



16th International Conference on Experimental Mechanics.

July 7-11 2014 • University of Cambridge, UK

Conference Handbook

Organised on behalf of the
European Society for Experimental Mechanics (EURASEM)
by The British Society for Strain Measurement (BSSM)



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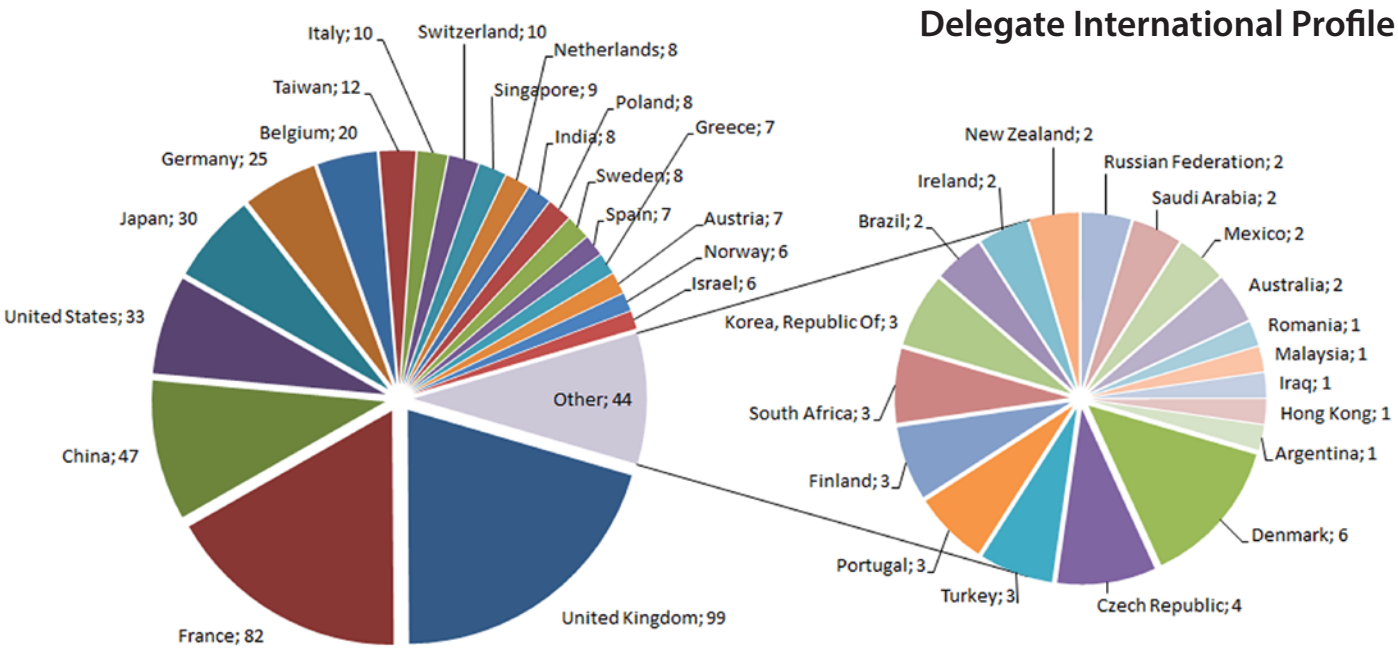


Exhibitors



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Foreword

Welcome to Cambridge, the UK and the 16th Conference on Experimental Mechanics.

The conference is the 16th in the series of conferences of the European Society of Experimental Mechanics. In its 50th Year the British Society for Strain Measurement is very proud and delighted to be organising the conference in the UK.

We are looking forward to a technically excellent conference and we are very grateful to the session organisers for helping us put the programme together. More importantly we are grateful to the authors for their efforts in producing their outstanding contribution to the programme. There is a programme printed at the back of the handbook but you may also want to use the online programme or the version we have for cellular devices <http://mobile.icem16.org/>.

We hope you enjoy the conference and its many events, all of which are described in the handbook. If you require any assistance during the conference please do not hesitate to contact us for help.

