



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 worldwide 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.



Enrique Iglesia
Department of Chemical Engineering,
University of California at Berkeley,
Berkeley, CA 94720

Acid and Redox Catalysis on Oxide Nanostructures

The redox and acid-base behavior of supported oxides change markedly as their local structure and electronic properties vary with domain size. The turnover rate and selectivity of catalytic reactions on oxide surfaces also depend on the size of these domains, as they evolve from isolated cations into disordered clusters and finally into crystals with bulk-like properties. This evolution in domain size provides a continuous spectrum of catalytic behavior and of site structures, as well as reaction chemistries often unavailable on the surfaces of bulk oxides. Acid catalysis on supported WO_3 domains and alkane reactions on supported V_2O_5 and MoO_3 domains and on isolated cations within microporous solids are used as examples of the remarkable catalytic diversity introduced by the range of surface structures and electronic properties available on these oxide nanostructures. These examples also illustrate the significant structural and mechanistic characterization challenges imposed by the reactive and disordered nature of these small oxide domains.

Enrique Iglesia

Enrique Iglesia is Professor of Chemical Engineering at the University of California at Berkeley and a Faculty Scientist in the E.O. Lawrence Berkeley National Laboratory of the U.S. Department of Energy. He received his Ph.D. degree in Chemical Engineering in 1982 from Stanford University. In 1993, he joined the University of California at Berkeley as Professor of Chemical Engineering, after eleven years of research and management experience in heterogeneous catalysis and reaction engineering at the Corporate Research Laboratories of Exxon Research and Engineering. He is Editor-in-Chief of the Journal of Catalysis and serves on the Editorial Boards of Energy and Fuels, Catalysis Today, Industrial Catalysis News, and Catalysis Surveys. He is past chairman of the Division of Petroleum Chemistry of the American Chemical Society and a Director in the Division of Catalysis and Reaction Engineering of the American Institute of Chemical Engineers. His recent awards include the 1997 Paul H. Emmett Award in Fundamental Catalysis of the Catalysis Society, the 1997 Eminent Visitor Award of the Chemical Society of South Africa, the 1996 Award for Excellence in Academic Teaching of the American Institute of Chemical Engineers, and the 1998 Best Teacher Award of the Berkeley Chapter of the AIChE.

Professor Iglesia has been involved in studies of heterogeneous catalysts for the direct and indirect conversion of methane to higher hydrocarbons and uses of methane in desulfurization and de- NO_x reactions, dehydrogenation of light alkanes to alkenes and aromatics, catalytic reforming and cracking processes, for low-temperature isomerization, alkylation, and combustion reactions. Current research projects also include the practical use of catalytic membranes to combine reaction and separation functions in alkane dehydrogenation and conversion processes and the development of theoretical methods for predicting the structure, transport, and chemical properties of porous solid catalysts. His research group at Berkeley combines expertise and facilities for the synthesis of novel catalytic solids, their in-situ structural and mechanistic characterization, and the detailed modeling of kinetic and transport processes in catalytic processes relevant to oil refining and petrochemical synthesis. Professor Iglesia has co-authored more than 120 publications and 28 patents.

YOU ARE
CORDIALLY INVITED
TO ATTEND

THE 26TH ANNUAL

**Harry G. Fair
Memorial Lecture**

IN CHEMICAL ENGINEERING
AND MATERIALS SCIENCE

**April 20, 2000,
3:30 P.M.**

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

COFFEE AND REFRESHMENTS WILL BE SERVED

SCHOOL OF CHEMICAL ENGINEERING
AND MATERIALS SCIENCE
THE UNIVERSITY OF OKLAHOMA
SARKEYS ENERGY CENTER
100 E. BOYD, ROOM T-335
NORMAN, OKLAHOMA 73019-1004

THE UNIVERSITY OF OKLAHOMA
COLLEGE OF ENGINEERING

THE 26TH ANNUAL

**Harry G. Fair
Memorial
Lecture**

in



CHEMICAL ENGINEERING

2 0 0 0