MGS Luncheon Meeting

Monday, November 14th

11:45 am – LOCATION UPDATE:

★McCormick Café Conference Center★

2419 Montana Ave, Billings, MT 59101

Please join us for lunch ($13) and the talk (no charge)

RSVP – montanageologicalsociety@gmail.com , or 406-259-8790
An email reminder will be sent 3 days prior to the talk

KITTY MILLIKEN, AAPG DISTINGUISHED LECTURER

Ph.D, University of Texas at Austin
Senior Research Scientist, USGS

Mudrocks (shales, mudstones) at the Scale of Grains and Pores: Current Understanding

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The fine-grained sediments and rocks that constitute most of the sedimentary record have received tremendous research attention in the past decade. This talk reviews some of the technologies that have supported these advances and summarizes current knowledge of the diagenetic processes that drive the evolution of bulk rock properties of mud in the subsurface. Electron microbeam instrumentation has been central to improving our understanding of fine-grained materials. In particular, improvements in resolution offered by field-emission electron guns and advances in sample preparation by various ion-milling techniques have allowed researchers to see tiny grains and pores in unprecedented detail. Grain assemblages in mudrocks vary across a very broad compositional range and the beginning compositions in muds have significant implications for the evolution of properties relevant to reservoir quality in mudrocks. It is now clear that the principal diagenetic processes of sandstones and limestones, compaction and cementation, also operate in mudrocks. Research efforts to quantify the roles of compaction and cementation are central in the quest to refine a predictive understanding of the evolution of mudrock properties in the subsurface.

Biography

Kitty L. Milliken received a B.A. in geology (1975) from Vanderbilt University and M.A. (1977) and Ph.D. (1985) degrees from the University of Texas at Austin. She is now Senior Research Scientist at the Bureau of Economic Geology. Her research focuses on the diagenesis of siliciclastic sediments and the evolution of rock properties in the subsurface. She has authored and co-authored around 90 peer-reviewed papers, over 100 abstracts, and also digital resources for teaching petrography. She served as Associate Editor of the *Journal of Sedimentary Research* (1993-2000) and as Co-Editor (2004-2008). She was elected a Fellow of the Geological Society of America (2008). She has been recognized by the AAPG with the J. Ben Carsey Distinguished Lectureship (2005-2006), the Robert Berg Outstanding Research Award (2015), and the Pratt Award (with co-authors) for best paper in the Bulletin (2015). Her current work is focused on the application of electron microbeam imaging and analysis to interpret chemical and mechanical histories of mudrocks (oil and gas shales).