



THE OHIO GEOLOGICAL SOCIETY

The Newsletter of the Ohio Geological Society

February/March 2004

President's Column

2003-2004 Officers

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2003 was a great year for the Ohio Geological Society, we saw many great speakers from as far away as Canada, held some exciting and very pertinent workshops, and saw the reinstatement of some great events such as the Annual Golf Outing. We plan to exceed this in 2004!

The 2003 year was capped off by a great 6th Annual Winter Gala on Friday, the 23rd of January. The OGS met at the Ramada Plaza Hotel, and everyone got to enjoy a wonderful evening with live entertainment despite the treacherous weather conditions that prevailed. The evening was made even more enjoyable by generous contributions from our sponsors, and everyone enjoyed door prizes ranging from free hotel accommodations, libations, coolers, hats, shirts, field and office equipment, and the OGS anthology! Our many thanks go out to our sponsors this year who were:

Sponsors

Appalachian Geophysical Services
Elite Seismic Processing, Inc.
Ergon Oil Purchasing, Inc.
Knox Energy, Inc.
Murphy Oil Company, Inc.
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Door Prizes

Ergon Oil Purchasing, Inc.
John L. Forman
Kilbarger Oil Field Service
Ohio Geological Society
Ohio Geological Survey
Professional Service Industries, Inc.
Ramada Plaza Hotel
Superior Well Services

We will soon have a new Home! Prepare yourselves for the new OGS website, which will no longer be under the Geological Survey umbrella. This will allow us to update and post items even faster than we have before! Unfortunately, it will also allow us to post the occasional less than flattering picture of OGS members in action. The new website should be up and running very shortly.

Our schedule of speakers and events is shaping up for the New Year as well. Dr. Lee Avery, of the West Virginia Geological Survey, spoke to us for our February luncheon meeting. We had a great turnout for the lunch and meeting and hope to incorporate more luncheons in our monthly meeting lineup.

We will be hosting our AAPG Distinguished Lecturer Linda Bonnell on March 10, at 4 pm, before the OOGA Legislative Reception at the Adam's Mark in Columbus. We have many interesting events and speakers planned for this year. I look forward to you joining us at some of our upcoming events. Hope to see you there!

2004 Calendar Year Membership Dues are due!

If you need to pay your dues send your check to P.O. Box 14304, Columbus, OH 43214. A membership application can be downloaded from our website at www.ohiodnr.com/geosurvey/ohgeosoc/ohgeosoc.htm.

If you are not sure whether or not you have paid, don't worry, we will be contacting you soon via e-mail/mail.

NEXT OGS MEETING Wednesday, March 10, at 4:00 p.m. before the OOGA Legislative Reception at the Adam's Mark Hotel in Columbus, 50 North Third Street, Downtown Columbus.

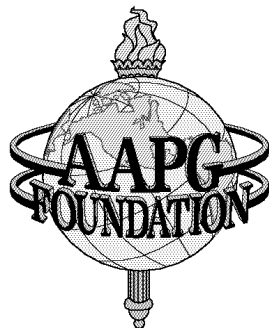
DIRECTIONS

From the North: I-71 South. Exit 670 West to Third Street. Follow Third Street (South) until intersection of Third and Gay Street. Hotel will be on the left corner of the intersection.

From the South: I-71 North. Exit at Fourth Street (North) into downtown. Turn left at Gay Street. Follow one block, turn left on Third Street. Hotel is at the corner of Third and Gay Street.

From the East: I-70 West to exit at Fourth Street. Follow Fourth Street (North) into downtown. Turn left at Gay Street. Follow one block, turn left on Third Street. Hotel is at the corner of Third and Gay Street.

From the West: I-70 East to exit at Fourth Street. Follow Fourth Street (North) into downtown. Turn left at Gay Street. Follow one block, turn left at Third Street. Hotel is at the corner of Third and Gay Street.



