



National Student Conference in Metallic Materials

20<sup>th</sup> June 2011

Halifax Hall, Endcliffe Village, University of Sheffield

**Programme**

0930 Registration and refreshments

**1000 Welcome, Prof Panos Tsakirooulos, Middleton Room**

**1015 Session A1 – Nickel I, Middleton Room**

Chair – Andrew Tweddle, University of Sheffield

Investigations into the mechanisms of primary water stress corrosion cracking (PWSCC) in alloy 600

John Lindsay, X Zhou, RA Cottis

*Advanced Metallic Systems CDT, The University of Manchester*

Influence of the precipitate size on deformation mechanisms in nickel-base superalloys

Elisabeth Knoche, BMB Grant, J Quinta da Fonseca, M Preuss

*The University of Manchester*

Deformation Mechanisms in Nickel-Base Superalloys

Paul Anderson, J Quinta da Fonseca, M Preuss

*Advanced Metallic Systems CDT, The University of Manchester*

**1015 Session B1 – Joining, Ennis Room**

Chair – Alexandra Panteli, The University of Manchester

Corner Friction Stir Welding

Sam Gascoyne<sup>1</sup>, BP Wynne<sup>1</sup>, PB Prangnell<sup>2</sup>,

<sup>1</sup>*Advanced Metallic Systems CDT, University of Sheffield*, <sup>2</sup>*The University of Manchester*

The Effect of Zinc Coatings on joint Properties and Interface Reactions in Aluminium to Steel Ultrasonic Spot Welding

Farid Haddadi

*The University of Manchester*

Linear friction welding of aluminium to copper  
Imran Bhamji, RJ Moat, M Preuss, PL Threadgill, AC Addison  
*The University of Manchester*

### **1115 Short break**

### **1120 Session A2 - Nickel II, Middleton Room**

Chair – Elisabeth Knoche, The University of Manchester

Understanding the influence of process parameters on the grain morphology and precipitation in direct laser fabricated Inconel718

Lakshmi Parimi, MM Attallah, D Clark  
*University of Birmingham*

Residual stress mitigation in aerospace forgings through annealing heat treatment

James Rolph, M Preuss, M Ganesan  
*The University of Manchester*

Laser powder bed fabrication of a nickel superalloy: Quantification and mitigation of cracking

Luke Carter, MM Attallah  
*University of Birmingham*

### **1120 Session B2 – Steels, Ennis Room**

Chair – Ashwin Pandit, University of Cambridge

Survey, classification and coding of wastes in the Libyan iron and steel industry

Mansur Zaghinin, T Perera  
*Sheffield Hallam University*

Development of ultra high strength steels for reduced carbon emissions in automotive vehicles

Alfonse Chamisa, WMR Rainforth, EJ Palmiere  
*Advanced Metallic Systems CDT, University of Sheffield*

Microstructural evaluation and performance of steels used in structural bolting assemblies in fire

Lucy Johnson, EJ Palmiere, R Thackray, I Burgess, B Davison  
*Advanced Metallic Systems CDT, University of Sheffield*

### **1220 Lunch and Posters, Sharman Room**

### **1330 Keynote Talk, Middleton Room**

Design of Metals using Neural Networks  
Prof Harry Bhadeshia  
University of Cambridge

### **1415 Short break**

### **1420 Session A3 – Corrosion, Middleton Room**

Chair – John Lindsay, The University of Manchester

In-situ studies of corrosion fatigue of high strength steel for offshore oil and gas applications

Peter Barnes, SB Lyon

*Advanced Metallic Systems CDT, The University of Manchester*

Corrosion of high strength lean 7xxx series aluminium alloys; Microstructural analysis using 3D tomography

Alex Cassell, GE Thompson

*Advanced Metallic Systems CDT, The University of Manchester*

Corrosion behaviour of closed cell metal foams in 3.5wt% NaCl at room temperature

Adebola Afelumo

*Sheffield Hallam University*

Practically exploring the metal scale - electrolyte interface at the nanoscale

Mahmoud Ahmed, R Lindsay, DJ Vaughan

*Advanced Metallic Systems CDT, The University of Manchester*

### **1420 Session B3 – Alloy Development and Casting, Ennis Room**

Chair – James Rolph, The University of Manchester

Novel Grain Refiner for Aluminium-Silicon Alloys

Magdalena Nowak

*Brunel University*

Preliminary measurement of the viscosity of a liquid metal by a concentric cylinder method

Ritwik Ritwik, Z Fan, P Qusted

*Brunel University*

Development of Nb silicide based intermetallic composites

Andrew Tweddle, H Kinoshita, P Tsakirooulos

*Advanced Metallic Systems CDT, University of Sheffield*

Development of oxidation resistant coatings for niobium silicide based in situ composites

Gary Bywater, A Leyland, P Tsakirooulos

*Advanced Metallic Systems CDT, University of Sheffield*

### **1540 Refreshment break**

### **1600 Session A4 – Zirconium and Magnesium Alloys, Middleton Room**

Chair - Magdalena Nowak, Brunel University

Analysis of casting defects in AZ80 magnesium alloy using X-ray computed tomography

David Mackie, J Robson, P Withers, M Turski

*The University of Manchester*

Parameter investigation of rheo-extruder using AZ91D alloy

Zen Cassinath, M Xia, Z Fan

*Brunel University*

Texture development in zircaloy-4 during uniaxial compression – effect of temperature

Peter Honniball, J Quinta da Fonseca, M Preuss

*The University of Manchester*

The relationship between processing, recrystallisation and texture in Zr-alloys

Chatri Boonchareon, M Preuss, J Quinta da Fonseca

*Advanced Metallic Systems CDT, The University of Manchester*

### **1600 Session B4 – Modelling and Mechanical Properties, Ennis Room**

Chair – Lucy Johnson, University of Sheffield

Influence of diffusion in ferrite on pearlite growth

Ashwin Pandit, HKDH Bhadeshia

*University of Cambridge*

A numerical modelling analysis of isothermal fatigue test

Mohammed Nasser, ST Hassan, D Myriounis

*Sheffield Hallam University*

Effect of plasma electrolytic oxidation (PEO) coatings on uniaxial mechanical response of open-cell aluminium foams

Taha Abdulla, A Yerokhin, R Goodall

*University of Sheffield*

Lattice structures with auxetic behaviour fabricated by electron beam melting  
Everth Hernandez, R Goodall  
*University of Sheffield*

**1730 Careers Session, Middleton Room**

Brief presentations from Dr Ellie Clark, Rolls-Royce, Dr Sinan Al Bermani, Sheffield Forgemasters International and Dr James Curran, Keronite followed by questions and discussion.

**1815 Drinks reception and posters**

**1900 Conference Dinner, The Edge, Endcliffe Village**