

# CMS News

A Publication of The Clay Minerals Society

Volume 13, Number 1, Spring 2002

## Annual Meeting Highlights

# Function Follows Form

The 38th annual meeting of The Clay Minerals Society recently convened in Madison, Wisconsin. The meeting was held at the Monona Terrace, a remarkable public building designed by the world-renowned American architect, Frank Lloyd Wright. The theme for the conference, "Form Meets Function," is borrowed from another prominent American architect, Louis Sullivan, who was one of Wright's early mentors and the author of the frequently cited phrase "form follows function." Wright eventually adopted a modified version of this phrase because he believed that "Form and function should be one, joined in spiritual union."

During the course of the meeting, we discovered that this idea applies to clay minerals as well as architecture. The themes of form and function were repeated throughout the conference and provided an appealing symmetry between the functional physical spaces that the meeting was held in

and one of the underlying tenets of clay science and applied clay science in particular: "The relationship of the fundamental characteristics of the clay minerals to the properties of clay materials...determine their use." (Grim, 1962)

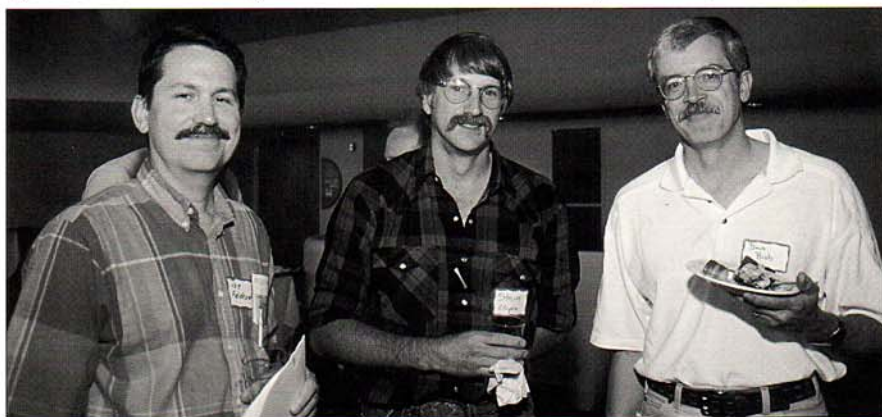
The organic yet rectilinear quality of the Monona Terrace's severely horizontal design, which is based on essential architectural forms including cubes, circles, lines, flat surfaces and repeated geometric patterns, is reminiscent of clay mineral structures. Within these free-flowing spaces various authors presented papers on a variety of topics that repeatedly examined the idea that a clay mineral's form controls its function. These papers paid homage to the idea that the clay mineral structure (form) controls surface properties, crystal morphology, and chemical behavior all, which, in turn, determine how a particular clay mineral may be used (function).



Charles Roth (left) and Will Bleam

Certainly Cliff Johnston, recipient of the 2001 Marion L. and Chrystie M. Jackson Mid Career Clay Scientist Award, had this relationship in mind when he delivered his talk, "Structure of the Ordinary." Form and function also provided a central theme in other venues. Saturday's pre-meeting workshop, which examined how clay mineral surfaces affect degradation of organic contaminants; the Biomineralization symposium addressed the unique structure, chemical and physical properties of very small particles precipitated as a result of microbial processes; Clay Science: Visions from Industry included many papers that examined the relationship between clay particle properties and industrial applications such as paper coating; the Environmental Mineralogy/Surface Chemistry symposium further explored the relationship between clay mineral form and

(story and photos continued on page 4)



Left to right: Joe Foldkam, Steve Chipera and Dave Bish

## The Clay Minerals Society



**President:** Blair F. Jones  
U.S. Geological Survey

**Vice President:** Jessica Elzea Kogel  
Thiele Kaolin Company

**Secretary:** Richard W. Lahann  
Conoco, Inc.

**Treasurer:** Andy Thomas  
ChevronTexaco

**Editor-in-Chief:** Derek Bain  
Macaulay Land Use  
Research Institute

**Immediate Past President:**  
Darrell G. Schulze  
Purdue University

**Vice President-Elect:**  
Kathryn Nagy  
University of Colorado, Boulder

**Manager:** Leslie D. Shivers  
Aurora, Colorado

*CMS News* is published irregularly by The Clay Minerals Society. Contributions of articles, letters, commentary, photographs, and drawings are welcome.

The newsletter is distributed to all non-institutional members. Membership rates (2002) are as follows: full membership, including a subscription to *Clays and Clay Minerals*, \$60.00/year; student membership, \$15.00/year; nonsubscribing membership, \$30.00/year. Institutional subscriptions to *Clays and Clay Minerals*: \$205.00/year (\$220.00 overseas) for the year 2002. Please contact the Society Office for information regarding new membership, and Allen Press (785-843-1221) for questions concerning current membership.

*CMS News* welcomes advertising. Inquire about rates to the Society Office. Articles and other contributions submitted to *CMS News* are subject to editing and are published on a space-available basis. All opinions expressed herein are the opinions of individual contributors, and not of The Clay Minerals Society.

©2002 The Clay Minerals Society

**The Clay Minerals Society**  
P. O. Box 460130  
Aurora, CO 80046-0130 USA  
phone: (303) 680-9002  
fax: (303) 680-9003  
e-mail: [cms@clays.org](mailto:cms@clays.org)  
home page: <http://cms.lanl.gov>

### Student Travel Grants

CMS Student Members who will be presenting a paper at the annual CMS conference are eligible for this grant. The grant covers expenses up to \$500 for travel to the CMS annual conference. Deadline is April 1. Applications are available online at <http://cms.lanl.gov/travel.html> or from the CMS office.

### Student Research Grants

The Clay Minerals Society annually awards several grants of up to \$2500 in Student Research Grants. The program provides partial financial support of masters and doctoral research for graduate students of clay science and technology. Applications will be judged on a competitive basis. The qualifications of the applicant, the financial need of the research project, and the design of the project are evaluated. There is no restriction with regard to nationality. Deadline is April 1. Applications are available online at <http://cms.lanl.gov/research.html> or from the CMS office.

### Thanks

Thank you to our contributors with whom our newsletter would not have been possible:

The Clay Doctor (whoever you are)  
Haydn Murray  
Bob Ylagan  
Colin Harvey  
Jim Post  
Heather Dion  
Pete Ryan  
Bill Moll  
Andreas Bauer  
David Laird

And especially to our  
photographer, Carl Bowser

### Donations Needed

The CMS headquarters office receives many requests from libraries and soil/earth science departments worldwide for donations of CMS books and other materials.

If you have purchased CMS publications in the past that you are no longer using, please consider donating them to the society for re-distribution to these libraries.

## Marilyn and Sturges W. Bailey Distinguished Member Award

The Clay Minerals Society (CMS) is soliciting nominations for the Bailey Award. This highest honor of the CMS is awarded solely for scientific eminence in clay mineralogy (in the broadest sense) as evidenced primarily by publication of outstanding original scientific research. Service to clay mineralogy, teaching and administration are not considered. This award replaces the CMS's Distinguished Member Award: hence, previous members of the Distinguished Member Award are ineligible. (Visit the CMS website for a list of previous awardees.)

Nominations for the Bailey Award consist of a cover letter and supporting letters outlining the candidate's qualifications in light of the criteria above. (Supporting letters may be solicited by the primary nominator). Nomination material should be sent by April 1, 2002, to the committee chair: David R. Veblen, Department of Earth & Planetary Sciences, Olin Hall, Johns Hopkins University, Baltimore, MD 21218-2687 USA. Telephone 410-516-8487; fax: 410-516-7933; [dveblen@jhu.edu](mailto:dveblen@jhu.edu)

Recommendations by the committee will be evaluated by the CMS Council, and the presentation of the Bailey Award will be made at the annual meeting of The Clay Minerals Society.

# 12th International Clay Conference Hosted by Universidad Nacional del Sur

The 12th International Clay Conference was held in Argentina between July 22nd and 28th, 2001. It was hosted by the Universidad Nacional del Sur in the friendly city of Bahia Blanca. A strong contingent of at least 30 CMS members attended the meeting and I believe all were impressed by the very warm and personal greetings extended to us by Eduardo Dominguez, Fernando Cravero and their team of enthusiastic workers.

