



Center of Excellence in Structural Health Monitoring

Spring Meeting
16-17 April 2008

The Penn Stater Conference Center Hotel
State College, Pennsylvania



Keynote Speakers

Asset Health Management of Naval System, *Ignacio Perez, Office of Naval Research, Arlington VA*

Dr. Perez obtained his B.S. in Physics from the University of Barcelona, Spain. He obtained his Ph.D. in Physics from Rutgers University, NJ in 1987. He joined the Naval Air Warfare Center (NAWC), Warminster PA, in the Nondestructive Evaluation (NDE) group in 1990 and became team leader 1995. In 2002 he moved to Washington DC where he became the Composite Materials and NDE Program Officer at the Office of Naval Research where he currently works.

Structural Health Monitoring Challenges and Applications, *Mark M. Derriso, Air Force Research Laboratory, Wright Patterson Air Force Base*

Mr. Derriso is a team leader in the Advanced Structural Concept Branch of the Air Vehicles Structures Division. He has years of experience in research and development of advanced materials and structures. Mark also has vast experience in developing unique data acquisition and controls systems for testing aircraft structures and materials. Currently, he serves as the AFRL technical lead for Integrated Systems Health Management (ISHM). Mr. Derriso is also the technical lead for the research area of Structural Health Monitoring (SHM). His current research efforts are in the area of health management for fielded and new weapon systems. Previously, Mark worked at the Air Force Institute of Technology (AFIT) where he performed research on metal matrix composites (MMC) and ceramic matrix composites (CMC) for the National Aerospace Plane (NASP) program. Mr. Derriso has an A.A.S. degree in Electronics Engineering Technology from Kentucky State University, a B.S. degree in Electrical Engineering from Wright State University and a M.S. degree in Mechanical Engineering from the University of Dayton.

Purpose of Meeting: 1) introduce new Center members, 2) showcase ongoing projects at Penn State, 3) foster relationships, 4) give attendees an opportunity to learn about the state of the art, recent breakthroughs, future directions, and technology needs for SHM

Center Mission: Advance the state-of-the-art in 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.



**Center of Excellence in Structural Health Monitoring Spring Meeting Penn Stater Conference Center, University Park, PA
Wednesday, 16 April 2008**

8:00	Registration
8:30	Welcome
9:00	Keynote: Asset Health Management of Naval System , <i>Ignacio Perez</i> , Office of Naval Research, Composite Materials and NDE Program
9:35	Damage Mechanics in Brittle Graphite: Theory and Simulation , <i>Francesco Costanzo</i> , Penn State, Engineering Science and Mechanics
10:00	Recent Advances in Piezoelectric Polymer Sensors for NDE , <i>Qiming Zhang</i> , Penn State, Electrical Engineering
10:25	Break
10:45	The Ben Franklin CoE SHM , <i>Cliff Lissenden</i> , Penn State, Engineering Science and Mechanics
11:10	A Method for Generalized Prognostics of a Component Using Paris Law , <i>Eric Bechhoefer</i> , Goodrich SIS
11:35	Self-Powered Health Monitoring Using the Activity Being Sensed as the Sole Source of Power , <i>Richard Cass, Farhad Mohammadi, Hyeoungwoo Kim, and Jerry Ruddle</i> , Advanced Cerametrics
12:00	Lunch
1:00	New Sensors for Improved Ultrasonic Guided Wave Tomography in SHM , <i>Joseph Rose and Jaya Koduru</i> , Penn State, Engineering Science and Mechanics
1:25	The Origin of Unpredictability in Damage Evolution Dynamics: Fundamental Limitations on SHM System Performance , <i>Joe Cusumano</i> , Penn State, Engineering Science and Mechanics
1:50	Use of Nonlinear Features for the Identification of the Location of a Breathing Crack in an Isotropic Beam , <i>Fabio Semperlotti</i> , Penn State, Aerospace Engineering
2:15	Ultra-Compact Vibration Power Harvesting for Wireless Sensors , <i>Jeremy Frank and Jacob Loverich</i> , KCF Industries
2:40	Data Mining for Structural Health Monitoring , <i>Mirna Urquidi Macdonald</i> , Penn State, Engineering Science and Mechanics
3:05	Silicon Carbide Prognostics , <i>Karl Reichard, Chris Rogan, and Greg Bower</i> , Penn State, Applied Research Laboratory
3:30	Break
3:50	Lab Tour: Applied Research Laboratory Testbed
6:00	Reception
6:30	Dinner

Center of Excellence in Structural Health Monitoring Spring Meeting Penn Stater Conference Center, University Park, PA Thursday, 17 April 2008

8:00	Registration
8:30	Welcome
8:40	Keynote: Structural Health Monitoring Challenges and Applications, <i>Mark Derriso</i>, Air Force Research Laboratory, Advanced Structural Concept Branch
9:15	Towards the Demonstration of an Integrated Systems Health Management Capability, <i>Michael Schoeller</i>, Impact Technologies
9:35	Monitoring of Concrete Pavement Responses under Heavy Multi-Wheel Aircraft Gears, <i>Shelley Stoffels</i>, Penn State, Civil and Environmental Engineering
10:00	Carbon Nanotube Sensing Skins for Structural Health Monitoring, <i>Jerome Lynch</i>, University of Michigan, Civil and Environmental Engineering, Electrical Engineering and Computer Science
10:25	Break
10:45	Advanced Single Crystal Piezoelectrics for NDE and SHM Applications, <i>Xiaoning Jiang</i>, TRS Technologies
11:10	Remote Sensing of Transient Temperature and/or Strain Histories and the Inverse Determination of Boundary Conditions, <i>Albert Segall</i>, Penn State, Engineering Science and Mechanics
11:35	Vibration Excitation Caused by Gear Damage, <i>Bill Mark</i>, Penn State, Applied Research Laboratory
12:00	Lunch
1:00	Break out group introduction
1:20	Break out group discussion
2:40	Break
3:00	Break out group presentations
3:30	Advisory Board meeting



