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The Clay Minerals Society

SOCIETY COUNCIL FOR 2006–2007

The Executive of The Clay Minerals Society for 2006–2007 comprises

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The council members are James Amonette, Steve Hillier, Heather Dion, Christopher Breen, James Kubicki, Patricia Maurice, Victoria Hover, Richard Lahann, Douglas McCarty, Sridhar Komameni, Lynda Williams, and Michael Velbel.

FROM THE TREASURER



Andrew Thomas

Howdy! It has been my pleasure to be the treasurer of The Clay Minerals Society, and I am now in my fifth and transition year. Many consider treasuring to be a task fraught with concern, adding machines, and tax forms. In fact, the position of CMS treasurer is rather one of horizon-viewing, and involves financial oversight and guidance rather than bookkeeping. I receive valuable assistance from the CMS Finance and Budget Subcommittee, currently chaired by Reed Glassman and chaired in the past by Richard Brown.

Our income continues to meet expenses through a varied set of income streams. Member dues and institutional subscriptions make up over 60% of the Society's income, and these traditional sources have been with us since the beginning. The Society has many more varieties of expenses than it does sources of income. Though this sometimes causes headaches, it is reassuring that we can afford to maintain our Student Grants Program, to support publication of the Short Course Notes volumes, and to engage in projects such as digitizing the entire CCM archive, for example. The CMS spends its money judiciously, and with continued careful management, we look forward to many more years of working with and for the clay community.

One of the income streams for the CMS is the Source Clays Repository (www.clays.org/sourceclays/SourceClays.html), located near Purdue University and ably run by Cliff Johnston and Darrell Schulze, with help from G.S. Premachandra. These Source Clays and their documentation in the CCM Source Clay Volume contribute to the greater body of phyllosilicate knowledge and are a well-characterized set of materials, ready for further research projects. Most laboratories consider their standards collection incomplete without the Source Clays, so thank you all for that.

Our Society's masthead is our journal, *Clays and Clay Minerals*. Producing a journal of this caliber requires money, yet through the diligent efforts of Derek Bain and Kevin Murphy, clever measures to reduce cost and



OBITUARY – VERNON JAMES HURST

Vernon Hurst, 83, Research Professor Emeritus in the Department of Geology at the University of Georgia at Athens (UGA), died on July 28, 2006.

Dr. Hurst was born on July 18, 1923, in Glenmore, Georgia. A member of the 97th U.S. Infantry, Hurst served in both the combat

European theatre and during the occupation of Japan. Following World War II, Hurst received his BSc degree from the University of Georgia and MS from Emory University. Hurst worked with Ernst Cloos, as well as with Hatton Yoder at the Geophysical Laboratory of the Carnegie Institution to earn his PhD in geology from the Johns Hopkins University in high-P-T hydrothermal mineralogy. He founded the Geology Department at UGA in 1965 and served as department head for eight years and chairman of the Physical Sciences Division for four years. Hurst held a University Research Professorship for 22 years, trained 9 PhD and 26 MS students, and published over 150 scientific papers.

An early proponent of transmission electron microscopy, Hurst studied mineral weathering and crystal growth, incorporating fundamental research findings into such economic applications as improved clay mineral beneficiation via selective flocculation and magnetic separation. In addition to basic and applied mineralogical research, Hurst performed extensive fieldwork and helped pioneer geologic mapping of highly saprolitized terrains. During his long career, he published many details on the stratigraphy and mineralogy of Georgia's Cretaceous and Tertiary sediments and contributed significantly to our understanding of the role of microbial processes and the origin of Georgia's world-famous soft and hard kaolins. Hurst was first to recognize classic Barrovian metamorphism in Georgia and published geologic maps of twelve counties. He also published on the gold districts and talc deposits in Georgia. He was a 50-year fellow of the Geological Society of America and the Mineralogical Society of America. He was also a member of Sigma Xi and Phi Kappa Phi. The Clay Minerals Society, in recognition of a lifetime of scientific achievements, selected him as a Pioneer in Clay Science Lecturer in 2003.

W.W. Barker

maintain quality have been found continually. I am pleased to say that today *Clays and Clay Minerals* costs ~95% of what it cost to produce in 2000. Considering our more colourful format and five years of inflation, that is quite a feat.

Our society office recently moved from Aurora, Colorado, to Chantilly, Virginia, and is now run by Alex Speer and Michelle Johnson. The CMS Executive Committee feels that this transition, which saves us money, will probably also pay longer-haul dividends in terms of membership and new ideas. We constantly seek new ideas regarding finance and welcome feedback from any member regarding our financial process, examined each year at the CMS annual meeting.

