



FATIGUE 2021

Conference Programme

Monday 29 March

0900 Welcome address: Dr John Yates, Conference Convenor

0905 Keynote: Very-High-Cycle Fatigue of Additive Manufactured Materials - Youshi Hong, Chinese Academy of Sciences

Session 1: Additive Manufacturing I

0935 Influence of defects in fatigue crack growth for materials processed by Laser Beam Melting - Melanie Prost, Mines ParisTech

1000 Fatigue behaviour of additively-manufactured Ti-6Al-4V deposited on conventionally-melted base plate - Yoshihiko Uematsu, Gifu University

1025 Probabilistic approach for the dimensioning of WAAM structures with isolated pores in high cycle fatigue - Lorenzo Bercelli, ENSTA Bretagne *

1050

Break and Spatial Chat

1115

Exhibitor 1 Presentation

Session 3: Environmental Fatigue

1120 Corrosion-Fatigue in Nickel Based Superalloys Subjected to SO₂ Environments - Martin Bache, Swansea University

1145 The Effect of Salt Chemistry on the Zero and Cyclic Load Performance of a High Temperature Nickel-based Superalloy - Mat Hendery, Swansea University *

1210

Lunch and Spatial Chat

1305

Exhibitor 2 Presentation

Session 5: Variable & Random Loading

1310 Formulation of cross terms for multi DOF, frequency domain loads, targeting damage equivalency with non-random time domain loads - Karl Holmgren, TitanX

1335 A Fatigue Life Assessment Method Based on Variable-Amplitude Loading Classification for Automotive Vehicles - Enora Bellec, PSA Group *

1400 A model to assess the variance of fatigue damage in high-kurtosis asymmetrical random loadings with narrow-band power spectrum - Julian Marcell Enzeiler Marques, University of Ferrara *

1450

Break and Spatial Chat

1515

Exhibitor 3 Presentation

Session 2: Continuum Scale Modelling

0935 Simplified methods comparison for cyclic behaviour prediction : validation with in-situ stress measurements on notched specimen - Ewann Gautier, ENSTA Bretagne *

1000 A phase field fracture and fatigue formulation for Shape Memory Alloys (SMAs) - Marlini Simoes University of Cambridge

1025 Boundaries of small-scale yielding regime for crack propagation - Fernando Antunes, University of Coimbra

Session 4: Crack Propagation I

1120 Study on the application of deep surface rolling technique to reduce fatigue crack propagation growth rates - Supriyo Ganguly, Cranfield University

1145 Numerical modelling of the fatigue crack propagation to predict the evolution of the crack front shape under the effect of plasticity induced crack closure - Wisam Taleb, ISAE-ENSMA

Session 6: Experimental Methods I

1310 Small Ring Fatigue Testing - Julija Kazakeviciute, University of Nottingham *

1335 Fatigue crack growth monitoring in the Nickel superalloy RR1000 using frequency sweep alternating current potential drop methods; estimation of crack shape and length - Yuqian Si, University of Nottingham

1400 Identification of Fatigue Cracking Mechanisms Using Acoustic Emission - Anghel Cernescu, Cardiff University

1425 Micro-scale Low Cycle and High Cycle Fatigue Testing by Micro-cantilevers - Jicheng Gong, Oxford University

Monday 29 March continued

Session 7: Welds I (hosted by TWI)

1520

Developments in Fatigue Design Rules for Welded Joints - Matthew Doré, TWI Ltd

1545

Probability of Fatigue Failure for Welded Joints by S-N Curve Method - Xing Sun, TWI Ltd

1610

Cumulative Fatigue Damage of Welded Joints under Variable Amplitude Loading - Xu Liu, TWI Ltd *

1635

Fatigue Life Prediction Of A Crane Girder: Comparing Hot Spot Stress And Fracture Mechanics Approaches - Kris Hectors, Ghent University *

Session 8: Multi-axial Fatigue

1520

Self-heating characterisation in the High Cycle Fatigue regime of naval transmission shaft steel under variable amplitude multiple loadings - Corentin Guellec, ENSTA Bretagne *

1545

Estimating the Fatigue Limit in the Presence of Circular Holes under Axial and Torsional Cyclic Loading Conditions - José Antonio Balbín, University of Seville

1610

Random Vibration Fatigue of Welded Structures - Applications in the Automotive Industry - Giovanni de Morais, Dassault Systèmes

Tuesday 30 March

0900

Keynote: Integrating Cellular Automata and Extended Finite Element Methods to Model Pitting Corrosion and Fatigue Behaviour - Robert Akid, University of Manchester

