Monday, November 16, 2009

HGS Joint International and North American
Dinner Meeting

Westchase Hilton • 9999 Westheimer
Poster Judging 4:30-5:30PM
Poster Viewing during Social Hour 5:30-6:30PM

Cost: $28 Preregistered members; $35 non-members & walk-ups

To guarantee a seat, you must pre-register on the HGS website and pre-pay with a credit card.
Pre-registration without payment will not be accepted.
You may still walk up and pay at the door, if extra seats are available.

Jüergen Schieber
Department of Geological Sciences
Indiana University

The Robert E. Sheriff Lecture Series

is sponsored by the University of Houston Department of Geosciences and UH Geoscience Alumni Association (UHGAA) in association with the Houston Geologic Society International Group.

Dr. John F. Casey, Department of Geosciences Chairman, will present an update of activities at UH, in addition to a guest speaker. There will be posters and presentations on current thesis and dissertation research of UH graduate students. Volunteers from the UHGAA judge the student posters.

The Robert E. Sheriff Lecture Series was initiated in 1999 by the University of Houston Geoscience Alumni Association (UHGAA). For the past several years it has been co-sponsored by the International Explorationists Group of the Houston Geological Society. The series honors Dr. Sheriff as an educator, scholar, and a proponent for the geosciences.

Its mission is to:

1. Bring some of the best known geologists and geophysicists in the world to the Houston community in order to share highly relevant ideas to exploration geology and geophysics and,
2. Showcase geoscience activity at the University of Houston.

A full list of the Student Posters will be available at HGS Website.
(Check the HGS Calendar event for the current list of Student Posters.)

Come and meet the next generation of geoscientists from UH!!

Thanks to Swift Energy for their Financial Support

R.E. Sheriff Lecture: Narrative of an Unrepentant Shale Geologist — Why Mudstones have a Key Role in Unlocking Geological History and Understanding the Hydrocarbon System

The study of mudstones has made considerable strides in recent years, aided by detailed outcrop studies, in-depth petrographic studies, and the infusion of experimental data on clay deposition. Instrumentation that has been especially helpful in that regard includes SEM's with high resolution backscatter detectors and the introduction of real time color SEM-CL. Flume studies have shown that deposition of clays from currents is probably common, a finding that will most likely require reassessment of depositional models for mudstones.

In multiple studies shales have shown great facies variability.

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Shale facies can be differentiated on the basis of hand specimen and core descriptions. Their arrangement is ordered and predictable. Through providing information about environment and processes, shale facies analysis also enables shale-based basin analysis. Aside from the secular vector of bioturbation, there seem to be no fundamental differences between shales of different ages.

Sequence Stratigraphy is possible in essentially "pure" shale successions, and distal shales may record substantial stratigraphic gaps due to intermittent erosion. In Devonian black shales of the eastern US a coherent sequence stratigraphic framework has emerged that can be linked to global sea level variations.

Detailed examination of sedimentary features in various source rocks shows that bioturbation in black shales tends to be much more prevalent (though subtle) than previously assumed, and that it is risky to rely on geochemical proxies for identification of water column anoxia. Sedimentological assessment, in combination with detailed petrographic study (Petscope, SEM), reveals many features such as pyrite grains, quartz grains, and carbonate cements that can shed new light on the accumulation history of a shale. Such features may for example signify extreme sediment starvation, reworked horizons, recycling of biogenic opal, and intermittent oxidation (burn-down) of bottom sediments.

Shales are complex rocks, that record an intertwined history of sedimentary processes, sediment-microbe interactions, and multiple overprinted geochemical processes.

Shales are complex rocks, that record an intertwined history of sedimentary processes, sediment-microbe interactions, and multiple overprinted geochemical processes. For these reasons, the study of shales requires an integrated multi-scaled approach. Conclusions reached at the mm and micron scale have to hold up in the face of boundary conditions determined at the outcrop and basin scale. ■

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Figure 1. The current flume lab at Indiana University with two racetrack flumes. Each flume is 10.5m x 3.5 m in size and has a paddle-belt drive. They have been specially designed for experiments with muddy suspensions and avoid the destruction of flocculated materials, a drawback of other recirculating flume designs.

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Biographical Sketch

Professor Schieber is a specialist on shales and publishes extensively on a wide range of topics concerning shales and mudstones. He has been invited to lecture at universities in the US, Canada, Europe and Asia; at research organizations, industry short courses and symposia. His research interests include: Sedimentary Geology and Basin Analysis, Sedimentology of Shales and the Origin of Black Shales, Sediment-hosted Mineral Deposits, Precambrian Sedimentology and Microbial Mats, Geochemistry of Sediments, Planetary Geology and the Sedimentary Geology of Mars. He is a member of the science team for the 2011 Mars Science Lab Mission.