The European contribution was unfortunately somewhat diminished by the economic crisis experienced by Aerolina Argentina which caused some southern Europeans to cancel their trip at the last moment, but the overall attendance was still close to 200 scientists. The conference program was divided into six sessions, each with a keynote speaker (in parentheses):

- Clays in Geology (Renato Andreis)
- Teaching Clay Mineralogy (Darell Schulze)
- Clays in Industry (Haydn Murray)
- Soil Mineralogy (Hector Morras)
- Clay Minerals and the Environment (Gerhard Lagaly)
- Clays in Hydrothermal Deposits (Colin Harvey)

In addition there was a well-attended international symposium on activated clays.

A series of field trips before and after the conference were well-attended and successful, despite occasional



## Opening Ceremony at AIPEA

*Left to right: Elen Roaldset, President, AIPEA; Mayor Bahia Blanca; Leandro Bergochea, Secretary General, Universidad Nacional del Sur; Haydn Murray; Eduardo Dominguez.*

constraints caused by snow, floods and national strikes. Fortunately there was no plague of locusts. Again the fortitude of the organizers (and participants) has to be commended.

A number of awards were given at the conference. An honorary doctorate from the University Nacional del Sur was awarded to Haydn Murray for his services to clays and industrial minerals research in Argentina. AIPEA medals were presented to Gerhard Lagaly and Tom Pinnavaia. The presidency of AIPEA passed from Elen Roaldset of Norway to the long serving former Secretary General, Robert Schoonheydt of Belgium.

The social program was extensive and varied and a lot of fun. It included the welcome reception in the Club Argentino (constructed by the English during the railroad construction period of about 100 years ago); a very enjoyable banquet complete with Tango lessons, an Asado (an excuse to eat copious quantities of beef) and Folk Show. The relatively small size of Bahia Blanca meant that all attendees were accommodated in hotels close to the city center, resulting in a lot of interaction between attendees. Despite the current tough economic situation in Argentina the conference organizers are to be congratulated on their fortitude and warmth, which made this a most enjoyable conference. The 13th ICC will be held in Tokyo, Japan.

– Colin Harvey, Bloomington, IN



*Haydn Murray (center) receives honorary doctorate from Leandro Bergochea (left), the Secretary General of the Universidad Nacional del Sur, as Eduardo Dominguez (right) looks on.*

## *Annual Meeting Highlights ~ Function Follows Form (continued from page 1)*

function with respect to environmental sciences as did the Montmorillonites in Geoenvironmental Engineering symposium. In fact, form and function is such a fundamental relationship in clay science that it is difficult to cite an example where this theme is not illustrated in some way.

The Tuesday afternoon social excursion to Taliesin, Frank Lloyd Wright's estate located in southwest Wisconsin, underscored the intriguing philosophical relationship between architecture and clay science. As Wright advised his apprentices at Taliesin, "study nature, love nature, stay close to nature. It will never fail you." We as clay scientists are engaged in studying one very small but exceptionally important aspect of nature and we too may benefit from such sage advice.

Not only did the meeting provide ample opportunity for scientific dialogue and exchange of ideas, but it also provided an opportunity to conduct important business essential to the long-term health of our society. At each annual meeting business issues are formally discussed during three separate meetings: 1) the Executive Committee meeting held on Saturday evening, 2) the Council meeting held all day Sunday and 3) the Annual Business meeting on Wednesday.

This year the main topics of discussion included declining membership, declining revenues (due in part to the drop in membership), rising operating costs and opportunities for reversing these trends. The need for a long-

range plan for the CMS was also discussed and the Executive Committee agreed to meet in January to begin formulating this plan. Council approved expenditure of funds to begin publishing *Clays and Clay Minerals* online. This expenditure was subsequently approved by a vote of the general membership at the Annual Business meeting. Most of the expense for creating an online version of *Clays and Clay Minerals* will be covered by money saved as a result of cost-cutting measures implemented by the Editor's office and the Society Office.

Overall the Society's financial situation is healthy but requires careful monitoring to ensure long-term growth rather than erosion of the endowment. Fortunately, our finances have been skillfully managed and monitored by outgoing Treasurer Dave Pevear, incoming Treasurer Andy Thomas and the Chair of the Finance and Budget Committee, Richard Brown. Through the dedication and watchful eyes of these three individuals, we actually saw a growth in our investment portfolio despite the poor performance of the stock market over the last 12 months.

Thanks to the meeting organizers, the 38th Annual Meeting of the Society was a success. Madison proved to be an outstanding location and, from all reports, meeting participants enjoyed having an opportunity to get to know this interesting and lively city.

The 39th Annual Meeting of the CMS will be held in Boulder, Colorado, June 8-13, 2002.

*- Jessica Elzea Kogel, Sandersville, Georgia*



*Left to right: Paula Elmer, Rick Lahann, Dick Berry*



*Left to right: Derek Bain, Robert Schoonheydt and Steve Guggenheim*



*Left to right: Blair Jones, Z. Z. Zhang, Paul Bertsch, John LeGolvan, Paul Schroeder*



*Darrell Schulze (left) and Robert Schoonheydt accepting the Brindley Award.*



*Ray Ferrell (left) and Carolyn Olson*



*Left to right: Seiichiro Uehara, Junji Akai and Toshihiro Kogure*



*Derek Bain (left) and Kevin Murphy*

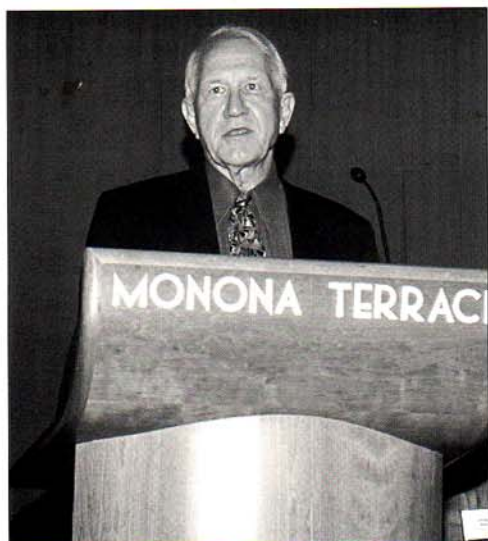


*Left to right: Max Mortland, Bill Moll, Don Scafe, Richard Brown, Tom Pinnavia*



*Left to right: Derek Bain, Richard Lahann, Kevin Murphy, Blair Jones, Darrell Schulze, Jessica Elzea Kogel, Leslie Shivers*

*Annual Meeting Highlights ~ Function Follows Form (continued from page 5)*



*Bill Moll*



*Blair Jones*



*Kathy Nagy (left) and Derek Bain*



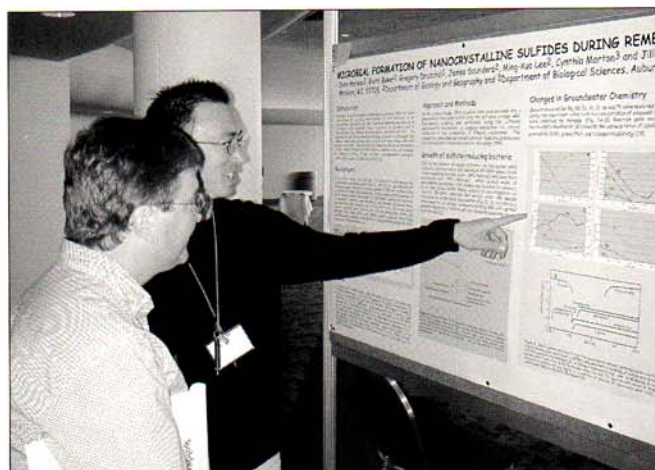
*Will Bleam (left) and Blair Jones*



*Il-Mo Kang (left) and Richard Lahann*



*Crawford Elliot (left) and Prakash Malla*



*Andy Thomas (left) and John Moreau*



*Susan Macha (left), Shoba Parekh and Sah-Joung Yoon (right).*

# *The Best of "Ask the Clay Doctor"*



*Who is the real Clay Doctor?*

**Editor's Note:** *The true identity of the Clay Doctor has never been revealed to anyone other than Jo Eberl. Now that we no longer have Jo, we are also without the Clay Doctor. Until the Clay Doctor reveals him or herself, we will have to enjoy "The Best of" version.*

*CMS News, August 1992*

**Dear Clay Doctor:** Illite fundamental particles have been described as having the appearance of a wet noodle in atomic force microscope images. Could you explain the meaning of this observation?