Session 9: Design & Assessment I

0930

Notch fatigue and crack growth resistance of ferritic and pearlitic ductile cast iron - Michele Dallago, University of Trento *

0955

Computed-tomography based defect characterisation and prediction of fatigue properties of recycled extrudates from field-assisted sintered EN AW-6082 aluminium chips - Alexander Koch, TU Dortmund University *

1020

Implications of the Load Sequence, the Cyclic Material Behaviour and the Geometry on the Local Damage Evolution with Respect to Fatigue Design and Assessment - Matthias Hell, Technische Universität Darmstadt

1045

Barkhausen noise-based assessment of single lip-deep drilling focused on fatigue life improvement of AISI 4140 component-near specimens - Nikolas Baak, TU Dortmund University

1110

Break and Spatial Chat

1135

Exhibitor 3 Presentation

Session 11: Additive Manufacturing III

1140

Fatigue assessment of additively manufactured plain and notched polylactide (PLA) - Luca Susmel, University of Sheffield

1205

Study on fatigue crack growth behavior in stainless steel 316L manufactured by laser powder bed fusion - Mehran Shahriarifar, TWI/University of Coventry *

1230

Effects of the surface roughness and the porosity on the high cycle fatigue behaviour of Ti-6Al-4V alloy obtained by additive Manufacturing Process - Viet-Duc Le, Amvalor

1255

Lunch and Spatial Chat

Session 10: Additive Manufacturing II

0930

Fatigue properties of type 420J1 martensitic stainless steel additively manufactured by laser metal deposition method - Toshifumi Kakiuchi, Gifu University

0955

Local Fatigue Parameter Prediction of Additively Manufactured Components using Machine Learning - Michael Hack, Siemens

1020

Is it possible to predict failure in additively manufactured metals? - Klas Solberg, Norwegian University of Science and Technology *

1045

Study on the relationship between the geometry and the mechanical properties of Selective Laser Melted lattice materials - Michele Dallago, University of Trento *

Session 12: Microstructure Scale Modelling

1140

A multiscale study on the evolution of slip bands in a polycrystalline nickel-based superalloy during low cycle fatigue - Fernando León-Cázares, University of Cambridge

1205

Decoupling Geometric and Microstructural Gradients in Fatigue Crack Formation - Gustavo Castelluccio, Cranfield University

Tuesday 30 March continued

1400

Keynote: 50 Years of Fatigue Research: Progress and Perspectives - Roderick Smith, Imperial College

1435

Exhibitor 5 Presentation

Session 13: Experimental Methods II

1440

Local stress concentration assessment and fatigue crack monitoring using infrared thermal imaging on welded tee-joints - Benaissa Malek, ENSTA Bretagne *

1505

A novel thermography-based high-cycle-fatigue life calculation method - Zhenjie Teng, Saarland University

1530

Test Technique Development and Fatigue Performance of Carburised Type 316H Austenitic Stainless Steel - Mark Callaghan, Jacobs

1555

Experimental evaluation of effective stress intensity factor using thermoelastic stress analysis and digital image correlation - Francisco Díaz, University of Jaen

Session 14: Thermomechanical Fatigue

1440

Structural Strain Approach for Fatigue Life Assessment of Thin-Walled Welded Structures under Thermo-Mechanical Loading - Simon Moser, TU Darmstadt

1505

High Temperature Low Cycle Fatigue behaviour of Type 316L Stainless Steels Manufactured through Powder Metallurgy and Hot Isostatic Pressing - David Coon, Jacobs

1530

The effect of phase angle on crack growth mechanisms under thermo-mechanical fatigue loading - Mark Whittaker, Swansea University

1555

Investigating Thermal Fatigue in Double Layer Transpiration Cooled Engine Components - Christos Skamniotis, Oxford University *

Wednesday 31 March

0900

Keynote: 3D printed mechanical interlocking and fatigue design - Filippo Berto, Norwegian University of Science & Technology

0930

Exhibitor 6 Presentation

Session 15: Additive Manufacturing IV

0935

Failure Causes of an additive manufactured Ti-6Al-4V and Implications on Fatigue Design - Emre Akgun, Coventry University *

1000

Effect Of A Post Fabrication Annealing Treatment On Fatigue Behaviour Of Additive Manufactured Inconel 625 - Noemie Martin, ISAE Supaero *

