer

Business Office:

Mineralogical Society of America

1015 Eighteenth Street N.W., Suite 601

Washington, D.C. 20036-5274

Tel: (202) 775-4344; Fax: (202) 775-0018

E-mail: business@minsocam.org

J_a_speer@minsocam.org

WWW: <http://www.minsoc.org>

Mineralogical Society of America Short Course Announcement

URANIUM: MINERALS, CHEMISTRY AND THE ENVIRONMENT

Dates: Friday and Saturday, October 22-23, 1999 (preceding the Mineralogical Society of American-Geological Society of America Annual meeting in Denver, Colorado)

Location: Short Course sessions are between 8:00 am - 5:00 pm at the Holiday Inn Denver West Village, 14707 West Colfax Ave, Golden, Colorado 80401, U.S.A. voice: (303) 279-7611, (800) 729-2830, fax: (303) 278-1651.

Conveners: *Peter C. Burns*, Department of Civil Engineering & Geological Sciences, University of Notre Dame, Notre Dame, IN 46556-0767, Tel: (219) 631-7380, Fax: (219) 631-9236, E-mail: Peter.Burns.50@nd.edu.

Robert Finch, Argonne National Laboratory, Chemical Technology Division, 9700 South Cass Avenue, Argonne, IL 60439-4837, USA, Tel: (630) 252-9829, Fax: (630) 252-4771, E-mail: finch@cmt.anl.gov.

Fees:	Professional Registration:	Member	on or before 8/31/99	after 8/31/99
			Non-member	\$265
Student Registration:	Member	Member	\$355*	\$405*
		Non-member	\$165	\$215
Speaker		Speaker	\$195*	\$245*
			none	none

* includes MSA membership dues for 2000.

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

Practical: Registration fee includes MSA short course sessions, refreshments at breaks, Saturday evening banquet, and *Reviews in Mineralogy* volume. There is an informal welcoming reception beginning 5:30 pm Thursday evening, October 21 on a self-pay basis at the Holiday Inn. Registration fee does not include room, other meals, or transportation costs to or from Golden. Participants must contact the Holiday Inn Denver West Village, 14707 West Colfax Ave, Golden, Colorado 80401, USA voice: (303) 279-7611, (800) 729-2830, fax: (303) 278-1651 to make reservations and pay for rooms. A block of rooms is reserved for short course participants at the Holiday Inn until September 30, 1999.

Ground transportation to and from the Denver Airport (DIA) is available. Among the services available to Golden is Golden West Commuter (303) 342-9300. It is regularly scheduled to leave DIA about every hour, reservations must be made to return from Golden to Denver of DIA. Cost \$18 one way.

Student Scholarships: There is support from the University of Notre Dame to provide short course registration fee waivers for students. Students must provide a one-page summary of why attending the short course will be beneficial to their professional development with their registration form. Deadline for receipt of requests for funding will be July 31, 1999. Successful applicants will be selected by the organizers of the course.

Short Course Description

The low crustal abundance of uranium belies its mineralogical and geochemical significance; over five percent of minerals known today contain uranium as an essential constituent. Once thought to be rare, uranium is more abundant than mercury, antimony, silver, or cadmium. Uranium is a geochemical and geochronological indicator, and the U-Pb decay series has long been one of the most important systems for dating rocks and minerals. Uranium is also an energy source, and the uranium fuel cycle has generated a

great deal of interest in uranium mineralogy and geochemistry since the first controlled nuclear fission reaction nearly sixty years ago. Current interest in uranium geochemistry stems in a large part from the energy cycle, especially with regard to environmental issues such as coping with uranium mine and mill tailings and other uranium-contaminated sites, as well as permanent disposal of highly radioactive uranium-based fuels in deep geologic repositories.

