

Program
International Symposium
on
Environmental Damage
under Static and Cyclic Loads in
Structural Materials
at Ambient Temperatures

August 14 – 19, 2011
Krakow, Poland

Conference Chairs

A.K. Vasudevan
Office of Naval Research

Henry Holroyd
Luxfer, Inc.

Richard Ricker
NIST

Neville Moody
Sandia National Laboratories



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Sunday, August 14, 2011

18:00	Conference Check-in
19:00	Reception
20:00	Dinner Wierzynek Restaurant (48-12-424-96-01) Rynek Glowny 15 (Main Market Square 15)

Notes

1. Conference Hotel: Andel's Hotel Krakow – ul. Pawla 3 – Krakow 31-154, Poland
2. Conference Hotel telephone number: +48-12-660-01-00
3. Breakfast buffets are in the restaurant of the Andel's Hotel Krakow.
4. Lunches are in the restaurant of the Andel's Hotel Krakow.
5. Dinners will be in different restaurants each night, usually preceded by a guided walking tour.

Monday, August 15, 2011

- 07:00 – 08:45 Breakfast buffet
- 08:45 – 09:00 **Welcome and Announcements**
A.K. Vasudevan, Conference Chair
Dean Miller, ECI Technical Liaison
- Session I: Overviews**
Session Chair: Eiji Akiyama, NIMS, Japan
- 09:00 – 09:40 **Fatigue crack growth analysis under spectrum loading in various environmental conditions**
Grzegorz Glinka, University of Waterloo, Canada
- 09:40 – 10:20 **A viewpoint on stress corrosion cracking**
Ronald Latanision, Exponent, Inc. Boston, Massachusetts, USA
- 10:20 – 10:50 Coffee break
- 10:50 – 11:30 **Water penetration: Its effect on strength and static fatigue of glass**
Sheldon Wiederhorn, NIST, Gaithersburg, Maryland, USA
- 11:30 – 12:10 **Modified Kitagawa diagram-crack initiation to growth**
Kuntimaddi Sadananda, Technical Data Analysis, Inc, Falls Church, Virginia, USA
- 12:10 – 13:30 Lunch
- Session I: Overviews (continued)**
Session Chair: Wolfgang Dietzel, GKSS, Germany
- 13:30 – 14:10 **SCC beyond electrochemistry: liquid metal embrittlement**
Evgeny Glickman, Tel Aviv University, Israel
- 14:10 – 14:50 **Mechano-electro-chemical driving force for stress corrosion crack initiation and growth**
Meryl M.Hall, Bettis Laboratory, Pittsburgh, Pennsylvania, USA (retired)
- 14:50 – 15:20 Coffee break
- 15:20 – 16:00 **Rate-controlling process for sustained load environmentally assisted cracking**
Stanley Lynch, Defence Science and Technology Organisation, Melbourne, Australia

Monday, August 15, 2011 (continued)

- 16:00 – 16:35 **Stress corrosion crack growth during initial stages of DCB testing of Al-Zn-Mg-Cu alloys in aqueous saline environments**
N. J. Henry Holroyd, Luxfer Gas Cylinders (Retired), Riverside, California, USA
- 16:35 – 17.00 **SCC behavior under tension and compression loading**
A.K. Vasudevan, Office of Naval Research, Arlington, Virginia, USA
- 17:30 Meet in Andel's Hotel Krakow lobby for Walking Tour #1
- 20:00 Dinner at Szara Restaurant (48-12-421-66-69)
Rynek Glowny 6 (Main Market Square 6)

Tuesday, August 16, 2011

- 07:00 – 08:45 Breakfast buffet
- 08:45 – 09:00 **Session II: Models/Experiments**
Session Chair: Nikhil Chawla, Arizona State University, USA
- 09:00 – 09:35 **A consistent thermodynamic description of hydrogen diffusion and defect interaction in a material containing dislocations, voids and micro-cracks**
D. J. Bammann, Center for Advanced Vehicular Systems, Mississippi State University, Starkville, Mississippi, USA
- 09:35 – 10:10 **Atomic scale study of grain boundary segregation and hydrogen embrittlement in Fe**
Kiran N. Solanki, Center for Advanced Vehicular Systems, Mississippi State University, Starkville, Mississippi, USA
- 10:10 – 10:35 Coffee break
- 10:35 – 11:10 **Stress concentration effects on SCC behavior**
A.K. Vasudevan, Office of Naval Research, Arlington, VA, USA
- 11:10 – 11:45 **Stress corrosion cracking of magnesium and titanium alloys**
Wolfgang Dietzel, Helmholtz-Zentrum Geesthacht, Geesthacht, Germany
- 11:45 – 12:20 **Atmospheric corrosion and delayed fracture of high strength steels**
Eiji Akiyama, National Institute for Materials Science, Japan
- 12:20 – 12:50 **Effect of passivity on the hydrogen embrittlement of ferritic stainless steels**
Sun Mi Kim, POSTECH, Korea
- 12:50 – 14.00 Lunch
- 16:00 Meet in lobby of Andel's Hotel for coach transportation to Old Jewish Quarter for walking tour
- 19:00 Dinner at Amadeus Restaurant (48-12-423-03-40)
Ul. Mikolajska 20 (Old Town)

