

Edward C. Smith

*The Pennsylvania State University, Department of Aerospace Engineering
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Professional Experience

Professor of Aerospace Engineering, 2004 - present
Director, Penn State Rotorcraft Center of Excellence

Associate Professor of Aerospace Engineering, 1998-2004
Director, Penn State Rotorcraft Center of Excellence

Assistant Professor of Aerospace Engineering, 1992-1998
Co-Director, Director, Penn State Rotorcraft Center of Excellence (1996-2000)

Areas of research include rotorcraft dynamics and aeromechanics, composite structures, elastomeric materials, adaptive structures, active vibration control, anti-icing systems, advanced power transmissions.

Graduate Research Fellow, University of Maryland, 1988-1992.

Undergraduate Research Assistant, Penn State Applied Research Laboratory, Fabrication and damping characterization testing of metal matrix composite materials 1986-1988.

Education

Ph.D., Aerospace Engineering
University of Maryland, Center for Rotorcraft Education and Research, August 1992
M.S., Aerospace Engineering,
University of Maryland, Center for Rotorcraft Education and Research, May 1990.
B.S. with High Distinction, Aerospace Engineering, Minor in Mathematics,
The Pennsylvania State University, May 1988.

Honors and Awards

2002 PSES Outstanding Research Award
2002 AIAA Lawrence Sperry Award for extraordinary leadership as founder of a National Rotorcraft Technology Center; for pioneering research in aeroelasticity of composite rotors; and for dedication to Aerospace Engineering Education.
2001, 1995, 1994 American Helicopter Society National Membership Sponsor Award
2000 Member of team which won the National Partnership for Reinventing Government Hammer Award
1994 American Helicopter Society Director's Award
1994 Army Research Office Young Investigator Award

Academic and Professional Service Highlights

Faculty Advisor: American Helicopter Society, Penn State Chapter
Committee Chairman: AHS Dynamics Committee, May 2000-2002
Committee Chairman: AHS Education Committee, May 1997-present
Senior Member: American Institute of Aeronautics and Astronautics, 1986 - present
General/Technical Chairman, 8th Army Research Office Workshop on dynamics and Aeroelasticity of Rotorcraft Systems, October 1999, University park, PA.

Academic Instruction

Dr. Smith regularly teaches undergraduate courses in Aerospace Structures, Helicopter Design, and Introduction to Engineering Principles. Dr. Smith regularly teaches graduate courses in Rotorcraft Aerodynamics, Rotorcraft Dynamics, Advanced Composite Structures. Dr. Smith has advised and chaired thesis committees for 14 Doctoral and 17 Master of Science degree recipients.

Recent Journal Publications

Kim, J.S., Wang, K.W., and Smith, E.C., "High-authority Piezoelectric Actuation System Synthesis through Mechanical Resonance and Electrical Tailoring" *Journal of Intelligent Material Systems and Structures*, Vol. 16, January 2005, pp. 21-31.

DeSmidt, H.A., Wang, K.W., and Smith, E.C., "On the Robust Stability of Segmented Driveshafts with Active Magnetic Bearing Control," Accepted for Publication in the *Journal of Vibration and Control*, November 2004.

Heverly II, D.E., Wang, K.W., and Smith, E.C., "Dual Stack Piezoelectric Device with Bidirectional Actuation and Improved Performance," *Accepted for Publication in the Journal of Intelligent Material Systems and Structures*, February 27, 2004.

Ramrakahyani, D.S., Lesieutre, G.A., and Smith, E.C., "Modeling of Elasticmeric Materials Using Nonlinear Fractional Derivative and Continuously Yielding Fraction Elements," *Accepted for Publication in the International Journal of Solids and Structures*, February 6, 2004.

Zhang, J., Smith, E.C., and Wang, K.W., "Active-Passive Hybrid Optimization of Rotor Blades with Trailing Edge Flaps," *Journal of the American Helicopter Society*, Vol. 49, No. 1, January 2004, pp. 54-65.

Keller, J.A. and Smith, E.C., "Active Control of Gimballed Rotors Using Swashplate Actuation During Shipboard Engagement Operations," *AIAA Journal of Aircraft*, Vol. 40, No. 4, July-August 2003, pp. 726-733.

Szeffi, J.T., Smith, E.C., and Lesieutre, G.A., "Formulation and Validation of A Ritz-Based Analytical Model Of High Frequency Periodically-Layered Isolators in Compression," *Journal of Sound and Vibration*, Vol. 268, No.1, July 2003, pp. 85-1001.

Funded Research Activities

In addition to the multi-year, multi-investigator RCOE and VLCOE awards he has lead (\$2,25M from 1996-2000, and \$3M from 2001-2006, \$4.5M 2006-2010), Dr, Smith has written and executed over \$2,5M in research grants during the past fifteen years. Dr. Smith has directed sponsored research from NASA (Ames, Langley and Glenn), Bell, Boeing, Sikorsky, Lord Corporation, the US Army (Army Research Office, AATD, Huntsville), the US Navy (Office of Naval Research, NAVAIR). Dr. Smith has also lead successful proposal activities for more than \$700,000 in new experimental equipment to be used on rotorcraft research and educational programs.