

International Workshop on Environmental Damage in Structural Materials Under Static Load/Cyclic Loads at Ambient Temperature 2016

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Cork, Ireland
29 May – 3 June 2016

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Sunday, May 29, 2016

- 17:00 – 18:00 Conference Check-in (South's Bar)
- 18:00 – 19:00 Opening Reception (South's Bar)
- Welcome remarks:
 Conference Organizers + ECI Liaison

NOTES

- Technical sessions will be in the Plunkett and Morgan rooms.
- Poster sessions will be in the Hillcrest Room.
- Lunches will be in the Pembroke Restaurant. The conference banquet will be in the Whitechurch Suite.
- Audiotaping, videotaping and photography of presentations are strictly prohibited.
- Speakers – Please leave at least 5 minutes for questions and discussion.
- Please do not smoke at any conference functions.
- Turn your cellular telephones to vibrate or off during technical sessions.
- Please write your name in the front of this booklet in case it is misplaced.
- Be sure to check the participant list in this booklet to confirm that your listing is correct. If there are changes or updates, please login to the ECI website and update your listing so that the list that ECI will send to all participants after the conference will be correct.

Monday, May 30, 2016

09:00 – 09:15

Welcome and Announcements

A.K. Vasudevan, Conference Chair, H.Holroyd,
R. Latanision, ECI Technical Liaison

Session I: Special Topics

Session Chair: Matteo Ciccotti, ESPCI ParisTech, France

09:15 – 09:55

Incorrect materials selection as a cause of environmentally assisted cracking 1

Stan Lynch, Monash University, Australia

09:55 – 10:35

Crack nucleation, growth & arrest under subcritical crack growth 2

K. Sadananda & A.K. Vasudevan, TDA,Inc., USA

10:35 – 11:15

Coffee break + Poster session

11:15 – 11:55

A perspective on environmentally-induced cracking 3

Ronald M. Latanision, Exponent, Inc., USA

11.55 – 13:15

Lunch

Session II: Special Topics (continued)

Session Chair: Alan Turnbull, NPL, UK

13:15 – 13:55

Micromechanisms of fracture propagation in glassy polymers 15

Matteo Ciccotti, ESPCI ParisTech, France

13:55 – 14:35

Environmentally assisted fatigue of superelastic NiTi 32

Jan Racek, Institute of Physics of the Czech Academy of Sciences,
Czech Republic

14:35 – 15:15

Competition of stress corrosion crack branches observed in-situ using time-lapse 3D x-ray synchrotron computed tomography 33

Tim L. Burnett, University of Manchester, UK

15:15 – 16:30

Coffee break + Poster session

16.30

Evening on your own

Tuesday, May 31, 2016

Session III: Models & Experiments

Session Chair: Monica Trueba, Università Degli Studi di Milano, Italy

- 09:00 – 09:40 **Predicting fatigue crack initiation in metals using dislocation dynamics simulations 34**
Veera Sundararaghavan, University of Michigan Ann Arbor, USA
- 09:40 – 10:20 **Role of defect interactions during hydrogen embrittlement in iron: A multiscale perspective 53**
K.N. Solanki, Arizona State University, USA
- 10:20 – 11:00 Coffee break + Poster session
- 11:00 – 11:40 **SCC characterization of AL-Li-Cu-x Alloys 54**
A.K. Vasudevan, TDA Inc., USA & H. Holroyd, USA
- 11:40 – 12:20 **The effect of composition, temper, and crack orientation on the stress corrosion cracking behavior of Al-Mg alloys 55**
James Burns, University of Virginia, USA
- 12:20 – 13:55 Lunch
- 14:00 – 18:00 Excursion to Blarney Castle and Gardens
- Free time / evening on your own

Wednesday, June 1, 2016

Session IV: Microstructure

Session Chair: Dan Kujawski, Western Michigan University, USA

- 09:00 – 09:40 **Effect of grain boundary microstructural features on the fracture behavior of Al-Li alloys 56**
Ramasis Goswami, Naval Research Laboratory, USA
- 09:40 – 10:20 **The effect of corrosion morphology on the fatigue initiation and small crack growth behavior of AA7050-T7451 57**
James Burns, University of Virginia, USA
- 10:20 – 11:00 Coffee Break + Poster session
- 11:00 – 11:40 **Microstructural and environmental effects on stress corrosion and corrosion fatigue of 7075 aluminum alloy 58**
Nik Chawla, Arizona State University, USA
- 11:40 – 12:45 Lunch

Session IV: Microstructure (continued)

Session Chair: Scott A. Fawaz, SAFE, Inc., USA

- 12:45 – 13:25 **Mechanical & chemical driving force affecting crack nucleation 59**
A.K. Vasudevan & K. Sadananda, TDA, Inc, USA
- 13:25 – 14:05 **Rate-controlling processes during environment-sensitive crack propagation in aluminum 79**
Tim Burnett, The University of Manchester, United Kingdom
- 14:05 – 14:45 **Solution conductivity dependent crack size effect in stress corrosion cracking and corrosion fatigue 80**
Alan Turnbull, NPL, United Kingdom
- 14:45 – 15:30 **Technical Discussion**
- 15:30 – 16:00 Coffee Break + Poster session

Session V: Hydrogen Assisted Cracking/Applications

Session Chair: Tim Burnett, The University of Manchester, UK

- 16:00 – 16:40 **Environmental assisted cracking of pipeline steels in CO₂ containing environment 81**
Marina Cabrini, University of Bergamo, Italy
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Reinder Hindrik Vegter, SKF Engineering & Research Centre, Netherlands

Evening on your own

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Session Chair: Sarah E. Galyon Dorman, SAFE, Inc., USA

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William Nickerson, Office of Naval Research, Arlington, USA
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Fritz J. Friedersdorf, Luna Innovations, USA
- 10:20 – 11:00 **Effect of sensitization on the stress corrosion cracking of AA5083 146**
Ramgopal Thodla, DNVGL, USA
- 11:00 – 11:40 Coffee break
- 11:40 – 12:20 **Pre-exposure embrittlement of sensitized aluminum-magnesium alloy, 5083-H116 147**
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- 12:20 – 13:00 **Investigation of electrochemically-induced repassivation of Al 7075-T6 and Al 2024-T3 as a function of applied stress and galvanic corrosion 148**
Monica Trueba, Università degli Studi di Milano, Italy

13:00 – 14:30 Lunch

Session VII: Fatigue

Session Chair: N. Chawla, Arizona State University, USA

- 14:30 – 15:10 **Understanding small crack effects on failure & threshold diagrams 169**
Daniel Kujawski, Western Michigan University, USA
- 15:10 – 15:50 **A numerical model to assess the role of crack-tip hydrostatic stress and plastic deformation in Environmental Assisted Fatigue Cracking 186**
Francesco Villa, University of Bergamo, Italy
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Sarah E. Galyon Dorman, SAFE, Inc., USA
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- 09:00 – 09:40 **UnioGrow & UnioCorr Life Prediction Models 202**
N. Iyyer, TDA, Inc, USA
- 09:40 – 10:40 **Discussion: What Corrosion Parameters are needed in Life Prediction Models?**
Moderator: R. Latanision, Exponent, USA
- 10:40 – 11:10 Coffee break
- 11:10 – 11:40 Feedback + Comments
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