Befuddled in Burbank

**Dear Befuddled:** The use of atomic force microscopy in clay studies is so new that researchers are still struggling with ways to verbalize their interpretations of the images they see. Food metaphors are well established in clay science; however, and it thus seems appropriate that the AIPEA Nomenclature Committee has recently mandated their continued application wherever possible. In 1854 the Ukrainian historian Eugenie Betopova noted that the early Greeks referred to clay-rich earths variously as sausage-like, fritter-like, ship-like, prune-like and banana-like. These expressions were modified in the Middle Ages, mainly by Italians who saw little difference between clay and food. Thus, we have the familiar but archaic terms such as rotini clay clumps, interlayer gelato, tetrahedrally coordinated mortadella, and exchangeable pepperoni. Diet-obsessed North Americans have shown a preference for low calorie, low cholesterol metaphors, and thus we are hearing more expressions such as tetrahedral tofu, soybean smectite, and of course, wet noodle illite.

*CMS News, December 1990*

**Dear Clay Doctor:** I am looking for a good book on the identification of clay minerals. Do you have any suggestions?

Illite Illiterate, Chicago

**Dear Illite Illiterate:** Let me recommend a book entitled X-ray Diffraction and the Identification and Analysis of Clay Minerals by Moore and Reynolds. This book is a good investment because, should the text become obsolete, the binding can be used as a replacement spring for your screen door.

*CMS News, Fall 1997*

**Dear Clay Doctor:** I just got a new copy of Moore and Reynolds' book, second edition, and am very pleased by the revised cover. The wire in the first edition cover would snag and ruin sweaters. In the second edition the wire is hidden. Also, the cover's slick surface makes an excellent coaster. Altogether an impressive cover!

Maiden Hurry, Bloomington

**Dear Ms. Hurry:** I guess that it is possible to tell a book by its cover.

## Memorial to Walter D. Keller ~ 1900-2001

Walter Keller is known internationally for his contributions to the understanding of the formation of diaspore, flint clays, and kaolins. Dr. Keller taught geology at the University of Missouri for 43 years prior to retiring in 1970. Retirement did not slow him down one iota as he continued his research activities and was a faithful attendee at meetings of The Clay Minerals Society and AIPEA.

Walter Keller was a master teacher and was proudest of his teaching accomplishments. When I visited Keller at his office in 1998, taped to a cabinet beside his desk was a quote from the ancient Greek historian Plutarch: "Teaching is not to fill a vessel but to light a flame." A few years ago at a social event in Bloomington, I was talking to a person who asked me where I worked, and when I said the Geology Department at I.U., she said that the most fascinating course in her college career was one in geology at the University of Missouri. I said I'll bet I know who taught that course and named Dr. Keller, and she said that was correct. She said he was the most stimulating and best teacher she had experienced. In his teaching career, I'm sure he lit many flames.

His large office in the Geology Building looked like a chaotic mess, which Keller called his piling system rather than a filing system. He had the amazing ability to go to the right pile to find what he was looking for. A sign above his cluttered desk read: "A clean desk is the sign of a barren mind."



Keller and his "piling" system.

Walter Keller had a handful of pens and pencils stuck in his shirt pocket, which was bulging full. He explained this as always having a pen or pencil to lend to a student who forgot his or hers, and he never lost this habit.

Professor Keller received many research and teaching awards. In 1981, the University of Missouri named its geology lecture hall "Walter D. Keller Auditorium," of which he was most proud. His most prestigious awards include:

- Distinguished Faculty Award – MU Alumni Association
- Neil Miner Award – National Association of Geology Teachers
- Twenhofel Medal – Soc. of Econ. Paleontologists and Mineralogists
- Hardinge Award – Soc. for Mining, Metallurgy, and Exploration
- Honorary Doctorate in Science – University of Missouri-Rolla
- The Giants of Geology Award – American Assoc. of Petroleum Geologists

He drove an ancient Volkswagen Beetle from his residence to his office every day up to the month before he died. It was a stick shift and everyone stayed out of his way when he started from the parking lots. He said he loved the VW because he could repair it himself. He was a good mechanic and he earned college expenses by working long hours repairing Model-T Fords at a local auto repair shop. He was also an avid football fan and never missed a homecoming football game for more than 70 years.



Walter Keller (left) with Harry Robinson teaching summer geology field camp in Wyoming circa 1930.

One of his earliest research contributions was related to his studies of the refractory mineral diaspore and its occurrence in the Missouri fire clays. He developed methods for field testing diaspore, allowing the miners to grade the clay according to its alumina content. Based on his studies A. P. Green Fire Brick Co. in Mexico, MO became a leading refractory company. His publication "Diaspore – A Depleted Non-renewable Mineral Resource of Missouri" gives one a historical overview of Missouri's most basic industrial mineral. This article was published by the Missouri Division of Geology and Land Survey in 1979. His publication on "The Origin of Missouri Fire Clays" in *Clays and Clay Minerals* v.2 (1954) is a classic. After he retired, he made important contributions describing scanning electron micrographs of clay minerals and chert.

I first met Walter Keller in 1952 at the first conference sponsored by the NSF Clay Minerals Committee, which was held in Berkeley, CA. We became very good friends and have exchanged extensive correspondence about clays over the past 45 years. Special Publication No. 1 of The Clay Minerals Society was dedicated to Walter Keller in recognition of his research activities on various types of kaolinitic clays. I am especially pleased to have Walter Keller's



Keller with Professor Chukrov on a field trip in England.



Walt Keller and Haydn Murray next to Keller's VW Beetle.

clay mineral collection, his hundreds of electron micrographs, and his reprint collection at Indiana University. Walter called me four years ago and said he was moving out of his large office and his mineral collections and micrographs were going to the basement. He asked if clay mineralogy was a fixture at Indiana University and when I informed him that a Chair of Applied Clay Mineralogy

in my name was established in the Department of Geological Sciences he said if I came to get them, the collections were mine.

One of the most vivid memories I have on many field trips all over the world was the continuing philosophical discussions he had with Russian Academician, Professor Chukrov. They always sat in the front seat of the bus

and had many loud and heated discussions.

Walter Keller was a renowned teacher, thinker, researcher, and a gentleman who will be remembered in years to come for his contributions and exploits. He died on March 23, 2001, at the age of 101.

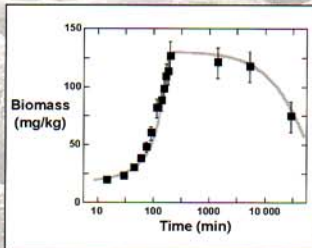
*Haydn H. Murray  
Bloomington, Indiana*

# The Geochemist's Workbench®

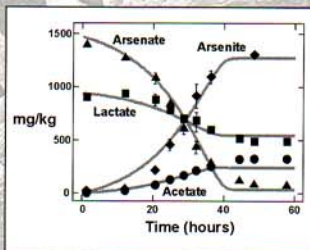
## We put BUGS in our software!

H<sub>2</sub>O • Ag<sup>+</sup> • Am<sup>3+</sup> • As(OH)<sub>4</sub><sup>-</sup> • Au<sup>+</sup> • B(OH)<sub>3</sub> • Ba<sup>2+</sup> • Br<sup>-</sup> • Ca<sup>2+</sup> • HCO<sub>3</sub><sup>-</sup> • Cs<sup>+</sup> • Cl<sup>-</sup> • Co<sup>2+</sup> • Cr<sup>3+</sup> • Cu<sup>2+</sup> • Eu<sup>3+</sup> • F<sup>-</sup>

**Growth and decay of microbial biomass in a laboratory experiment**

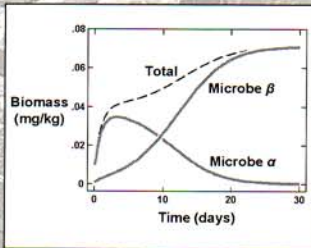


**Arsenate reduction by BACILLUS ARSENICOSELENATIS**



**New! Version 3.2**

Windows 95/98 and NT/2000



**Growth on acetate in a chemostat experiment of two strains of microbes, one fast, the other efficient**

**New in 3.2 –**

- MICROBIAL METABOLISM AND GROWTH Model the geochemical and mineralogic effects of complex microbial communities
- CUSTOM RATE LAWS Specify kinetic rate laws of any form – No Programming needed!

**GWB is your personal toolkit for –**

- Reaction simulation
- Kinetics
- Surface chemistry
- Isotope fractionation
- "Pitzer equations"
- Speciation
- Bioavailability
- Redox disequilibrium
- Redox-pH diagrams
- Catalysis, enzymes, and more!

