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Conference Schedule

	Monday 03 May	Tuesday 04 May	Wednesday 05 May
8:00-8:30	Opening Remarks		
8:30-9:15	Keynote Address	Keynote Address	Keynote Address
9:25-10:40	Contributed Presentations	Contributed Presentations	Contributed Presentations
10:40-10:55	Coffee Break	Coffee Break	Coffee Break
10:55-12:10	Contributed Presentations	Contributed Presentations	Contributed Presentations
12:10-13:15	Lunch		Lunch
12:35-13:15			
13:15-14:00	Keynote Address	Poster Session II	Keynote Address
14:10-15:25	Contributed Presentations		Contributed Presentations
14:00			
15:00		Excursion Columbus Museum of Art	Coffee Break
15:25-15:40	Coffee Break		Contributed Presentations
15:40-16:55	Contributed Presentations		
17:00-18:30	Poster Session I and Reception		
18:30		Banquet at the OSU Main Library	

Sunday, May 2, 2010

Lobby of University Plaza Hotel

14:00 to 17:00

Registration

Ohio Student Union

19:00

Cartoon Room, 3rd floor

Welcome Reception sponsored by DNV

Shuttle bus from University Plaza Hotel provided starting at 18:30

Monday, May 3, 2010 - Morning

Multi-purpose room, 4-H building

08:00 **Opening remarks**
G. Frankel and R. Buchheit

Chair: G. Frankel

08:30 to 09:15 *Keynote* page 33
Digby Macdonald (*Materials Science and Engineering, Pennsylvania State University, University Park, PA, USA*)
The Early History of Passivity Research at the Fontana Corrosion Center

Coatings I

Multi-purpose room, 4-H building

Chairs: G. Frankel, D. Hansen

09:25 to 09:50 *Invited* page 123
Herman Terryn (*Electrochemical and Surface Engineering, Vrije Universiteit Brussel, Brussels, Belgium*), Guido Grundmeier, Arjan Mol, Ralf Posner, Peyman Taheri, Jan Wielant
Influence of the Nano Oxide Metal Films on the Interaction with Organic Coatings

09:50 to 10:15 *Invited* page 112
Michael Rohwerder (*Max-Planck-Institut für Eisenforschung, Düsseldorf, Germany*)
Application of Conducting Polymers for the Corrosion Protection of Iron and Zinc

10:15 to 10:40 page 64
Brian Hinderliter (*Coatings and Polymeric Materials, North Dakota State University, Fargo, ND, USA*)
Simulation of Electromagnetic Response (EIS) of Corrosion Protective Coatings to Flaws

10:40 to 10:55
Coffee Break

- 10:55 to 11:20 page 131
Harry Tsaprailis (*DNV Columbus, Materials and Corrosion Technology Center, Dublin, OH, USA*), **H. Cong, Luis Garfias**
 A Novel Method to Measure *In-situ* Corrosion and Degradation Reactions Occurring inside Pressurized Aerosol Containers
- 11:20 to 11:45 page 133
Vinod Upadhyay (*Coatings and Polymeric Materials, North Dakota State University, Fargo, ND, USA*), **Kerry Allahar, Gordon Bierwagen**
 Environmental humidity influence on a topcoat/Mg-rich primer system with embedded electrodes
- 11:45 to 12:10 page 125
Sergej Toews (*Universität Paderborn, Coating and Surface Technology, Paderborn, Germany*), **Wolfgang Bremser**
 Smart Functionalized Polymer Dispersions for Effective Mapping of Heterogeneous Metal Surfaces: New Concepts for Corrosion Protection

Iron and Nickel Alloys I

International Room, 4-H building

Chairs: R. Buchheit, P. Andresen

- 09:25 to 09:50 *Invited* page 71
Kyoo Young Kim (*Graduate Institute of Ferrous Technology, Pohang University of Science and Technology, Pohang, Korea*), **Jeong Kil Kim, Yeong Ho Kim**
 New Findings on Intergranular Corrosion Mechanism of Ti-stabilized Ferritic Stainless Steels
- 09:50 to 10:15 *Invited* page 137
Bruno Vuillemin (*ICB, Interfacial Electrochemistry Corrosion Group, Dijon, France*), **Roland Oltra, Aurelien Percheron**
 Study of Crevice Corrosion by Coupling pH Measurements by TIRFM with FEM Modeling
- 10:15 to 10:40 page 93
Bastian Maier (*Fontana Corrosion Center, The Ohio State University, Columbus, OH, 43210*), **Gerald S. Frankel**
 Pitting Corrosion of SS304L in Droplets of NaCl Solution
- 10:40 to 10:55
 Coffee Break

- 10:55 to 11:20 page 77
Jaе-Bong Lee (*School of Advanced Materials Engineering, Kookmin University, Seoul, Korea*), **Jaе-Jung Kim**, **Kyu-Seop Kim**
 Studies on Corrosion Characteristics of Fe-Cr Alloys and Sensitized STS 304 Using the Micro-droplet Cell Technique
- 11:20 to 11:45 page 74
Hyuk Sang Kwon (*Department of Materials Science and Engineering, Korea Advanced Institute of Science and Technology, DaeJeon, Korea*), **Kyung Jin Park**
 Effects of Mn on the Localized Corrosion Behavior of Fe-18Cr Alloys
- 11:45 to 12:10 page 72
Yeong Ho Kim (*POSCO Technical Research Lab., Pohang, Korea*)
 Life Prediction and Field Corrosion Behavior of Stainless Steel for Automotive Mufflers

High Temperature I

Eastman Room, 4-H building

Chairs: R. Rapp, J. Smialek

- 09:25 to 09:50 *Invited* page 127
Peter Tortorelli (*Oak Ridge National Laboratory, Oak Ridge, TN, USA*), **Michael Brady**
 Turning Corrosion Around: Using High-Temperature Oxidation Principles for Synthesis of Functional Materials and Application to PEM Fuel Cell Bipolar Plates
- 09:50 to 10:15 page 108
Robert Rapp (*Department of Materials Science and Engineering, The Ohio State University, Columbus, OH, USA*)
 The Role of the Metal/Scale Interface in the Growth of Protective Scales on Metals
- 10:15 to 10:40 page 70
Randy C. John (*Shell Global Solutions Inc., Houston, TX, USA*), **A.D. Pelton**, **W. T. Thompson**, **I.G. Wright**, **A.L. Young**
 Managing High Temperature Corrosion in the 21st Century
- 10:40 to 10:55
 Coffee Break