2003-2004 AAPG Distinguished Lecture

Abstract

LINDA M. BONNELL

Geocosm LLC Austin, TX

Sealed, Bridged or Open – A New Theory for Quartz Cementation in Fractures

Because fracture networks play a key role in determining the economic viability of tight gas sandstones, assessment of fracture properties should be an integral part of reservoir quality evaluation of these sandstones. Fracture fluid flow properties are a function of aperture and length distributions, connectivity, clustering, and orientations, as well as the extent to which fractures have been filled with cements. By studying the link between diagenesis and fractures, a more accurate prediction of fracture attributes can be achieved. In this presentation, I review our on-going efforts to develop predictive models of the interaction between quartz cementation and fractures.

Quartz cementation influences fracture systems by affecting the rock mechanical properties at the time of fracture formation, which, in turn, influences fracture aperture distributions and clustering. Modeling the quartz cementation history provides a means to understand the evolution of fracture characteristics when used in concert with basin and geomechanical models. In this presentation, we reconstruct the interaction between quartz cementation and fracture development in the Travis Peak Formation of East Texas. The quartz cement model reproduces the amount of quartz cement in the unfractured portions of the sandstones and allows us to predict the volume of intergranular cements and porosity at the time of fracture formation as constrained by fluid inclusion analyses of quartz cement in fractures combined with thermal reconstructions. Both intergranular cements and porosity are key controls on subcritical crack index, a mechanical rock property that influences fracture characteristics (Olson et al., 2001).

Unraveling the pattern of quartz cement within fractures has benefited greatly from recent advances in false color SEM/cathodoluminescence imaging (Milliken and Laubach, 2000). Quartz cement in fractures can have a wide range of morphologies including, 1) overgrowths that completely fill the fracture, 2) quartz “bridges” that span an otherwise open fracture, and, 3) euhedral quartz crystals lining the edge of the fracture. Not surprisingly, these different quartz cement morphologies exert a large influence on the fracture fluid flow and mechanical properties. Until now, there have been no conceptual models to explain the different quartz cement morphologies observed in fractures. Recent work by Geocosm and the Bureau of Economic Geology has led to the development of a 2D model that links cement morphology to the timing and rate of fracture opening as well as to the sandstone texture, composition, and thermal history. The model explicitly considers the influence of fractures on geometry of nucleation surface area in intergranular and fracture pores. The modeled surface area evolves in response to both the cementation process (which tends to reduce the surface area) and the fracture process (which tends to increase the surface area). The model also accounts for the dependency of precipitation rate on crystallographic orientation. Preliminary model results suggest that quartz cement morphology in trans-granular fractures is a function of the sandstone composition, texture, crystallographic orientation of quartz grains, temperature history and the opening rate and frequency of fracturing. If these preliminary results hold up under further testing, they may provide valuable insights into both the timing and the rate of fracture opening.

*Co-authors: Robert H. Lander, Stephen E. Laubach, Julia F.W. Gale

Ohio Department of Natural Resources

BOB TAFT, GOVERNOR

SAMUEL W. SPECK, DIRECTOR



News Release
FOR IMMEDIATE RELEASE

February 2, 2004

STATE OF OHIO ABANDONED UNDERGROUND MINE LOCATOR WEBSITE

COLUMBUS, OH – A new State of Ohio Website ([http:// www.ohiodnr.com/geosurvey](http://www.ohiodnr.com/geosurvey), then click on "Interactive Maps") that allows the user to view locations of abandoned underground mines in Ohio is now available from the Ohio Department of Natural Resources (ODNR). Homeowners, realtors, geotechnical consultants, land-use planners, and others interested in abandoned underground mines and mine subsidence will find many uses for this Website managed by the ODNR, Division of Geological Survey.