**Price –**

\$2,900.00 (\$1,600.00 academic)

**Industry • Government • Consulting  
Academic • Classroom**

Photo: B. Fouke

**RockWare®**  
Earth Science Software

The Geochemist's Workbench® is a registered trademark of the University of Illinois.

Over 200 Software Solutions at <http://www.rockware.com>

2221 East Street, Suite 101 • Golden, Colorado 80401 • 800.775.6745, 303.278.3534 • fax: 303.278.4099

# ~ Feats of Clay ~

Luke Eberl, son of Jo and **Denny Eberl**, recently appeared in "Planet of the Apes." He played a leading role alongside Mark Wahlberg and Kris Kristofferson.

\* \* \* \* \*

The 2001 Clay Minerals Society Best Student Paper and Poster awards were presented to four CMS members. The Best Student Paper was awarded to **Lori Eversull** for "Mineralogy of the Twiggs Clay Formation near Wrens, Georgia." The Best Student Poster was awarded to **Michael T. Brumbach** for his presentation "Adsorption of PAA on the Alumina Basal Surface of Kaolinite." **Carla B. Swearingen** received Best Student Paper Runner-up and **Jeffrey Brownson** received Best Student Poster Runner-up.

\* \* \* \* \*

Student Travel Grants were awarded to **Katerina Donstova** (Purdue University), **Carla Swearingen** (Loyola University) and **John LeGolvan** (University of Georgia).

\* \* \* \* \*

New council members elected by the membership and announced at the Madison meeting are **Richard K. Brown**, **Ray L. Frost**, **Audrey C. Rule** and **Samuel J. Traina**.

\* \* \* \* \*

The Leakey Award was given to **Richard L. Hay** by The Leakey Foundation for Multi-Disciplinary Research. He and fellow researcher Garnis Curtis received this award in recognition of "outstanding scholarship and dedication to a better understanding of the origins, behavior and survival of humanity and for monumental contributions to the chronology of human evolution."

Congratulations to **Kevin Murphy** and his wife, Roseanne, on the birth of their lovely daughter, Aideen, who was born on October 12, 2001 (7 pounds, 4 ounces).



*Aideen Murphy*

Congratulations also to Beth and **Joel Kostka** on the arrival of Lilian May Kostka, born December 27th. She weighed 8 pounds, 13 ounces.



*Lilian May Kostka*



*Jacqueline Arroyo*



*Jeff Brownson*



*Diana Jozwik*



*John Moreau*



*Rebecca Sutton*

Five student research grants were funded for the year. Congratulations to each of the recipients: **Jacqueline Arroyo** for her project "Relative Roles and Mechanistic Function of Soil Clays and Organic Matter as Sorbent Phases for Pesticide Retention," **Jeffrey Brownson** for "Phthalic Acid and Silica in Aqueous Aluminum Systems as Effective Factors in Polymeric Aluminum Inhibition and Low Temperature Clay Mineralization," **Diana Jozwik** for "Geoarchaeology of Pottery and Clay Samples at Kukulik, Saint Lawrence Island," **John Moreau** for "Metal Sequestration in Biogenic Nanocrystalline Sulfides during Groundwater Remediation," and **Rebecca Sutton** for "Investigation of Interlayer Alkyl-Smectite Complexes."

# Messages Sent to CMS Following the Tragic Events of September 11th

"To our American Colleagues and the American People from the deepest of our hearts: You have our sympathy and our profound condolences. Our prayers are for you all. May such things never happen again."

– Dr. Konstantinos Kitsopoulos

"I deeply share the heart-felt sympathy and condolences to all Americans especially those families of the victims resulting from 911 terrorist attacks. The whole world is condemning the heinous acts of evil. However, what has been done can not be undone. As a Christian who is the follower of Our Lord Jesus Christ, I humbly request the American People to forgive as they do not know what they are doing. Our Lord Jesus Christ, the One Who loves to the end, forgiving those who take His life. Amen!"

– IPIJNA (CHIN KEE CHIN)

"I just want to say may it soon be past and please accept my condolences due to the terrorist attack the US."

– Yoldas Seki  
Dokuz Eylul University  
Faculty Of Arts & Science  
Chemistry Department  
Kaynaklar Campus Buca Izmir, Turkey  
(student member)

"May we express our deepest sympathy and condolences in connection with the tragedy that occurred in the United States."

Basil Alexeyev  
Head, Acquisitions Department  
All-Russian Institute of Scientific and  
Technical Information (VINITI)

## Meeting of the "Brazilian Workshop on Clay Mineralogy" December 2001, Porto Alegre, Brasil

The first meeting of the Brazilian Workshop on clay mineralogy was held over a three-day period at the Universidade Federal do Rio Grande do Sul in Porto Alegre. Fifteen lecturers presented contributions to some 50 Brazilian participants. The organisation and objectives were to provide an introduction to clay mineralogy and to cover basic and advanced techniques of clay analysis. Emphasis was placed on lectures and technical sessions where participants could become personally acquainted with the state-of-the-art methodology.

First day sessions dealt with an introduction to smectite mineralogy, the fundamentals of X-ray diffraction techniques, the occurrence of smectite in South America and their use in stratigraphic studies. Sessions on the second day dealt with interpretation techniques for X-ray diffraction of clay minerals and X-ray diffraction patterns of  $\text{Ca}^{2+}$ ,  $\text{K}^{+}$  and  $\text{Ca}^{2+} + \text{K}^{+}$  saturated clays. Special emphasis was given to the X-ray diffraction investigation of clay minerals by peak decomposition and modelling methods. The afternoon sessions dealt with exchange reactions in smectites, the interaction of clays with organic matter in basic solutions, poorly crystalline phases as precursor of halloysite/kaolinite formation and the quantification of coexisting halloysite and kaolinite with Siroquant. The third day was devoted to a general overview of chloritization processes in geothermal systems, clay minerals and oil and some considerations about the geochronology of bentonites. The workshop was followed in the evening by a concluding discussion summarising the conference. Evening social events were different "churascos" with very cold Brazilian beer and caipirinhas. A field trip to the bentonites of Melo (Uruguay) and the tonsteins of the Candiota Coal mine (Brasil) followed the workshop. Overall, the workshop was conducted in a good-humoured atmosphere, and provided an excellent forum for discussion and feedback between all participants.

– **Andreas Bauer**  
**Brazil**



The "battle" of Acegua. Alain Meunier and Andreas Bauer bet in the field if the sandstone is carbonate or not. The winner is...



Susanna Ramirez and Marcia Gomes discussing the bentonites of Melo (Uruguay)



Alain Meunier and Bruno Lanson "trapped" Angélica Varajão



Liane Calarge giving an introduction to the bentonites of Melo (Uruguay)

# In Memory of Dr. Mingchou Lee ~ 1956-2001

On January 26, 2001, clay science lost one of its best and brightest. Dr. Mingchou Lee passed away in Houston, Texas, after a courageous battle with cancer. Mingchou was born on February 19, 1956, in Chiayi, Taiwan. He graduated from National Taiwan University with high honors in 1977. After fulfilling his military obligation, he began graduate studies at Case Western Reserve University, receiving a doctorate in Geology in 1984. He continued at Case Western as a research associate until 1988, during which time he also earned a master's degree in Computer Science.

Mingchou was an expert in oxygen isotopic studies of clays and potassium-argon dating of illitic clays. He will always be remembered for his pioneering analytical techniques developed to separate quartz cement for oxygen isotope studies and authigenic illite for age-dating.

His doctoral work with Sam Savin and Jim Aronson on the stable and radiogenic isotope geochemistry and diagenesis of the Rotliegendes Sandstone in Germany will serve as a lasting legacy of a talented research scientist. As a research associate, he applied his skills in isotope geochemistry to better understand potassic metasomatism in Ordovician tuffs and Cambrian sandstones, and the geochronology and geochemistry of hydrothermal and contact metamorphic environments.

The numerous clay scientists that have worked with him extend well beyond Sam and Jim. They include: Steve Altaner, Denny Eberl, Crawford Elliott, Richard Hay, Warren Huff, Jay Matthews, Paul Nadeau, and Jan Srodon, to name a few.

In 1988, he joined the Sandstone Diagenesis Group at Mobil's Research Laboratory in Dallas, Texas. He continued his illite research, and later, thanks to his many Structural Geology friends, expanded into fault-related diagenesis research. Throughout his career in the petroleum industry, he used his considerable talents to solve numerous diverse

and practical geologic problems. Mingchou was an excellent scientist, who confidently believed that, when asked the right questions, clays would reveal many details about the generation and migration of hydrocarbons.



