

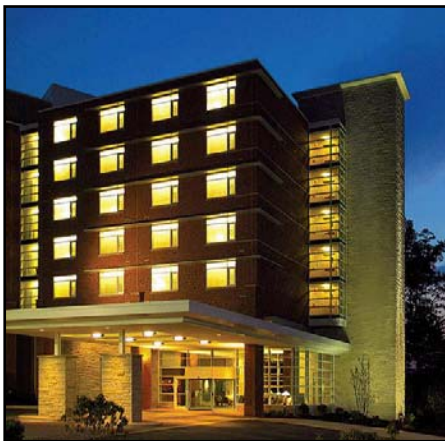


Center of Excellence in Structural Health Monitoring

Spring Meeting
11-12 June 2009



The Penn Stater Conference Center Hotel
State College, Pennsylvania



The **purpose of the meeting** is to:

1. bring designers and owners of platforms that benefit from SHM technology together with researchers and developers of SHM systems and
2. grow the Center by building relationships that lead to fruitful multidisciplinary collaborations between industry, academia, and government.

The meeting will:

1. present and discuss the state of the art, recent breakthroughs, future directions, and technology needs for SHM,
2. foster relationships,
3. and showcase ongoing projects at Penn State.

Center Mission: Advance the state-of-the-art in structural health monitoring (SHM) to improve public safety, reduce maintenance costs, improve readiness, and foster a paradigm shift in design by leveraging and fostering collaborative R&D efforts between academia, industry, and government entities. Provide a means for transferring technology to member companies, agencies, and institutions.

www.esm.psu.edu/shm (click on 'Register for June 11-12 meeting')

Special Speakers

Structural Health Monitoring of Nuclear Components, *Stephen E. Cumblidge, PNNL*

(Thursday keynote)

Dr. Cumblidge is a scientist at the Pacific Northwest National Laboratory. For the past seven years he has worked on issues facing the nuclear industry, including waste disposal and nondestructive testing of nuclear components. Current research with the Applied Physics Group involves determining the capabilities and reliability of nondestructive techniques to examine nuclear reactor components for the NRC. This research primarily involves the use of phased array and conventional ultrasound and includes techniques such as synthetic aperture focusing technique ultrasound (SAFT UT), eddy current, and visual testing. Additional research includes the use of acoustic emission and ultrasonic techniques for continuous online monitoring of nuclear power plant components. Previous research at PNNL included pressing and sintering pure uranium oxide fuel pellets and pellets doped with an array of elements designed to increase and decrease the lattice parameter and grain size of the fuel, using MCNP to explore advanced mixed-oxide nuclear fuel pellet configurations for enhanced plutonium elimination, and supporting the Yucca Mountain Geological Disposal Project.

Structural Health Monitoring - A GE Perspective, *Thomas J. Batzinger, GE (Friday keynote)*

Mr. Batzinger has 28 year experience in the development and application of Nondestructive Evaluation (NDE) technologies and is presently the Principal Engineer in the GE Global Research, Nondestructive Technologies Laboratory. His NDE experience started in the Nuclear Power Generation industry and has evolved to include efforts in the Aviation, Petrochemical, Transportation, Paper, and Power Generation industries. Mr. Batzinger received an Associate in Applied Science degree in the field of Nondestructive Testing from the State University of New York (Schenectady, New York), a Bachelor of Science in Mechanical Engineering Technologies from the University of Massachusetts (Lowell, MA) and a Master of Science in Mechanical Engineering from the Rensselaer Polytechnic Institute (Troy, New York). He presently has over 20 issued patents and numerous publications.