Ohio has a history of mining underground that dates to 1800 (pre-Statehood). Commodities mined underground have included coal, clay, limestone, gypsum, conglomerate, and, in one unusual instance, even sand and gravel. While underground mining has occurred across the state, the vast majority of underground mining has occurred in the coal and clay producing regions of eastern Ohio. The heyday of underground mining activity occurred in the late 1800s/early 1900s when more than 1,110 underground mines were in operation.

Subsidence, in the context of underground mining, is the lowering of the Earth's surface due to collapse of bedrock and unconsolidated materials (sand, gravel, silt, and clay) into underground mined voids. Mine subsidence can damage the foundations of homes, buildings and roads; disrupt underground utilities, and can be a potential risk to human life. An unfortunate consequence of more than two hundred years of mining underground is mine subsidence—a geologic hazard that can strike with little or no warning and can result in very costly property damage.

Abandoned underground mines are found in 44 counties in Ohio. The Division of Geological Survey has information for 6,675 abandoned underground mines in Ohio, including detailed abandonment maps (scale: 1 inch equals 400 feet) for 4,346 mines, most of which are coal mines. The Division's extensive database on abandoned underground mines has been combined into an Abandoned Underground Mine (AUM) Geographic Information System (GIS). Abandoned-underground-mine information for a given area in the AUM GIS can be accessed by either entering a street address for the area of interest or by zooming in on the area and clicking on abandoned-underground-mine features.

The overall AUM GIS has been made possible by cooperative funding from the Ohio Department of Transportation. This Web application has been funded by and the Ohio Mine Subsidence Insurance Underwriting Association and developed in cooperation with the ODNR, Division of Mineral Resources Management.

For further information on this press release, contact:

Jane Beathard, ODNR, Office of Communications
(614) 265-6860

-or-

Doug Crowell, ODNR, Division of Geological Survey
(614) 265-6594

The AAPG has returned election results: 2003-2006

Delegate is : (drumroll please....) Steve Zody

Alternate is : Gregory Nadon

Delegates and alternates take office on July 1st, they will receive a mailing from the AAPG regarding duties and responsibilities.

Job requirements for geologist position

A top independent natural gas producer located in Northwest Pa is looking to expand its operation with the addition of 1-2 geologists. Some specifics of the position are:

- Extensive experience in upper Devonian structures or formations required--for experienced geologist
- Must be willing to live in Northwestern Pa
- Salary commensurate with experience
- Great communications skills
- Excellent organizational skills
- "Entry-level" position also open
- Excellent computer skills
- Must want to "make a difference" and look at this position as a "career move"

My client has commissioned Soltys and Associates to do the preliminary search for these positions. Please respond to:

Louis E. Soltys
Soltys and Associates
P. O. Box 483
Latrobe, Pa 15650

Phone: 724-537-5335 / Fax: 724-537-8218 / E-mail: lousoltys@aol.com

CALENDAR

For information regarding OGS meetings contact Nicole Venteris at
knoxnicole@yahoo.com / 740-927-6731.

- March 10 Dr. Linda Bonnell, AAPG Distinguished Lecturer, Adam's Mark Hotel, 4 p.m.
Sealed, Bridged or Open - A New Theory of Quartz Cementation in Fractures
- March 10-12 OOGA Winter Meeting, Adam's Mark Hotel
- April TBA OGS Joint Meeting with AIPG
- May 27 PTTC Horizontal Drilling Workshop, Salt Fork Resort, more information to follow.

Other meetings or events of note (from the PTTC website <http://karl.nrcce.wvu.edu/calander>).

- March 25-27 Northeastern (39th) and Southeastern (53rd) Sections GSA Annual Meeting, Hilton McLean Tysons Corner, VA
- April 15-16 The North American Coalbed Methane Forum, Inc. -- Spring Session Holiday Inn - Meadowlands, Washington, PA
- April 18-21 AAPG Annual Meeting, Dallas Convention Center, Dallas, TX
- October 3-6 AAPG Eastern Section Meeting, Ramada Plaza Hotel, Columbus, OH