

# Wednesday 30 September 2015

08:00 REGISTRATION

08:25 Introduction in the Amphitheatre

ILL Director of Research  
Helmut Schober

08:45 - 09:30 **Keynote Lecture 1**  
Amphitheatre Fracture mechanics  
Chairman IC.Noyan by synchrotron X-ray microscopy

**Phil Withers**  
University of Manchester, UK

## Short break

09:40–12:30  
Room 221

Chairman R. Woracek

K8 | 1-6 • P 2 to 8 • Techniques/Instruments - I

09:40

IT 1

Deep penetration capability of neutron diffraction for strain scanning

Woo Wanchuck  
KAERI, Korea

10:10

X-ray Stroboscopic Strain Measurement in a Rotating Bearing

Thomas Connoley  
Diamond, UK

10:30

A rotating and revolving spiral slit system for space-resolved stress measurement with synchrotron radiation and area detector

Daigo Setoyama  
Toyota Central Inc., Japan

10:50

## Coffee Break

Chairman P. Staron

11:10

Neutrons for Materials Science and Engineering Research at ISIS

Shu Yan Zhang  
ISIS Facility, UK

11:30

Beamline for European Materials Engineering Research (BEER)

Jochen Fenske  
Helmholtz-Zentrum, Germany

11:50

MPISI: New material science diffractometer at SAFARI-1

Andrew Venter  
NECSA Ltd, South Africa

12:10

PSICHE: A synchrotron tomography and diffraction beamline at SOLEIL designed for materials science

Andy King  
Synchrotron Soleil, France

12:30

## Lunch Break

09:40–12:30  
Room 224

Chairman P. Gergaud

K4 | 1-6 • P 9 to 15 • Surface Modification & Coating

09:40

IT 2

Neutron through-thickness stress measurements in coatings with high spatial resolution

Vladimir Luzin  
ANSTO, Australia

10:10

Effects of cathodic arc deposition process parameters on residual stress and mechanical properties in TiAlN coatings on a ZIRLO substrate

Imran Bhamji  
University of Manchester, UK

10:30

Mapping of 7-nm-thick condensed Si<sub>1-x</sub>Gex layer by Micro-Raman spectroscopy and Scanning X-Ray Diffraction Microscopy

Aurèle Durand  
CEA LETI-Grenoble, France

10:50

**Coffee Break**

**Chairman R. Rogge**

11:10

Evaluation of Residual Stress in a 2024-T351 Aluminium plate after Laser Shock Peening by Synchrotron X-Ray Diffraction

Marco Pavan  
University of Coventry, UK

11:30

Effects of the Microstructure on the Residual Stress State and the Fatigue Lifetime of a Shot-peened Nickel-based Superalloy

Mathieu Fevre  
ONERA, France

11:50

Correlation between residual stress and nanohardness generated by laser shock peening in AL-2624 aerospace alloy

Suraiya Zabeen  
University of Coventry, UK

12:10

Stresses evaluation in thermal sprayed multilayer materials using synchrotron radiation

Benoit Malard  
CIRIMAT

12:30

**Lunch Break**

13:40–15:30  
Room 221

**Chairman: J. Bernier**

**K6 | 1-4 • P 16 to 20 • Microstructure characterization - I**

13:40

IT 3

Evolution of Grain Morphology of Ceramic Nuclear Fuels Under Simulated Operating Conditions

Don Brown  
LANL, USA

14:10

**Short break**

14:15

The uncertainty of strain measurements in large-grained polycrystalline samples: measurement and mitigation

Tom Holden  
Northern Stress Technologies, CA

14:35

Microstructural characterization of intact two Japanese swords through neutron techniques

Francesco Grazzi  
CNR, Italy

14:55

Residual Stresses and Texture in fused-cast ZrO<sub>2</sub> Bricks

Taylan Örs  
Arts & Metiers , France

15:15

In situ full stress tensor determination in Metal Matrix Composites undergoing matrix phase transformation during cooling