The conference is taking place alongside the Tour de France which is visiting the UK this year, with Stage 3 of the race starting in Cambridge on the first day of the conference. This will make the conference a unique and memorable event for all participants. So many thanks to the Tour de France organisers for choosing 7th July.



Scan this code with your QR code reader and it will take you to the conference programme page

A special thanks to the organising committee of the conference without whom the conference would not have been possible.

Dr. Vincent Lozano
(Website administrator)
LTDS ENISE
France

Mrs. Amanda Boaler
(Conference Secretariat)
BSSM
United Kingdom

Mrs. Biana Gale
(Conference exhibition organizer)
BSSM
United Kingdom

Dr. Rachael Waugh
(Event support team Coordinator)
University of Southampton
United Kingdom

Dr. Simon Quinn
(BSSM chairman)
University of Southampton
United Kingdom

Dr. Jerry Lord
(BSSM Treasurer)
NPL
United Kingdom

Prof. Margaret Lucas
University of Glasgow
United Kingdom

Prof. Ole Thybo Thomsen
University of Southampton
United Kingdom

We also acknowledge the support we have had from the teams at Robinson College especially Mel Searle, West Road especially Alice Bogey, Duxford especially Miles Colby and Fitzwilliam Museum, especially Llionos Thomas.

Professor Janice Barton
Professor Fabrice Pierron
Conference chairmen
University of Southampton

Conference Venues

The conference sessions take place in two venues West Road Concert Hall and Robinson College.

WiFi is available throughout both venues including the Marquee. An access code will be provided for each venue. At Robinson please select the **Robinson conference network** and then use the access code given on the back of your badge. At West Road please select the **UniofCam** network and once connected open your browser and enter the login details given on the back of your badge. **Eduroam** is available in both venues as well.

On Sunday 6th July registration will take place in the Marquee in the courtyard at Robinson College. Throughout the conference the registration desk will be situated at West Road Concert Hall. The registration desk is also the help desk if you have any queries.

At Robinson College the sessions will take place in:

- The Auditorium (RbA)
- The Umney Lecture Theatre (RbU)
- The Junior Common Room (RbJ)

At West Road Concert Hall the sessions will take place in:

- The Concert Hall Auditorium (WRA)
- Lecture Theatre 2 (WRL)
- The Recital Room (WRR)

All plenary presentations take place in West Road Concert Hall. The Concert Hall has a capacity of 499 persons so we would be very grateful if you could move to the end of the row when you take your seat.

It is about a 7 minute walk between the two venues. After each plenary session there is a break to allow you time to go to Robinson College to attend sessions if you wish. It will not be possible for you to see a presentation at one venue and then the next one at the other venue.

During the Coffee Breaks refreshments will be served at both venues. Please make your way to the venue where the session you wish to attend next is taking place. At Robinson College the refreshments will be served in the Marquee on all days of the conference. At West Road refreshments will be served in the Foyer.

On Monday, Tuesday and Friday lunch will be served at Robinson College in the Dining Hall and the Garden Restaurant. It will be a self-service hot buffet with a choice including vegetarian options. If you have requested a special meal other than vegetarian then this will be set aside for you, please inform staff. On Wednesday and Thursday there will be packed lunches in the exhibition (see information on the exhibition).

Throughout the conference there is an Event Support Team on duty to help you. Please look for the distinctive blue tee shirts.

If you wish to store your luggage at the venue on the last day of the conference there will be a special baggage store at Robinson College. If you are not staying at Robinson please bring your luggage to West Road where Amanda Boaler will arrange storage.