He was an active member of the CMS, as well as AAPG, SEPM, and GSA.

With the Exxon/Mobil merger, he joined the Petrophysics and Reservoir Quality Group in the Upstream Research Company (Houston, Texas). Mingchou was very excited about the merger and the opportunity to join his friends in the EPR Reservoir Quality Group. However, two days after agreeing to join the new company, he discovered that he had cancer. This was a shock to all. But Mingchou and his beloved wife, Yeechin (Virginia), battled the cancer with the same passion that he was known for in his scientific career, inspiring all with their faith, courage, and determination.

Mingchou was a devoted husband (22 years) and father to three sons, Justin (14 years), Jason (10 years) and Joseph (4 years) of Houston, Texas. His eyes would always light up when he talked of his sons and their many accomplishments in school. As a family, they enjoyed camping, hiking, fishing, picnics, sports, and trips to Cleveland, Taiwan, Europe and the Civil War battle grounds of the U.S. Mingchou had strong religious values from which he and

Yeechin took great comfort, even in the depths of his illness.

Mingchou's many friends and family around the world will miss this very special person, his wonderful smile, and positive outlook on life. He will be further remembered as the one who asked the important questions in meetings (the ones that needed to be asked), that caused you to rethink your hypothesis, and for his superb ability to network and reach out to people in other disciplines to help solve complex problems. He will especially be remembered for his honesty, intelligence, and respect for others. Persistence, determination, passion, creativity, and a wonderful inquisitiveness about the earth, were among his many virtues. Mingchou accomplished much in his short life, and his spirit lives on, in his sons, and the many of us lucky to have been enriched by him.

**Joann E. Welton and Robert F. Ylagan (with contributions from S.M. Savin and J.L. Aronson) Houston, Texas**

## “Global Kaolin Resources” Conference Announced

The first Dreyer Conference will be held September 9-11, 2002, in Savannah, Georgia. The purpose of the conference is to outline and discuss the major changes that are currently taking place in the kaolin industry with an emphasis on development of new resources and new technologies. Presentations will focus on worldwide kaolin occurrences with specific emphasis on new commercial deposits and the economic and market influences impacting their development.

The conference will include two days of presentations followed by a field trip to the Port of Savannah. For registration information, contact Joette Cross at SME (303-948-4241 or [cross@snet.net](mailto:cross@snet.net))

Student Research Profile**HEATHER DION****Hometown:** New London, NH**Academic History:** I received a B.A. degree from College of the Atlantic in Bar Harbor, ME in Human

Ecology, and I am currently a Ph.D. candidate in chemistry at Washington State University (ABD). I have also been involved in the Center for Multiphase Environmental Research at WSU. The center is a collaboration between eight departments on campus intended to develop better methods of integrating environmental analysis. In 1999, the center was granted an NSF Integrative Graduate Education



and Research Training (IGERT) Grant which allowed the center to fund several graduate students from around campus on NSF fellowships, including me. To date, there are at least 12 students actively involved in the center, and while collaboration is not as extensive as it could be, I still find it useful for graduate students from disparate fields to discuss how we approach these situations. I'm not sure we will all ever see it the same, but I think we definitely have an idea of where the other is coming from. Another part of the IGERT program is mentoring. This summer I worked with an undergraduate chemistry major from Gonzaga University using electrospray ionization-ion mobility spectrometry to detect metal cations and metal cation complexes in water. The project showed that metal cations could be detected and that they tend to form different complexes dependent on the counter anion in the initial solution. The web page for the center is [www.cmer.wsu.edu](http://www.cmer.wsu.edu).

**Thesis Advisors:** Herbert Hill in chemistry and James Harsh in crop and soil sciences.**Research Topic:** My research has encompassed several different types of projects, from looking at polar organic sorption on high clay subsoils using batch systems, to competitive sorption experiments using glyphosate and phosphate on clay minerals and high clay subsoils, and fundamental analytical chemistry work such as the project I completed with my summer student. I would like to think that they are all related in a sort of broad soil, groundwater, environmental fate type of way, but I'll let you be the judge.**What drew you to research involving clay?** A lot of my undergraduate research and early graduate research involved hydrophobic organic chemicals that tend to be sequestered in organic matter. I spent a lot of time looking at sorption kinetics and remediation strategies, but found that when they were applied to polar chemicals they didn't work very well. My advisor Jim Harsh helped me to focus my research on clay minerals and their contribution to sorption of these types of chemicals. I think I was hooked from there. It seemed from my limited standpoint that clays were a highly underrated fraction of the soil, especially in terms of kinetics, chemical properties, and bonding interactions between chemicals and clays. Of

course that was before I really knew what was out there, but I think there is still a lot of work to be done. One interesting area for me is the formation of new mineral phases from contaminants that have entered the systems, like in radioactive waste depositories.

**Other Interests?** Graduate students have time for other things? No really, in my free time I try to get out as much as possible. When we have time most of it is spent out camping, hiking, and SKIING, which prior to graduate school was my only life. Recently we have been attending a lot of weddings which has allowed us to see Yellowstone NP, the Tetons and the Liberty Bell in Philadelphia.**Future Plans:** I anticipate finishing in spring 2001, but after that I only know I would like to stay active in research and in directing research, and right now I am looking for postdocs. I hope to stay in the soils/clays area, but have not ruled out analytical chemistry positions. My search, however, is also dependent on my husband, Steve, who is a radioanalytical and nuclear chemist, and where he can get a job.**Favorite use of clay other than standard academic and industry research?** Toothpaste, and at almost 27 I still have yet to get a cavity.

Since this interview, Heather finished graduate school and is now working for Paul Bertsch at the Savannah River Ecology Laboratory in Aiken, South Carolina. Her current research involves examining clay mineral weathering processes and its role in the fate and transport of metals and radionuclides.

In Memoriam**Padraic Partridge**

Padraic (Pad) Partridge passed away a short time before the 2001 Annual CMS meeting took place this summer in Madison. He was active in the CMS for many years and widely known. Two brothers, a son and a daughter survive him. His mother was Imogen Cunningham, one of the founders of modern photography, and his father was a well-known artist in California.

Pad earned a B.S. degree in Mining Engineering at the University of Nevada, then proceeded to become educated in many fields including clay processing, field geology and photography. He also became a professional pilot, and as aircraft and auto mechanic. He worked for a number of clay processing companies including Georgia Kaolin Company, and was a private consultant.

We first met at the 1970 Annual CMS Conference held in Miami Beach. I was introduced by my graduate faculty advisor from the University of Arizona, Professor R. Sloane, who originally got me interested in The Clay Minerals Society.

On a personal level, Pad was very warm, kind and helpful. For a number of years, we had an agreement that he did field investigations for economic deposits of clays and zeolites, and I did the lab studies of the minerals. I especially miss his presence as a personal friend and guide in clay studies.

~ Jim Post, Nevada City, CA

## *In Memory of John W. "Spike" Jordan*

On May 31, 2001, the clay minerals community lost one of its most innovative members with the death of John W. Jordan, affectionately known to his many friends as "Spike." His career exemplified the best in industrial chemistry and mineralogy, that of building a careful theoretical base for successful product development. Spike was born in Pittsburgh, Pennsylvania, on April 25, 1912. He obtained an A.B. from Marietta College, and a Ph.D. in physical chemistry from Columbia University, where one of his teachers was the noted chemist Harold Urey. His dissertation subject, hydrous ferric oxides, may have led to his later interests in the colloidal clays. He worked in glass technology at Corning Corporation until an exceptional opportunity opened in 1941 at Mellon Institute.

George Ratcliffe, General Manager of the Baroid Division of National Lead Company, was a very farsighted businessman. He recoiled at the memory of pouring hectorite down a drill hole in the Signal Hill oil field for five dollars per ton. The unusual colloidal properties of hectorite and Wyoming bentonite certainly deserved a better, and higher-priced, fate. Thus, he set up a fellowship at Mellon Institute to find new uses for bentonite. The search committee for the director, which included Ralph Grim, eventually interviewed Spike and found him ideally qualified. Not only did he have an appropriate education, but had a great facility with equipment and machinery. Spike's father, Frank, had been Chief Astronomer at the Allegheny Observatory in Pittsburgh, home of the largest refractor telescope. Spike had the run of the place, and enjoyed working with the fine machinists in the excellent machine shop.

