

The Clay Minerals Society

www.clays.org

THE PRESIDENT'S CORNER



W. Crawford Elliott

The CMS is eagerly anticipating the Euroclay Meeting in Edinburgh, Scotland. The CMS Executive Committee just convened its long-term-planning meeting in Chantilly, Virginia, in mid-January. Michael Velbel is our acting editor-in-chief while our editor, Joe Stucki, is on professional leave. If you have not picked up *Clays and Clay Minerals* for a while, then please do so. The journal continues to publish high-quality work in the study of clays in many disciplines. We continue to make progress on pushing out our knowledge

via a number of fronts: our e-newsletter, Clay Talk, and conventional means. Look for tweets and other types of communications soon.

There are two pieces of news of particular importance to the *Elements* family. The CMS is instituting the Blair F. Jones and Jane Flinn Award. This award will be given each year to the student who writes the best travel proposal. The award was made possible by Prof. Jane Flinn and honors Dr. Blair Jones (USGS-Reston). Blair was a force in the CMS, a gracious person, and certainly well known in the *Elements* family. We are looking forward to the first award, which will be made at the forthcoming CMS Annual Meeting in Scotland.

A second important piece of news is that the CMS Source Clay Repository found a replacement for our dwindling supply of the popular Wyoming Bentonite Source Clay. We thank our friends at Halliburton Corporation for donating the Wyoming Bentonite as our new Wyoming Bentonite Source Clay. This new well-characterized bentonite will soon be available to support research and instructional activities. The announcement of a new Georgia Kaolin is forthcoming. More information about the Source Clay Repository can be found at <http://www.clays.org/SOURCE%20CLAYS/SCBackground.html>

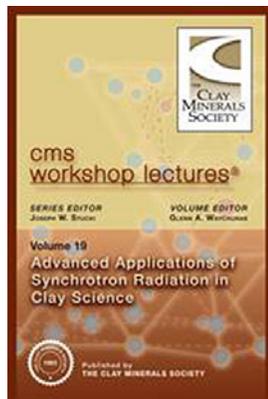
The source clays and our student awards are two activities that add considerable value to CMS membership. These activities highlight our service to the research community and our support of the next generation of scientists interested in the study of clays. Please sign on for Clay Talk or to receive the CMS e-newsletter. We extend our best wishes to all our friends in the *Elements* family.

Sincerely,

W. Crawford Elliott, President
The Clay Minerals Society
wcelliott@gsu.edu

ADVANCED APPLICATIONS OF SYNCHROTRON RADIATION IN CLAY SCIENCE

Have you bought your copy of the latest volume in the CMS Workshop Lecture Series? Do so now at <https://cms.clays.org/publications.html>.



STUDENT RESEARCH SPOTLIGHT

Congratulations to **Mike Bonomo** (Stanford University) for winning a CMS Student Research Grant and to **Tae-Hee Koo** (Yonsei University) and **Luke Morgan** (Texas A&M) for winning a CMS Student Travel Grant Award!



Michael Bonomo is adapting chemical and mineralogical analyses of clay-bearing soils, sediments, and archaeological ceramics to the study of **ancient craft production systems in Late Neolithic/Early Bronze Age China**. In particular, Mike is using X-ray-fluorescence to find the source of ancient ceramics in the Yiluo basin (Henan Province) and is using X-ray diffraction

(on temperature-dependent thermal decomposition and metamorphic products of precursor clay minerals in fired ceramic assemblages) to gain the quantitative information necessary to assess how ancient Chinese cultures actually organized the production of their ceramic wares. By applying clay science methodologies, Mike hopes to refine existing models that link changes in craft production systems by China's earliest known state-level societies to changes in social complexity.



Tae-Hee Koo's research focuses on the **redox cycle of iron and its effects on structural and chemical transformations in Fe-rich smectite**, especially the process of illitization. Tae-Hee carried out long-term (up to 12 months) incubation experiments to examine smectite alteration during bioreduction. She characterized illitization by monitoring the progressive increase

in K concentration and the Al/Si ratio in the packets of 10-Å layers using transmission electron microscopy with energy dispersive X-ray spectroscopy. Tae-Hee found that the structural and chemical changes associated with smectite bioreduction show a degree of irreversibility upon reoxidation. This suggests that illitization was in progress at the nanoscale during her experiments. These results provide insight into a possible mechanism for the formation of K-nontronite, a mineral frequently observed in deep seafloor sediment.



Luke Morgan's research focuses on **heavy metal and iron oxide interactions in acid mine drainage in a limestone environment**. The weathering of mine tailings can create acidic conditions and, consequently, leach heavy metals. Neutralizing such acidity is a common intervention, but the study site in Zimapán, Mexico, possesses acidity that persists even in a carbonate-rich area. Luke is examining phase transformations and oxidation state variability in different weathering stages of collected mine tailings using X-ray diffraction, electron microscopy, and X-ray absorption near edge spectroscopy to understand the role of nano-phase iron oxides in immobilizing harmful metals. His results indicate that arsenic and lead are highly concentrated in the sampled tailings and that these metals are associated with the minerals plumbojarosite, galena, scorodite, and arsenopyrite. Computer-aided geochemical modeling will be used to strengthen the laboratory experimental results. An improved understanding of the main geochemical pathways is essential for designing effective remediation strategies.



