# Tuesday March 25, 2014

**Keynote Address 8:00-8:45 am**
***Innovations in Breast Imaging and Why We Need Them***
**Michael K. O'Connor, Mayo Clinic**

| | **Aerospace**<br>Chair: A. Poudel, Southern Illinois University Carbondale | **Thermography: Advanced Techniques and Applications**<br>Chairs: M. Fallahpour, University of Illinois at Urbana-Champaign; K. Donnell, Missouri S&T |
|---|---|---|
| 9:00 am | **Impact Damage Detection in CFRP Laminates with Ultrasonic NDE**<br>S. Li, S. Sharf, C. McGee, P. Chu, Southern Illinois University Carbondale; Y. Pan, Emerson Inc. | **Effect of Material Properties on Active Microwave Thermography**<br>A. Foudazi, K. Donnell, Missouri S&T; M. Fallahpour, University of Illinois at Urbana-Champaign |
| 9:30 am | **NDE of Aged CFRP Panels using Infrared Thermography**<br>C. McGee, S. Li, S. Sameeuddin, T. Chu, Southern Illinois University Carbondale; Y. Pan, Emerson; T. Chen, M. Huang, National Cheng Kung University Taiwan; C. Liu, Chung Shan Institute of Science and Tech | **Green's Function for Evaluation of Microwave Power used for Active Microwave Thermography**<br>A. Foudazi, K. Donnell, Missouri S&T; M. Fallahpour, University of Illinois at Urbana-Champaign |
| 10:00 am | **Porosity Measurement in Carbon Fiber Epoxy Laminates by using Acoustography**<br>A. Poudel, T. Chu, Southern Illinois University Carbondale; J. Sandhu, Santec Systems Inc.; C. Pergantis, US Army Research Laboratory | **Comparison of Advanced Data Processing and Quantitative Methods in Pulsed Thermography**<br>F. Lopez, Federal University of Santa Catarina; C. Ibarra-Castanedo; X. Maldague, Laval University |
| 10:30 am | **Shearography NDT of Aerospace Composites**<br>J. Newman, Laser Technology Inc. | **Viscoelastic Absorptive Coatings for Vibration Coverage Analysis in Vibrothermography**<br>S. Holland, J. Vaddi, Iowa State University CND |

**11:00 am-12:30 pm Lunch in the Exhibit Hall**

| | Tuesday March 25, 2014 | |
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| | **Structural Health Monitoring I**<br>Chairs: S. Kenderian, The Aerospace Corporation; A. Farhidzadeh, SUNY at Buffalo | **Thermal Methods**<br>Chairs: M. Fallahpour, University of Illinois at Urbana-Champaign; K. Donnell, Missouri S&T |
| 12:30 pm | **Corrosion Diagnostics in Loaded Pre-stressing Strands using Guided Ultrasonic Waves and Acoustic Emission**<br>A. Farhidzadeh, S. Salamone, SUNY at Buffalo | **Active Microthermography**<br>Z. Talken, J. Wilson, E. Kinzel; Missouri S&T |
| 1:00 pm | **Characterization of Cracking in Concrete using a Fully Contactless Scanning Ultrasonic System**<br>S. Ham, J. Popovics, University of Illinois | **Near and Far Field Detection of Foreign Object Debris in Composites**<br>S. Shepard, Thermal Wave Imaging, Inc. |
| 1:30 pm | **Tracking Long Term Changes in the Jeremiah Morrow Bridge using Multivariate Correlational Data Analysis**<br>M. Norouzi, V. Hunt, A. Helmicki, University of Cincinnati | **Comparison of Microwave Sensing Methods for Monitoring Sand Production in Petroleum Wells**<br>S. Hilgedick, K. Donnell, Missouri S&T |
| 2:00 pm | **Acoustic Emission Damage Assessment and Pattern Recognition Analysis for Prestressed Concrete Structures**<br>M. Abdelrahman, M. ElBatanouny, P. Ziehl, University of South Carolina | |
| **2:30-3:00 pm Refreshment Break in the Exhibit Hall** | | |

# Tuesday March 25, 2014

| | Structural Health Monitoring II<br>Chairs: S. Kenderian, The Aerospace Corporation; A. Farhidzadeh, SUNY at Buffalo | NDE Engineering |
|---|---|---|
| 3:00 pm | **NDE for Tracking Progressive Damage Development in Composite Materials**<br>A. Gupta, J. Duke, Virginia Tech | **Vibration Response of a Foundation on Elastic Half-Space Medium-Experimental Analysis**<br>B. Alsaidi, E. Sarfaraz, H. Hamidzadeh, Tennessee State University |
| 3:30 pm | **SHM Capabilities of Modified Wood Adhesives for Timber Structures**<br>C. Winkler, U. Schwarz, Eberswalde University of Applied Science | **Toward Automated Interpretation of Integrated Information: Managing "Big Data" for NDE**<br>S. Holland, T. Lesthaeghe, E. Gregory, Iowa State University CND |
| 4:00 pm | | **Modal Vibration Analysis of Discontinuously Damped Cylinder**<br>E. Sarfaraz, B. Alsaidi, H. Hamidzadeh, Tennessee State University |
| 4:30 pm | | **Evaluation of Residual Stress in Welding of Spiral Carbon Steel Tubes in Oil Heater**<br>M. Heidari, B. Mazandaran, Takta Azmoon Sanat; H. Bayest, Daboo Sanat |