Wednesday, August 17, 2011

- 07:00 – 08:45 Breakfast buffet
- 08:45 – 09:00 **Session III: Stress Corrosion**
Session Chair: Thomas Tsakalakos, Rutgers University, USA
- 09:00 – 09:35 **Stress corrosion cracking in Al-Zn-Mg-Cu alloys in aqueous environments**
N.J. Henry Holroyd, Luxfer Gas Cylinders (retired), Riverside, California, USA
- 09:35 – 10:10 **Embrittlement of pipeline steels by gaseous and aqueous hydrogen**
Richard E. Ricker, National Institute of Standards and Technology, Gaithersburg, Maryland, USA
- 10:20 – 11:10 Coffee break
- 11:10 – 11:45 **Effects of heat treatment, solution concentration, pH, and stress intensity on stress corrosion cracking of AA5083**
David J. Quesnel, University of Rochester, Mechanical Engineering Department, Rochester, New York, USA
- 11:45 – 12:20 **Stress corrosion cracking in sensitized Al 5083**
Peter S. Pao, Naval Research Laboratory, Washington, DC., USA
- 12:20 – 14:00 Lunch
- Session III: Stress Corrosion (continued)**
Session Chair: Richard Ricker, National Institute of Standards and Technology, USA
- 14:00 – 14:35 **Effects of internal and external hydrogen environments on crack growth susceptibility**
Neville R. Moody, Sandia National Laboratories, Livermore, California, USA
- 14:35 – 15:10 **Stress corrosion cracking characteristics of Al-Li-Cu alloys**
A. K. Vasudevan, Office of Naval Research, Arlington, Virginia, USA and N.J. Henry Holroyd, Luxfer Gas Cylinders (retired), Riverside, California, USA
- 15:10 – 15:40 Coffee break
- 15:40 – 16:15 **Direct measurement of surface energy of aluminum 7075-T6 and aqueous sodium chloride systems**
Kiran N. Solanki, Center for Advanced Vehicular Systems, Mississippi State University, Starkville, Mississippi, USA

Wednesday, August 17, 2011 (continued)

- 16:15 – 16:50 **New opportunities for *in situ* electron microscopy on corrosion processes**
Dean Miller, Argonne National Laboratories, USA
- 19:00 Dinner
Galicyjska Restaurant (48-12-430-07-62)
Pijarska 9 (Old Town)

Thursday, August 18, 2011

- 07:00 – 08:45 Breakfast buffet
- 08:45 – 09:00 **Session IV: Stress Corrosion MicroStructures**
Session Chair: Ronald Latanision, Exponet, Inc., USA
- 09:00 – 09:35 **Nanoscale grain boundary beta phase formation at relatively low and ambient temperatures, and stress corrosion cracking in Al-5083**
Ramasis Goswamu, Naval Research Laboratory, Washington, DC, USA
- 09:35 – 10:10 **Strain mapping in stress corrosion cracking and corrosion fatigue by synchrotron probe**
Thomas Tsakalakos, Rutgers University, Piscataway, New Jersey, USA
- 10:10 – 11:35 Coffee break
- 11:35 – 12:00 **Effect of Cu on the nature of grain boundary precipitates and stress corrosion Cracking in Al-7075**
Ramasis Goswamu, Naval Research Laboratory, Washington, DC, USA
- 12:00 – 13:30 Lunch
- Session V: Stress Corrosion - General Topics/Fatigue**
Session Chair: Lawrence Kabacoff, Office of Naval Research, USA
- 13:30 – 14:10 **Stress corrosion cracking of aluminum alloy**
Eun U.Lee, NAVAIR Laboratories, Patuxent River, Maryland, USA
- 14:10 – 14:45 **Effects of NaCl, pH and potential on the static creep behavior of AA1100**
David J. Quesnel, University of Rochester, Mechanical Engineering Department, Rochester, New York, USA
- 14:45 – 15:25 Coffee break
- 16:10 – 16:45 **Microstructural and environmental effects on corrosion and fatigue crack growth in 7075 aluminum alloy**
Nikhil Chawla, Arizona State University, Arizona, USA
- 16:45 – 17:20 **Corrosion fatigue of API5LX65 in sour environment**
Ramgopal Thodla, DNV Inc, Columbus, Ohio, USA
- 17:30 Meet in hotel lobby for departure to **Wieliczka Salt Mine** (a UNESCO World Heritage Site) for a tour followed by dinner at In the Jan Haluszka Chamber

Friday, August 19, 2011

- 07:00 – 08:45 Breakfast buffet
- 08:45 – 09:00 **Session VI: Corrosion Fatigue**
Session Chair: Neville R. Moody, Sandia National Laboratory,
USA
- 09:00 – 09:45 **Effects of cyclic stress and environment on fatigue threshold**
Daniel Kujawski, Western Michigan University, Kalamazoo,
Michigan, USA
- 09:45 – 10:20 **Spectrum fatigue of aluminum alloy**
Eun U.Lee, NAVAIR Labs, Patuxent River, Maryland, USA and
Grzegorz Glinka, University of Waterloo, Canada
- 10:20 – 10:55 **Fatigue crack growth under high pressure gaseous hydrogen
in a 15-5PH martensitic stainless steel**
Zhidan Sun, Institut Pprime, CNRS, Poitiers, France
(*presented by Clara Moriconi*)
- 10:55 – 11:30 **Environmental influence of FCG of low C-steel at high and
low R**
Rodrigo Vieira Landim, Pontifical Catholic University of Rio de
Janeiro, Brazil
- 11:30 – 12:00 Epilogue – comments and remarks
- 12:30 Lunch and departures (to post conference tours or airport)