Conference Venues

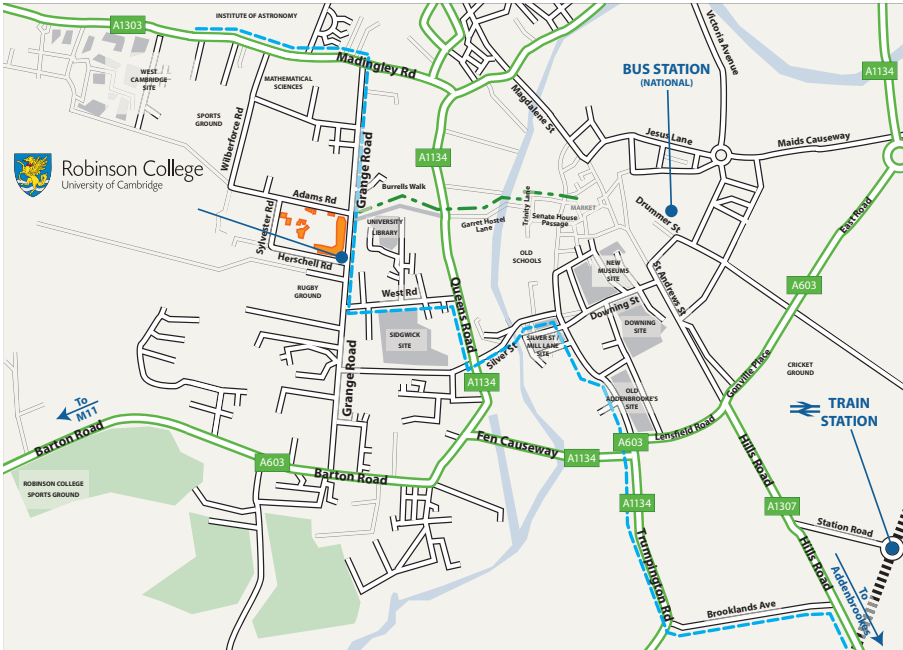


How to find us

By foot / bicycle
From Market Square in the town centre, go past Great St Mary's, heading towards Senate House. Follow Senate House Passage, then right onto Trinity Lane, then left 30 yards later onto Garret Hostel Lane. Cross Queens Road and continue the path running past the University Library. Arrive Grange Road.

By Public Transport
The College is 10 minutes by taxi from the train or bus stations.
The U4 Citibus runs from Brooklands Avenue runs to the College every 20 minutes.

By foot / bicycle
By U4 bus route



Robinson College
Grange Rd
Cambridge
CB3 9AN

Porters' Lodge
Tel. +44 (0)1223 339 100
Fax. +44 (0)1223 351 794
porters@robinson.cam.ac.uk

Conference Office
Tel. +44 (0)1223 332 859
Fax. +44 (0)1223 315 094
conference@robinson.cam.ac.uk



