GEORGE A. HAWKINS

The Hawkins Memorial Lecture in Heat Transfer was established in 1984 to honor the memory of George A. Hawkins, former dean of the College of Engineering. Renowned for his many contributions as a teacher, researcher, and administrator, he retained a strong commitment to heat transfer and was instrumental in establishing Purdue's eminence in the field. The lecture series provides an opportunity for a leader in heat transfer research to present topics of broad interest to the University community. This series is supported by an endowment created with gifts from the Heat Transfer Area faculty at Purdue.

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School of Mechanical Engineering
Purdue University
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HAWKINS

Memorial Lecture in Heat Transfer

Thursday, October 16, 2008
4:30 p.m., Mechanical Engineering Building, Room 161
Refreshments at 4 p.m., Room 254

PURDUE UNIVERSITY | **School of Mechanical Engineering**

PAUL HOMMERT

Engineering and Our Energy Future

Vice President
California Laboratories and Homeland Security & Defense Strategic Management Unit
Sandia National Laboratories

PAUL HOMMERT

Paul Hommert is currently vice president of Sandia's California Laboratory, located in Livermore, California. Principal programs of the division include nuclear weapons stewardship; homeland security with a focus on WMD defense, including bio terrorism; combustion; hydrogen energy research; biofuels; cyber security; and information systems.

Hommert also leads the laboratory's Homeland Security & Defense Strategic Management Unit, which is focused on development of Sandia's programs with the Department of Homeland Security.

From November 2003 to August 2006, Hommert was the leader of the Applied Physics Division at Los Alamos National Laboratories. The Applied Physics Division (known within the weapons community as X division) is responsible for the nuclear weapon design competency at Los Alamos.

Before Los Alamos, Hommert was the director of the Systems Analysis Center in the Defense Systems and Assessments organization at Sandia National Laboratories. In this capacity, he was responsible for strategic planning and business development for Sandia's non-nuclear work in support of the Department of Defense.

From January 2000 until March 2003, Hommert was director of Research and Applied Science at the Atomic Weapon Establishment in the United Kingdom. He led the nuclear weapon stewardship effort in the United Kingdom. His organization had responsibility for nuclear weapon design, large scale experimental operations in hydrodynamics, high energy density physics, and material and engineering science in support of the weapons program. His organization also included computational science and the procurement and operation of computational capabilities for the UK's nuclear weapon program.

From April 1995 until December 1999, Hommert was director of Engineering Sciences at Sandia National Laboratories. In this capacity, he led the engineering research efforts at Sandia and the organization that provided engineering analysis for the full range of Sandia's programs. He was also responsible for establishing Sandia's program in engineering simulation development as part of the Defense Program's strategic computing initiative.

Earlier in his Sandia career, Hommert was involved in a wide range of programs supporting energy research. Activities included research in geophysics, oil shale, underground coal gasification, geothermal, and the strategic petroleum reserve. He is the author of numerous technical papers in the area of fossil energy recovery and radiation transport.

Hommert earned a BSME from Rensselaer Polytechnic Institute and an MSME and PhD from Purdue University. In 2003, he received an outstanding alumnus award for professional excellence from Purdue's School of Mechanical Engineering.

ROLE OF SCIENCE AND ENGINEERING IN SHAPING OUR ENERGY FUTURE

As the need for affordable, reliable, and lower carbon energy sources becomes a national and global imperative it is valuable to look both to the past and to the future, and explore the role that science and engineering has played. Events of 35 years ago brought energy, especially oil, to the forefront of national priorities. How do the conditions of 35 years ago compare and contrast with today? What can be learned from the impact of science and engineering on energy production, utilization, and efficiency that can guide the research community as it confronts renewed national initiatives around energy?

It is an economic and security imperative for the nation that the next 20 years see dramatic progress in the development of energy technologies. This progress will be led in large part by the engineers and scientists who are just beginning their careers.

The Department of Energy's national laboratories have held a key role in developing new energy sources and new approaches to energy conversion. Sandia National Laboratories has been a leader in energy technologies since the early 1970s. Early programs focused on coal gasification, solar thermal, and geothermal energy technologies. Over the last decade, wind energy and the transition to distributed sources of electricity have prompted new research and innovation. The importance of combustion as a fundamental process in energy conversion was recognized and continues to be pursued. Progress in these areas continues to be shaped by a balance between cost, performance, and public acceptance.

In the future, the globalization of energy supply and demand, and the need for constraining the growth of carbon in the atmosphere, will place even greater stress on world energy systems. The complexities of the social and political environment will require that researchers take a systems approach and provide a range of options as well as key innovations.

While progress in energy over the last generation may have been incremental, when compared to advances in information technologies, cumulatively great advances have been made in both energy and in the environment. The challenges the U.S. and the world face are how to accelerate energy innovation and how to diversify our energy options. During his lecture, Hommert will suggest some new ways that the research and development communities can work to achieve these goals.

Hawkins Memorial Lecture Series

1984 **Ernst R. G. Eckert** • University of Minnesota
1985 **E. M. Sparrow** • University of Minnesota
1986 **Arthur E. Bergles** • Iowa State University
1987 **Chang-Lin Tien** • University of California—Berkeley
1988 **Wataru Nakayama** • Hitachi, Ltd.
1989 **Franz Mayinger** • Technische Universität München
1990 **Raymond Viskanta** • Purdue University
1991 **R. J. Goldstein** • University of Minnesota
1992 **Richard C. Chu** • International Business Machines Corporation
1993 **Robert Siegel** • NASA Lewis Research Center
1994 **Julian Szekely** • Massachusetts Institute of Technology
1995 **John R. Howell** • University of Texas–Austin
1996 **Frank P. Incropera** • Purdue University
1997 **Boris Rubinsky** • University of California—Berkeley
1998 **David P. DeWitt** • Purdue University
1999 **Vijay K. Dhir** • University of California—Los Angeles
2000 **Robert G. Watts** • Tulane University
2001 **Martin C. Jischke** • Purdue University
2002 **Kenneth R. Diller** • University of Texas—Austin
2003 **John H. Sununu** • JHS Associates, Ltd.
2004 **Dimos Poulikakos** • ETH Zurich
2005 **Massoud Kaviany** • University of Michigan—Ann Arbor
2006 **Yogesh Jaluria** • Rutgers, The State University of New Jersey
2007 **Richard O. Buckius** • University of Illinois at Urbabna–Champaign
2008 **Paul Hommert** • Sandia National Laboratories

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