



**HARRY G. FAIR**

Each year, a special lecture is given in memory of Harry G. Fair, an outstanding OU alumnus. Harry G. Fair was born in Okmulgee, Oklahoma, on June 3, 1916. He received his B.S. in Chemical Engineering in 1939. He joined Phillips Petroleum Company in 1939 and worked his way up to Vice President for Supply and Transportation, with responsibility for world-wide exchange of crude oil and all transportation facilities. In 1966, he joined the M.W. Kellogg Company as Executive Vice President, in charge of all engineering activities and became Executive Vice President of Coastal States Gas Corporation from 1971 until the time of his death on July 27, 1974. Harry G. Fair was active in service to society and to his alma mater. He was a member of a number of professional societies and was a licensed professional engineer.

This lecture is made possible by the Harry G. Fair Memorial Fund contributed by his widow, Jane Swift Fair. Arrangements are made by the School of Chemical Engineering and Materials Science.

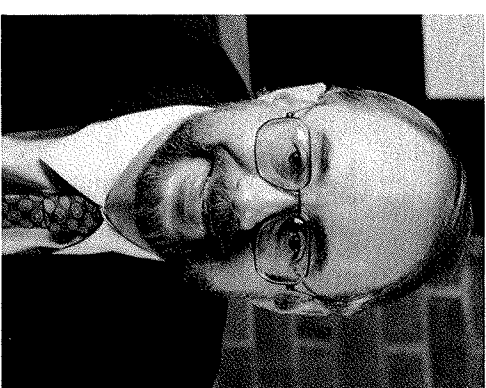
## **“Particulate Transport in Porous Media and The Existence of Microquakes”**

**by H. Scott Fogler**

*The generation, transport, and capture of micron size particles (i.e., fines) in porous media is a challenge of both scientific and industrial importance. These processes are important in separation by filtration, in situ bacteria transport in bioremediation, transport of adsorbed hazardous substances in ground water flows and the plugging of water sensitive sandstones in oil reservoirs. Three types of particulate transport will be discussed: colloiddally induced fines migration, convective jamming, and bacteria transport.*

*The release of smectitic fines is a threshold process with discontinuous jumps that produce microquakes. There is a critical salt concentration (CSC) at which these microquakes occur and produce fines migration in the porous media. Convective jamming, which results when a number of fines arrive at a pore constriction at the same time, is a function of particle concentration and the interstitial velocity. Discussion on particulate transport concludes with a description of the effect of the type of nutrient feed on the transport, capture and sloughing of bacteria in porous media. Here bacteria transport can become oscillatory in nature under conditions of constant flow.*

H. Scott Fogler, the Vennema Distinguished Professor of Chemical Engineering at The University of Michigan, has research interests in flow and reaction in porous media, colloid stability, wastewater treatment, and dissolution kinetics in microelectronics fabrication. He is author of more than 130 research publications in these areas. In addition, he is author of four books. The *Elements of Chemical Reaction Engineering*, 2nd Edition, published by Prentice Hall in 1992, is the most used book on this subject in the world. The most recent book,



**H. SCOTT FOGLER**

*Strategies for Creative Problem Solving*, co-authored with Steven E. LeBlanc, was published by Prentice Hall, August 1995.

In 1980, Professor Fogler was a recipient of the first award for outstanding research from the University of Michigan's College of Engineering. In that same year, he received the Chemical Engineer of the Year Award from the Detroit Section of the American Institute of Chemical Engineers. In 1984, he was appointed the Vennema Distinguished Professor of Chemical Engineering. In 1987, he received the University of Colorado Distinguished Alumnus Award, and the following year he was elected President of the Computer Aids for Chemical Engineering (CACHE) Corporation. In 1993, he was a recipient of the W. Corcoran Award for Best Paper in Chemical Engineering Education. In 1994, he was elected a Director of the American Institute of Chemical Engineers, and a Fellow of AIChE. Also in 1994, he received the Inaugural Adler Lectureship at Case Western Reserve University and was a McCabe Lecturer at North Carolina State University. Most recently, he received the 1995 Warren K. Lewis Award from AIChE for contributions to chemical engineering education.

YOU ARE CORDIALLY INVITED  
TO ATTEND THE 22<sup>ND</sup> ANNUAL

## Harry G. Fair Memorial Lecture

IN CHEMICAL ENGINEERING  
AND MATERIALS SCIENCE

May 2, 1996, 3:30 P.M.

THE LECTURE WILL BE GIVEN ON CAMPUS,  
IN SARKEYS ENERGY CENTER, ROOM M-204

COFFEE AND REFRESHMENTS WILL BE SERVED

### Previous Series Lecturers:

Stanley Learned, Phillips Petroleum Co., 1975  
Harry L. Blomquist Jr., Coastal States Gas Co., 1976  
Laurance S. Reid, Ball-Feld Engineers Inc., 1977  
Raymond W. Lowe, E. I. DuPont de Nemours, 1978  
Charles R. Perry, Perry Gas Companies, 1979  
A. B. Slaybaugh, Conoco Inc., 1980  
Robert S. Purgason, Perry Gas Processors, 1981  
Lynn T. Reed, Warren Petroleum Co., 1982  
B. H. Sellers, Sellers Chemical Co., 1983  
Richard G. Askew, Phillips Chemical Co., 1984  
John M. Campbell, John M. Campbell & Co., 1985  
Stuart W. Churchill, Univ. of Pennsylvania, 1986  
Eli Ruckenstein, SUNY, Buffalo, 1987  
C. Judson King, Univ. of Calif., Berkeley, 1988  
James Wei, M.I.T., 1989  
George A. Samara, Sandia National Labs., 1990  
E. N. Lightfoot, Univ. of Wisconsin, 1991  
Dan Luss, Univ. of Houston, 1992  
Larry V. McIntire, Rice University, 1993  
Christopher W. Macosko, Univ. of Minnesota, 1994  
Gary L. Haller, Yale University, 1995

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in



CHEMICAL ENGINEERING

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