The task was formidable, considering the state of the science at the time. These were the days long before X-ray diffraction equipment was common, and the days when identification techniques were still in development. He proceeded by systematically collecting and characterizing bentonites from the United States, southern Canada, and northern Mexico. He and his wife, Marian, made the grand tour, visiting leading clay mineral laboratories on the way, and made the first comprehensive collection of bentonites. As work progressed, additional personnel came on board, including the acerbic but brilliant MIT chemist Ernst Hauser as a consultant. The project first aimed at developing a functional filler for plastics. Exchanging organic cations onto the surface of the clay promised to eliminate the organic-inorganic interface that generated severe points of weakness in the composite. Spike and his group accomplished some of the first work on investigating the mode of adsorption and the orientation of the adsorbed organic molecules. When they found that the material would gel the plastic monomer, they decided they were in truth creating a gelling agent, not a filler. Fortunately, another National Lead division, Dutch Boy Paints, had use for such a gelling agent for the then-prevalent solvent-based coatings. They christened the product "Bentone™," a name that suggested both mineral and organic chemistry.

By the late 1940's, the project was near commercialization but required a manufacturing facility. National Lead offered a former white lead plant in Saint

Louis. Spike and his crew converted the plant to the first facility to size-separate and surface treat smectite minerals on an industrial scale. Baroid had supported the effort for ten years, and found the money well spent. The innovation Spike and his group developed eventually provided twenty percent of the before-tax profit of the company for many years.

Ratcliffe moved Baroid headquarters from California to the center of the oil patch, Houston, in the early 1950's, and constructed an office and a large laboratory. Spike became Technical Director, and directed research into oil field chemicals and well as the organoclays. His effort extended the use of the organoclays into many applications, including oil-based drilling fluids and high temperature greases. Baroid also provided a well equipped and staffed pilot plant in Houston for process development. This facility developed methods for successful manufacture of laboratory innovations.

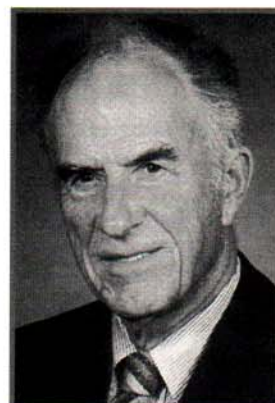
Spike also oversaw the next Mellon project, synthetic smectite catalysts, directed by the gifted William T. Grandquist. Grandquist developed these catalysts and procedures to manufacture them on a large scale. Unfortunately, Grandquist died about the time manufacturing began. With Baroid moving in other directions, this project never fulfilled its great promise.

Over the years, Spike inspired numerous researchers interested in clays as industrial minerals. Many of them became close personal friends. His thoughtful nature and insight helped many to persist in solving the challenges that come with research. Marietta College honored him with an honorary Doctor of Science in 1959. He served as president of the Clay Minerals Society in 1973-1974, and was the Pioneer in Clay Science lecturer in 1990. Spike retired in 1975, after an uncommonly productive career.

The scientific career was but a part of Spike's persona, for his interests were wide indeed. He continued his interest in machinery by restoring antique automobiles. The Jordan and Grandquist families would vacation in Idaho, often in quest of some rare model. His restored Model T fire truck was a gem. Although a very peaceable man, he maintained a keen interest in firearms, and assembled an outstanding collection. Some dated from the 18th century, and he made sure that all of them worked. His book, "The Eagle on U.S. Firearms," remains a valuable reference work.

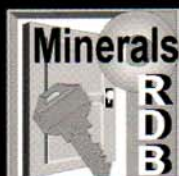
Spike enjoyed a full family life, providing rewarding and interesting surroundings for his children. Marian died near the time that Bill Grandquist did. Spike later married Bill's widow Noreen. They continued their interests in music, and, with Spike near 80, even won a tango-dancing contest. In his later years, Spike became an Alzheimer's victim, but Noreen cared for him at home to the end.

Spike, we appreciate what you did for all of us.



# I nternational C entre for D iffraction D ata

1941—Sixty Years—2001  
Serving the Scientific Community



Introduces

## PDF-4/Minerals 2001

### Featuring

- ▼ Over 14,000 entries
- ▼ A powerful user interface that integrates all of the functionality of PCPDFWIN
- ▼ Boolean search capability
- ▼ "On-the-fly" calculation
- ▼ Display of fully digitized patterns derived from ICSD entries
- ▼ CIF output of fully digitized patterns
- ▼ Query results sorted by column headings
- ▼ Multiple tab forms to facilitate organization of query results
- ▼ 13,400 entries with ambient/blank experiment condition flags
- ▼ 12,600 entries with density information
- ▼ 6,600 I/l<sub>c</sub> entries
- ▼ 3,100 entries with mineral classification codes
- ▼ 530 distinct mineral classes
- ▼ 1,900 entries with optical property references
- ▼ 1,700 representative structure codes



Visit us at [www.icdd.com](http://www.icdd.com)



Phone: 610.325.9814 ▼ Sales: 610.325.9810 ▼ Fax: 610.325.9823 ▼ [info@icdd.com](mailto:info@icdd.com)

ICDD, the ICDD logo, and PDF are registered trademarks of the JCPDS—International Centre for Diffraction Data.  
PCPDFWIN is a trademark of the JCPDS—International Centre for Diffraction Data.

*Book Review*

# *Humic Substances Versatile Components Of Plants, Soils and Water*

*Edited by E.A. Ghabbour and G. Davies  
Special Publication No. 259*

*The Royal Society of Chemistry, 2000  
Thomas Graham House, Science Park,  
Milton Road, Cambridge CB4 0WF, UK*

The book is based on the proceedings of the fourth Humic Substances Seminar held at Northeastern University in Boston, MA, on March 22-24, 2000. The 26 chapters are diverse in the subjects addressed, methodologies employed, and in both the quality of the writing and the quality of the science presented. The book can be roughly divided into halves. Most chapters in the first half address basic questions about the nature of humic materials, humification, and problems and advantages associated with various analytical procedures. In the second half, several chapters address environmental applications such as sorption of various biological, organic, and inorganic environmental contaminants on humic materials. A few chapters seem to be little more than thinly veiled sales pitches for commercial products.

The book begins with an elegant essay by Robert Wershaw (The study of Humic substances - In search of a paradigm R.L. Wershaw). Dr. Wershaw submits that 'Progress in the field of humic substance research is impeded by the lack of a shared paradigm on which the research is based.' Shortcomings include a lack of agreed upon definitions of terms, and both the analytical and conceptual problem of separating humic and non-humic materials. For both historical and practical reasons, humic substance scientists have clung to methodologically based definitions for humic acid, fulvic acid, and humin. This linkage between terminology and methodology is both a blessing and a curse. Readers of the term humic acid have an immediate and clear understanding of how the material was obtained, yet the

terminology has fueled a 100 year quest for the holy grail, to define the structure of humic acid. The literature is filled with papers that begin by acknowledging that heterogeneity in structure and composition is a fundamental feature of humic acids and then proceed with ever increasing sophistication and ever increasing detail to try to define the structure of humic acids. I submit that "the structure of humic acid" is an oxymoron. Dr. Wershaw proposes a shift to the "humification paradigm", the quest to understand the reactions that tissues undergo during and after senescence. While compelling, particularly in light of the historic quest to define structure, the proposed new paradigm should be broadened to include the function of humic substances whether extracted and "purified" or in their natural setting (In my opinion, a "purified humic acid" is another oxymoron).

A common theme either on the surface or percolating in inferences through much of the first half of the book is the current debate as to whether humic substances are products of secondary synthesis or aggregations of partially decomposed biopolymers? One school holds that secondary synthesis, including clay surface catalyzed oxidative polymerization reactions, leads to macromolecules composed of heterogeneous assemblages of subunits linked by covalent bonds. The contrasting view holds that fragments of biopolymers become entangled forming aggregates of colloidal dimensions. In such aggregates the subunits are held together by H bonding, dispersive forces, and polyvalent cation bridging. Secondary synthesis is supported by evidence that humification during composting results in the formation of molecules with higher molecular weights and both greater stability and greater complexity than the starting

materials (Humification of Duck Farm Wastes M. Schnitzer et al.). The secondary synthesis hypothesis is also supported by evidence that aqueous hydroxy-Al ions and silicic acid catalyze browning reactions (analogous to humification) of catechol (Catalytic effects of hydroxy-aluminum and silicic acid on catechol humification C. Liu and P.M. Huang). The chapter by Liu and Huang is a contribution to an already significant literature showing that clays and various inorganic cations catalyze polymerization of polyphenols and amino acids and their co-polymerization. The aggregation hypothesis is supported by several reports employing size exclusion chromatography, matrix assisted laser desorption/ionization-time of flight-mass spectrometry (MALDI-TOF-MS), and flow field-flow fractionation techniques which indicate that apparent molecular weights of humic materials are highly dependent on pre-treatments and disruption energies.

