

Rock Physics Observations of Organic Maturity, Elastic Modulus, and Flow in Organic-Rich Rocks

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Organic-rich rocks (ORR) are common source rocks for most clastic reservoirs. More recently, they have gained importance as reservoirs. However, the effects of kerogen maturation on hydrocarbon saturation and transport are poorly understood. Similarly, although seismic velocities and elastic moduli increase with increasing maturity, the reason for this increase also remains poorly understood. In this talk, I will review existing correlations for ORR, for example between seismic properties and maturity, and discuss their implications for seismic imaging, hydraulic fracturing, and flow characteristics. Our ongoing study focuses on better understanding maturity-related variations in ORR by using various analysis techniques. These results are critical to help us understand how the various components of ORR evolve with burial and maturation and how hydrocarbons are stored and transported to sustain large storage even at high overburden stresses.

Biography



Manika Prasad is an Associate Professor of Petroleum Engineering at the Colorado School of Mines. She directs the OCLASSH (Organic, Clay, Sand, Shale) research group and is the co-Director of the Center for Rock Abuse. Manika received a BS (Honors) in Geology (with distinction), an MS (Diplom) in Geology with Marine Geology and Geophysics as minors, and a Ph.D. (magna cum laude) in Geophysics, both from the Christian-Albrechts-Universität at Kiel in Germany. Manika won the Merit Scholarship Award from University of Bombay for her BS achievements and the Friedrich-Ebert-Stiftung Scholarship for Ph.D. research at Kiel University. She has worked at the Mineral Physics Laboratory at University of Hawai'i, Stanford Rock Physics Laboratory at Stanford University, and at the Center for Rock Abuse at the Petroleum Engineering and Geophysics departments at Colorado School of Mines. Her students have won student paper awards. She was an advisor for Native American Students at Stanford and was named Outstanding Mentor to Native American Students for two years in a row.

Manika's main interests lie in understanding the basic principles governing the physical properties of rocks, fluids, and rocks with fluids. She is also interested to understand how ant-sized phenomena control elephant-sized features. She has published in geophysical, geological, petroleum engineering, and non-destructive testing journals.