**ASNT 23rd Research Symposium, Minneapolis, MN**

# Wednesday March 26, 2014

**ASNT Research Award for Sustained Excellence 8:00-8:45 am**
***Sustained Innovation***
***How it makes the difference***
**B. Boro Djordjevic, Materials and Sensors Technologies, Inc.**

| | **Digital Imaging/Neutron Radiography/Radiography**<br>Chair: H. Taheri, South Dakota State University | **Ultrasonic I** |
|---|---|---|
| 9:00 am | **Utilization of Virtualized Environments for Efficient X-ray Attenuation Approximation**<br>E. Jimenez, K. Thompson, L. Orr, Sandia National Laboratories | **Artificial Neural Network Prediction of Concrete Strength Based on Non-Destructive Test Results**<br>O. Antonio, A. Jaurigue, University of the Philippines |
| 9:30 am | **Development of Subsea Radiography using a Marinised DDA**<br>J. McNab, D. Scoville, Oceaneering; D. Keck, BP America; R. Venkatachalam, GE | **Ultrasonic Technique Development and Validation using Software Tools**<br>R. Ginzel, J. Buchholz, Eclipse Scientific |
| 10:00 am | **Digital Radiography and Computed Tomography Process Effect on Electronic Device Temperature and Circuit**<br>H. Taheri, F. Delfanian, J. Du, South Dakota State University | **Novel Damage Diagnosis Algorithms for Aerospace Non Destructive Testing Data using Ultrasonic Testing Technique**<br>T. Khan, N. Rao, F. Amir, PNECNUST; M. Khan, PIA Engineering |
| 10:30 am | | **A Novel Method for Ultrasonically Estimating Stress States of Metallic Components**<br>C. Kube, J. Turner, University of Nebraska; G. Garcia, EVRAZ |

**11:00 am-12:30 pm Lunch Break**

# Wednesday March 26, 2014

| | NDE Characterization<br>Chair: A. Poudel, Southern Illinois University Carbondale | Ultrasonic II<br>Chair: H. Taheri, South Dakota State University |
|---|---|---|
| 12:30 pm | **Automated Defect Classification using Artificial Neural Networks**<br>S. Sameeuddin, A. Poudel, S. Li, T. Chu, Southern Illinois University Carbondale; Y. Pan, Emerson | **Online High Frequency Ultrasonic Testing to Enable Closed Loop Control of Additive Manufacturing Systems**<br>K. Nadimpalli, D. Pal, T. Starr, B Stucker, University of Louisville |
| 1:00 pm | **Nondestructive Characterization of Sensitization of Aluminum Alloy AA5083 using Eddy Current Probes**<br>P. Lekeaka-Takunju, S. Agnew, University of Virginia; G.Bunget, M. Shedd, Luna Innovations, Inc. | **Ultrasonic Evaluation of Composite Materials: Conventional and Phased Array Techniques**<br>H. Taheri, F. Delfanian, J. Du, South Dakota State University |
| 1:30 pm | **What Makes a Phased Array Instrument Advanced? Understanding Important Characteristics for Automated Systems**<br>G. Dao, Advanced OEM Solutions | **Real Time 2D Ultrasound Camera Imaging: A Higher Resolution Option to Phased Array**<br>B. Lasser, D. Rich, J. Kula, D. Slaski, O. Mallaug, Imperium Inc. |
| 2:00 pm | **Nondestructive Characterization of Oxidative Aging in Asphalt Concrete Pavements**<br>H. Reis, M. McGovern, B. Behnia, B. Hill, W. Buttlar, University of Illinois at Urbana-Champaign | **Shear Wave Measurements using Normal Incidence Focused Transducers**<br>A. Arguelles, C. Kube, University of Nebraska-Lincoln |