There are several notable chapters in the first half of the book. Among these, I especially enjoyed the authoritative review of solvent properties, interactions between solvents and humic substances, and procedures for extracting humic substances from soils, peats, and natural waters by Hayes and Graham (Procedures for the isolation and fractionation of humic substances M.B. Hayes and C.L. Graham). Wershaw et al. provide an excellent discussion of factors influencing quantitative reliability of CP/MAS <sup>13</sup>C NMR followed by a direct comparison of DP-liquid <sup>13</sup>C NMR spectra with CP/MAS <sup>13</sup>C NMR spectra obtained using various contact times for 9 different DOC samples. The authors suggest a means of empirically correcting CP/MAS <sup>13</sup>C NMR peak areas to yield quantitative information (Structural-

*(story continued on next page)*

## Humic Substances Versatile Components

(continued from page 16)

group quantitation by CP/MAS <sup>13</sup>C NMR measurements of dissolved organic matter from natural surface waters – R.L. Wershaw et al.)

The chapter by Mao et al. describes application of 2D heteronuclear <sup>13</sup>C-<sup>1</sup>H NMR (HETCOR) analysis of the Amherst humic acid. Spectra are shown with and without dipolar dephasing and for 0.1 and 1 ms contact times. Results indicate that CH<sub>3</sub> groups are connected with O-alkyl and aliphatic components. Methoxy groups are connected to aromatic rings and COO groups are primarily associated with O-alkyl groups but some are associated with aromatic and aliphatic groups (Structural investigation of humic substances using 2D Solid-state nuclear magnetic resonance – Mao et al.)

Several good applications chapters are presented in the second half of the book.

Van Stempvpprt et al. offers a nice review of literature related to sorption of humic acid on soil and aquifer materials including a few references to clays and effects of mineralogy, pH, and other factors. Results for a batch equilibration study show that Aldrich humic acid sorbs on simulated aquifer material in two phases (fast and slow) and that after 148 d the sorption fits nicely to a Langmuir isotherm. Finally, they test the kinetic model from the batch study by trying to predict aqueous and sorbed humic acid concentration observed during a pilot scale study, their model works but will be difficult to extend to other systems. The idea is to use humic acids in remediation of contaminated aquifers to help flush out hydrocarbons. Numerous potential problems with the idea are also discussed (Sorption of aqueous humic acid to a test aquifer material and implications for subsurface remediation – D.R. Van Stempvpprt et al.). Carlsen et al. were unable to correlate sorption of esfenvalerate, one of the pyrethroids insecticides, on humic acids with any measurable property of the humic acids but were able to predict sorption using multivariate statistics (The inter-

action between esfenvalerate and humic substances of different origin. L. Carlsen et al.). Other interesting papers address sorption of endocrine disruptors on humic acids (Adsorption-desorption interactions of environmental endocrine disruptors with humic acids from soils and urban sludges – E. Loffredo et al.) and the quenching of fulvic acid fluorescence by aniline and paraquat (Binding of organic N compounds to soil fulvic acids as measured by molecular fluorescence spectroscopy By C.L. Coolidge and D.K. Ryan).

The importance of clay minerals for the formation and stabilization of humic materials in soils was articulated by Selman Waksman in 1936:

“Among the important aspects of humus in the soil, the most significant is its interaction with the clay constituents, which give rise to clay-humus. Increasing the amount of soil organic matter in this combination is of great importance. The addition of clay to sandy soil may be as important as the addition of organic matter itself. A certain quantity of stable manure or compost or mass of plant residues can be converted into this type of complex only when it is composted with a certain amount of clay before it is applied to the soil.”

Yet 65 years later, interactions between clays and humic materials are only fleetingly mentioned in this book, or for that matter throughout the humic substance literature. Interactions between clays and humic substances are routinely acknowledged as “important” but then ignored. Indeed, the starting point of most humic substance research are extensive efforts to remove the ‘clay contaminants’ from humic substances, a process known as “purification”. In the opinion of this reviewer, a golden opportunity exists for clay scientists to step forward and use our growing knowledge of clay surface chemistry and clay organic interactions to describe qualitatively if not quantitatively interactions between clays and humic substances and the function of clay-humus in soils and sediments.

– David Laird, Aimes, IA

### Our Tribute to Jo Eberl

As you all know, Jo Eberl, Office Manager of CMS for 10 years, retired on December 31, 1999.

Our President, Blair Jones, sees this summer's annual meeting in Boulder, Colorado, as the perfect opportunity to recognize Jo's dedication to CMS and has asked me to organize the event.

The ceremony, which will take place at the annual banquet, will include presenting Jo with an “Appreciation Book.” We would like the book to be overflowing with letters from as many of you as possible recounting how Jo's efforts made your CMS membership more meaningful. Over the years, Jo and I worked together on various projects, and therefore, I witnessed first hand her dedication to CMS. All Jo did for CMS, and for all the members, was more than a job, it was a labor of love.

The book, however, will be special only if it holds letters from those of you who also think highly of Jo, so please take a few minutes to write a paragraph or two, or more if you like, of how Jo helped you in your relationship with CMS.

Please send the letters to me either by e-mail at [Patricia.Costanzo@USPTO.GOV](mailto:Patricia.Costanzo@USPTO.GOV) or to my home. The address is: P. M. Costanzo, 2960 Bowen Road, Elmyra, NY 14059.

– Pat Costanzo

### Correction

Several errors were made in the memorial for Toshio Sudo which was published in the last newsletter (Volume 12, Number 1, Winter 2001). These were:

- 1) Miller should have been Müller
- 2) Nendo-K(butsu should have been Nendo-Kobutsu
- 3) Nendo-K(butsugaku should have been Nendo-Kobutsugaku
- 4) Manjir should have been Manjiro

We sincerely apologize for these mistakes and any confusion that they may have caused.

# The Clay Minerals Society

## Organization and Committee Personnel 2001-2002

### EXECUTIVE COMMITTEE

Blair F. Jones, President '02  
 Jessica Elzea Kogel, Vice President  
 Richard W. Lahann, Secretary '02  
 Andrew R. Thomas, Treasurer '04  
 Derek C. Bain, Editor-in-Chief  
 Darrell G. Schulze, Immediate Past President '02  
 Kathryn L. Nagy, Vice President Elect

### COUNCIL

Amos Banin '02  
 Eric J. Daniels '02  
 Alanah Fitch '02  
 Douglas W. Ming '02  
 William F. Bleam '03  
 Kathleen A. Carrado '03  
 Warren D. Huff '03  
 Prakash B. Malla '03  
 Richard K. Brown '04  
 Ray L. Frost '04  
 Audrey C. Rule '04  
 Samuel J. Traina '04

### STANDING COMMITTEES

#### Finance & Budget

R. K. Brown, Chair '03  
 R. F. Giese '02  
 C. Olsen '03  
 \*A. R. Thomas, Treasurer  
 K. L. Nagy, V.P. Elect

#### Program Development

V. Colten-Bradley, Chair '02  
 A. Fitch '03  
 R. Berry '03  
 J. Banfield '04  
 \*D. L. R. Hesterberg, Cont. Ed.  
 \*K. L. Nagy, Chair '02 Mtg.  
 \*P. A. Schroeder, Chair '03 Mtg.  
 \*P. Gasswan, Chair '04 Mtg.

#### Continuing Education

D. L. R. Hesterberg, Chair '02  
 J. D. Kubicki '02  
 K. A. Carrado '03  
 R. Hughes '03  
 G. Grathoff '04  
 J. Banfield '04  
 \*V. Colten-Bradley, Chair PD  
 \*K. L. Nagy, Chair '02 Mtg.  
 \*P. A. Schroeder, Chair '03 Mtg.  
 \*P. Gasswan, Chair '04 Mtg.