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Topics and Speakers/Authors

Overview

Introduction [no lecture]..... Robert Finch & Peter C. Burns
 Radioactivity and the 21st Century [no lecture] Rodney C. Ewing

Crystal Chemistry and Mineralogy

Crystal Chemistry of Uranium..... Peter C. Burns
 Systematics and Paragenesis of Uranium Minerals Robert Finch & Takashi Murakami

Isotope Systematics and Age Determination

Uranium-Lead systematics and age determination..... Mostafa Fayek & T. Kurtis Kyser
 Stable Isotope Systematics of Uranium Deposits..... Mostafa Fayek & T. Kurtis Kyser

Actinide Geochemistry & the Formation of Ore Deposits

Aqueous (Geo) Chemistry of Actinides William M. Murphy & Everett L. Shock
 Geology and Genesis of Uranium Deposits..... Jane Plant
 The Oklo Natural Reactor Janusz Janeczek

Environmental Aspects

The Impact of Microorganisms on the Form and Distribution of
 Uranium and Other Actinides Jillian Banfield and Yohey Suzuki
 Environmental Remediation..... Abdessalam Abdelouas, Werner Lutze & Eric Nuttall
 Uranium Mineralogy and the Geologic Disposal of Spent Fuel David Wronkiewicz & Edgar Buck

Instrumental Techniques [no lectures]

Spectroscopic Techniques Applied to Uranium John Hanchar
 Infrared Spectroscopy and Thermal Analysis of Uranium Minerals Jiri Cejka
 Analytical Techniques for Measuring Uranium in Minerals and Groundwaters Stephen F. Wolfe
 X-ray Diffraction Identification of Uranium Minerals Francis Hill

The short course will be held in conjunction with an MSA topical session at the Mineralogical Society of America - Geological Society of American Annual Meeting, Denver, Co. If you submit an abstract for this special session, please let the short course convenors know about it.

Registration Form

Mineralogical Society of America Short Course
URANIUM: MINERALS, CHEMISTRY AND THE ENVIRONMENT
Golden, Colorado - October 22-23, 1999

Complete and return this registration form to the MSA Business Office, 1015 Eighteenth St NW Ste 601, Washington, D.C. 20036-5274, USA. Telephone: (202) 775-4344. FAX: (202) 775-0018. Please type or print. Use one form per registrant. Registration is limited to 100 people on a first-come, first-served basis. Payment must accompany this form, which will be fully refunded if cancellation is received in writing prior to September 24, 1999.

Name _____
(first) (middle) (last)

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

Telephone: (Voice) _____ (Fax) _____

E-mail: _____

Registration fee includes MSA short course session costs, break refreshments, banquet, and *Reviews in Mineralogy* volume. All MSA short course sessions are at the Holiday Inn Denver West Village, Golden, Colorado. There is an informal welcoming reception 5:30 pm Thursday evening, October 21 at the Holiday Inn. Registration fee does not include room, other meals, or transportation costs to or from Golden. A block of rooms have been reserved for short course participants until 9/30/99 at the Holiday Inn Denver West Village, 14707 West Colfax Ave, Golden, Colorado 80401, USA voice: (303) 279-7611, (800) 729-2830, fax: (303) 278-1651. Participants must contact the hotel to make reservations and pay for rooms. Information on the short course, lodging, ground transportation, and course updates are on the MSA Home Page (<http://www.minsocam.org>).

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

Professional Registration:	<i>on or before 8/31/99</i>	<i>after 8/31/99</i>	cost
[] Member	\$265	\$315	_____
[] Non-member	\$355*	\$405*	_____
[] Speaker	no cost	no cost	_____
Student Registration:	<i>on or before 8/31/99</i>	<i>after 8/31/99</i>	
[] Member	\$165	\$215	_____
[] Non-member	\$195*	\$245*	_____

* includes MSA membership dues for 2000

Total Due US\$ _____

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

[] Enclosed is a check (in US \$ drawn on a US bank) or money order in the amount of US \$ _____
[] Charge my: _____ Visa _____ Mastercard _____ Diner's Club _____ American Express card
(Your credit card will be charged when the registration form is received) the amount US \$ _____

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

(signature) (exp. date)

Meeting Calendar 1999-2000

1999

May-June

31-4 AGU Spring Meeting. Boston, MA. *Details:* AGU Meeting Department, 2000 Florida Ave., NW Washington, DC 20009. Tel.: 202-462-6900; Fax: 202-328-0566, E-mail: meetings@kosmos.agu.org, WWW: <http://www.agu.org/meetings>.

