

USC Viterbi

School of Engineering
*The Mork Family Department
of Chemical Engineering and
Materials Science*

Professor and Chair
Richard Roberts

invites you to attend the
2018 Cornelius Pings Lecture
at the
University of Southern California
SAL 101

Wednesday, April 4, 2018
at 11:00 a.m.

Meet & Greet Reception
HED 1st Floor Lobby
at 10:00 a.m.

CORNELIUS PINGS LECTURE SERIES



EARTH RESOURCES ENGINEERING
An Emerging Field

CHARLES FAIRHURST
Professor Emeritus, University of Minnesota
Senior Consultant, Itasca International Inc.

The term Earth Resource Engineering was introduced by the US National Academy of Engineering in 2006 to encompass the traditional extractive disciplines of Petroleum, Mining and Geological Engineering plus newer applications - such as long -term isolation of high-level nuclear waste. This recognized the unique ability of the rock subsurface to isolate the biosphere from toxic contaminants for millennia. A considerable number of additional uses, both shallow and deep, have since been introduced and/or proposed. These will be described briefly. The lecture will focus on some of the specific challenges in mechanics arising in rock engineering. Evolving over several billion years, the structural make-up of the subsurface is far more complex than materials encountered in most other branches of engineering. This dictates a different engineering methodology. Thus, although continuum mechanics plays a valuable role in rock engineering, discontinuities, anisotropy, and heterogeneity -large and small scale- must be recognized and considered.

A few examples, including efforts to increase advance rates in tunneling "by a factor of ten". will be provided to illustrate the challenges, and the potential for interdisciplinary collaboration. Introduction of Earth Resource Engineering programs at leading research universities would stimulate such collaboration and advances.



Dr. Cornelius Pings, USC's provost and senior vice president for academic affairs from 1981 to 1993, was instrumental in developing a system that linked academic planning with budgetary accountability in each of USC's schools and its college. His position oversaw the academic and research programs in all of the university's schools, the libraries, student affairs, and community and governmental relations. In 1993, Pings was awarded USC's highest honor, the Presidential Medallion, for "his years of insightful and dedicated leadership that have left an enduring mark on the academic life of USC."

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That same year, he became president of the Association of American Universities until 1998. The Washington, D.C.-based AAU represents the nation's 60 major research universities. In 1988, Pings was appointed chairman of the Committee on Science, Engineering and Public Policy, a post that earned him national attention in higher education circles. A joint committee of the National Academy of Sciences, the National Academy of Engineering and the Institute of Medicine, the group was charged with addressing the health of U.S. science and technology.

From 1987 to 1989, Pings chaired an ad hoc committee for the AAU that undertook a major review of "Indirect Costs Associated With Federal Support of Research on University Campuses." The committee's report, which became known nationally as the "Pings Report," considered and offered resolutions for a number of contentious research-related issues among government officials, faculty, and university administrators.