# CRC ENERGY TRANSITION LECTURE SERIES 2023

Presented by CALIFORNIA STATE UNIVERSITY BAKERSFIELD | California Energy Research Center

# "From Depositional Environment to Rock Properties in the Miocene Monterey Formation of California"

The Monterey Formation of California is a fantastic natural laboratory for studying shales due to its tremendous stratigraphic variability – both vertically and laterally – from being deposited into oxygen-depleted settings on an active plate margin. The characteristically biosiliceous sediments and their diagenetic equivalents display a greater range of physical rock properties than any other kind of sedimentary rock. The linkage between sedimentology, stratigraphy, burial history, diagenesis, and structural deformation is well demonstrated in the Monterey Formation.

In addition to stratigraphic variation in lithofacies with time, lateral variation in composition, thickness, depositional process, and sedimentary fabric occurs over distances as short as 1-2 km in multiple basins. Differences in sedimentary composition and fabric on bed-to-member-scale influence initial porosity and permeability and these variations are inherited and preserved through successive diagenetic stages, from opal-A diatomite to quartz chert and porcelanite.

Sediment composition is also the principal control of rock hardness at any burial depth or diagenetic stage. Heterogeneous-stratified sediments are prone to diagenetic enhancement of bedding which leads to the contrasting mechanical behavior critical to the formation of intense fracture networks that are important pathways for water, solutes, and hydrocarbons through the formation.

**Richard J. Behl, PhD**
*CSU Long Beach*

## ABOUT THE SPEAKER

Richard (Rick) Behl's expertise is in the sedimentology and sedimentary petrology of hemipelagic and pelagic sediments, and their relationship to climatic, oceanographic, and tectonic change. He earned his bachelor's degree at UC San Diego and his Ph.D. at UC Santa Cruz. Rick's research focuses on the Quaternary Santa Barbara Basin and the petroliferous Miocene Monterey Formation. He has written more than 60 peer-reviewed scientific articles, 180 abstracts, and one controversial book. He is a Fellow of the Geological Society of America and served as a past President of both the Pacific Sections AAPG and SEPM and as an AAPG Distinguished Lecturer.

**SEPTEMBER 20, 2023 | 4 pm to 5 pm | Room: SCI 3 - 108**

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