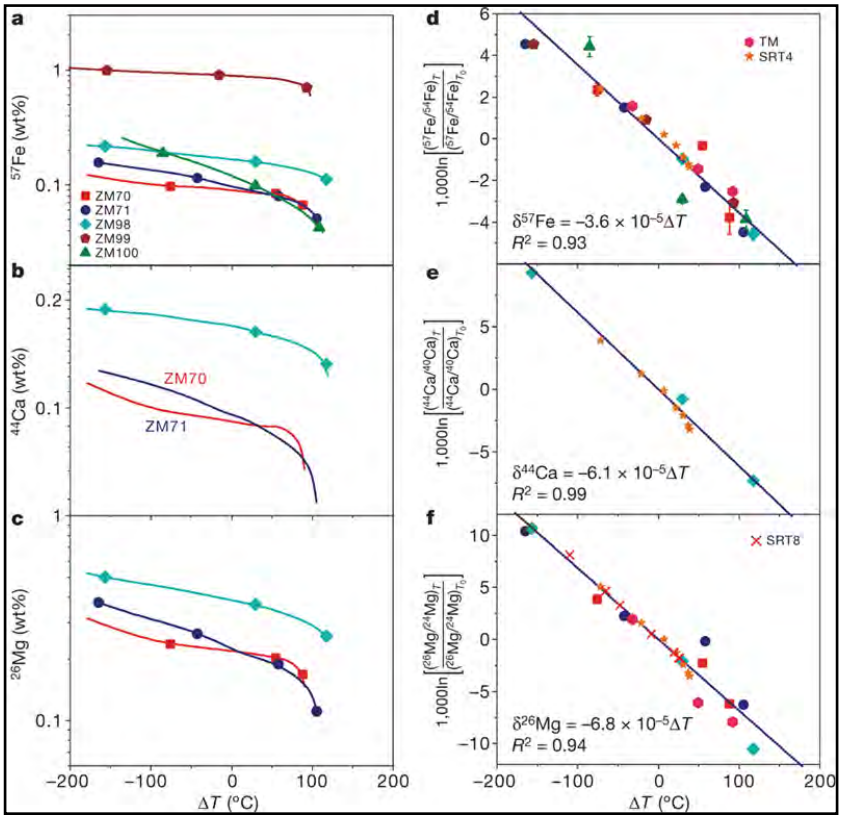
THE DEPARTMENT OF EARTH & ENVIRONMENTAL SCIENCES, CSU FRESNO AEG, ASI, & THE COLLEGE OF SCIENCE & MATHEMATICS PRESENTS:

The SORET Effect Revisited: Implications for Magmatic Differentiation and Core - Mantle Interaction

Agricultural Sciences room 109
noon-1 PM Friday, March 15th

*parking permit available for off campus participants - call 559-278-3086 for parking code



Since its discovery more than 150 years ago, the SORET effect (separation of constituents of a solution in response to a temperature gradient) has been documented in a large variety of inorganic and organic solutions, exploited as an industrial technique for chemical and isotope refinement, and seriously contemplated as an agent of magmatic differentiation, only to be dismissed. In this talk, I will take a historical look at this enigmatic process in geological systems, review new high pressure-temperature experimental work on silicate and iron alloy melts that is prompting a reconsideration of its effects in magmatic systems, and discuss the implications for mass transport across the largest thermal boundary layer within our planet – the Core-Mantle Boundary.

Dr. Charles Lesher is a professor of geology at UC Davis and director of the Experimental Petrology and Materials Synthesis Lab there. He holds a B.S. from Beloit College and both M.S. and Ph.D. from Harvard University. He also conducted post-doctoral research at Lamont-Doherty Earth Observatory, and mutliple visiting professor appointments around the world. His research focus is in: 1) experimental igneous petrology and geochemistry, 2) phase equilibria and kinetics of silicate systems at elevated pressure and temperature, and 3) physical, transport and thermodynamic properties of silicate melts. Recent projects include (a) Laboratory: low to high pressure phase equilibria studies of basaltic systems; trace element partitioning; chemical and self diffusion studies of silicate melts; solution properties of silicate liquids from thermal diffusion. (b) Field: magmatic evolution of the North Atlantic Ocean basin and the evolution of the Iceland hot spot; petrologic studies of early Tertiary volcanic and plutonic rocks of East Greenland.

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