2nd International Workshop on Mechanistic Behaviour of HCP Alloys

Mon 17th – Wed 19th September 2018
PEMBROKE COLLEGE, UNIVERSITY OF OXFORD, UK

Final Programme

Organising Committee:
Ben Britton, Fionn Dunne and Saira Naeem (Imperial College London)
Programme Overview - Monday:

08:30 Registration and Refreshments
09:20 Welcome & workshop outline

Session 1 – Chair: Fionn Dunne

09:30 David Rugg
Keynote: The use of academic research output in Industry

10:10 Yi Xiong, Phani Karamched, Christopher Magazzeni, Chi-Toan Nguyen, David M Collins, Edmund KR Tarleton and Angus J Wilkinson
An In-situ Synchrotron Diffraction Study of Stress Relaxation in Ti Alloys

10:30 Anish Roy, Qiang Liu, Rongxin Zhao, Anuj Bisht, Satyam Suwas
Modelling the temperature and strain rate effects of extruded AM30 magnesium alloy

10:50 Discussion

11:10 Refreshments

Session 2 – Chair: Irene J. Beyerlein

11:40 Zebang Zheng, David Wilson, Bo Chen, Daniel Balint, Fionn Dunne
Keynote: Discrete Dislocations to Crystal Plasticity: New Ideas to Explore Fatigue and Fracture

12:20 Y. Lu*, M. Aristizabal, X. Wang, B. Pang, Y.L. Chiu, Z. T Kloenne, H.L. Fraser and M.H. Loretto
The influence of heat treatment on the microstructure and properties of HIPped Ti6Al4V

12:40 Abigail K Ackerman, Colin Ophus, Alexander Knowles, Ioannis Bantounas, Mohsen Danaie, David Rugg, David Dye
Improving Strength in Ti-6Al-2Sn-4Zr-6Mo

13:00 Discussion

13:20 Lunch

Session 3 – Chair: Phani Karamched

14:10 Irene J. Beyerlein
Keynote: Twin Formation, Propagation, and Intersections at the Mesoscale

14:50 Jing Wu and YuLung Chiu
In-situ TEM study of \(<c+a>\) dislocations in Mg-Y alloys

15:10 Gyula Zilahi, Gábor Ribárik, Sean Agnew, Wei Wu, Ulrich Lienert and Tamás Ungár
Characterization of 3D dislocation structure in single grains and parent-twin pairs of uniaxially deformed polycrystalline Mg AZ31 alloy specimens

15:30 Discussion

15:50 Refreshments

Session 4 – Chair: Abigail Ackerman

16:20 Martin A. Crimp, Yang Su, Songyang Han and Philip Eisenlohr
An Experimental and Computational Study of Shear Accommodation at Grain Boundaries in Alpha Titanium

16:40 Liu Chen, Fionn Dunne and Son Pham
Microstructure-based modelling of plastic anisotropy in lamellar TiAl alloy

17:00 Viacheslav Kuksenko, Steve Roberts and Edmund Tarleton
Nanoindentation hardness anisotropy of beryllium

17:20 James Little and Hector Basoalto
Plasticity as emergent behaviour in 2-phase alloys

17:40 Discussion
18:00 End of Session
19:30 Dinner

Programme Overview - Tuesday:

Session 5 – Chair: Ben Britton

09:00 Michael D. Sangid

Keynote: Coupling modeling and in situ experiments to investigate plasticity and fatigue performance of Ti alloys

09:40 Sudha Joseph, Trevor C Lindley and David Dye

Influence of load hold on dislocation mechanisms in fatigue of a near-alpha titanium alloy

10:00 Kayleigh Nelson, Euan Wielweski and Darren Pagan

Materials Fundamental Study of the Properties and Deformation of Titanium Alloys at Room Temperature

10:20 David Wilson and Fionn Dunne

Modelling microstructurally-sensitive fatigue crack growth

10:40 Discussion

11:00 Refreshments

Session 6 – Chair: Sudha Joseph

11:30 Siyang Wang, Finn Giuliani and Ben Britton

Micropillar compression of hydride containing zircaloy-4 to explore the performance of nuclear fuel cladding

11:50 Benjamin Christiaen, Ludovic Thuinet, Christophe Domain, Antoine Ambard and Alexandre Legris

Object kinetic Monte Carlo modelling of microstructure evolution under irradiation in zirconium based on atomistic modelling of point defect clusters


Hydrides and deuterides in zircaloy-4

12:30 Michael Preuss

Quantification of strain localisation and slip mode activity in hcp metals by orientation mapping and high resolution digital image correlation – progress and challenges

12:50 Discussion

13:10 Lunch

Session 7 – Chair: Rhys Thomas

14:10 Armand Beaudoin, Kamalika Chatterjee, Darren Pagan and Paul Shade

Keynote: Insight into the Kinetics of Plasticity Using High-Energy X-Ray Diffraction

14:50 Christos Triantafyllou, Darren Pagan and Andrew McBride

Experimental and numerical investigation of cold-dwell fatigue in UD-rolled Ti64

15:10 Jicheng Gong and Angus Wilkinson

Micro-cantilever Tests of Asymmetry in Tensile and Compressive Slip Properties and Basal Plane Cracking in Alpha Titanium

15:30 Haiyang Yu, Angus Wilkinson and Edmund Tarleton

Three dimensional discrete dislocation plasticity modeling of microcantilever tests on HCP materials
15:50  Discussion
16:10  Refreshments

Session 8 – Chair: Vivian Tong

16:40  Michael Lowe, Ming Huang, Stan Rokhlin and Gaofeng Sha  
Grain scale simulation of wave propagation in polycrystalline materials

17:00  Kamalika Chatterjee, Robert Carson and Paul Dawson  
Best practices in determination of microstructure-property correlations in alpha-Titanium using crystal plasticity

17:20  Bo Lan, T.Ben Britton, Weimin Gan, Michael Hofmann, Michael A. Carpenter, Christopher M. Kube, Fionn P.E. Dunne and Michael J.S. Lowe  
Volumetric measurement of crystallographic texture using acoustic waves

17:40  Hamidreza Abdolvand, Jonathan P Wright and Angus J Wilkinson  
Strong Neighbour Effects on Grain Resolved Stress Distributions in Hexagonal Metals

18:00  Discussion
18:30  Drinks Reception
19:30  Banquet Dinner

Programme Overview - Wednesday:

Session 9 – Chair: Fionn Dunne

09:00  Maryam Ghazisaeidi  
Keynote: Effect of Solutes on Twin Nucleation and Growth in Ti and Mg alloys

Investigating the Effects of Oxygen and Nitrogen on Titanium alloys for Turbine Engine applications

10:00  Zhenbo Zhang, Philip Platt, David Lunt and Michael Preuss  
Effect of hydrogen on the plasticity of Ti64 and Ti575 alloys

10:20  Hattie Xu, Tamas Ungar, Philipp Frankel and Michael Preuss  
Characterizing dislocation loops in proton irradiated pure zirconium

10:40  Discussion
11:00  Refreshments

Session 10 – Chair: Hector Basoalto

11:30  Arutyun Arutyunyan, Jicheng Gong and Angus Wilkinson  
Ultrasonic Fatigue testing of Ti: nucleation and short crack growth

11:50  Christopher Magazzeni, Jicheng Gong and Angus Wilkinson  
Microstructure and Local Property Assessment near Linear Friction Welds

12:10  L. Farbaniec, J.R.W. Patten, T. White and D.E. Eakins  
Dynamic behaviour of Ti-6Al-4V alloy under high strain rate loading

12:30  Discussion
12:50  Lunch
14:00  End of Conference