June

13-18 Gordon Research Conference on Origins of Solar Systems. Henniker, New Hampshire. *Details:* A. Boss, DTM-Carnegie Institution of Washington, 5241 Broad Branch Road NW, Washington, DC 20015-1305 USA ; Tel.: (202)-686-4370; Fax: (202)-364-8726; E-mail: boss@dtm.ciw.edu; WWW: www.grc.uri.edu

21-24 XV ECROFI (European current research on fluid inclusions). Potsdam, Germany. *Details:* Mrs., Claudia Rohl, GeoForschungsZentrum Potsdam, Telegrafenberg, D--14473 Potsdam, Germany. Tel.: 49(0) 331 288 1436; E-mail: ecrofi@gfz-potsdam.de.

21-24 International Gemological Symposium. San Diego, CA. *Details:* Dona Dirlam, Gemological Institute of America, 5345 Armada Dr., Carlsbad, CA 92008, Tel.: (760) 603-4154, Fax: (760) 603-4256, E-mail: ddirlam@gia.edu.

21-27 GSA Penrose Conference: Terrane Accretion along the Western Cordilleran Margin: Constraints on Timing and Displacement. Seattle and Winthrop, Washington. *Details:* J. B. Mahoney, Department of Geology, University of Wisconsin - Eau Claire, WI 54702-4004, E-mail: mahonej@uwec.edu

June-July

26-1 36th Clay Minerals Society Annual Meeting. West Lafayette, Indiana. *Details:* Patricia Eberl, Manager, The Clay Minerals Society, P. O. Box 44-5, Boulder, CO 80306. Tel.: 303-444-6405; Fax: 303-444-2260; E-mail: peberl@clays.org.

July

7-18 Inside Silicic Calderas - CEV Field Workshop. Birmingham, UK. *Details:* Michael Brantly, Geology Dept., Leicester University, University Road, Leicester LE1 7RH, UK. Tel.: +44 116 252 3647 Fax: +44 116 252 3647, E-mail: mjb26@le.ac.uk .

11-16 62nd Annual Meteoritical Society Meeting. Johannesburg, South Africa. *Details:* W. U. Reimold, Dept. of Geology, University of Witwatersrand, Private Bag 3, P.O. Wits 2050, Johannesburg, South Africa, Tel.: 27 11 716 2946, Fax: 27 11 339 1697, E-mail: 065wur@cosmos.wits.ac.za

12-16 Orogenesis in the Outback - A Look at Cyclicity in Orogenic Belts (Specialist Group in Mineralogy, Geochemistry and Petrology; Geological Society of Australia), Alice Springs, Australia. *Details:* Jodie Miller (jmiller@orion.earth.monash.edu.au); Ian Buick (I.Buick@latrobe.edu.au). WWW: <http://www.earth.monash.edu.au/sggmp/SGGMP.html>

18-23 5th International Conference on Mars. Pasadena, California. *Details:* Arden Albee, Graduate Office, Mail Stop 02-31, California Institute of Technology, Pasadena, CA 91125. Tel.: (626) 395-6367, Fax: (626) 577-9246, E-mail: 5thMars99@caltech.edu.

19-30 22nd General Assembly of the International Union of Geodesy and Geophysics. Birmingham, UK. *Details:* IUGG99, School of Earth Sciences, The University of Birmingham, Edgbaston, Birmingham BIS 2TT, UK. Fax: 44121414 4942, E-mail: IUGG99@bham.ac.uk. WWW: <http://www.bham.ac.uk/IUGG99/>.

