

*You are  
cordially invited  
to attend*

## The 34th Annual

### Harry G. Fair Memorial Lecture in Chemical Engineering

Thursday, 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
2006	George Georgiou, University of Texas at Austin
2005	James A. Dumesic, University of Wisconsin
2004	Robert C. Armstrong, Massachusetts Institute of Technology
2003	Nicholas Peppas, University of Texas at Austin
2002	Richard C. Alkire, University of Illinois
2001	Ralph T. Yang, University of Michigan
2000	Enrique Iglesia, University Of California, Berkeley
1999	George Stephanopoulos, Massachusetts Institute of Technology
1998	Stuart L. Cooper, University of Delaware
1997	Keith E. Gubbins, Cornell University
1996	H. Scott Fogler, University of Michigan
1995	Gary L. Haller, Yale University
1994	Christopher W. Macosko, University of Minnesota
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.
1983	B.H. Sellers, Sellers Chemical Co.
1982	Lynn T. Reed, Warren Petroleum Co.
1981	Robert S. Purgason, Perry Gas Processors
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.

School of Chemical, Biological and Materials Engineering  
College of Engineering  
University of Oklahoma  
Sarkeys Energy Center  
100 East Boyd, Room T-335  
Norman, Oklahoma 73019-1004



The 34th Annual

### Harry G. Fair Memorial Lecture in 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 Bio-engineering 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.