

VITA OF ASOK RAY, Ph.D., P.E., Fellow IEEE, Fellow ASME

Asok Ray earned the Ph.D. degree in Mechanical Engineering from Northeastern University, Boston, MA in 1976, and also graduate degrees in each of the disciplines of Electrical Engineering, Computer Science, and Mathematics. Dr. Ray joined the Pennsylvania State University in July 1985, and is currently a Distinguished Professor of Mechanical Engineering, and a Graduate Faculty of Electrical Engineering, and a Graduate Faculty in the Inter-College Program in Materials. Prior to joining Penn State, Dr. Ray held research and academic positions at Massachusetts Institute of Technology and Carnegie-Mellon University as well as research and management positions at GTE Strategic Systems Division, Charles Stark Draper Laboratory, and MITRE Corporation.

Dr. Ray has pioneered the concept of life extending control of aerospace and electromechanical systems to achieve a trade-off between structural durability and dynamic performance. This concept integrates two different disciplines: *Decision & Control Theory* and *Damage Mechanics in Structural Materials*, and is being applied to life extension of the reusable Space Shuttle Main Engine (supported by NASA Lewis), future generation and existing aircraft structures (supported by NASA Langley), land-based advanced gas turbines (supported by DoE), ships and submarines (supported by ONR), and steam-electric power plants (supported by EPRI). Specific research experience of Dr. Ray includes: Health monitoring and life extending control of the Space Shuttle Main Engine; Modeling of material behavior of gas turbine engines and experimental validation of these models; Integrated flight control and sensor signal validation of the F-15, F-16 and F-18A tactical aircraft; real-time control of the MITR-II nuclear reactor at MIT.

RESEARCH AND SCHOLARSHIP AREAS

- Optimization & Optimal Control, Robust Multivariable Control, and Discrete-Event Control;
- Stochastic Processes, Statistical Signal Processing, and Failure Decision Theory;
- Analysis and Modeling of Mechanical Behavior and Structural Damage in Engineering Materials;
- Control Systems Analysis and Design for Aircraft, Spacecraft, Undersea Vehicle, and Surface Ship;
- Control Systems Analysis and Design for Fossil and Nuclear Power Plants, and Process Plants.

HONORS AND AWARDS

- **Distinguished Professorship** Award, Pennsylvania State University College of Engineering, 2002;
- **IEEE Fellow** Award, for research in aerospace and electromechanical systems, 2002;
- **ASME Fellow** Award, for research in Decision & Control Theory and Damage Mechanics, 1994;
- **Senior Research Fellow** Award, National Academy of Sciences, 1998-1999;
- **Best Paper** Award, ASME Journal of Dynamic Systems, Measurements, and Control, 1999;
- **Premier Research** Award, Pennsylvania State University College of Engineering, 2002;
- **Outstanding Research** Award, Pennsylvania State University College of Engineering, 1995;
- **Outstanding Faculty** Award, Penn State University Department of Mechanical Engineering, 1993.

PROFESSIONAL ACTIVITIES

- Editor, IEEE Transactions on Aerospace and Electronic Systems (2000-present);
- Associate Editor, IEEE Transactions on Control Systems Technology (2000-present);
- Associate Editor, The International Journal of Structural Health Monitoring (IJSHM) (2001-present);
- Associate Editor, International Journal of Flexible Manufacturing Systems (1991-present);
- Associate Editor, ASME Journal of Dynamic Systems, Measurement, and Control (1992-1995);

PUBLICATIONS RECORD

Over four hundred research publications (including about one hundred seventy five scholarly articles in refereed journals and research monographs) and forty technical reports based on sponsored research.