

NSIRC RESEARCH AND INNOVATION CONFERENCE 2021

INDUSTRY-LED
POSTGRADUATE RESEARCH
8-9 SEPTEMBER 2021



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DAY 1 (8TH) AGENDA



09:30

Welcome and Introduction to NSIRC (National Structural Integrity Research Centre) and CRP (Core Research Programme)

Prof Tat-Hean Gan, NSIRC Director

09:45

Scanning the Horizon for a Net Zero Future

Keynote Speaker: Luca Corradi, Innovation Network Director,
Net Zero Technology Centre

SESSION A

SESSION B

10:15

Composites and Polymers

Sponsored by **Brunel Composites Centre**
and **Teesside University**

Alessandro Sergi

Influence of Powder Characteristics on Hot Isostatically
Pressed pure Niobium for Space Application

10:30

Mohammad Alghfeli

An Approach to Enhanced HDPE nanocomposites

10:45

BREAK

11:00

Core Research Programme Showcase Presentation:

Chris Worrall

Preliminary Mechanical Properties of Thermoplastic
Composites Containing Multiple Pierced Perforations

11:15

Minghui Wu

Assessing life cycle costs and environmental performance
of composite material in aircraft application

11:30

Thamasha Dona

Design and Development of Composite Panels with
Variable Thermal Conductivity for Li-ion Battery Module

11:45

12:00

LUNCH

Additive Manufacturing

Sponsored by **Anglia Ruskin University**
and **Malvern Panalytical**

Helen Elkington

Laser Beam Direct Energy Deposition – Effect of Process
Parameters on Material Properties of Inconel 718

Sameera Weeratunga

Determine influence of local microstructure features on
crack initiation in additively manufactured Inconel-718

Marie-Salome Duval-Chaneac

Effect of heat treatment on fatigue crack growth in Multiple
Material Additive Manufacturing (MMAM)

Saad Ahmed

Correlating Defects to Fatigue Performance in Selective
Laser Melted Al-Si10-Mg Alloys

Core Research Programme Showcase Presentation:

Adrian Addison

Welding of Additively Manufactured Materials: Preliminary
Assessment

13:00

Hamad Raheem

Evaluation of Polymer Ageing Due to Gas Permeation
using Piezoelectric Micromachined Ultrasonic Transducers

13:15

Malallah Al Lawati

Powder Hot Isostatic Pressing of Ti-based Metal Matrix
Composites (TMCs)

13:30

Burak Sakarya

Design of Composite Pressure Vessels with built-in "Leak-
Before-Break" Capability

13:45

Maciej Gierulski

Electrofusion couplers for Thermoplastic Composite Pipe

14:00

BREAK

14:15

Mohammad Khairy

Effect of partial pressure of hydrogen on vacuum brazing
of 316L stainless steel

14:30

Tianmiao Li

Cold Atmospheric Plasma (CAP) Treatment to Enhance
Adhesive Bonding

14:45

Core Research Programme Showcase Presentation:

Mike Dodge

Hydrogen Embrittlement of High Strength Precipitation
Hardenable Nickel Alloys

15:00

15:15

Closing Words

15:30

End of Day 1

Corentin Penot

Investigation of the corrosion performance of a WAAM
deposited 316L alloy in NaCl environment

Industry 4.0

Sponsored by the **University of Leicester**

Yi Yin

Electron Beam Weld Penetration Depth Prediction Based on
Artificial Neural Network and Numerical Modelling

Marco Berchiolli

Deep Learning Based Chest Cavity Segmentation in T1-
Weighted Contrast-Enhanced Breast MRI

Norbert Sieczkiewicz

Electron beam characterisation using time series imaging
and deep learning

Joining Technologies

Sponsored by **TWI Certification Limited**
and **Coventry University**

Structural Integrity

Sponsored by **Brunel University London**
and **Coventry University**

Chiamaka Mbanusi

Dynamic Fracture Toughness of Metallic Materials at Very
High Loading Rates

Zeng Chen

Evaluation of applicability of different constraint parameters
in brittle SEN(B) specimens

Hanwei Zhou

Numerical Simulation of Fatigue Crack Propagation

Vishal Vats

Characterization of arc welding fume samples by FT-IR
spectroscopy

DAY 2 (9TH) AGENDA



	Welcome and Introduction	
09:30	Ameni Lounissi, Research and Innovation Operations Section Manager, TWI Ltd Daisy Martlew, Commercial Operations Team Manager, TWI Ltd	
	Technology Matters	
09:45	Keynote Speaker: Mark Thomson, Executive Chair, <i>Science and Technology Facilities Council (STFC)</i>	
	SESSION A	SESSION B
	Inspection and Monitoring Sponsored by TWI Hellas , the Industrial Net Zero Innovation Centre and Castalia	Structural Integrity and Standards Sponsored by Brunel Innovation Centre
10:15	Rukhshinda Wasif Development of permanently installed magnetic eddy current sensor for corrosion monitoring	Faris Nafiah Quantitative Data Analysis of Pulsed Eddy Current Responses For Pipeline Profiling
10:30	Dandan Liu Hydrogen Induced Cracking in Oil and Gas Pipelines and Its Monitoring	Paul Sukpe Crack Tip Constraint In Typical High Strength Steel Components In Arctic Conditions
10:45	BREAK	
11:00	Core Research Programme Showcase Presentation: Channa Nageswaran Influencing Parameters For The Ultrasonic Inspection Of Austenitic Welds	Matthew Weltevreden Parametric Statistics using Austenitic Girth Weld Residual Stress Data
11:15		Oliver Logan Constraint Analysis – Application to Notched Cases
11:30	Xuening Zou Simulation-based training of CNN for detection of cracking	Core Research Programme Showcase Presentation: Muhammad Ali Refill Friction Stir Spot Welding Parameter Development for Transport Industry Aluminium Alloys
11:45	Nagu Sathappan Development of an underwater and high temperature sensor for a permanently installed corrosion monitoring system	
12:00	LUNCH	

13:00	Coatings Technologies Sponsored by the Materials Innovation Centre Ana Carolina Araujo-Lascano Performance of Painted TSA in Simulated Marine Environment	Joining Technologies Sponsored by TWI Certification Limited and Coventry University Dimitrios Gaitanelis Thermal degradation of thermoplastic composites in laser processing: An investigation for composite-metal joining
	Nigar Malik Development of novel REACH-complaint coatings for the protection of high strength steels	Bowei Li Laser riveting: an innovative technique for dissimilar materials joining
13:30	Core Research Programme Showcase Presentation: Ewen Kellar Gas Plasma as a Universal Dry Pre-treatment for Structural Bonding Applications	Amarachi Frances Obilor Laser Surface texturing of Polymer materials for surface energy control
13:45		George Brooks Investigation Into The Influence Of Friction Stir Welding In Thick Section Aluminium Alloys
14:00	BREAK	
14:15	Aamna Asad Understanding the structure function relationships of super-omniphobic nano-particles	
14:30	Adamantini Loukodimou Development of Novel Coating Systems for Mitigating Corrosion of Offshore Wind Turbines	
14:45	Closing Words	
15:00	End of Day 2	