- 10:55 to 11:20 page 103
Bruce Pint (*Oak Ridge National Laboratory, Oak Ridge, TN, USA*)
Quantifying Degradation Mechanisms of Alumina-Forming Alloys for
Energy-Related Applications
- 11:20 to 11:45 page 126
Peter Tortorelli (*Oak Ridge National Laboratory, Oak Ridge, TN, USA*), **Michael
Brady**
High-Temperature Sulfidation of Alumina-Forming Alloys
- 11:45 to 12:10 page 132
Kinga A. Unocic (*Materials Science and Technology Division, Oak Ridge National
Laboratory, Oak Ridge, TN, USA*), **Michael P. Brady, Bruce A. Pint**
The Oxidation Behavior of Commercial Alumina-Forming Austenitic
Steel

Monday, May 3, 2010 - Afternoon

Multi-purpose room

Chair: R. Buchheit

13:15 to 14:00 *Keynote* page 35

Roger Staehle (*Staehle Consulting, North Oaks, MN, USA*)

The "Wedging Action" of Compounds as a Damage Process Important to Professor Fontana

Coatings II

Multi-purpose room

Chairs: M. Rohwerder, W.T. Tsai

14:10 to 14:35 page 124

Herman Terryn (*Vrije Universiteit Brussel, Group of Electrochemical and Surface Engineering, Brussels, Belgium*), Iris De Graeve, Annick Hubin, Jean-Baptist Jorcin, Gill Scheltjens, Els Tourwé, Guy Van Assche, Yves Van Ingelhem, Bruno Van Mele

A Coating Combination of Self-Healing Polymers and Corrosion Inhibitors for Active Corrosion Protection of Metals

14:35 to 15:00 page 56

Santiago Garcia Espallargas (*Department of Aerospace Materials and Manufacturing, Delft University of Technology, Delft, Netherlands*), H.R. Fischer, A.E. Hughes, J. Mardel, J. M. C. Mol, P.A. White

Self-Healing Anticorrosive Organic Coating Based on the Release of a Reactive Silyl Ester

15:00 to 15:25 page 105

Ralf Posner (*Fontana Corrosion Center, Department of Materials Science and Engineering, The Ohio State University, Columbus, OH, USA*), Stephan Amthor, Guido Grundmeier, Martin Marazita, Konrad J. Roschmann, Kristof Wapner

The polymer network structure as a key parameter for the corrosion resistance of polymer/oxide/metal interfaces

15:25 to 15:40

Coffee Break

- 15:40 to 16:05 page 62
Douglas Hansen (*University of Dayton Research Institute, Dayton, OH, USA*),
 Karolyn Hansen, Andrew Mount, Yuhchae Yoon
 Electrochemical Characterization of Oyster Shell as an Environmentally
 Friendly Ceramic Coating Material
- 16:05 to 16:30 page 55
Xuecheng Dong (*Dept. of Chemical and Materials Engineering, Univ. of Cincinnati,
 Cincinnati, OH, USA*), Dale W. Schaefer
In Situ Evolution of Non-Chromate Inhibitor Films by Simultaneous
 Neutron Reflectivity and Electrochemical Methods
- 16:30 to 16:55 page 39
Saikat Adhikari (*Fontana Corrosion Center, The Ohio State University, OH,
 Columbus, USA*), G. S. Frankel, Kinga A. Unocic, Yumei Zhai
 Hexafluorozirconic Acid Based Surface Pretreatments as a Replacement
 for Phosphate Conversion Coating: Characterization and Performance
 Assessment

Iron and Nickel Alloys II

International Room

Chairs: M. Stratmann, J. Noel

- 14:10 to 14:35 page 135
Vincent Vignal (*ICB, CNRS-Univ. Bourgogne, Dijon, France*), Hassan Amar,
 Olivier Heintz, Halina Krawiec, Dominique Mainy, Jerome Peultier, Vincent
 Vignal
 Passive properties of duplex stainless steels after long-time ageing in
 air studied using EBSD, local electrochemical impedance spectroscopy,
 XPS and Auger
- 14:35 to 15:00 page 141
Dmitrij Zagidulin (*Department of Chemistry, University of Western Ontario,
 London, Canada*), Pellumb Jakupi, James J. Noël, David W. Shoesmith,
 Xiangrong Zhang
 Structure and Composition of an Alloy 22 Surface Preoxidized at
 Different Conditions

- 15:00 to 15:25 page 117
Namurata Sathirachinda (*Div. of Surface and Corrosion Science, School of Chemical Science and Engineering, Royal Institute of Technology, KTH, Stockholm, Sweden*), Jinshan Pan, Rachel Pettersson, Sten Wessman
 SEM/EDS and SKPFM Study of Chromium Nitrides in Duplex Stainless Steels - Limitations and Implications
- 15:25 to 15:40
 Coffee Break
- 15:40 to 16:05 *Invited* page 144
Howard W. Pickering (*Department of Materials Science and Engineering, The Pennsylvania State University, University Park, PA, USA*), Faisal M. Al-Faqeer, Hung-Kai Shu
 Initial Passive Film Breakdown on Crevice Wall for Iron in Near Neutral Sulfate Chromate Solution
- 16:05 to 16:30 page 58
Koji Fushimi (*Graduate School of Engineering, Hokkaido University, Sapporo, Japan*), Hiroki Habazaki, Hidetaka Konno, Masahiro Seo, Takatoshi Yamamoto
 Mechano-electrochemistry of Passive Surface Using *In-situ* Micro-indentation Test
- 16:30 to 16:55 page 57
Gerald Frankel (*Fontana Corrosion Center, The Ohio State University, Columbus, OH, USA*), Michael Stevenson
 Investigation into the Corrosion of Steel under or near Grease Layers

