

Sixth International Workshop on Environmentally-Assisted Cracking

Washington, DC, USA
16-21 July 2023

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Monday, July 17, 2023

08:00 – 09:00	Breakfast	
09:00 – 09:10	Opening Remarks Fritz Friedersdorf, Conference Co-Chair Ron Latanision, ECI Technical Liaison	
	<u>Session 1</u> Chair: Dave Rusk, Naval Air Warfare Center Aircraft Division, USA	
09:10 – 10:00	Keynote Environment-induced crack initiation in metals - experimental studies Henry Holroyd, Consultant, USA	1
10:00 – 10:30	Characterizing environmentally assisted crack initiation and short crack growth Tim L. Burnett, The University of Manchester, United Kingdom	2
10:30 – 11:00	Coffee Break	
11:00 – 11:30	Effect of laser surface treatment on the corrosion and fatigue performance of aa5456-h116 alloys Rajaguru Jeyamohan, University of Virginia, USA	3
11:30 – 12:00	Evaluation of chloride stress corrosion susceptibility of stainless steels Earl Johns, Naval Nuclear Laboratory; Fluor Marine Propulsion, USA	4
12:00 – 13:30	Lunch	
	<u>Session 2</u> Chair: Siddiq Qidwai, National Science Foundation, USA	
13:30 – 14:20	Keynote Modeling electrochemically assisted hydrogen adsorption on alloy surfaces Chris Taylor, DNV GL and Ohio State University, USA	
14:20 – 14:50	Advances in peridynamic modeling of environmentally- assisted cracking Florin Bobaru, University of Nebraska-Lincoln, USA	5
14:50 – 15:30	Coffee Break	
15:30 – 16:00	Combined damage-fracture model for corrosion fatigue crack growth in 3D parts Alexander Staroselsky, Raytheon Technologies Research Center, USA	6
16:00 – 16:30	Electrochemical-mechanical phase field model for electroplating process Jung Ho Yang, Technical Data Analysis, Inc., USA	7

Dinner on your own

Tuesday, July 18, 2023

08:00 – 09:00	Breakfast	
	<u>Session 3</u>	
	Chair: Rick Ricker, University of Maryland, USA	
09:00 – 09:30	A computational framework for prediction of atmospheric Mehdi Amiri, George Mason University, USA	8
09:30 – 10:00	Correlating nature of precipitates with environmental degradation in aluminum alloys Ramasis Goswami, US Naval Research Laboratory, USA	9
10:00 – 10:30	Coffee Break	
10:30 – 11:00	Unusual behavior of long cracks at low dk: Marci effect Daniel Kujawski, Western Michigan University, USA	10
11:00 – 11:30	New aluminum alloy design Asuri Vasudevan, Office of Naval Research (Retired), USA	11
11:30 – 13:00	Lunch	
13:15	Board bus for excursion	
13:30 – 16:30	Excursion - National Air and Space Museum - The Steven F. Udvar-Hazy Center VA Note: The bus will depart from the hotel promptly at 13:30	

Wednesday, July 19, 2023

08:00 – 09:00	Breakfast		
	<u>Session 4</u>		
	Chairs: Victor Rodriguez-Santiago, NAWCAD, USA		
09:00 – 09:50	Keynote Quantification of environmentally-assisted cracking mechanisms with high-resolution characterisation Sergio Lozano-Perez, University of Oxford, United Kingdom		
09:50 – 10:20	Preferred EAC initiation sites in 7xxx aluminum Matthew Curd, University of Manchester, UK	12	
10:20 – 11:00	Coffee Break		
11:00 – 11:30	Atomic mechanism of near threshold fatigue crack growth in vacuum as a basis for understanding environmental effects Mingjie Zhao, Exponent, Inc., USA		13
11:30 – 12:00	Microstructural crack path prediction using graph theory Veera Sundararaghavan, University of Michigan, USA	14	
12:00 – 13:30	Lunch		
	<u>Session 5</u>		
	Chairs: Nagaraja Iyyer, Technical Data Analysis, Inc., USA		
13:30 – 14:20	Keynote Dynamic fracture in dealloying induced stress-corrosion cracking Karl Sieradzki, Arizona State University, USA		15
14:20 – 14:50	Surface stress in metals induced by organic monolayer films Srinivasan Chandrasekar, Purdue University, USA		16
14:50 – 15:20	Modeling hydrogen diffusion in precipitation hardened nickel alloy Attilio Arcari, Naval Research Laboratory, USA		17
15:20 – 15:50	Coffee Break		
15:50 – 16:20	Development of a lifetime prediction model for evaluating the sensitivities of aisc susceptibility in stainless-steel nuclear waste storage canisters Sarah Blust, University of Virginia, USA		18
16:20 – 17:00	Use of an inverse life plot for fatigue endurance/limit estimation Daniel Kujawski, Western Michigan University, USA		19
17:00 – 18:00	Reception		
	<i>Dinner on your own</i>		

Thursday, July 20, 2023

08:00 – 09:00	Breakfast		
	<u>Session 6</u>		
	Chairs: Earl Johns, Naval Nuclear Laboratory, USA		
09:00 – 09:50	Keynote Is laboratory testing of SCC susceptibility fit for purpose?	20	
	Alan Turnbull, NPL, United Kingdom		
09:50 – 10:20	Assessing the loading rate dependence of hydrogen environment-assisted cracking behavior in a wide-range of engineering alloys		21
	James Burns, University of Virginia, USA		
10:20 – 10:50	Environment-assisted fracture, my friend: The cutting of gummy metals		22
	Ronald M. Latanision, Exponent Inc.; Massachusetts Institute of Technology, USA		
10:50 – 11:30	Coffee Break		
11:30 – 12:00	The influence of additive manufacturing (3D printing) on susceptibility to environmentally induced fracture		23
	Rick Ricker, University of Maryland, USA		
12:00 – 12:30	Electrochemical activities at the crack tip: A localized approach	24	
	Leila Saberi, George Mason University, USA		
12:30 – 14:00	Lunch		
	<u>Session 7</u>		
	Chairs: Alexander Staroselsky, Raytheon Technologies Research Center, USA		
14:00 – 14:30	Environmentally-assisted degradation and erosion of polymers for attritable metamaterials		25
	Nicole Apetre, U.S. Naval Research Laboratory, USA		
14:30 – 15:00	Fracture toughness K_{Ic} affecting static threshold K_{Isc}	26	
	Asuri Vasudevan, TDA, Inc., USA		
15:00 – 15:30	Fatigue threshold $K_{max,th}$ affected by static threshold K_{Isc}	27	
	Asuri Vasudevan, TDA, Inc, USA		
15:30 – 16:00	Atmospheric laboratory and outdoor testing of aluminum alloy environment assisted cracking		28
	Fritz Friedersdorf, Luna Labs USA, LLC, USA		
16:00 – 16:30	Coffee Break		
19:00 – 21:00	Conference Banquet		