The Clay Minerals Society

www.clays.org

THE PRESIDENT'S CORNER

David Laird

Oil has been king for 100 years. The one trillion barrels of oil that we have pumped out of the ground during that time have fueled unparalled economic growth around the world. Yet, our economic dependence on fossil fuels has also caused an unprecedented increase in the concentration of greenhouse gases in the atmosphere.

We have used only about 25% of the recoverable conventional oil on our planet; however, we took the easy oil first. In the early years, for every 100 units of energy pumped out of the ground only 2 or 3 units of energy were needed to drill the well and to pump, transport, and refine the petroleum. Over time, oil energy efficiency has gradually declined but is still a remarkably high 92%. The remaining conventional oil, however, will be increasingly expensive and difficult and inefficient to extract. Thus, whether we like it or not, we are on the cusp of a global energy transition.

The impending decline of conventional oil has sparked interest in unconventional oil and gas resources. Bitumen is being surface mined from the oil sands in Alberta, natural gas is being recovered from the Marcellus Shale in Pennsylvania, oil is being extracted from the Bakken Shale in North Dakota, and there is growing interest in the massive oil shale deposits in Colorado, Utah, and Wyoming (not to mention similar organic-rich shales in Australia, Canada, China, South Africa, Scotland, and many other places around the world).

Necessity is the mother of invention. The problem with extracting hydrocarbons from shales is that shales are fine-grained sedimentary rocks with low porosity and even lower permeability. Until recently hydrocarbons in shales were only accessible through surface mining and expensive, energy-intensive postprocessing of the shale. However, within the last five years two key technology developments—horizontal drilling and hydraulic fracturing—have suddenly opened the door to in situ recovery of hydrocarbons from organic-rich shales.

Clay mineralogy is inherently a diverse and interdisciplinary science, but the core of our discipline is the pursuit of knowledge and understanding about the mineralogy, structure, physics, chemistry, and function of clay minerals and colloid materials. Understanding the complex and often nonlinear feedback interactions between clay minerals and inorganic cations, water, and organic molecules could well make the difference between a productive and a nonproductive well in an organic-rich shale.

These are the best of times and the worst of times. Renewed interest in shale-derived oil and natural gas could help revive our sluggish economy while breathing new life and much needed research funds into the science of clay mineralogy. But nagging me is a profound ethical dilemma: Climate change is a real and rapidly growing threat to humanity. The development of unconventional fossil fuel resources will surely accelerate and potentially exacerbate global climate change. Clay mineralogists have the tools and knowledge to significantly enhance hydrocarbon recovery form organic-rich shales, but should we?

"Shales and Imposters" will be the theme of the 49th annual meeting of the Clay Minerals Society, which will be held July 7–12, 2012 in Golden, Colorado. We will explore the geologic setting, physics, chemistry, and mineralogy of the organic-rich shales of Colorado.

David Laird (dalaird@iastate.edu)
President, The Clay Minerals Society

STUDENT RESEARCH SPOTLIGHT

Congratulations to **Jing Zhang** for winning a CMS Student Research Grant Award. Jing is a PhD student in geology at Miami University (Ohio), working with Professor Hailiang Dong. Her research focuses on the role of microorganisms in the preservation of buried organic matter in clay minerals. Specifically, her interest is the effect of bacterial functional groups on microbe–clay interactions.

UPCOMING ARTICLES IN *CLAYS AND CLAY MINERALS*

Volume 59, number 4 (2011) contains the following articles on extraterrestrial clays:

- Terrestrial perspective on authigenic clay mineral production in ancient Martian lakes – Thomas F. Bristow and Ralph E. Milliken
- Evidence for low-grade metamorphism, hydrothermal alteration, and diagenesis on Mars from phyllosilicate mineral assemblages – Bethany L. Ehlmann, John F. Mustard, Roger N. Clark, Gregg A. Swayze, and Scott L. Murchie
- Fine-grained serpentine in CM2 carbonaceous chondrites and its implications for the extent of aqueous alteration on the parent body: A review – Michael A. Velbel and Eric E. Palmer
- Reflectance spectroscopy of beidellites and their importance for Mars – Janice L. Bishop, Will P. Gates, Heather D. Makarewicz, Nancy K. McKeown, and Takahiro Hiroi
- Interpretation of reflectance spectra of clay mineral-silica mixtures: implications for Martian clay mineralogy at Mawrth Vallis – Nancy K. McKeown, Janice L. Bishop, Javier Cuadros, Stephen Hillier, Elena Amador, Heather D. Makarewicz, Mario Parente, and Eli A. Silver.

NOMINATIONS SOUGHT FOR CMS AWARDS

The CMS gives four awards at its annual meeting. See the CMS website for a description of the awards and an overview of the nomination process: www.clays.org. **The nomination deadline for the 2012 awards is March 30, 2012.**

2012 CMS ANNUAL MEETING

July 7–12, 2012, Golden, Colorado, USA

Meeting theme: **"Shales and Imposters"**

Workshop (July 7) and field trip (July 8) on organic-rich rocks

Technical sessions: July 9–11

Abstract deadline: April 30

Early registration deadline: May 11

More details at www.clays.org