SCC

Eastman Room

Chairs: R. Staehle, E.H. Han

- 14:10 to 14:35 *Invited* page 44
Peter Andresen (*GE Global Research Center, Schenectady, NY, USA*)
 Perspective on SCC Response and Prediction in Nuclear Power System
- 14:35 to 15:00 page 84
Digby Macdonald (*Materials Science and Engineering, Pennsylvania State University, University Park, PA, USA*)
 The Electrochemistry of Stress Corrosion Cracking

15:00 to 15:25 *Invited* page 61

En-Hou Han (*Institute of Metal Research, Chinese Academy of Sciences, Shenyang, China*), Jianqiu Wang

Crack Initiation on Alloy 690 in Lead-Contaminated High Temperature Pressurized Water

15:25 to 15:40

Coffee Break

15:40 to 16:05 page 83

Jingli Luo (*Department of Chemical and Materials Engineering, University of Alberta, Edmonton, Canada*), Bao-Tong Lu, Yu-Cheng Lu, Lian-Peng Tian, Ren-Kang Zhu

Investigation of Stress Corrosion Cracking of Alloy 800 in Neutral Crevice Solutions

16:05 to 16:30 page 40

Eiji Akiyama (*National Institute for Materials Science, Tsukuba, Japan*), Songjie Li, Tadashi Shinohara, Kaneaki Tsuzaki, Zuogui Zhang

Evaluation of Hydrogen Embrittlement Property of High Strength Steels

16:30 to 16:55 page 82

Xiaoyuan Lou (*School of Materials Science and Engineering, Georgia Institute of Technology, Atlanta, GA, USA*), Preet Singh

Local Passivation Breakdown of Carbon Steel in Bio-ethanol during Stress Corrosion Cracking

17:00 to 18:30

First poster session with a reception

Tuesday, May 4, 2010 - Morning

Multi-purpose room

Chair: G. Frankel

08:30 to 09:15 *Keynote* page 32

Ivan Cole (*CSIRO, Clayton, Australia*), Emmanuel Bosco, Gunasegaram Dayalan, Venkatraman Murali, Tim Muster

Multi-Scale Modeling of Atmospheric Corrosion

Coatings III

Multi-purpose room

Chairs: H. Terryn, E. Akiyama

09:25 to 09:50 page 48

Rudy G. Buchheit (*Fontana Corrosion Center, Department of Materials Science and Engineering, The Ohio State University, Columbus, OH, USA*), F. Gambina

Characterizing the Relationship between EIS Measurements and Exposure Testing Results Using Neural Networks and Fuzzy Set Theory

09:50 to 10:15 page 136

Bruno Vuillemin (*ICB, Interfacial Electrochemistry Corrosion Group, Dijon, France*), Christian Allely, Kevin Ogle, Roland Oltra, Florian Thebault

Experimental Evidence of the Inhibition of the Oxygen Reduction on Galvanized Steel Cut-Edges

10:15 to 10:40 page 54

Anusha Chilukuri (*Department of Materials Science and Engineering, Fontana Corrosion Center, The Ohio State University, Columbus, OH, USA*), Rudolph G. Buchheit

Evaluation of the cathodic inhibition by rare earth (Ce^{3+} , Pr^{3+} , La^{3+}) and Zn^{2+} cations on AA 2024-T3 alloy and characterization of cation exchanged bentonite pigments dispersed in organic coatings

10:40 to 10:55

Coffee Break

10:55 to 11:20 page 41

Mark D. Soucek (*Department of Polymer Engineering, The University of Akron, Akron, OH, USA*), Rudolph G. Buchheit, Hua Gu, Shuyan Qiu, Elif Alyamac

Alkoxysilane Oligomer Modified Epoxide Primers for Automotive Coatings

- 11:20 to 11:45 page 96
Chike F. Oduoza (*School of Engineering and Built Environment, University of Wolverhampton, City Campus, United Kingdom*), M.E Khan
 Nickel Undercoat to Improve Chromium Electrodeposition of Aluminium Alloys
- 11:45 to 12:10 page 90
Rajendran Nallayan (*Department of Chemistry, Anna University Chennai, Chennai, India*), Muthiurlan Paandi
 Conducting Polymer-Silica Nanoparticles Based Hybrid Nanocomposites: A Facile and Green Synthetic Approach for Active Anti Corrosive Coatings
- 12:10 to 12:35 page 42
Maozhong An (*Chemical Engineering and Technology, Harbin Institute of Technology, Harbin, China*), Chongxing Li, Jinqiu Zhang
 Study of chromium-free passivation process of Ti-P-Si-Mo compound system for electrogalvanized coating

Concrete and Atmospheric Corrosion

Boardroom

Chairs: F Mansfeld, I. Cole

- 09:25 to 09:50 *Invited* page 81
Changjian Lin (*State Key Lab of Physical Chemistry of Solid Surfaces, Xiamen University, Xiamen, China*), Shigang Dong, Ronggui Du, Ronggang Hu
 A Multifunctional Sensor for *In-situ* Monitoring Corrosion of Steel Reinforced Concrete Structure
- 09:50 to 10:15 *Invited* page 43
Carmen Andrade (*Eduardo Torroja Institute, CSIC, Madrid, Spain*), Isabel Martinez
 Non-Contacting Method for the Corrosion Rate Measurement in Concrete Structures: Study about the Correct Electrical Model to be Applied
- 10:15 to 10:40 page 76
Luciano Lazzari (*Politecnico di Milano Dipartimento di Chimica Materiali Ingegneria Chimica, Milan, Italy*), Luca Bertolini, Fabio Bolzoni, Tommaso Pastore
 Pietro Pedferri's Great Contribution on Understanding Corrosion in Concrete

10:40 to 10:55

Coffee Break

10:55 to 11:20

page 89

Tim Muster (*CSIRO Materials Science & Engineering, Clayton, Australia*),
Avi Bendavid, Angela Bradbury, Svetlana Dligatch, Deborah Lau, Tracey
Markley, Phil Martin, Adrian Trinchi

The effects of droplet-surface interactions on the atmospheric
corrosion of zinc

11:20 to 11:45

page 80

Qiaoxia Li (*Department of Material Science and Engineering, University of Virginia,
Charlottesville, VA, USA*), William C. Keene, Robert G. Kelly, John R. Maben

Chemical Characteristics of Material Surfaces Exposed to Ambient
Coastal Marine Atmospheres

