

## Lawrence M. Cathles III

After doctoral research on the viscosity of the earth's mantle at Princeton, Cathles spent seven years at Kennecott Copper Corporation's Ledgemont Laboratory investigating the genesis of porphyry copper deposits and industrial leaching processes. Joining the faculty of The Pennsylvania State University in 1978 he researched the formation of massive sulfide deposits at mid-ocean ridges and in failed rifts in Japan. At Chevron Oil Field Research Laboratory from 1982 to 1987 he developed genetic and exploration models for gold and sulfide deposits and investigated the CO<sub>2</sub> generation that often attends steam injection for enhanced oil recovery. Since 1987 he has been at Cornell University where he has investigated: oil and gas generation and migration in the Gulf of Mexico Basin; how capillary seals contain overpressured fluids in basins for hundreds of millions of years, allow basins to suddenly expel brine, form MVT deposits, and explain otherwise curious aspects of pock marks and gas pipes; how vein halos indicate porphyry copper deposits formed in barely-controlled hydrothermal explosions; how chemical alteration can be used to infer patterns of fluid flow; and how nanoparticles might be used to assess the degree of fracture control on subsurface fluid flow. For 10 years he co-directed the Global Basins Research Network. He was the 24th Hugh Exton McKinstry Memorial Lecturer (1989) at Harvard, the 2008 Adrian Smith Lecturer at the University of Waterloo, the 2011 Distinguished Lecturer for the Society of Economic Geologists, and is a fellow of the American Association for the Advancement of Science and a member of the American Geophysical Union. Presently he is the leader of the oil and gas thrust of the Cornell KAUST program, and Director of the Cornell Institute for the Study of the Continents. He has published over 110 peer-reviewed publications and a book: "The Viscosity of the Earth's Mantle".