Association Internationale pour l'étude des Argiles

www.aipea.org



RECENT PAPERS IN CLAYS AND CLAY MINERALS

- Synthesis and characterization of zeolite NaY using kaolin with different synthetic methods. *Tavasolia M, Kazemianb H, Sadjadic S, Tamizifard M*
- An integrated methodological approach for source clay determination of ancient ceramics: the case of Aegina Island, Greece. *Christidis GE, Shriner CM, Murray HH*
- Neofomed mineral phases during clay ceramic firing. *El Ouahabi M, Daoudi L, Hatert F, Fagel N*
- An integrated experimental system for solid-gas-liquid environmental cells. *Guggenheim S, Koster van Groos AF*
- Mineralogical and geochemical characteristics and genesis of the Güzelyurt alunite-bearing kaolinite deposit within the late Miocene Gödeles ignimbrite, central Anatolia, Turkey. *Kadir S, Külah T, Eren M, Önalgil N, Gürel A*
- Modification of montmorillonite with alkyl silanes and fluorosurfactant for clay/fluoroelastomer (FKM) nanocomposites. *Khajehpour M, Gelves GA, Sundararaj U*
- Adsorption of organic compounds found in human sebum on Latvian illitic, kaolinitic and chloritic clays. *Puraa A, Dusenkovaa I, Malersa J*

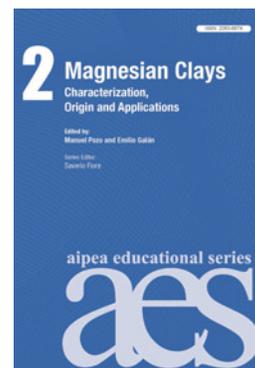


Saverio Fiore

Announcing the second volume in the AIPEA Educational Series! When the AIPEA General Meeting took place on 11 July 2013, in Rio de Janeiro (Brazil), I had a dream: to publish a second volume in the AIPEA Educational Series (AES). The first volume had dealt with the interstratified clay minerals. Now, thanks to the hard work of the authors, editors and reviewers, my dream has turned into reality. *Magnesian Clays: Characterization, Origin and Applications* is ready for reading!

The book, edited by Manuel Pozo and Emilio Galán, was prepared in conjunction with the popular second running of the AIPEA School for Young Scientists (ASYS), convened 6–7 July 2013 at the University of Rio de Janeiro, by Manuel Pozo (Universidad Autonoma de Madrid, Spain). Young and not-so-young clay scientists actively participated in ASYS, and there was a “fertile cultural substratum” for discussing knowledge, old and new, on the characterization, origin and applications of magnesian clays.

The seven chapters of the new book follow the didactic course structure of the 2nd ASYS and is supplemented by an extensive reference list. The chapters are authored by Patricia Aparicio (Spain), José P. Calvo (Spain), Emilio Galán (Spain), Stephen Guggenheim (USA), Manuel Pozo (Spain), Julio Santarén (Spain), and Nicholas J. Tosca (United Kingdom). I am certain that this book will revitalize the scientific and technological interest in such an important group of clay minerals. Chapter 1 deals with the crystal chemistry and structure of Mg-rich clay minerals. Chapter 2 describes various identification and characterization analytical techniques. Chapters 3 and 5 describe the geological occurrences of Mg-clays in sedimentary and nonsedimentary environments. Chapter 4 details the origin and mineralogical aspects of Mg-rich clay minerals. Chapter 6 discusses the geochemical parameters governing Mg-clay formation. And finally, Chapter 7 illustrates the industrial applications of the magnesian clays. I must point out that there are plenty of important questions left unanswered. The interested reader should consider these as an opportunity to continue researching these fascinating minerals.



Volume 2 (2015): *Magnesian Clays: Characterization, Origin and Applications*
 Edited by Manuel Pozo and Emilio Galán
 Edited by Saverio Fiore
 aipea educational series
 aes
 Volume 2 (2015): *Magnesian Clays: Characterization, Origin and Applications*
 Manuel Pozo and Emilio Galán, editors
 xii + 380 pages
 ISBN: 978-88-7522-093-8
 ISSN: 2283-687X
 Now available for purchase at www.aipea.org

AES – 1st VOLUME

The electronic copy of the 1st volume of AES, “*Interstratified Clay Minerals: Origin, Characterization and Geochemical Significance*” (2nd ed., ISSN: 2283-687X), is available for free download. Just send a request to info@aipea.org.

AIPEA TALK

Are you interested in getting news from AIPEA? Please send a message to talk.subscribe@aipea.org. You may remove your e-mail address at any time by sending a request to talk.unsubscribe@aipea.org.

NEWSLETTER

January 2015 saw the launch of the new annual AIPEA Newsletter. You can download it, along with previous issues, from the AIPEA website (www.aipea.org).

Saverio Fiore
AIPEA President