Robinson College - Level G

KEY

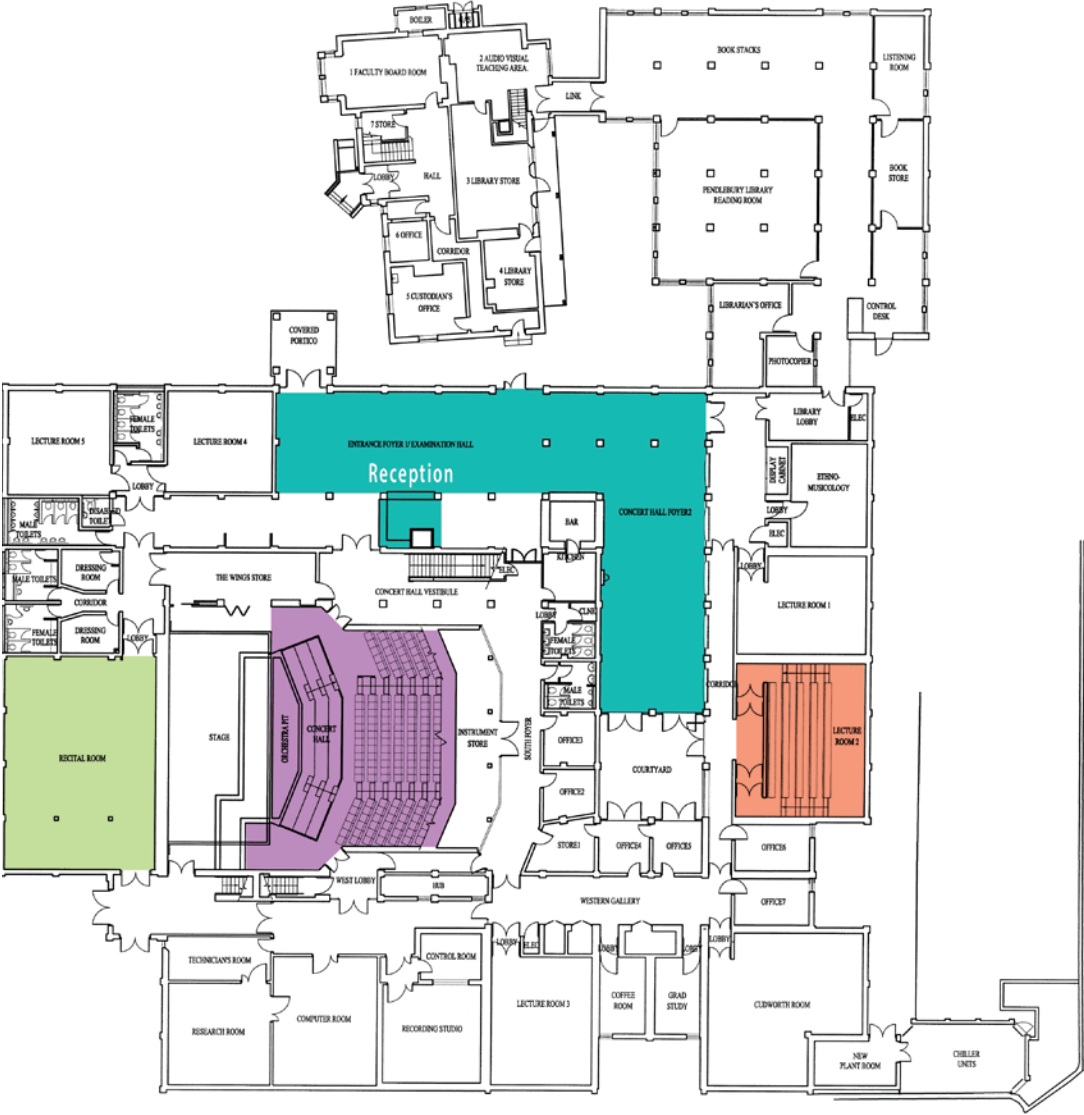
- Disabled toilets
- Toilets
- Porters' Lodge /Reception
- Telephone
- Lift
- Stairs

Level G

- 1 Auditorium
- 2 Auditorium Lounge & Foyer
- 3 Auditorium Conference Office
- 4 Games Room
- 5 Dining Hall
- 6 Balcony
- 7 Red Brick Cafe
- 8 Bar
- 9 JCR
- 10 Umney Lounge
- 11 Umney Theatre
- 12 Umney Conference Office
- 13 TV Room
- 14 Linnett Room
- 15 Chapel

Conference Venues

West Road



- The Concert Hall
- Registration Desk i Exhibition Space
- Recital Room
- Lecture Room 2

Exhibition (EMex 14)

The exhibition will take place on Wednesday 9th July and Thursday 10th July.

The exhibition is split between two venues, the West Road Foyer and the Marquee in the Courtyard at Robinson College. Delegates are free to visit the exhibition at any time the exhibition is open.

Before the lunch break on each day of the exhibition the exhibitors will give a short 3 minute pitch style presentation in a plenary session in the Robinson College Auditorium and in the West Road Concert Hall.

Exhibitors presenting their pitch are to assemble at the front of West Road Concert Hall or Robinson Auditorium (as appropriate at 11.55 on Wednesday and Thursday of the conference). Two slides in pdf format are to be sent to Professor Janice Barton in advance of the conference (janice@soton.ac.uk).

