

Tentative Technical Program



FIFTH SYMPOSIUM ON EVALUATION OF EXISTING AND NEW SENSOR TECHNOLOGIES FOR FATIGUE, FRACTURE AND MECHANICAL TESTING

Sponsored by ASTM Committees E08 on fatigue and Fracture and E28 on Mechanical Testing

May 25-26, 2021
Virtual

Symposium Chairs:

Jidong Kang

CanmetMATERIALS
Hamilton, ON, Canada
Email: jidong.kang@canada.ca

Peter C. McKeighan

Symmetry Engineering and Forensic Consulting LLC
Shingle Springs, CA, USA
Email: pmckeighan@sym-eng.com

Gary Dahlberg

MTS Systems Corporation
Rio Rancho, NM, USA
Email: gary.dahlberg@mts.com

Bob Kemmerer

Carpenter Technology
Reading, PA, USA
Email: bkemmerer@cartech.com

ABOUT THE SYMPOSIUM

The symposium will provide a forum for the presentation of current research on existing and new sensor technologies for fatigue, fracture, and mechanical testing. It will also serve as an incubator for identifying new opportunities for standardization in related areas.

TUESDAY, MAY 25, 2021
(All time in U.S. EDT)

9:00 AM **Welcome and Opening Remarks**
Peter McKeighan (E08) and Bob Kemmerer (E28), Symposium Chairs

SESSION 1: DIGITAL IMAGE CORRELATION – Part 1

Session Chair: Peter McKeighan

9:10 AM **KEYNOTE: Overview and Comparison of Non-contacting and Traditional Contacting Extensometers**
Erik Schwarzkopf, MTS Systems Corporation, Eden Prairie, MN, USA

9:45 AM **Evaluation of Video Extensometer in Youngs Modulus Measurement in Tensile Testing**
Jidong Kang, CanmetMATERIALS, Hamilton, ON, Canada

10:10 AM **Application of Digital Image Correlation for Crack Length Measurement in WDCB-based Mode I Fracture Toughness Testing of Composites**
Yanhong Chen, University of Oxford, Oxford, United Kingdom

10:35 AM **In-Situ Observation of the Local Deformation Behavior of Coarse-Grained Nickel Cast Alloys Under Thermo-Mechanical Fatigue Loading Using Digital Image Correlation**
Karl Kraemer, TU Darmstadt, Darmstadt, Germany

11:05 AM BREAK

SESSION 2: DIGITAL IMAGE CORRELATION - Part 2

Session Chair: Gary Dahlberg

11:20 AM **Real-Time Digital Image Correlation Coupled with an Anti-Buckling Device for Advanced Cyclic Tension-Compression Testing of Lightweight Materials**
Akshat Agha, FADI-AMT LLC, Greenville, SC, USA

11:45 AM **Advanced Non-Contact Measurement Technologies for a CF-188 Structural Durability and Damage Tolerance Fatigue Test**
David Backman, National Research Council Canada, Ottawa, ON, Canada

12:10 PM **A New Methodology for Determination of Biaxial Tensile Behavior of AA7075-T6 Sheet using Hot Gas Bulge Forming**
Moisei Bruhis, McMaster University, Hamilton, ON, Canada

12:35 PM **DIC Calibration and Verification Trends and Good Practices**
Tim Schmidt, Trilion, King of Prussia, PA, USA

1:00 PM **ADJOURN FOR THE DAY**

WEDNESDAY, MAY 26, 2021
(All times in U.S. EDT)

SESSION 3: OTHER APPLICATIONS – Part 1

Session Chair: Jidong Kang

- 9:00 AM **Automatic Tracking Measurement Method of Biaxial Crack Propagation Path Based on Image Recognition Technology**
Qiang Lin, Tianjin University, Tianjin, China
- 9:25 AM **In-Site Creep Testing System for Tubular Specimens at Elevated Temperature**
Derek Tsang, Shanghai Institute of Applied Physics (SINAP), Shanghai, China
- 9:50 AM **Real-time Visible Monitoring of Crack Growth Behavior under Biaxial Loading through Organic Mechanoluminescence**
Zhe Zhang, Tianjin University, Tianjin, China
- 10:15 AM **Fatigue Studies on Small Disk Specimens through Cyclic Small Punch Testing and Acoustic Emission Monitoring**
Raghu Prakash, Indian Institute of Technology Madras, Chennai, Tamilnadu, India
- 10:40 AM **BREAK**

SESSION 4: OTHER APPLICATIONS – Part 2

Session Chair: Bob Kemmerer

- 10:55 AM **Crack Growth Measurement Under Thermo-Mechanical Fatigue Loading Using Alternating Current Potential Drop**
Karl Kraemer, TU Darmstadt, Darmstadt, Germany
- 11:20 AM **The Influence of Crack Tip Plasticity on Subcritical Crack Growth Measurements Using the Direct Current Potential Difference Technique**
Zachary Harris, University of Virginia, Charlottesville, VA, USA
- 11:45 AM **An Internet of Things based Crack Growth Monitoring Approach Using Multiphysics NDE Data**
Antonios Kotsos, Drexel University, Philadelphia, PA, USA
- 12:10 PM **Closing Remarks**
Symposium Chairs
- 12:15 PM **SYMPOSIUM ADJOURNS**