Lilian Vautrot  
Institut Jean Lamour, France

15:30

**Coffee Break**

**Chairman: C. Tomé**

**K2 | 1-5 • P 21 to 25 • Deformation/Modelling - I**

15:55

Elastoplastic deformation and damage process in duplex steel studied using synchrotron and neutron diffraction

Yuchen Zhao  
Université de Troyes, France

16:15

Determination of Residual Stresses in Armor Wires of Flexible Pipes Used in Oil Extraction

Olivier Sicardy  
CEA Grenoble, France

16:35

Evolution of residual stresses and dislocation density in cold drawn pearlitic steel wires during heat treatment

Jay Chakraborty  
National Metallurgical Lab, India

16:55 Cold compression of the aluminium alloy 7075 and associated {311} peak broadening Jeremy Robinson  
University of Limerick, Ireland

17:15 Identification of thermomechanical parameters in a thermally grown chromia, thanks to radiation facilities Benoit Panicaud  
UTT, France

13:40–15:30  
Room 224

Chairman L. Edwards

K3 | 1-4 • P 26 to 30 • Fatigue/Creep/Plasticity - I

13:40-14:10 Neutron Engineering Application for Structural Engineering of Reinforced Concrete Structure Hiroshi Susuki  
JAEA, Japan

IT 4

**Short break**

14:15 Strains in thermally growing Cr<sub>2</sub>O<sub>3</sub> films measured in-situ using Synchrotron X-Rays Jean Luc Grosseau-Poussard  
Université de La Rochelle, France

14:35 Comparison of residual stress profiles of laser peened thin Al2024-T351 samples obtained by diffraction methods and incremental hole drilling Burak Toparli  
Defense Industries Research and Development Inst., Turkey

14:55 Long Range Internal Stresses in Lath Martensite Steel Tamas Ungar  
Eotvos University, Hungary

15:15 Precise measurement of residual 3-D internal strains ahead of a crack tip after over loading cycle by neutron diffraction Kenji Kikuchi  
Ibaraki University, Japan

15:30 **Coffee Break**

15:55 -17:30  
Room 224

Chairman O. Muransky

K1 | 1-5 • P 31 to 35 • Processing / Welding - I

15:55 Characterisation of Residual Stresses in EPR™ Dissimilar Metal Welds by Neutron Diffraction Miguel Yescas  
AREVA, France

16:15 The challenges of determining residual stress in dissimilar metal welds Johanna Walsh  
University of Manchester, UK

16:35 Use of Synchrotron X-ray diffraction to obtain a high-resolution 2D map of residual stresses in thin laser peened samples Stefano Coratella  
Open University, UK

16:55 In-situ EDXRD Study of MAG-Welding using LTT Weld Filler Materials under Constructive Restraint Conditions Florian Vollert  
Universität Karlsruhe, Germany

17:15–17:35 In situ characterisation of the strain distribution produced around GTAW Leigh Connor  
Diamond, UK

18:30 – 21:00 Grand Salon

Poster Session with Wine & Cheese Party and Jazz Music

# Thursday 1 October 2015

**08:30-09:20** **Keynote Lecture 2**  
**Amphitheatre** A Rigorous Analysis of the Information  
 Chairman A. Schreyer Volume in a Powder Diffraction Experiment

**I.C. Noyan**  
 Columbia University, USA

## Short break

**09:30-10:40**  
**Room 221**

**Chairman D. Brown**

**K6 | 5-6 • P 37 to 39 • Microstructure Characterization II**

09:30

**IT 5**

Complementary Synchrotron, Neutron and X-ray diffraction techniques for the investigation of heat treatment processes

Jeremy Epp  
 Inst. Fur Werkstofftechnik,  
 Germany

10:00

Investigation on microstructure evolution of intermetallic phases in high strength high ductility steels by *in situ* synchrotron X-ray diffraction

Wenwen Song  
 IEHK, Aachen, Germany

10:20

Line-Broadening of Randomly Oriented Polycrystalline Materials: Experimental Confirmation with Cu film on Polyimide