22-25 SGA-IAGOD 1999. London, UK. *Details:* C. J. Stanley, Dept. of Mineralogy, Natural History Museum, Cromwell Road, London SW7 5BD. E-Mail: cjs@nhm.ac.uk

26-30 Asteroids, Comets, Meteors (ACM).

Ithaca, New York. *Details:* B.E. Clark, ACM Conference, Space Sciences Building, Cornell University, Ithaca, NY 14853-6801 USA ; Tel.: +1-607-254-8895; Fax: +1-607-255-9002; E-mail: acm@scorpio.tn.cornell.edu; WWW: scorpio.tn.cornell.edu/ACM/;

August

2-6 The 1999 Denver X-ray Conference.

Steamboat Springs, Colorado. *Details:* Denise Flaherty, Conference Coordinator, ICDD, 12 Campus Blvd., Newtown Square, PA 19073-3273 USA; Tel.: 610-325-9814, Fax: 610-325-9823, E-mail: flaherty@icdd.com ; WWW: http://www.dxcicdd.com.

4-13 XVIII International Union of Crystallography Congress and General Assembly. Glasgow, Scotland. *Details:* G. Houston, Northern Networking Congress Central Office, Bellway House, 813 South Street, Glasgow, G14 0BX, Scotland, UK, E-mail: crystal@glasconf.demon.co.uk, WWW: http://www.chem.gla.ac.uk/iucr99/.

12-20 5th International Symposium on the Geochemistry of the Earth's Surface (GES-5). Reykjavik, Iceland. *Details:* S. R. Gislason or G. Xander, GES-5 Conference Secretariat, Science Institute, University of Iceland, Dunhagi 3, 107 Reykjavik, Iceland. Tel.: +354 525 4800, Fax: +354 552 8911, E-mail: ges5@raunvis.hi.is. WWW: http://www.raunvis.hi.is/ges5.html.

22-27 9th Annual V. M. Goldschmidt Conference. Cambridge, Massachusetts. *Details:* L. Simmons, Conference Administrator, Lunar and Planetary Institute, Publications and Program Services Department, 3600 Bay Area Boulevard, Houston, TX 77058-1113 USA ; Tel.: +1-281-486-2158; Fax: +1-281-486-2162; E-mail: simmons@lpi.jsc.nasa.gov; Abstract Deadline: May 14, 1999

The Fersman Mineral Database

This excellent software product is a comprehensive database of all known mineral species through early 1998, compiled by the scientists at the Fersman Mineralogical Museum in Moscow. Information for each mineral includes chemistry, mineral group, X-ray data and space group, optical data, other physical properties as well as type locality and literature references!

The program has powerful search capabilities for any data element, whether by fragment of the mineral name, X-ray data, distinctive physical properties, type locality (or any portion thereof) or chemistry. For example, you can enter or exclude any combination of elements, add or exclude any other properties, and the software quickly provides an English or Russian output list *based on any parameters* you have established! Plus, there are two user fields that can be modified for your own purposes and included in any search!

We have utilized this software extensively, and it functions well under any Windows environment with an IBM-compatible system. We have prepared a full English installation package and instruction guide for our clients, and this excellent software package is *just \$99-* plus nominal \$4- shipping and handling. Visa, MasterCard, American Express accepted. Order from:

Excalibur Mineral Company

1000 North Division Street - Peekskill, NY 10566
Tel: (914) 739-1134 - Fax: (914) 739-1257
E-Mail: excalmin@bestweb.net

August-September

28-1 Gemeinschaftstagung - annual meeting of the German and Austrian Mineralogical Societies together with the Hungarian Geological Society, Vienna, Austria. *Details:* Minwien 1999, Institute of Petrology, University of Vienna, Geozentrum, Althanstaße 14, A-1090, Vienna, Austria, E-mail: mineralogie@univie.ac.at or WWW: www.univie.ac.at/Mineralogie/Oemg.htm.