**2:30-3:00 pm Refreshment Break**

# Wednesday March 26, 2014

| | Computed Tomography | Ultrasonic III |
|---|---|---|
| 3:00 pm | **Computed Tomography and 3-D Rendering of Composite Materials**<br>D. Moore, B. Kernen, Sandia National Laboratories | **Non-Invasive Inspection of Heat Exchanger Tubes**<br>M. Klatt, J. Siegel, AcousticEye |
| 3:30 pm | **Comparison of Computed Tomography Values from Industrial CT systems to Measured X-ray Attenuation Values**<br>K. Thompson, E. Jimenez, L. Orr, Sandia National Laboratories | **Proposal for Test Block for Procedure Demonstration With TOFD Technique According to ASME Code Sec. VIII Div.2.**<br>G. Nardoini, P. Nardoni, D. Nardoni, M. Feroldi, I&T Nardoni Institute; A. Filosi, L. Possenti, S. Quetti, ATB RIVA CALZONI |
| 4:00 pm | **Tomographic Imaging of Moving Objects**<br>S. Shakya, P. Munshi, Indian Institute of Technology Kanpur | **UT of Welding of a 70 mm ss316L Blind to Nozzle in a Pressure Vessel**<br>M. Heidari, B. Mazandaran, Takta Azmoon Sanat Co; B. Ramezanian, Pargasiran Co |
| 4:30 pm | **Mollifier Schemes in Limited Data Computerized Tomography**<br>M. Goswami, A Saxena, P. Munshi, Indian Institute of Technology Kanpur | |

# Thursday March 27, 2014

**ASNT Research Award for Innovation 8:00-8:45 am**
***Thermographic Signal Reconstruction – From Images to Signals (and Back)***
**Steven M. Shepard, Ph.D., Thermal Wave Imaging, Inc.**

| | **Guided Waves I**<br>Chair: E. Dehaghan Niri, State University of New York at Buffalo | **Eddy Current**<br>Chair: H. Taheri, South Dakota State University |
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| 9:00 am | **Multi-mode (passive-active) Real Time Corrosion and Leak Monitoring of Cylindrical Structures**<br>E. Dehghan Niri, State University of New York at Buffalo | **The Evaluation of Signal Frequency and Testing Speed on Wireless Eddy Current Inspection**<br>H. Taheri, F. Delfanian, J. Du, South Dakota State University |
| 9:30 am | **Quantitative Propellant Diagnostics with Ultrasonic Guided Waves**<br>B. Gheorghe, Luna Innovations | **Detection of Subsurface Flows in Ferritic Steel With Eddy Current Probe**<br>G. Nardoni, V. Uchanin, I&T Nardoni Institute |
| 10:00 am | **Characterization of Fatigue Cracks via Adaptive Imaging with Estimated Scattering Matrices**<br>X. Chen, J. Michaels, T. Michaels, Georgia Institute of Technology | **Multi Frequency Eddy Current Non Destructive Evaluation of Aerospace Structures**<br>T. Khan, M. Hassan, F. Amir, PNECNUST; S. Hassan, PIA Engineering |
| 10:30 am | **Ultrasonic Guided Wave Mode Conversion from Transducer Couplings**<br>S. Lowe, S. Fateri, TWI Ltd. | |

**11:00 am-12:30 pm Lunch Break**

# Thursday March 27, 2014

| | Guided Waves II<br>Chair: E. Dehaghan Niri, State University of New York at Buffalo | NDE Method Development |
|---|---|---|
| 12:30 pm | **A Two Dimensional Fourier Transform using Incremental Frequency Examination for Multimodal Ultrasonic Guided Wave Analysis**<br>S. Fateria, N. Boulgouris, S. Majidnia, Brunel University; A. Wilkinson, TWI Ltd. | **NDE of Composite Biopolymer Material at Nanoscale by AFM Based Nanoindentation**<br>X. Xi, B. R. Tittmann, Penn State University |
| 1:00 pm | **Quantitative Modal Analysis of Ultrasonic Guided Wave Signals**<br>P. Mudge, TWI Ltd. | **Void-Fraction Estimations for Bubble Column with Small Diameter**<br>M. Goswami, S. Kumar, A. Khanna, P. Munshi, A. Saxena, Indian Institute of Technology Kanpur |
| 1:30 pm | **Efficient GWUT Signal Processing Algorithms for Wireless NDE**<br>T. Khan, PNECNUST | **Radiography Testing of AL 5083 Welded Plates**<br>M. Heidari, Takta Azmoon Sanat Co.; B. Ramezanian, Pargasiran Co. |
| 2:00 pm | | |

**2:30-3:00 pm Refreshment Break**

# Thursday March 27, 2014

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| | **Neutron Radiography**<br>Chair: S. Maghsoudy-Louyeh, The Aerospace Corporation | |
| 3:00 pm | **US Army Advancements with Neutron Radiographic Equipment**<br>S. Zuber, US Army RDECOMARDEC | |
| 3:30 pm | **Characteristics of Statistical Noise of the sCMOS Based Neutron Computed Radiography Images - A Simplified Measurement Approach**<br>M. Radebe, Necsa; A. Kaestner, E Lehmann, Paul Scherrer Institute | |
| 4:00 pm | | |
| 4:30 pm | | |