11:45 to 12:10

page 91

Erica Neiser (*Center for Electrochemical Science and Engineering, Department of
Materials Science, University of Virginia, Charlottesville, VA, USA*), Rob Kelly

Atmospheric Corrosion of Silver and Its Relation to Accelerated Testing

12:10 to 12:35

page 118

Eric Schindelholz (*University of Virginia, Materials Science and Engineering,
Charlottesville, VA, USA*), Robert G. Kelly

Application of Inkjet Printing for Salt Deposition Prior to Atmospheric
Corrosion Testing

High Temperature II

Eastman Room

Chairs: E. Opila, R. John

09:25 to 09:50

page 109

Vilupanur Ravi (*Chemical and Materials Engineering, California State Polytechnic
University, Pomona, CA, USA*), Richard Kaner, Jordan Koch, Christian
Kouttjie, Andrew Lech, Thuan Nguyen

Engineered Coatings Using Pack Cementation Processes

09:50 to 10:15

page 104

Bruce Pint (*Oak Ridge National Laboratory, Oak Ridge, TN, USA*)

Development and Performance of Al-Rich Oxidation Resistant Coatings
for Fe-Base Alloys

- 10:15 to 10:40 *Invited* page 110
Vilupanur Ravi (*Chemical and Materials Engineering, California State Polytechnic University, Pomona, CA, USA*), T. D. Claar
 Materials for High Temperature Thermal Shock Applications
- 10:40 to 10:55
 Coffee Break
- 10:55 to 11:20 *Invited* page 87
Gerald Meier (*Univ. of Pittsburgh, Pittsburgh, PA, USA*), Frederick Pettit
 The Effects of Water Vapor and Hydrogen on the High-Temperature Oxidation of Alloys
- 11:20 to 11:45 page 121
James Smialek (*Materials and Structures, NASA Glenn Research Center, Cleveland, OH, USA*)
 Moisture-Induced Alumina Scale Spallation: The Hydrogen Factor
- 11:45 to 12:10 page 128
Brett Tossey (*DNV Columbus, Inc., Dublin, OH, USA*), Tom Andress, Hassan Khan,
 The effect of cold work due to shot peening on the steam oxidation resistance of Type 304H austenitic stainless steel

Light Metals I, Ti/Mg/Si

International Room

Chairs: N. Birbilis, K. Ogle

- 09:25 to 09:50 page 95
Jamie Noel (*Dept. of Chemistry, The University of Western Ontario, London, Canada*), David Shoosmith, Li Yan
 The Role of Proton Reduction in Complicating the Crevice Corrosion of Titanium
- 09:50 to 10:15 *Invited* page 130
Wen-Ta Tsai (*Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan*), Jhen-Rong Chen, Wan-Shan Kang, Wen-Ta Tsai
In Situ Corrosion Monitoring of Ti-6Al-4V Alloy in H₂SO₄/HCl Mixed Solution Using ECAFM

10:15 to 10:40 page 116

Masatoshi Sakairi (*Graduate School of Engineering, Hokkaido University, Sapporo, Japan*), Tatsuya Kikuchi, Misaki Kinjyo

Repassivation Behavior of Ti in Artificial Saliva with PRM

10:40 to 10:55

Coffee Break

10:55 to 11:20 page 102

MariaPia Pedferri (*Politecnico di Milano, Dipartimento di Chimica Materiali Ingegneria Chimica, Milan, Italy*), Andrea Brenna, Maria Vittoria Diamanti, Marco Ormellese

Pitting-Induced Surface Alteration of Titanium

11:20 to 11:45 page 138

Geraint Williams (*Swansea University, Swansea, United Kingdom*), Richard Grace, Neil McMurray

Chloride-Induced Filiform Corrosion of Magnesium

11:45 to 12:10 page 59

Daming Gu (*Department of Chemistry, Harbin Institute of Technology, Harbin, China*), Maozhong An, Xinghua Guo

Preparation of anodization/SNAP film coated on magnesium alloy and study of its corrosion protection

12:10 to 12:35 page 85

Abdel Salam Makhlof (*Max-Planck-Institute of Colloids and Interfaces, Potsdam, Germany*), Darryl Butt, Mahmoud Farahat, Brian Marx

Self-Healing Coatings for Magnesium Alloys

Tuesday Afternoon

13:15 to 14:30

Second poster session after lunch

15:00-17:00

Excursion in the afternoon

18:30

Banquet at the OSU Main Library

Shuttle bus from University Plaza Hotel starting 18:00

Wednesday, May 5, 2010 - Morning

Multi-purpose room

Chair: R. Buchheit

08:30 to 09:15 *Keynote* page 34

Roger Newman (*University of Toronto, Dept. of Chemical Engineering and Applied Chemistry, Toronto, Canada*), **Gregmar Chirinos**, **Andrew Garner**

Fundamental and Practical Predictive Approaches for Stainless Steel Corrosion

Modeling

International Room

Chairs: R. Newman, C. Andrade

09:25 to 09:50 page 88

Nicolas Murer (*Fontana Corrosion Center, The Ohio State University, Columbus, OH, USA*), **Rudolph Buchheit**

Stochastic Modeling of Pitting Corrosion in Aluminum Alloys

09:50 to 10:15 page 65

Barry Hindin (*Battelle Memorial Institute, Columbus, OH, USA*), **Homero Castaneda**, **Ayako Yajima**

A proposed model for coated steel exposed to simulated soil environments by integrating mechanistic and statistical approaches

10:15 to 10:40 page 53

Kiran Deshpande (*GM Technical Centre India Pvt Ltd, Bangalore, India*)

Modeling of Micro-Galvanic Corrosion

10:40 to 10:55

Coffee Break

10:55 to 11:20 page 45

Francois Ayello (*Det Norske Veritas Research & Innovation, Dublin, OH, USA*), **Pablo Cincunegi**, **Davion Hill**, **Stefan Marion**, **Narasi Sridhar**

Integrated Sensor Networks for Corrosion Under Insulation: Monitoring, Cost Reduction, and Life Extension Strategies Part 1: Monitoring - Detection of Cui

11:20 to 11:45 page 51

Mary Cavanaugh (*Fontana Corrosion Center, The Ohio State University, Columbus, OH, USA*), Nick Birbilis, Rudy Buchheit