31-2 Exhumation of Metamorphic Terranes (Metamorphic Studies Group). Rennes, France. *Details:* Michel Balleve (michel.balleve@univ-rennes1.fr), Simon Cuthbert (cuthce0@wpmail.paisley.ac.uk), Giles Droop (Giles.droop@man.ac.uk)

September

4-10 Euroclay 1999. Banska Stiavnica, Slovakia. *Details:* WWW: http://www.ing-pan.krakow.pl.

11-16 European Research Conference - The Deep Earth: Theory, Experiment and Observation. Acquafredda di Maratea, Italy. *Details:* John Brodhof, University College London, London, UK or George Helffrich, University of Bristol, Bristol, UK. WWW: <http://slamdunk.geol.ucl.ac.uk/~brodhof/euroconference.html>.

12-15 Third International Workshop on Orogenic Lherzolites and Mantle Processes. Pavia, Italy. WWW: http://www_crystal.unipv.it.

13-16 Modern Approaches to Ore and Environmental Mineralogy, Pretoria, South Africa. *Contact.* Dr. M. Cloete, Council for Geoscience, Private Bag X112, Pretoria 0001, South Africa, mcloete@geoscience.org.za, www.geoscience.org.za

September-October

26-1 Migration '99 – Chemistry and Migration Behavior of Actinides and Fission Products in the Geosphere. Lake Tahoe, California. *Details:* Cynthia Palmer, Lawrence Livermore National Laboratory, P.O. Box. 808, L-231, Livermore, CA 94551-9989. Tel. (925) 422-5693, Fax: (925) 422-

2105, E-mail: palmer2@llnl.gov , WWW: <http://www.aer.wsu.edu/migration/migration.html>.

October

22-24 Third Canada-Mexico Workshop on Applications of the Physics of Porous Media, 1999. Puerta Vallarta, Mexico. *Details:* P. Sahay, Department of Seismology, Centro de Investigacion Cientifica y de Educacion Superior de Ensenada, Ensenada, Baja California 22860, Mexico; Fax: +52-61-75-05-59; E-mail: pratap@cicese.mx; WWW: poro99.cicese.mx/

25-28 Geological Society of America. Denver, Colorado. *Details:* Becky Martin, GSA Meetings Dept. Boulder, CO 80301-9140. Tel.: (303)-447-2020, Fax: (303)-447-1133. WWW: <http://www.geosociety.org/meetings/index/htm>.

December

13-17 AGU Fall Meeting. San Francisco, CA. *Details:* AGU Meeting Department, 2000 Florida Ave., NW Washington, DC 20009. Tel.: 202-462-6900; Fax: 202-328-0566, E-mail: meetings@kosmos.agu.org, WWW: <http://www.agu.org/meetings>.

2000

February

17-22 2000 Annual Meeting of the American Association for the Advancement of Science (AAAS). Washington, DC. *Details:* Program Committee, AAAS, 1200 New York Avenue, NW, Washington, DC 20005 USA ; Tel.: +1-202-326-6450; Fax: +1-202-289-4021; Abstract Deadline: March 22, 1999

April

16-19 8th International Symposium on Experimental Mineralogy, Petrology and Geochemistry (EMPG VIII). Bergamo, Italy. *Details:* EMGG VIII Organizing Committee, Dipartimento Scienze della Terra, Universita di Milano, Via Botticelli 23, 20133 Milano, Italy. WWW: <http://imiucca.csi.unimi.it/~spoli/empg.html>.

16-19 Fractal 2000 – Complexity and Fractals in the Sciences. Singapore. *Details:* Dr. M. M. Novak, School of Physics, Kingston University, Kingston-

upon-Thames, Surrey KT1 2EE, UK ; Tel. +44-181-547-7481; Fax: +44-181-547-7562; E-mail: novak@kingston.ac.uk; WWW: www.kingston.ac.uk/fractal/

May

15-18 Geology and Ore Deposits 2000: the Great Basin and Beyond. Reno-Sparks, Nevada. *Details:* Geological Society of Nevada, PO Box 12021, Reno, NV 89510 USA ; Tel: +1-702-323-3500; Fax: +1-702-323-3599; E-mail: gsnsymp@nbmg.unr.edu; WWW: www.seismo.unr.edu/GSN