An Aviator's Perspective on Health Monitoring, *Gregory J. Johnson, ARL (Thursday dinner)*

Mr. Johnson is a research administrator at Penn State's Applied Research Laboratory. He works within the Materials and Manufacturing office, which oversees ARL's complex systems monitoring effort. Prior to joining ARL (18 years ago), Greg served as a Marine Corps aviator for 20 years. At the time of his retirement he was serving as an Executive Assistant to the Assistant Secretary of the Navy for Research, Development and Acquisition at the Pentagon. During his military career, Greg accumulated over 4300 hours of military flight time. Of that time, 2000 hours are in fixed wing aircraft; the rest is helicopter. Greg was a designated post-maintenance test pilot early in his career. He has worked in maintenance, operations, logistics, and acquisition. He has held all military flight designations, to include Weapons Tactics Instructor. He was the primary fixed wing instructor of the year at the Naval Air Training Command in Pensacola, Florida for 1979. The only accident he claims to have ever had was in his own home-built biplane; the result of a mechanic putting improper brake fluid in his brake system. A native of Southern California, Greg attended the University of Hawaii on a football scholarship. Following a short romance with the San Diego Chargers (as a free agent) he turned to Naval Aviation when he was finally able to pass the Navy's stringent aerospace flight physical. Greg holds a masters degree from Pepperdine University and is a graduate of the Defense Systems Management College. Tonight, Greg hopes to give you a journeyman's aviation perspective on health monitoring. He will also provide some anecdotal observations and insight on safety, as well as design for maintenance on aircraft. Following his comments he will field questions from the audience.



**Center of Excellence in Structural Health Monitoring
Spring Meeting, Penn Stater Conference Center, University Park, PA
Thursday, 11 June 2009**

8:30	Registration and Coffee
9:00	Welcome and Introduction
9:15	Keynote: Structural Health Monitoring of Nuclear Components, Stephen Cumblidge, Pacific Northwest National Laboratory
10:05	TBA, Karl Reichard, Penn State Applied Research Laboratory
10:30	Break
10:50	Rotorcraft Airframe Structural Integrity Monitoring, Mark Davis, Sikorsky Aircraft
11:15	Vibration-Based Structural Damage Detection, Weidong Zhu, University of Maryland-Baltimore County
11:40	Ultrasonic Guided Wave Technology Transfer, Steve Owens and Roger Royer, FBS Inc.
12:05	Lunch
1:15	SHM Center Update, Cliff Lissenden, Penn State Engineering Science and Mechanics
1:35	Aircraft Aging and Durability Project Overview, Elliott Cramer, NASA Langley Research Center
2:00	Energy Harvesting, Heath Hofmann, Penn State Electrical Engineering
2:25	Wireless Ultrasonic Transducer Network for SHM Applications, George Zhao, Intelligent Automation Inc.
2:50	Posters and Displays with Snacks
3:30	Panel Discussion
4:00	Penn State Facilities
6:00	Reception
6:30	Dinner with Speaker, Greg Johnson, Penn State Applied Research Laboratory, An Aviator's Perspective on Health Monitoring





Center of Excellence in Structural Health Monitoring
Spring Meeting, Penn Stater Conference Center, University Park, PA
Friday, 12 June 2009

8:30	Registration and Coffee
9:00	Keynote: Structural Health Monitoring - A GE Perspective , Thomas Batzinger , <i>GE Global Research</i>
9:50	Coupled-Field Modeling and Simulation of Damage Dynamics and Failure Statistics , Joseph Cusumano and Francesco Costanzo , <i>Penn State Engineering Science and Mechanics</i>
10:15	SHM Sensing and Embedded Monitoring Devices , Bill Nickerson , <i>Impact RLW Systems</i>
10:40	Break
11:00	Using COTS Technology to Create a New Generation of Structural Health Monitoring Systems , Igor Alvarado , <i>National Instruments</i>
11:25	New Sensors for Improved Ultrasonic Guided Wave Tomography in SHM , Joseph Rose , <i>Penn State Engineering Science and Mechanics</i>
11:50	Lunch
1:00	SHM and NDI Technologies for Wind Energy Structures , Clark Moose , <i>Penn State Applied Research Laboratory</i>
1:25	Probabilistic Fatigue Life Prediction from Guided Wave Ultrasonic Technology SHM , Cliff Lissenden , <i>Penn State Engineering Science and Mechanics</i>
1:50	Penn State-led NSF ERC Proposal on Ultrasound Tool Sets for Health and Infrastructure , Tom Shrout , <i>Penn State Materials Research Institute</i>
2:10	Wrap-up
3:00	Advisory Board Meeting



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