



LOS ANGELES BASIN GEOLOGICAL SOCIETY

May 2023 Meeting Announcement

Stratigraphy, Sedimentology and Petrography of the Siliceous Lithofacies in the Upper Modelo Turbidite System, Eastern Ventura Basin, Southern Lake Piru, California – Bedig Charkhutian, CSU, Long Beach, Candidate for a Masters of Science, Geology

Thursday, May 25th, 11:30 start, Signal Hill Petroleum, 2633 Cherry Ave., Signal Hill, Conference Room, 2nd floor

The LABGS Executive Committee and Membership extends their sincere appreciation to Brady Barto and SHP for their support!

Bedig Charkhutian's Abstract & Bio

The Upper Miocene Modelo Formation is a clastic-rich stratigraphic equivalent of the well-studied Monterey Formation, deposited as part of a submarine fan in a tectonically complex bathymetric environment. In the Upper Modelo Formation, Lake Piru area, Eastern Ventura basin, fine-grained sedimentary rocks intercalated with deep-water clastics are abundantly biosiliceous (containing porcelanite, chert and siliceous mudstone) and display unique diatomaceous sedimentary structures. These provide evidence for downslope transport and re-sedimentation of original hemipelagic deposits of near-pure diatomaceous sediment into the overbank-levee setting of the channel-lobe transition environment. With diagenesis, a remarkably cherty, biogenic, siliceous lithofacies is produced, as compared to the epiclastic shales.

Depositional environment does not necessarily dictate the depositional mechanism, and a critical process-sedimentology lens allows for an accurate distinction between the two. Biosiliceous predominance and position in certain stratigraphic intervals may also relate to late Miocene marine sea-level sequence stratigraphy and can be interpreted as (sub)parasequences within several pulses of lobe migration.

The combination of extremely biosiliceous rocks (>90% SiO₂) intercalated with clastic shale, siltstone and sandstone, plus sedimentary features in the siliceous rocks, such as massive and graded speckled beds, sandy or silty chert, organic-laminated chert, depositional loading and biosiliceous slumps, provide evidence for downslope re-sedimentation by gravity flows from local bathymetric highs with a distinct provenance from the deep-water clastics. These mechanisms help explain lateral variation in stratigraphic thickness and silica content documented in the subsurface of the Santa Barbara, Santa Maria and San Joaquin basins that are critically important to the siliceous rocks' roles as reservoir or seal.

Field and lab analysis, including documentation of sedimentary structures, lithofacies relations, microfacies, and optical petrographic and SEM-EDS composition, leads to a classification of opal-CT biosiliceous lithofacies

within southern Lake Piru. This can be applied to other mixed biosiliceous-clastic fan systems like the Tarzana and Stevens fans or the Los Angeles and San Joaquin basins.

Bedig Charkhutian is currently a Masters of Science Candidate at California State University Long Beach, where he is integrating deepwater clastic systems analysis with (hemi)pelagic biosiliceous facies sedimentology typical of the Monterey Formation to study the type area of the Upper Modelo Formation in the Eastern Ventura Basin. He received his Bachelor of Science in General Geology at California State University, Los Angeles. He holds memberships in various local and national geologic societies, has received several scholarships and grants during his graduate program including the AAPG and the SEPM. Bedig has been an active board member of the AAPG CSULB Student Chapter since starting his graduate degree in Fall of 2019 and was awarded the Departmental Graduate Student Honors in 2022. Outside of school, Bedig enjoys reading popular science, philosophy, and maritime history, as well as various stay-cations throughout southern California.

Luncheon Prices, cash or check

Lunch and Talk (pre-registered)	\$25.00
Retired:	\$20.00
Student:	\$10.00
Walk-ins:	\$35.00

Location

Signal Hill Petroleum, 2633 Cherry Ave., Signal Hill, Conference Room, 2nd floor.

Reservations are required by noon, Monday, May 22nd at labgs.org/meeting_info.html. Alternatively, contact LABGS Secretary Joseph Landeros at (626) 497-1710 or landerosjd@gmail.com.

“We shall not cease from exploration. And the end of all our exploring will be to arrive where we started and know the place for the first time.”

- T.S. Elliot (1888 – 1965), Collected Poems, Four Quartets, Little Gidding

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