Ryouichi Yokoyama  
 Rigaku Corporation, Japan

10:40

## Coffee Break

**11:00-12:30**  
**Room 221**

**Chairman C. Braham**

**K1 | 6-8 • P 40 to 43 • Processing / Welding II**

11:00

**IT 6**

Determination of rigidity temperature in AA5182 and AA6063 aluminium alloys using *in situ* X-ray diffraction during casting

Jean Marie Drezet  
 EPFL, Switzerland

11:30

Stress distribution in the chip formation zone of brass alloys with different zinc contents analysed by *in situ* diffraction

Katrin Brömmelhof  
 Technical University Berlin

11:50

Weld Residual Stresses and Associated Plasticity in a Three-Pass Austenitic Steel Weld: Predictions and Experimental Validation

Ondrej Muransky  
 ANSTO, Australia

12:10

*In-situ* experiment for laser beam welding of a TiAl alloy using high-energy X-rays

Peter Staron  
 Helmholtz-Zentrum, Germany

12:30

## Lunch Break

**09:30-12:30**  
**Room 224**

**Chairman Y. Tomota**

**K2 | 6-10 • P 44 to 50 • Deformation / Modelling II**

09:30

**IT 7**

Microstructure, stress and strain

Matteo Leoni  
 Università di Trento, Italy

10:00

Internal Strain Evolution in Mg-Y-Zn alloys containing Long Period Stacking Ordered (LPSO) Phases

Sandra Cabeza  
 CSIC, Spain

10:20

Textures and micro mechanical behavior in a rolled plate of AA7449

Julia Wagner  
 KIT, Germany

10:40

## Coffee Break

<b>Chairman H. Suzuki</b>			
11:00	IT8	Neutron Diffraction Residual Stress and In-Situ Loading Measurements on Additively Manufactured Stainless Steel	Björn Clausen LANL, USA
11:30		Microstructure and residual stress in titanium after tensile test	Krzysztof Wierzbanski Univ. of Science and Technology, Poland
11:50		Lattice strain pole figures analysis in titanium during uniaxial deformation	Baptiste Girault CEA-LETI, France
12:10		Exploration of Polymer Quenching and Vibratory Stress Relief as Stress Relief Methods	C. E. Truman University of Bristol, UK
12:30		<b>Lunch Break</b>	
13:40 – 16:15 Room 221		<b>Chairman C. Woo</b>	<b>K8   7-11 • P 51 to 56 • Techniques / Instruments - II</b>
13:40	IT 9	Pinhole High Spatial Resolution Engineering Diffraction	Ke An Oak Ridge National Lab, USA
14:10		<b>Short break</b>	
14:15		Large-Area CdTe Pixel Detectors for High-Energy X-ray Diffraction Applications	Tilman Donath Dectris Ltd., Switzerland
14:35		Modelling pseudo-strains at spallation neutron sources	Jon James Open University, USA
14:55		Deconvolution Method for Near Surface Residual Strain Gradients Measured by Neutron Diffraction	Jan Šaroun Academy of Science, CZ
15:15		<b>Coffee Break</b>	
<b>Chairman K. An</b>			
15:35		Neutron diffraction study of the surface effect for through surface scanning of a layered steel sample	Jens Gibmeier Inst. Für Werkstoffkunde, Germany
15:55 – 16:15		Practical correction of Pseudo Strain in near surface strain measurements	Thilo Pirling ILL, France