His research is characterized by a holistic approach to shales and consists of an integration of field studies (facies, stratigraphy) and lab studies (thin sections, electron mincroscopy, geochemistry, flume research) in order to understand the various factors that are involved in the formation of shales.

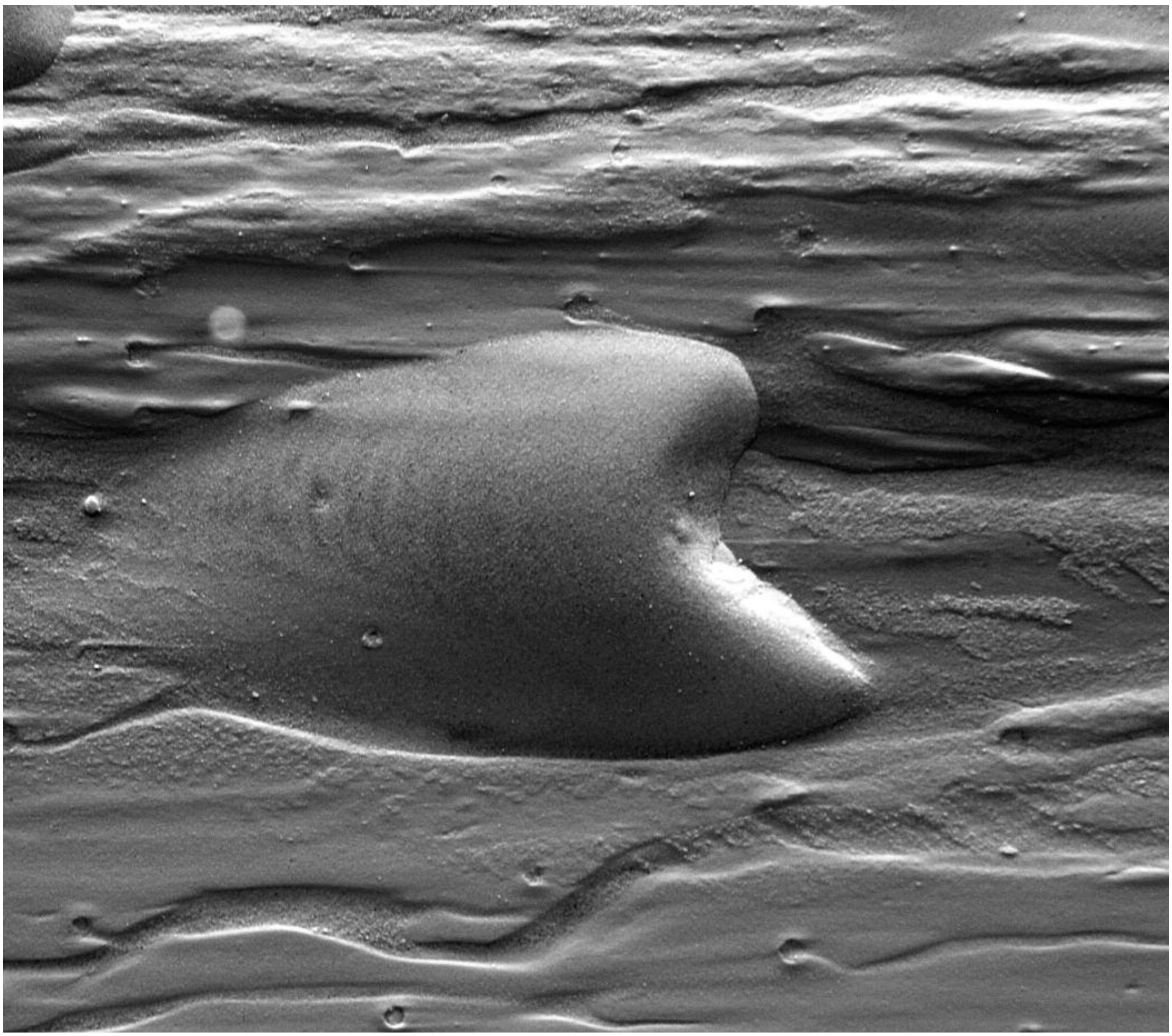

Figure 2. Experiments with our flumes have shown that clays flocculate under a wide range of conditions, and that these floccules travel largely in bedload at flow velocities between 15-35 cm/sand give rise to floccules ripples. Such a ripple can be seen in the center of the image, overlying a partially eroded clay bed from an earlier experiment. Flow is from left to right. The ripple is asymmetrical and has well developed slip face. For further information see SCIENCE, *v. 318, p. 1760-1763 and* GEOLOGY, *v. 37, p. 483-486. The results of our flume research have serious implications for the interpretations of ancient mudstones, in particular with regard to the common assumption that muds can only accumulate in low energy environments.*