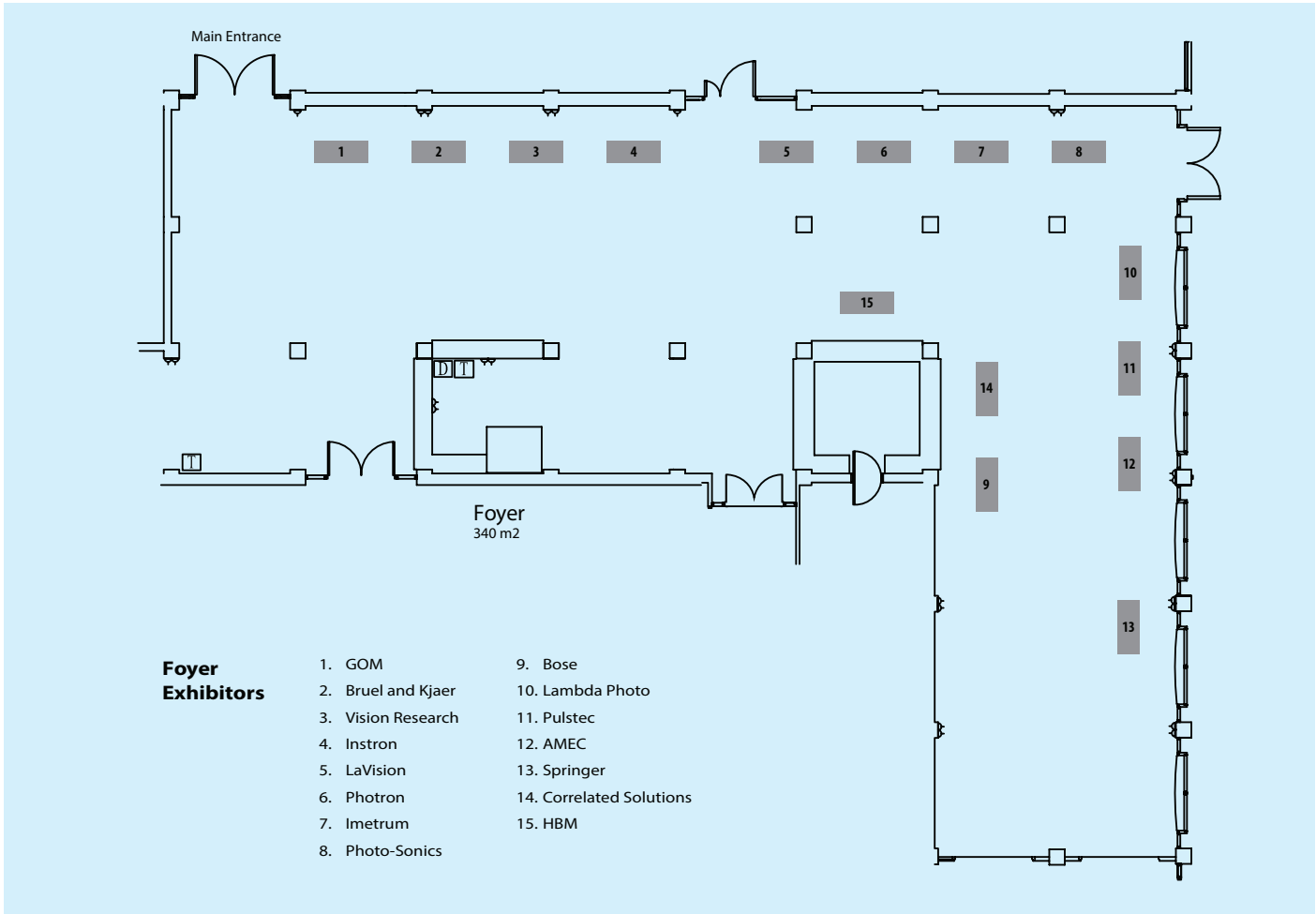
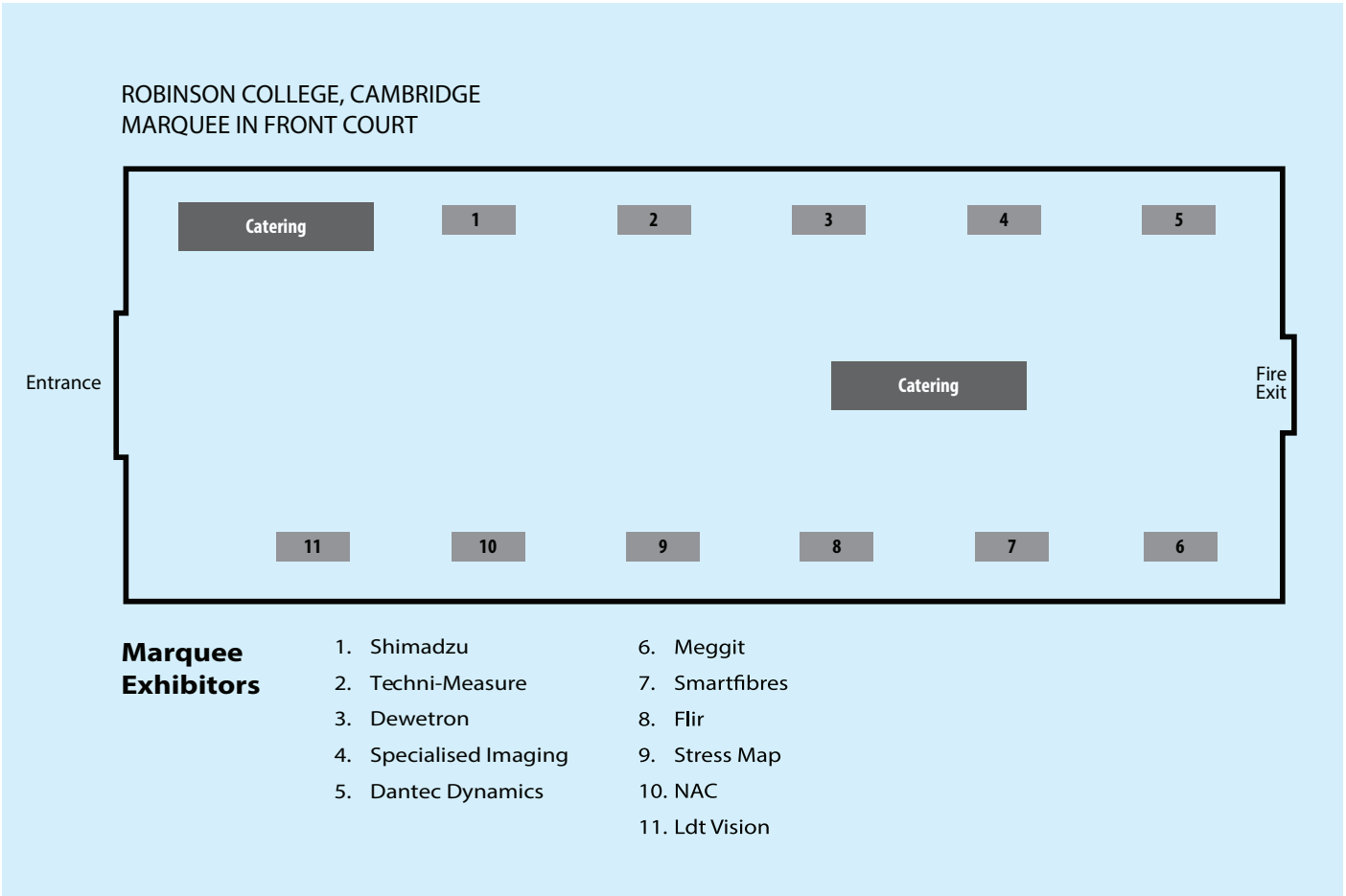
Packed lunches will be served in the exhibition on Wednesday and Thursday.