13:40 – 15:15 Room 224	Chairman T. Ungar	K3   5-7 • P 57 to 60 • Fatigue/Creep/Plasticity - II
13:40 IT 10	Industrial porous and microcracked ceramics: macro and micromechanical properties	Giovanni Bruno BAM, Germany
14:10	<b>Short break</b>	
14:15	Neutron and synchrotron diffraction study of elastoplastic behaviour of Al/SiCp metal matrix composite	Elżbieta Gadalińska Institute of Aviation, Poland
14:35	Unusual Plastic Deformation Behavior in Lath Martensitic Steel Containing High Dislocation Density	Stefanus Harjo JAEA, Japan
14:55	Dislocation Density of Plastically Deformed Oxygen Free Copper	Sano Mutsumi JASRI, Spring8, Japan
15:15	<b>Coffee Break</b>	
15:35 – 16:15 Room 224	Chairman C. Curfs	K9   1-2 • P 61 to 62 • Others
15:35	Determination of the Elastic properties and Diffraction Elastic Constants of Ni-base Superalloys at high temperatures	Pierre Emmanuel Aba-Perea ILL, France
15:55	Cyclic in situ deformation experiments on a granite sample – Applied and residual strain investigation by neutron-TOF-diffraction and acoustic emission recording	Christian Scheffzuek KIT, Germany
16:45 – 18:35	<b>ILL Salsa or ESRF Beamlines visit</b>	
18:45	<b>Bus departure from EPN Guesthouse</b>	
19:00	<b>Other bus pick-up at the World Trade Center (behind train station - view map)</b>	
19:45	<b>Conference Dinner at the Chateau de la Commanderie</b>	

## Friday 2 October 2015

**08:30-09:20**                      **Keynote Lecture 3**  
**Amphitheatre**  
 Chairman A. Lodini                      Understanding Engineering Materials in Nature

**Martin Müller**  
 Helmholtz-Zentrum Geesthacht

*Short break*

**09:30–12:30**                      **Chairman A. King**                      **K6 | 7-11 • P 64 to 70 • Microstructure characterization II**  
**Room 221**

<b>09:30</b>	<b>IT 11</b>	Quantifying the Mechanical Response of Polycrystalline Materials at the Mesoscale via 3D-XRD	Joël Bernier LLNL, USA
<b>10:00</b>		In-situ X-ray $\mu$ Laue diffraction mapping of Cu through-silicon vias	Dario Ferreira-Sanchez CEA Grenoble, France
<b>10:20</b>		Towards three-dimensional full field X-ray orientation microscopy	Wolfgang Ludwig ESRF, France

**10:40**                      *Coffee Break*

**Chairman M. Leoni**

<b>11:00</b>	<b>IT12</b>	The UK High Value Manufacturing Catapult: a need for central facilities?	Neil Raath WMG Centre, HMV Catapult
<b>11:30</b>		High strength Cu/Nb micro- and nano-composite wires: assessing size and architecture effects on the mechanical properties from in-situ deformation under neutrons	Jean-Rony Medy Institut Pprime, France
<b>11:50</b>		Laue X-ray Microscopy Station at the CRG-IF BM32 synchrotron beamline	Jean-Sébastien Micha CEA Grenoble, France
<b>12:10</b>		A Synchrotron Line Broadening Study of Neutron and Proton-Irradiated Zircaloy-2	Thomas Seymour University of Manchester, UK

**12:30**                      *Lunch Break or Midis de Minatec in the Amphitheatre*

**09:30–12:30**                      **Chairman K. Wierzbanski**                      **K2 | 11-15 • P 71 to 77 • Deformation /Modelling III**  
**Room 224**

<b>09:30</b>	<b>IT 13</b>	The Application of Neutron Beams for Non-Destructive Nuclear Forensics of Radioactive Samples	Ron Rogge Canadian Nuclear Labs
<b>10:00</b>		Deformation Behavior of Solid-Solution-Strengthened Mg-Al Alloys: Neutron Diffraction and EVPSC Modeling	Soo Yeol Lee Chungnam Nat. Univ. Korea
<b>10:20</b>		Quantitative Evaluation of Dislocations during Deformation and Annealing for Austenitic Steels using CMWP Fitting Method for Neutron Diffraction Profiles	Yo Tomota NIMS, Ibaraki, Japan

10:40

**Coffee Break**

**Chairman B. Clausen**

11:00

**IT14**

Characterizing stress and strain relaxation mechanisms in Mg AZ31 using modeling and neutron diffraction

Carlos Tomé  
LANL, USA

11:30

Cyclic response of Zn under high pressure and the effect of c/a ratio on hcp metals plasticity