May-June

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

July

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

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

August

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

September

3-8 Goldschmidt 2000. Oxford, UK. *Details:* P. Beattie, Cambridge Publications, Publications House, PO Box 27, Cambridge, UK CB1 4GL. Tel.: 44-1223-333438, Fax: 44-1223-333438, E-mail: gold2000@campublic.co.uk, WWW: <http://www.campublic.co.uk/science/conference/Gold2000/>

November

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

December

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



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Carpenter, Mr. Craig M., University of Michigan, Dept Geological Sciences, 425 E University Ave, Ann Arbor MI 48109-1063. Ph: . Fax: . E-mail: cmcarpenter@umich.edu. (ST-99). MI,CC,IP,MP,GE

Celestian, Mr. Aaron J., Coronado Hall Apt 733, 822 E 5th St, Tucson AZ 85719-5052. Ph: (520) 695-2292. Fax: . E-mail: . (ST-99). MI,CC,PP,GE,PE,IM

Chestnut, Mr. Douglas James, Syracuse University, Dept of Chemistry CST 1-014, Syracuse NY 13244-4100. Ph: (315) 443-3731. Fax: (315) 443-4070. E-mail: djchesnu@syr.edu. (ST-99). CC,MI,IP,MP,IM,GM,TC

Dolejs, Mr. David, McGill University, Dept Earth & Planet Sci, 3450 University St, Montreal QC H3A 2A7, CANADA. Ph: (514) 398-7485. Fax: (514) 398-4680. E-mail: dolejs@geosci.lan.mcgill.ca. (ST-99). PP,MP,PE

Ellis, Dr. Michael M., US Mega Lube, 750 Sanctuary Cove Drive, West Palm Beach FL 33410-4518. Ph: (877) 691-1505. Fax: . E-mail: . (M-99).

Goffe, Dr. Bruno, Lab Geologie, E.N.S., 24 rue Lhomond, Paris F-75005, FRANCE. Ph: . Fax: . E-mail: goffe@geologie.ens.fr. (M-99). MP,MI,CC,PP,GE,PE,CM,IM,EM,GM

Gouaze, Mr. Stephane, 22 Riverside Dr, New York NY 10023-1603. Ph: (212) 787-4220. Fax: (212) 787-4274. E-mail: sgouaze@ihm.net. (M-99).

Gray, Mr. Julian C., 524 Robin Ln, Marietta GA 30067-7046. Ph: (770) 973-3632. Fax: . E-mail: jgray@mindspring.com. (M-99). MI,MP

Havice, Mr. Tony, Ph2 Environmental, 5450 N Lafayette Rd, Indianapolis IN 46254-1655. Ph: (317) 387-9722. Fax: (317) 387-9714. E-mail: ph2@sprynet.com. (M-99). CC,EG

(TC), Topologic Mineralogy (TP), Biological-Mineral Interactions (BM), and others as indicated.

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Johnson, Dr. Quintin, MDI, 1224 Concannon Blvd, Livermore CA 94550-6002. Ph: (925) 449-1084. Fax: (925) 373-1659. E-mail: xrd@aol.com. (M-99). CC,CM

Kitchel, Ms. Stefanie L., Johns Hopkins Univ, Dept Earth & Planet Sc, 3400 N Charles St, Baltimore MD 21218-2687. Ph: (410) 516-7155. Fax: . E-mail: stefanie.kitchel@jhu.edu. (ST-99).

Koga, Mr. Kenneth, Woods Hole Oceanographic Inst, 360 Woods Hole Rd MS 23, Woods Hole MA 02543-1541. Ph: (508) 289-2207. Fax: (508) 457-2175. E-mail: ktkoga@mit.edu. (ST-99). GE,IP

Kolis, Dr. Joseph W., Clemson University, Dept of Chemistry, Clemson SC 29634-1905. Ph: (864) 656-4739. Fax: (864) 656-6613. E-mail: kjoseph@clemson.edu. (M-99).