Neural Network Modeling of Pit Growth Kinetics in Aluminum Alloys

11:45 to 12:10 page 101

Joe H. Payer (*University of Akron, Akron, OH, USA*)

Advances in Corrosion Science for Greater Safety, Reliability and Performance

Light Metals II, Al

Multi-purpose room

Chairs: D. Macdonald, C. Lin

09:25 to 09:50 page 47

Nick Birbilis (*Department of Materials Engineering, Monash University, Clayton, Australia*)

Use of electrochemical atomic force microscopy to understand the localised corrosion of light metals

09:50 to 10:15 *Invited* page 63

Kurt Hebert (*Department of Chemical & Biological Engineering, Iowa State University, Ames, IA, USA*), Jiahe Ai, Gery Stafford, Guiping Zhang

Formation of Localized Corrosion-Relevant Surface Defects on Aluminum - Experimental Studies and Kinetic Monte Carlo Simulation

10:15 to 10:40 *Invited* page 86

Florian Mansfeld (*Mork Family Department of Chemical Engineering and Materials Science, USC Viterbi School of Engineering, University of Southern California, Los Angeles, CA, USA*), John Daugherty, Yuelong Huang, Hong Shih

The Corrosion Resistance of Anodized Aluminum 6061 during Long-Term Exposure and after a Thermal Cycling Treatment

10:40 to 10:55

Coffee Break

10:55 to 11:20 *Invited* page 97

Kevin Ogle (*Physical Chemistry of Surfaces, UMR7045, Ecole Nationale Supérieure de Chimie de Paris, Paris Tech, France*), **Polina Volovitch**, **Meriem Mokaddem**, **Roland Oltra**, **Fabien Rechou**

The Anodic and Cathodic Dissolution of Al Alloys by Atomic Emission Spectroelectrochemistry

11:20 to 11:45 page 106

Kevin Ralston (*ARC Centre of Excellence for Design in Light Metals, Department of Materials Engineering, Monash University, Clayton, Australia*), **Nick Birbilis**

Effect of Grain Size and Processing on the Corrosion Resistance of Aluminium

11:45 to 12:10 page 119

Mara Shedd (*Center for Electrochemical Science and Engineering, Department of Materials Science and Engineering, University of Virginia, Charlottesville, VA, USA*), **Robert Kelly**

Development of an Electrochemical Method of Detection of Sensitization in Al-Mg Alloys

High Temperature III

Boardroom

Chairs: P. Tortorelli, G. Meier

09:25 to 09:50 page 98

Elizabeth Opila (*NASA Glenn Research Center, Cleveland, OH, USA*), **Meredith Boyd**

Oxidation of SiC fiber-reinforced SiC matrix composites with a BN interphase

09:50 to 10:15 page 100

T. A. Parthasarathy (*Materials and Manufacturing Directorate, AFRL/MLLN, Wright-Patterson AFB, OH, USA*), **R.J. Kerans**, **M. Opeka**, **R.A. Rapp**

A Model for predicting oxidation kinetics of refractory diborides

10:15 to 10:40 page 143

Dongming Zhu (*NASA Glenn Research Center, Cleveland, OH, USA*), **Robert A. Miller**, **James L. Smialek**

Ionic Transport and Durability of Advanced Thermal Barrier Coatings

10:40 to 10:55

Coffee Break

- 10:55 to 11:20 page 107
Robert Rapp (*Fontana Corrosion Center, Department of Materials Science & Engineering, The Ohio State University, Columbus, OH, USA*)
 The Role of Chromium in the Hot Corrosion of Metals
- 11:20 to 11:45 page 142
Tian Zhongliang (*School of Metallurgical Science and Engineering, Changsha, China*), Yuan Changfu, Li Jie, Lai Yanqing
 Corrosive Resistance of NiFe₂O₄ Based Cermet Inert Anodes in Low Temperature Electrolyte Na₃AlF₆-K₃AlF₆-AlF₃ for Aluminum Electrolysis

Oil/Gas/Pipeline Corrosion I

Eastman Room

Chairs: M. Orazem, M. Iannuzzi

- 09:25 to 09:50 *Invited* page 92
Srdjan Nesic (*Institute for Corrosion and Multiphase Flow Technology, Ohio University, Athens, OH, USA*)
 Causes and mechanisms of localized CO₂ corrosion
- 09:50 to 10:15 page 50
Raymundo Case (*Production Assurance Technology (PAT), Bartlesville Technology Center, Bartlesville, OK, USA*), Sudhakar Mahajanam, Dale McIntyre, Hernan Rincon
 Effect of Intermetallic Content on the Pit Stability and Propagation Kinetics of Duplex Stainless Steel Exposed to CO₂ Saturated Production Brine
- 10:15 to 10:40 page 78
Hui Li (*Institute for Corrosion and Multiphase Technology, Department of Chemical and Biomolecular Engineering, Ohio University, Athens, OH, USA*), Bruce Brown, Srdjan Nesic
 A Mechanistic Model of Localized CO₂ Corrosion for Carbon Steel
- 10:40 to 10:55
 Coffee Break

10:55 to 11:20

page 68

Jin Huang (*Institute for Corrosion and Multiphase Technology, Department of Chemical and Biomolecular Engineering, Ohio University, Athens, OH, USA*),
Bruce Brown, Brian Kinsella, Srdjan Nesic

Application of Electrochemical Impedance Spectroscopy for the Study
of Under Deposit CO₂ Corrosion of Mild Steel

11:20 to 11:45

page 67

Lei Huang (*Institute for Corrosion and Multiphase Technology, Department of Chemical and Biomolecular Engineering, Ohio University, Athens, OH, USA*),
Bruce Brown, Srdjan Nesic

Investigation of Environmental Effects on Intrinsic and Galvanic
Corrosion of Welded Carbon Steel in CO₂ Environments

11:45 to 12:10

page 120

Seth Silverman (*Hess Corporation, Houston, TX, USA*)

Failure and Reliability Issues of Equipment in a Large Natural Gas
Liquids Processing Plant

Wednesday, May 5, 2010 - Afternoon

Multi-purpose room

Chair: G. Frankel

13:15 to 14:00 *Keynote* page 36

Martin Stratmann (*Max-Planck-Institut für Eisenforschung, Duesseldorf, Germany*)