1025

High cycle fatigue behaviour of additive manufactured stainless steel 316L: free surface effect and microstructural heterogeneity - Anis Hor, ISAE Supaero

1050

Instrumented fatigue tests on 316L and TA6V samples produced by wire arc additive manufacturing - Christophe Hacquard, University of Montpellier

1115

Break and Spatial Chat

1145

Exhibitor 7 Presentation

Session 17: Design & Assessment II

1150

Model Based Virtual Sensing of Wheel Centre Loads and Full Strain Field on an Automotive Suspension - Şafak Has, Siemens

1215

Surface Treatment Effects in Fatigue Analysis of Landing Gear Materials - Andrew Halfpenny, HBK

1240

Fatigue Behaviour of Hot Dip Galvanized Structural Steel Details - Gonçalo Ferraz, KU Leuven

1305

Probabilistic Fatigue and Reliability Simulation - Andrew Halfpenny, HBK

Session 16: Crack Propagation II

0935

Detection of small internal fatigue cracks of Ti-6Al-4V in the very high cycle regime via synchrotron radiation nanocomputed tomography - Takashi Nakamura, Hokkaido University

1000

Experimental evaluation of plastic wake by digital image correlation - Jose Manuel Vasco-Olmo, University of Jaen

1025

The prediction of fatigue crack growth rates in materials that exhibit a relationship between Young's modulus and plastic strain - James Rouse, University of Nottingham

1050

A fractographic study of the initiation and propagation process of internal fatigue cracks in Ti-22V-4Al with different alpha-phase precipitation - Gaoge Xue, Hokkaido University *

Session 18: Welds II

1150

Local Fatigue Property Assessments of Linear Friction Welds - Chris Magazzeni, Oxford University *

1215

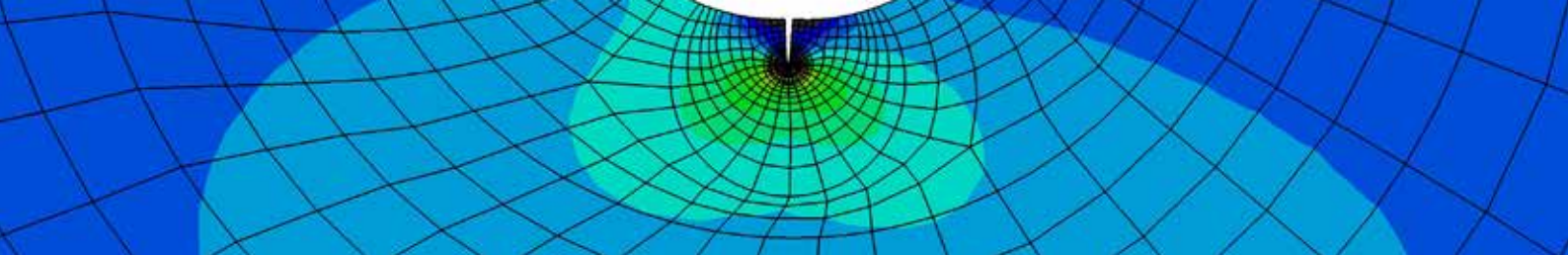
Multiscale analysis of fatigue damage mechanisms of welded stainless steels components - Ayoub Elmoutaouakkil, University of Mines *

1240

Fatigue properties of ultrasonically welded aluminium alloys to polymer composites for aerospace applications - Florian Staab, University of Freiburg

1305

Fracture Analysis of Dissimilar Welded Metal Joints - Hassan Ghadbeigi, University of Sheffield



Wednesday 31 March continued

1330

Lunch and Spatial Chat

1430

Peter Watson Prize

Session 19: Composites

1440

Challenges in Collecting and Analysing Experimental Data on Composites Fatigue - Peter Bailey, Instron

1505

Fatigue Durability Estimation Methods for Multidirectional Laminates of UD CFRP - Peter Heyes, HBK

1530

Influence of the layer structure and metal volume fraction on the fatigue behaviour of thermoplastic-based hybrid laminates - Selim Mrzljak, TU Dortmund University

1555

Fatigue Damage Accumulation in a SiCf/SiC CMC Monitored via In-situ X-ray Computed Tomography and Acoustic Emission - Zak Quiney, Swansea University

1620

Evaluation of Multi-Material Thick Adhesive Joints for use in Marine Applications under Fatigue Loading - Wim de Waele, Ghent University

1645

Closing Address: Dr John Yates, Conference Convenor

* Denotes presenters eligible for the Peter Watson Prize

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For further information please contact:

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