Langenhorst, Dr. Falko, Universitaet Bayreuth, Bayerisches Geoinstitut, Bayreuth D-95440, GERMANY. Ph: +49 (251) 553727. Fax: +49 (251) 553769. E-mail: falko.langenhorst@uni-bayreuth.de. (M-99). PM,MI,CC

Lemanski Jr., Mr. Chester, 309 Massachusetts Rd, Browns Mills NJ 08015-0000. Ph: (609) 893-7366. Fax: . E-mail: . (M-99). MI

Ma, Dr. Chi, California Inst of Tech, Div Geol Planet Sci MC 170-23, 1201 E California Blvd, Pasadena CA 91125-0002. Ph: (626) 395-6126. Fax: (626) 568-0935. E-mail: chi@gps.caltech.edu. (M-99). MI,CC,CM,IM,EM,GM

Miller, Mr. Gregory P., PO Box 1468, Socorro NM 87801-1468. Ph: (505) 838-0505. Fax: (505) 838-0504. E-mail: arsenic@nmt.edu. (ST-99). GE

Moon, Ms. Yong-Hee, Gyeongsang National Univ, Dept Earth & Env Sci, Chinju 660-701, KOREA. Ph: +82 (591) 751-6001. Fax: +82 (591) 757-2015. E-mail:

s_moony9@gsnp.gsnu.ac.kr. (ST-99).
MI,CC,IP,GE,PE,IM,EM,GM,MS

Moreau, Mr. John W., Arizona State University, Dept of
Geology, Box 871404, Tempe AZ 85287-1404. Ph: (602) 965-
5175. Fax: (602) 965-8102. E-mail: moreau@asu.edu. (ST-99).
MI,BM

Moreno, Ms. Michele Vale, 15095 N Thompson Peak Pkwy
Apt 3119, Scottsdale AZ 85260-2071. Ph: (602) 314-3187.
Fax: . E-mail: . (ST-99). MI,CC

Muttiah, Dr. Ranjan Samuel, Blackland Research Center,
Texas Agricultural Exp Station, 808 E Backland Rd, Temple
TX 76502-6712. Ph: (254) 770-6659. Fax: (254) 770-6561. E-
mail: muttiah@brc.tamus.edu. (M-99). CC,MI

Norman, Dr. Marc Douglas, University of Tasmania, School
of Earth Sciences, Ctr for Ore Deposit Studies, Hobart TAS
7001, AUSTRALIA. Ph: +61 (3) 6226-2400. Fax: +61 (3)
6226-7662. E-mail: marc.norman@utas.edu.au. (M-99).
GE,EG,PM

Pastakia, Ms. Naaznin, Univ of Toronto, Dept Geology, 22
Russell St, Toronto ON M5S 3B1, CANADA. Ph: (416) 978-

0662. Fax: (416) 978-3938. E-mail:
pastakia@zircon.geology.utoronto.ca. (ST-99). EG,BM

Ratajesky, Mr. Kent, Univ of North Carolina, Geology
Dept., Mitchell Hall CB-3315, Chapel Hill NC 27599-
3315. Ph: (919) 932-6256. Fax: (919) 966-4519. E-mail:
plutonic@email.unc.edu. (ST-99).

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9306. Ph: (716) 372-5898. Fax: (716) 372-6864. E-mail:
lrector@localnet.com. (M-99). MI,GE

Simpson, Mr. Robert L., University of Oxford, Dept
Earth Sciences, Parks Rd, Oxford ENGLAND OX1 3PR,
UNITED KINGDOM. Ph: +44 (1865) 272056. Fax: +44
(1865) 272072. E-mail: robert.simpson@earth.ox.ac.uk.
(ST-99). MI,IP,MP,PE,CC,GE

Stanley, Ms. Jo, 1136 Strong St, Brighton CO 80601-
1838. Ph: (303) 655-0763. Fax: . E-mail:
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