

*You are
cordially invited
to attend*

The 34rd Annual

Harry G. Fair
Memorial Lecture in
Chemical Engineering

Tuesday, May 3, 2007
Seminar – 3:00 P.M.
M-204 Sarkeys Energy Center
100 East Boyd
University of Oklahoma
Norman, Oklahoma

Coffee and refreshments will
be served prior to the lecture.

Accommodations on the basis of disabilities are
available by calling (405) 325-5812

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Harry G. Fair
Memorial Lecturers

- 2007 David Mooney, Harvard University
- 2007 John Prausnitz, University of California, Berkeley
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- 2005 James A Dumesic, University of Wisconsin
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- 2003 Nicholas Peppas, University of Texas at Austin
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- 2000 Enrique Iglesia, University Of California, Berkeley
- 1999 George Stephanopoulos, Massachusetts Institute of Technology
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- 1993 Larry V. McIntire, Rice University
- 1992 Dan Luss, University of Houston
- 1991 E. N. Lightfoot, University of Wisconsin
- 1990 George A. Samara, Sandia National Labs
- 1989 James Wei, Massachusetts Institute of Technology
- 1988 C. Judson King, University of California, Berkeley
- 1987 Eli Ruckenstein, SUNY Buffalo
- 1986 Stuart W. Churchill, University of Pennsylvania
- 1985 John M. Campbell, John M. Campbell & Co
- 1984 Richard G. Askew, Phillips Chemical Co
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- 1982 Lynn T. Reed, Warren Petroleum Co
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- 1980 A. B. Slaybaugh, Conoco Inc
- 1979 Charles R. Perry, Perry Gas Cos
- 1978 Raymond W. Lowe, E. I. DuPont de Nemours
- 1977 Laurance S. Reid, Ball-Reid Engineers Inc
- 1976 Harry L. Blomquist Jr., Coastal States Gas Co
- 1975 Stanley Learned, Phillips Petroleum Co

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College of Engineering
University of Oklahoma
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Chemical Engineering
2007



David Mooney
Division of Engineering and Applied Science
Harvard University
Cambridge, Massachusetts, 02138

*Angiogenesis on Demand:
A Tool for Regenerative
Medicine*



Harry G. Fair

Each year, a special lecture is given in memory of Harry G. Fair, an outstanding OU alumnus. Fair was born in Okmulgee, Oklahoma, on June 3, 1916, and earned his bachelor of science degree in chemical engineering in 1939. He joined Phillips Petroleum Co. 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, Fair joined M.W. Kellogg Co. as executive vice president in charge of all engineering activities. He was named executive vice president of Coastal States Gas Corp. in 1971, a post he held until his death on July 27, 1974. A member of a number of professional societies and a licensed professional engineer, Fair was active in service to society and his alma mater.

This lecture is made possible by the Harry G. Fair Memorial Fund established by his widow, Jane Swift Fair. Arrangements for the lecture are made by the School of Chemical, Biological and Materials Engineering in OU's College of Engineering.

Angiogenesis on Demand: A Tool for Regenerative Medicine

David Mooney

DIVISION of Engineering and Applied Sciences
Harvard University
Cambridge, Massachusetts, 02138

Building networks of blood vessels to provide nutrients is an essential component of virtually all tissue regeneration efforts, and may provide a new approach to treat ischemic diseases. Most attempts to drive this process go directly from biological discovery (e.g., growth factors or cell types) to therapy, with little attention to the engineering of the delivery system. However, the complex interplay of multiple factors and cells that regulate angiogenesis suggests that spatiotemporal control over their presentation will be essential to regulate the formation and function of engineered microvessel networks. Polymeric systems that can provide combinations or sequences of angiogenic factors and program resident or transplanted cell populations have now been demonstrated to allow one to regulate the extent, maturation, and functionality of engineered networks of blood vessels. This approach to locally regulate angiogenesis may have a wide array of potential applications, which include enhancing the perfusion of ischemic tissues, promoting bone and neural regeneration, and increasing tissue formation by transplanted cells.

David Mooney biography

David Mooney is the Gordon McKay Professor of Bioengineering in the Harvard School of Engineering and Applied Sciences at Harvard University. His laboratory is focused on the design and synthesis of microenvironments, or niches, that regulate the fate of either transplanted cell populations or cells already resident in tissues. These polymeric systems mimic the native extracellular matrix in their spatiotemporal control of information presentation to cells, and may find special utility in controlling stem cell populations. The applications of these systems include the regeneration of damaged or diseased tissues (tissue engineering), or the targeted destruction of undesirable tissue masses in the body. Dr. Mooney was previously a faculty member at the University of Michigan, and his education is from the University of Wisconsin and the Massachusetts Institute of Technology. He is a Fellow of the American Institute of Medical and Biological Engineering, a NIH MERIT awardee, and has received the NSF CAREER award. His inventions have been licensed by over six companies for development and he is active on industrial scientific advisory boards.