Sébastien Merkel  
Université de Lille, France

11:50

Understanding the cyclic deformation mechanism of Mg-Zn-Y alloy containing of 18R Long-Period Stacking Ordered Structure by in-situ neutron diffraction

Satoshi Morooka  
Tokyo Metropolitan University  
Japan

12:10

Role of Slip-Twin Interactions in the Strain Hardening Behavior of a Wrought Mg Alloy

Hahn Choo  
University of Tennessee, USA

12:30

**Lunch Break or attend Jens Gibmeier giving a general talk for “Les Midis de MINATEC” in the Amphitheatre – 60 MECASENS participants can attend**

**13:40 – 15:30  
Room 221**

**Chairman T. Holden**

**K7 | 1-4 • P 78 to 82 • 3D/4D Characterization**

13:40

**IT 15**

Diffraction Contrast in Neutron Imaging for Evaluation of Phase, Texture and Strain in 2D & 3D

Robin Woracek  
European Spallation Source,  
Sweden

14:10

**Short break**

14:15

Neutron Diffraction Techniques in Granular Mechanics

Chris Wensrich  
University of Newcastle, UK

14:35

Interest of x-ray tomography for analysis spallation induce by laser. Experimental and numerical study

Joëlle Bontaz-Carion  
CEA Bruyeres Le Chatel, France

14:55

Quantitative grain-scale ferroelectric domain volume fractions and domain switching strains measured by 3DXRD during in situ electrical poling

Jette Oddershede  
Technical University of Denmark

15:15

Internal stress associated with moving shear band front in tensioned NiTi shape memory alloy wire evaluated by in-situ 3D X-ray diffraction and DIC methods

Petr Sittner  
Czech Academy of Science, CZ

15:30

**Coffee Break**

**13:40 – 16:55  
Room 221**

**Chairman J. Epp**

**K1 | 9-11 • P 83 to 85 • Processing / Welding III**

15:55

Determination of the residual stress distribution in a butt welding using Time of Flight Neutron Diffraction and Blind Hole Drilling.

Francesco Grazzi  
CNR - Istituto dei Sistemi  
Complessi, Italy

16:15

A Comparison of the Constitutive Response of Austenitic and Ferritic Steels under Welding Processes

Lyndon edwards  
ANSTO Sydney, Australia

16:35

Comparison between evaluation and simulation of the residual stresses in the welded steel by laser process.

David Afia-Kouadri  
INSA-Rennes, France



13:40 – 16:55  
Room 224

Chairman A. Venter

K8 | 12-18 • P 86 to 93 • Techniques / Instruments III

13:40

IT 16

On the way to an International Standard for Residual Stress Measurements by Neutron Diffraction

Carsten Ohms  
Joint research Center EC, NL

14:10

**Short break**

14:15

Chopper system and multiplexing technique of the Beamline for European Materials Engineering Research (BEER) at ESS

Mustapha Rouijaa  
Helmholtz Zentrum Geesthacht,  
Germany

14:35

Modelling and Control of Neutron Diffractometer Positioning Systems

Stephen Nneji  
STFC, UK

14:55

Minimizing and Characterizing Uncertainties in Neutron Strain Measurements with Special Attention to Grain Size Effects

Robert Wimpory  
Helmholtz Zentrum Berlin,  
Germany

15:15

Experimental comparison of in-depth residual stresses measured with neutron and X-ray diffraction and FEA stress relaxation correction method

Bruno Levieil  
LBMS, France

15:30

**Coffee Break**

Chairman N. Raath

15:55

X-ray diffraction laboratory and neutron/X-ray diffraction by synchrotron or neutron facility: the good complementarity for residual stress profile

Fabien Lefebvre  
CETIM, France

16:15

Designing and Validating Parallel Wire Suspension Bridge Wire Strands for Neutron Diffraction Stress Mapping

Adrian Brügger  
Columbia University, USA

16:55 – 17:15

**Wrap up session**

ESRF Director of Research  
Harald Reichert

MECA SENS 2015  
Grenoble - France