Novel Approaches to an Old Problem: Selective Dissolution of Binary Alloys

Cu

International Room

Chairs: K. Hebert, B. Hindin

14:10 to 14:35 page 134

Yves Van Ingelgem (*SURF Vrije Universiteit Brussel, Brussels, Belgium*), Annick Hubin

Modeling the fast initial stages of copper corrosion using multisine EIS combined with supporting experimental techniques

14:35 to 15:00 *Invited* page 66

John R. Scully (*CESE, University of Virginia, Charlottesville, VA, USA*), Hongbo Cong, Claes Taxen, R. Verley

Effects of Selected Water Chemistry Variables on Copper Pitting Propagation: Experiments and Modeling

15:00 to 15:25 page 113

Bo Rosborg (*The Royal Institute of Technology, Div. Surface and Corrosion Science, Stockholm, Sweden*), Jinshan Pan

The Corrosion Behavior of Pure Copper in a Bentonite/Saline Groundwater Environment

15:25 to 15:40

Coffee Break

15:40 to 16:05 page 49

T. David Burleigh (*Materials and Metallurgical Engineering Dept. New Mexico Tech, Socorro, NM, USA*), **Drew Prichard**

Designing Color Stable, Tarnish Resistant, Copper Alloys

16:05 to 16:30 page 46

Kazuhisa Azumi (*Graduate School of Engineering, Hokkaido University, Sapporo, Japan*), **Jungo Yajima**

Evaluation of Copper Corrosion Rate in Underground Water at High Temperature Using Resistometry

16:30 to 16:55 page 94

Mengyan Nie (*National Centre for Advanced Tribology at Southampton, Southampton, United Kingdom*), **Andy W. Cranny**, **Nick R. Harris**, **Mengyan Nie**, **Keith R. Stokes**, **Julian A. Wharton**, **Robert J. K. Wood**

Crevice Solution Chemistries Evolution of Nickel-Aluminium Bronze in 3.5% NaCl Solution

Light Metals III, Al

Multi-purpose room

Chairs: J. Payer, N. Birbilis

14:10 to 14:35 page 73

Georges Kipouros (*Materials Engineering, Dalhousie University, Halifax, Canada*), **Paul Bishop**, **Michael Mosher**, **Hans Claus Neubing**

Corrosion characteristics of Powder Metallurgy (P/M) aluminum alloys

14:35 to 15:00 page 79

Jinfeng Li (*Department of Materials Science and Engineering, Fontana Corrosion Center, The Ohio State University, Columbus, OH, USA*), **Gerald Frankel**

Corrosion of an Al-Mg-Si alloy under MgCl₂ Solution Drops

15:00 to 15:25 page 140

Yuhchae Yoon (*University of Dayton Research Institute, Dayton, OH, USA*), **M. Bouchard**, **K. Lafdi**, **L. Li**

Corrosion Monitoring with CNT-Enhanced Fiber Sensors

15:25 to 15:40

Coffee Break

15:40 to 16:05 page 122

David Starosvetsky (*Department of Materials Engineering, Technion-Israel Institute of Technology, Haifa, Israel*), Yair Ein-Eli, Tal Zaid

Passivity, Breakdown and Etching Rates of Silicon in Alkaline Solutions

16:05 to 16:30 page 111

Brendy Rincon Troconis (*Fontana Corrosion Center, The Ohio State University, Columbus, OH, USA*)

Effects of Surface Treatments on Adhesion Strength of Epoxy Coated AA2024-T3 Using the Blister Test

16:30 to 16:55 page 60

Yang Guo (*Department of Materials Science and Engineering, Fontana Corrosion Center, The Ohio State University, Columbus, OH, USA*), Gerald Frankel

Corrosion Protection of Aluminum Alloys by Trivalent Chrome Process Treatment

Oil/Gas/Pipeline Corrosion II

Eastman Room

Chairs: S. Nestic, B. Tribollet

14:10 to 14:35 *Invited* page 99

Mark E. Orazem (*Department of Chemical Engineering, University of Florida, Gainesville, FL, USA*), Douglas P. Riemer

Mathematical Models for Cathodic Protection of Pipelines

14:35 to 15:00 *Invited* page 129

Bernard Tribollet (*LISE UPR 15 du CNRS, Paris cedex 05, France*), Didier Caron, Sylvain Fontaine, Ibrahim Ibrahim, Suzanne Joiret, Michel Meyer, Hisasi Takenouti

AC Corrosion Mechanism on Buried Pipelines

15:00 to 15:25 page 75

Luciano Lazzari (*Politecnico di Milano - Dipartimento di Chimica, Milan, Italy*), Andrea Brenna, Maria Vittoria Diamanti, Marco Ormellese

Effects of AC on Passive Metals Corrosion

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Coffee Break

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Mariano Iannuzzi (*Det Norske Veritas, Høvik, Norway*), Luciano Avila-Gray, Gustavo Maio, Conchita Mendez

Electrochemical Noise Analysis to Determine Critical Pitting and Crevice Temperatures in Simulated Sour Environments

16:05 to 16:30

page 52

Yoon-Seok Choi (*Institute for Corrosion and Multiphase Technology, Department of Chemical and Biomolecular Engineering, Ohio University, Athens, OH, USA*), Shiun Ling, Srdjan Nescic

Effect of H₂S on the CO₂ Corrosion of Carbon Steel in Acidic Solutions

16:30 to 16:55

page 139

Yang Yang (*Institute for Corrosion and Multiphase Technology, Department of Chemical and Biomolecular Engineering, Ohio University, Athens, OH, USA*), Srdjan Nescic, Bruce Brown

Development of an Electrochemical Quartz Crystal Microbalance Probe for Corrosion Testing in Flow Loops

Poster Presentations

Advances in the Science and Technology of Corrosion

Monday, May 3, 2010

17:00

First poster session in the late afternoon with a reception

Tuesday, May 4, 2010

Second poster session after lunch

P-001

Nikolai Boshkov (*Institute of Physical Chemistry, Bulgarian Academy of Sciences, Sofia, Bulgaria*), Vasil Bachvarov, Desislava Koleva, Miglena Peshova, Petar Petrov, Georgi Raichevski, Neli Tsvetkova, Stefana Vitkova