Andrew Thomas, Treasurer
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CMS PEOPLE IN THE NEWS

Robert J. Reynolds Jr. Research Award to Deb Jaisi

The Robert J. Reynolds Jr. Research Award is an annual grant made for the best proposal for student research. This year's grant went to Deb Jaisi from Miami University, Ohio. Deb's work is described in the

paragraph below. The Society is pleased to be able to help further Deb's research.

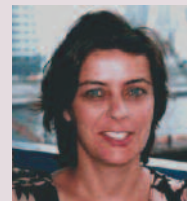
^{99}Tc has been released into the environment during weapon testing and waste disposal. The long half-life (2.13×10^5 years), high mobility (as stable TcO_4^-), and subsequent uptake into the food chain cause Tc(VII) to be a significant contaminant and hence a threat to our society. As it is now realized that physical (pump and treat), chemical (adsorption, ion-exchange), and biological (enzymatic reduction) methods are inappropriate for the long-term containment of the contaminant, the scientific communities are increasingly concerned about finding reliable alternatives. Clay minerals, the foe in existing remediation practices, can be turned into friend by reducing its Fe(III) to Fe(II) by chemical or biological means. The multifaceted Fe(II) (on variably charged sites, exchange and structural sites) in reduced clay is very good at reducing Tc(VII) to Tc(IV) and hence immobilizing Tc in groundwater and soils. The increased charge due to Fe(III) reduction in clays promotes accelerated aggregation of clay particles and hence provides an effective means for in situ containment of reduced Tc(IV).

CMS Student Research Grant to Pankaj Kulshrestha

A CMS student research grant was awarded to Pankaj Kulshrestha, from the State University of New York at Buffalo for his project on the development of nanocomposites of titanium dioxide and

silicate particles as photocatalytic green oxidants for the mineralization of methyl *tertiary*-butyl ether.

Methyl *tertiary*-butyl ether (MTBE) has been used as a gasoline additive in the United States since the late 1970s when it was introduced as a means of maintaining adequate octane ratings during the phase-out of alkyl lead additives. By 2000, MTBE had become the fourth highest organic chemical carcinogen, with an aggregate production of ~60 million metric tonnes. MTBE has a solubility exceeding 5000 mg/L at room temperature, making it very mobile in groundwater systems, and is the second most frequently detected compound after chloroform in groundwater, surface water, and storm water. MTBE is regarded as recalcitrant because it is not biodegradable in water, and there are no widely accepted estimates of its half-life. Stable nanocomposites of titanium dioxide and silicate particles could be used in the photocatalytic mineralization of MTBE. These nanocomposites have large surface areas because of the introduction of surfactants in their synthesis. With metal and non-metal doping, these nanocomposites could use light in the visible range of the solar spectrum to effectively mineralize MTBE in the aqueous environment.

Jill Banfield elected to National Academy of Science

For 2006, the U.S. National Academy of Sciences announced the election of 72 new members and 18 foreign associates from 16 countries in recognition of their distinguished and continuing achievements in original research.

Included in the election was Prof. Jill Banfield, CMS member. "Election to the Academy is considered one of the highest honors in American science and engineering," said Ralph Cicerone, who became president of the Academy in 2005. Barbara Schaal, an NAS member since 1999 who was elected last year as the Academy's first woman vice president, noted, "This year's new class represents outstanding accomplishment in a wide variety of disciplines." The new elections bring the total number of active members to 2013.

In 2000 Banfield received the Marion L. and Christie M. Jackson Mid-Career Clay Scientist Award of the Clay Minerals Society and in 2005 she delivered the Pioneer Lecture at the CMS annual meeting.

Jill's research involves study of the interactions between microorganisms and minerals and the impact of microorganisms on mineral weathering and crystal growth. Specific topics of current interest include microbial controls on silicate, phosphate, and sulfide mineral dissolution reactions, the roles of microorganisms in geochemical cycling of nutrients, and metals in the environment. Approaches include application of molecular biological (including genomic) analyses to understand the biochemical pathways that underpin biogeochemical processes. She is also interested in microbial evolution and the mechanisms by which microorganisms adapt to environmental challenges. Other current research focuses on the thermodynamics and kinetic behavior of nanocrystalline materials produced by biomineralization and mineral weathering (structure, phase stability, crystal growth kinetics, morphology evolution, and microstructure development).

Enchanted Clays -The 44th Annual Meeting of the Clay Minerals Society will be held June 2007 in beautiful and historic Santa Fe, New Mexico, USA. Santa Fe provides an idyllic location in the southwestern United States for attendees to enjoy technical and social sessions while soaking up the diverse culture and wonderful climate of New Mexico-The Land of Enchantment. We encourage you to attend, to share knowledge and ideas, to benefit from technical interactions, and to relax in the wonderful historic and enchanted environs of Santa Fe. www.sandia.gov/clay

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