#### Regulatory Issues

R. K. Brown, Chair  
 G. D. Guthrie  
 S. B. Rice  
 P. M. Costanzo  
 W. F. Moll  
 \*W. D. Johns, Source Clays Curator  
 \*D. M. Moore, Chair Nomen.

#### Special Publications Editor

P. A. Schroeder

#### CMS News

J. Elzea Kogel  
 P.E. Ryan  
 E.J. Daniels

#### Policy & Administration

D. W. Ming, Chair '02  
 R. Ylagan '03  
 R. Hughes '04  
 \*D. G. Schulze, Past Pres.  
 \*R. K. Brown, Chair, F & B  
 \*K. L. Nagy, V. P. Elect

#### Awards

W. Bleam, Chair '04  
 Z. Z. Zhang, '02  
 T. J. Pinnavaia '02  
 P.M. Bertsch '03  
 M. Velbel '04  
 N. Clauer '04

#### Contributions & Membership

J. M. Hemzacek, Chair '03  
 R. Ylagan '02  
 D. Laird '03  
 C. Elliott '04  
 W. Huff '04  
 \*S. Chipera, Chair, Publications  
 \*R. K. Brown, Chair, F&B

#### K-12 Education

A. C. Rule, Chair  
 S. J. Chipera  
 J. Elzea Kogel  
 S. Parekh  
 \*R. Roth  
 \*C. Middleton

#### Society History

D. M. Moore, Chair  
 D. Scafe

#### Nominations

P. B. Malla, Chair '02  
 A. Manceau '02  
 J. Amonette '03  
 W. Hudnall '03  
 E. Daniels, '04  
 S. Guggenheim, '04

#### Research Grants

S.P. Altaner, Chair '04  
 G. D. Guthrie '02  
 M. C. Duff '03  
 D. McCarty '03  
 \*A. R. Thomas, Treasurer

#### Bailey Award

D.R. Veblen, Chair '04  
 C. T. Johnston '02  
 W. F. Moll '02  
 R. A. Eggleton '02  
 R. J. Pruettt '03  
 L. Zelazny '04

#### International Liaison

R. W. Berry, Chair  
 D. L. Bish  
 D. Schulze  
 A. Manceau

#### Electronic Communications

D. L. Bish, Chair  
 S. J. Chipera  
 C. T. Johnston  
 \*K. Murphy, Managing Editor

#### Tellers Committee

R. M. Pollastro, Chair

#### Publications

S. J. Chipera, Chair '02  
 J. Bigham, '03  
 J. E. Post '04  
 \*A. R. Thomas, Treasurer  
 \*D. C. Bain, Editor  
 \*P. A. Schroeder,  
 Spec. Pub.

#### Nomenclature

D. M. Moore, Chair '04  
 F. J. Wicks '02  
 M. Mortland '03  
 C. J. Bowser '04  
 \*S. Guggenheim, AIPEA

#### Source Clay Minerals

C. A. Johns, Chair '02  
 W. Gates '03  
 J. L. Post '03  
 J. E. Post '04  
 \*W. D. Johns, Curator  
 \*J. Yang, Curator's Asst.

### AD HOC COMMITTEES

#### Liaison Representatives

AIPEA - S. Guggenheim  
 SSSA - D. W. Ming  
 MSA - D. L. Bish  
 AGI - B. F. Jones  
 ICDD - J. E. Post  
 ACS - C. T. Johnston  
 Am. Cer. Soc. - W. M. Carty  
 SME - R. J. Pruettt  
 Drilling Mud Soc. -  
 S. Polnaszek

#### Society Office Advisor

H. H. Murray

# The Clay Minerals Society

Headquarters Office  
The Clay Minerals Society  
P. O. Box 460130  
Aurora, Colorado 80046-0130  
Telephone: (303) 680-9002  
Fax: (303) 680-9003  
E-mail: cms@clays.org  
Internet: http://cms.lanl.gov



*publisher of clays and clay minerals*

## Purpose

To stimulate research and to disseminate information relating to all aspects of clay science and technology.

## Services

- Sponsoring the annual Clay Minerals Conference where papers and specially-invited reviews are presented in all areas of clay science.
- Organizing trips to laboratories, industrial plants, and field occurrences of clays.
- Supporting a Student Research Grant Program.
- Arranging joint meetings with other related societies.
- For North American members, joint membership in AIPEA, the international clay organization.
- Publishing the CMS Workshop Lectures Series and occasional Special Publications.
- Offering selected books to its members from time to time at a discount over the publisher's posted price.
- Member discounts on publications of the Mineralogical Society of America.
- Supporting the Source Clays Project which is designed to provide homogeneous clay samples for research purposes.
- Publishing the bimonthly journal *Clays and Clay Minerals*, and a newsletter containing information about Society activities, related conferences, and non-technical articles of interest to the clay science community.

## Benefits

Through access to its conferences and publications, membership in the Society is the best way to follow the many-sided developments in the clay sciences and to meet fellow scientists and technologists having widely different backgrounds and interests.

## Membership

To join, please fill out the form below and mail it with the appropriate dues to the Headquarters Office (address above).

**Please make check payable to: The Clay Minerals Society.**

---

### CMS Membership Application

Name \_\_\_\_\_  
(Ms., Mr., Dr.)                      First                      Initial                      Last

Mailing Address (Include organization, zip code or postal code) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Phone (Please include country code outside of North America) \_\_\_\_\_

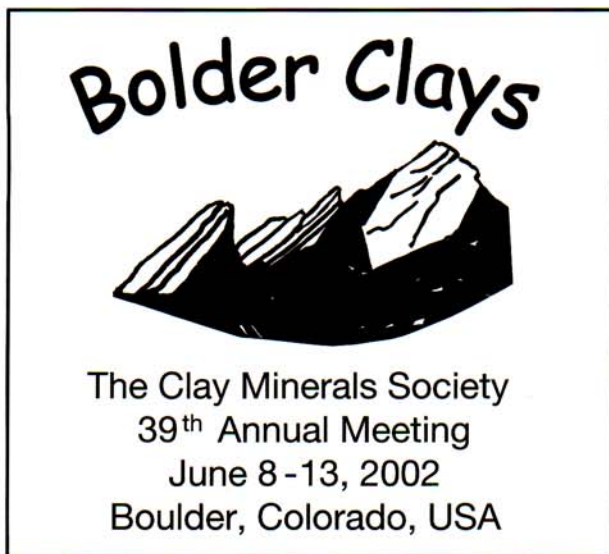
Fax \_\_\_\_\_                      Electronic mail \_\_\_\_\_

Subscribing Member*	\$60.00 _____	For calendar year(s): _____ through _____
Subscribing Student Member**	\$15.00 _____	<i>If no year is indicated, your membership will be recorded for the current year if you join January – September. If you join in October, November, or December, membership is recorded for the following year.</i>
Non-subscribing Member	\$30.00 _____	

\*Dues will cover the calendar year indicated, beginning January 1.

\*\***Student applications must be countersigned by student's advisor.**

Please make checks payable to *The Clay Minerals Society*. Checks must be in U.S. dollars and drawn on a U.S. bank. Visa, Discover, MasterCard or American Express may also be used. Please include card number and expiration date.



**Workshop:**  
**Teaching Clay Science**  
Saturday, June 8  
Audrey Rule & Stephen Guggenheim

**Field Trip:**  
**Clays and the Front Range**  
Thursday, June 13  
Dan Kile

**Symposia:**  
Clay Membrane Processes  
Computational and Experimental Chemistry of Nanomaterials in Aqueous Systems  
Interactions of Microbes with Clay Minerals  
Isotopic Tracing and Dating of Clay Mineral Processes in Diverse Crustal Environments  
Mineralogy and Petrology of Mudrocks: Geological and Industrial Applications  
Structure, Crystal Chemistry, and Surface Reactivity of Environmental Minerals

**Meeting Chairs**  
Kathryn Nagy 303-492-6187 (phone); 303-492-2602 (fax); kathryn.nagy@colorado.edu  
Dennis Eberl 303-541-3028 (phone); 303-447-2505 (fax); ddeberl@usgs.gov  
Alex Blum 303-541-3027 (phone); 303-447-2505 (fax); aeblum@usgs.gov

**Sponsors**  
Department of Geological Sciences, University of Colorado  
Division of Water Resources, U. S. Geological Survey

<http://www.colorado.edu/geolsci/cms/>



**The Clay Minerals Society**  
**P. O. Box 460130**  
**Aurora, Colorado 80046-0130**  
**USA**