Sustainability of Composite Zinc and Zinc-Based Deposits Additionally Treated in Environmentally Friendly Conversion Solution

P-002

Andrea Brenna (*Politecnico di Milano, Dipartimento di Chimica Materiali Ingegneria Chimica "G. Natta", Milan, Italy*), Fabio Bolzoni, Marco Ormellese, MariaPia Pedeferra

Effect on Time-To-Corrosion of Chloride-Induced Corrosion of Reinforced Concrete Structures

P-003

Severine Cambier (*Materials Science Engineering, Fontana Corrosion Center, The Ohio State University, Columbus, OH, USA*)

Effects of Ozone and UV on Polymer Coating Degradation and Corrosion of Metal Substrates

P-004

Liu Cao (*Materials Science and Engineering, Fontana Corrosion Center, The Ohio State University, Columbus, OH, USA*), Gerald Frankel, Narasi Sridhar

Corrosion and Cracking of Carbon Steel in Fuel Grade Ethanol - Exploration of Supporting Electrolyte

P-005

Ashwini Chandra (*Fontana Corrosion Centre, Fontana Corrosion Center, Department of Materials Science and Engineering, The Ohio State University, Columbus, OH, USA*), Gerald Frankel, Michael Sumption

Electropolishing of Niobium to Obtain Defect Free Surface

P-006

Xi Chen (*Fontana Corrosion Center, The Ohio State University, Columbus, OH, USA*)

Corrosion Resistance Assessment of Pre-Treated Magnesium Alloys

P-007

John Zimmerman (*Henkel, Madison Heights, MI, USA*), John Comoford, Ronald Dubs, Girdhari Kumar, Kirsten Lill

Comparison of Semiconductor Properties for Pretreatments on Steel: Progress Toward Characterization and Performance Prediction for Zirconium Nanoscale Coatings (Zr-nsC)

P-008

Jose M. Costa (*Department of Physical Chemistry, University of Barcelona, Barcelona, Spain*)

The Records of Atmospheric Corrosion Study: Facts and Figures

P-009

Paula Drob (*Electrochemistry and Corrosion, Institute of Physical Chemistry, Bucharest, Romania*), Silviu Iulian Drob, Mihai Popa, Ecaterina Vasilescu, Cora Vasilescu

Long Term Stability of a Multilayer Green Coating

P-010

Silviu Iulian Drob (*Electrochemistry and Corrosion, Institute of Physical Chemistry, Bucharest, Romania*), Paula Drob, Mihaela Mandroiou, Cristian Pirvu, Ecaterina Vasilescu, Cora Vasilescu

Corrosion Monitoring of Carbon Steel Substrate Coated with a New Paint Film

P-011

Hidenori Fujii (*Higashimaru Shoyu Co., Ltd, Tatsuno, Japan*)

Effect of components in soy sauce on the corrosion behavior of various stainless steels

P-012

Belinda L. Hurley (*Department of Materials Science and Engineering, Fontana Corrosion Center, The Ohio State University, Columbus, OH, USA*), Rudolph G. Buchheit

Raman Analysis of Surface Vanadate Species on the Matrix and Copper-rich Intermetallic Particles of AA 2024-T3 Alloy Treated with NaVO_3 and NH_4VO_3

P-013

Rosa Maria Junqueira (*Metallurgical Department, Fundacao Centro Tecnologico de Minas Gerais - CETEC, Belo Horizonte, Brazil*), Maria João Carmezim, Albano Cavaleiro, Eric Garcia, Rosa Maria, Rabelo Junqueira, Celia Regina, Oliveira Loureiro, Alda Maria, Pereira Simões

Influence of thermal treatment temperature on the passivating efficiency of interference colored stainless steel

P-014

Mariano Kappes (*Fontana Corrosion Center, The Ohio State University, Columbus, OH, USA*), Ricardo Carranza, Gerald Frankel, Narasi Sridhar, Ramgopal Thodla

Assessment of the Viability of Simulating Corrosion Fatigue in Sour Environments with $S_2O_3^{2-}$ Solutions

P-015

Borna Kazerooni (*Center for Electrochemical Science and Engineering, Department of Materials Science and Engineering, University of Virginia, Charlottesville, VA, USA*), Wasiu Adedeji, Robert Kelly

Development of an Electrochemical Method of Detection of Sensitization in Al-Mg Alloys

P-016

Halina Krawiec (*AGH University of Science and Technology, Department of Chemistry and Corrosion of Metals, Krakow, Poland*), Jacek Banas, Alicja Lukaszczyk

Corrosion and passivation of Fe-Cr alloys in geothermal water

P-017

Hyuk Sang Kwon (*Department of Materials Science and Engineering, Korea Advanced Institute of Science and Technology, Daejeon, Korea*), Se Jin Ahn, Kyung Jin Park

Effects of Solution Temperature on the Passivity of Nickel

P-018

Nushe Lajci (*University of Prishtina, Faculty of Mines and Metallurgy, Republic of Kosova, Mitrovica, Albania*), Mirjana Metikos-Hukovic, Zeljka Petrovic

Chromium Passivity in Sulfuric Acid Solution

P-019

Xiaoji Li (*Department of Materials Science and Engineering, Fontana Corrosion Center, The Ohio State University, Columbus, OH, USA*), Sean Brossia, Hongbo Cong, Gerald S. Frankel, Feng Gui, Belinda L. Hurley

Study of Corrosion of Carbon Steel at the Liquid-Air Interface in Simulated Nuclear Waste Solutions

P-020

Huang Lin (*Fontana Corrosion Center, The Ohio State University, Columbus, OH, USA*), Gerald Frankel

The Effect of Ozone on Atmospheric Corrosion of Copper in the Presence of NaCl Particles

P-021

Changjian Lin (*State Key Lab of Physical Chemistry of Solid Surfaces, Xiamen University, Xiamen, China*), Shigang Dong, Ronggang Hu, Lanqiang Li

A Study on Interaction Between Macrocell and Microcell in an Early Corrosion Process of Reinforcing Steel in Concrete

P-022

Omar Lopez-Garrity (*The Fontana Corrosion Center, Materials Science and Engineering, The Ohio State University, Columbus, OH, USA*), Gerald Frankel

Inhibition of Aluminum Alloy 2024 by Selected Inhibitors in Solution

P-023

Digby Macdonald (*Materials Science and Engineering, Pennsylvania State University, University Park, PA, USA*), Jan Mankowski

Use of Limiting Current Measurements in Calibrating Annuli for Fluid Flow Studies at Elevated Temperatures and Pressures

P-024

Digby Macdonald (*Materials Science and Engineering, Pennsylvania State University, University Park, PA, USA*)

Kinetic Stability Diagrams and the Prediction of Passivity

P-025

Bastian Maier (*Fontana Corrosion Center, The Ohio State University, Columbus, OH, USA*), G.S. Frankel

Investigation of defects in Mg-rich primer on AA2024-T3

P-026

M. F. Mohamed (*Institute for Corrosion and Multiphase Flow, Ohio University, Athens, OH, USA*), Srdjan Nescic, A. Muhammad Nor, M. Singer, M.F. Suhor

Corrosion prediction model enhancement for high pressure CO₂ environments

P-027

A. Mohammed Nor (*Institute for Corrosion and Multiphase Technology, Ohio University, Athens, OH, USA*), M. F. Mohamed, S. Nescic, M. F. Suhor

Mass Transfer Characterization of Thin Channel Flow Cell for Flow-Sensitive CO₂ Corrosion Study

P-028

Rajendran Nallayan (*Department of Chemistry, Anna University Chennai, Chennai, India*), **Karthega Mani**

Development of Porous Layer on Titanium Alloys Using Hydrogen Peroxide Solution for Orthopedic Application

P-029

Thoa T. P. Nguyen (*University of Science, Vietnam National University, Ho Chi Minh City, Viet Nam*), **Hai V. Le**, **Tru N. Nguyen**

Water Uptake and Diffusion of Chloride Ions in Seawater-Epoxy Coating-Steel Systems

P-030

Chike Oduoza (*University of Wolverhampton, SEBE, Wolverhampton, United Kingdom*)

White Bronze Plating as a Possible Substitute for Nickel in Decorative Chromium Plating

P-031

Soo-Gil Park (*Chungbuk National University, Cheong-ju, Korea*), **Hong-Il Kim**, **Han-Joo Kim**, **Dal-Woo Shin**, **Jeong-Jin Yang**

Effect of additive on etching pit behavior of aluminum under AC etching process

P-032

Ralf Posner (*Department of Materials Science and Engineering, Fontana Corrosion Center, The Ohio State University, Columbus, OH, USA*), **Galina Giza**, **Guido Grundmeier**

Investigation of the polymer/oxide/metal interface stability with an *in-situ* Scanning Kelvin Probe Blister Test

P-033

Masatoshi Sakairi (*Graduate School of Engineering, Hokkaido University, Sapporo, Japan*), **Tatsuya Kikuchi**, **Youichi Kojima**, **Yoshiyuki Oya**, **Kenji Yanada**

Formation and corrosion behavior of artificial pit of 2024 aluminum alloy with PRM

P-034

Salah Salman (*Materials Science Engineering Dept., Nagoya University, Nagoya, Japan*), **R. Ichino**, **Masazumi Okido**

Electrochemical behaviors of AZ31 and AZ91 Mg alloys in alkaline and chloride solutions

P-035

Oscar J. Suarez G. (*Universidad Nacional de Colombia, Bogota, Colombia*), Jairo Olaya, Sandra Rodil, Marco F Suarez

Effect of Operation Conditions During Plating on Electrochemical Behavior and Morphology of Chromium Films

P-036

Joao Tedim (*Department of Ceramics and Glass Engineering, CICECO, University of Aveiro, Aveiro, Portugal*), Mario Ferreira, Silvar Kallip, Alena Kuznetsova, Andrei Salak, Mikhail Zheludkevich

Application of Nanostructured Materials as Host Structures for Corrosion Inhibitors

P-037

Meng Tong (*Department of Materials Science and Engineering, Fontana Corrosion Center, The Ohio State University, Columbus, OH, USA*), Rudolph Buchheit

In-situ Monitoring Undercoating Corrosion Damage of Al Thin Film by Direct Optical Interrogation (DOI)

P-038

Aide Torres-Huerta (*CICATA-Altamira, Instituto Politécnico Nacional, Altamira, Mexico*), Silvia Brachetti-Sibaja, Miguel Domínguez-Crespo, Esther Ramírez-Meneses

Electrochemical characterization of Ce (La)-based coatings on commercial AA6061 aluminum alloy

P-039

Wen-Ta Tsai (*Department of Materials Science and Engineering, National Cheng Kung University, Tainan, Taiwan*), Sung-Mao Chiu, Paul Chung, Hsin-Hui Lin,

Effect of Metal Glass Coating on the Electrochemical and Corrosion Behavior of 316L Stainless Steel Bipolar Plate for Fuel Cell Application

P-040

Ecaterina Vasilescu (*Electrochemistry and Corrosion, Institute of Physical Chemistry, Bucharest, Romania*), Jose Maria Calderon Moreno, Paula Drob, Silviu Iulian Drob, Cora Vasilescu

Monitoring of Some New Scaffolds Behavior in Simulated Body Fluid

P-041

Cora Vasilescu (*Electrochemistry and Corrosion, Institute of Physical Chemistry, Bucharest, Romania*), Paula Drob, Silviu Iulian Drob, Monica Popa, Ecaterina Vasilescu

Passivity Behavior and Long Term Stability of a New Non-toxic Implant Alloy

P-042

Jesús Manuel Vega Vega (*Department of Materials Engineering, Degradation and Durability National Centre for Metallurgical Research (CENIM/CSIC), Madrid, Spain*), Belén Chico, Daniel de la Fuente, Iván Díaz, Noelia Granizo, Manuel Morcillo, Joaquin Simancas

Inhibition Mechanism and Anticorrosive Behaviour of Calcium Exchanged Silica Pigment

P-043

Liang Zhenhai (*College of Chemistry and Chemical Engineering, Taiyuan University of Technology, Taiyuan, China*), Caimei Fan, Xiaogang Hao

Corrosive Performance of Ti/SnO₂+Sb₂O₄/CF/PbO₂ Acid-Proof Anode