Please note the coloured spot on your badge, this indicates which exhibition presentation and part of the exhibition you should attend on each day:

RED SPOT	
Wednesday 9th July	Robinson College
Thursday 10th July	West Road Concert Hall
GREEN SPOT	
Wednesday 9th July	West Road Concert Hall
Thursday 10th July	Robinson College

Please attend the correct venue on each day as both spaces can only accommodate a maximum of 250 persons and we have ordered catering to suit. Please take only one packed lunch – if you are still hungry you can see if there are any left over towards the end of the lunch break. Vegetarian lunch boxes are marked – please only take this if you have specifically requested vegetarian food at registration.



Instructions for Presenters

All presenters please ensure that you bring your presentation (which can be in pdf or PowerPoint) to the conference on a memory stick or CD-Rom.

Each lecture theatre will be equipped as standard with the following audio-visual equipment:

Laptop running windows 7 with PowerPoint and Adobe reader. Laser pointers will also be available in each conference room.

On the day of your presentation, please report to the support staff in the lecture theatre at 08.00 prior to the first session of the day so that your presentation can be uploaded. If you intend to use animations, please ensure you bring the movie files with you as well.

You may wish to use your own laptop – if this is the case you are still required to attend in advance to check that the presentation will work. Please be in the room of your presentation about 5 minutes before the session starts to introduce yourself to the session chairman.

With the exception of the keynote and invited presentations, the time slot for each paper is a maximum of 20 minutes. You should therefore aim to speak for 15 minutes, leaving the remaining 5 minutes available for questions.

Plenary Speakers

We have invited four internationally leading researchers to start proceedings on four of the days of the conference. Their work represents the diverse range of topics covered by experimental mechanics.

**Prof. Magnus Langseth (Monday 10.00)
Norwegian University of Science and Technology,
NTNU, Trondheim — Norway**



Magnus Langseth is a professor at the Department of Structural Engineering at NTNU and at the same time the Director of SIMLab – Centre for Research-based Innovation at NTNU for the period 2007-2014 (www.ntnu.edu/simlab). Professor Langseth is a member of the Royal

Norwegian Society of Sciences and Letters the Norwegian Academy of Technical Sciences and was awarded the “Médaille Albert Portevin”, Société Française de Métallurgie et de Matériaux in 2005. In 2009 he was honoured with the title of “Docteur Honoris Causa” at the Université de Valenciennes et du Hainaut-Cambrésis. He is the Editor-in-Chief of the International Journal of Impact Engineering and sits on the editorial boards of the International Journal of Mechanics and Materials in Design, Multidiscipline Modeling in Materials and Structures, and Ships and Offshore Structures.

The present research of Professor Langseth is primarily related to impact and crashworthiness of aluminium and high-strength steel structures as well as lightweight ballistic protection. Included here is the development of test facilities for material testing at elevated rates of strain as well as facilities for impact and crashworthiness testing of components and structures. The focus in his aluminium research is connected to the behaviour and modelling of aluminium extrusions with and without aluminium foam filler subjected to axial and lateral impact as well as the behaviour and modelling of self piercing rivets. His high-strength steel research is mainly related to material modelling and robustness studies of energy absorbing components. The light-weight ballistic protection activity is related to the behaviour and modelling of aluminium and high-strength

steel plates subjected to projectile impact and blast. The methodology used in his research is a coupling between testing in the laboratory, material modelling and analyses as a basis for recommendations with respect to modelling and design.

Crashworthiness of aluminium structures

Lightweight materials such as aluminium offer the automotive industry an opportunity to design and manufacture high-performance vehicles that are safe, energy-efficient and environmentally friendly, and much lighter than traditional designs. However, the introduction of lightweight materials is challenging the automotive design engineers to explore and develop new solutions in design and production technology in order to fully realize the potential that can be gained in the interaction between these materials, product/structural design and the manufacturing process. Even though aluminium is an “old” material, it is relatively new as a load-carrying material in the automotive industry. In order to meet the future challenges with respect to the use of aluminium as a structural material in the automotive industry, the product development to day is increasingly carried out in virtual environments by using computational mechanics. Even though great advances have been made in modelling, the designer must still use knowledge about the physical mechanisms controlling the product performance. The designer must also know what simplifications can be made in the modelling and still retain sufficient reliability and accuracy. At all levels of modelling, experimental validation of the numerical models to be used is required before the models are accepted. The present presentation will give an overview of aluminium as a structural material and the strong and weak points about the material will be discussed. Furthermore, typical mechanical properties that have to be taken into account in modelling to get reliable predictions will be shown. In this context calibration procedures will be presented where experimental material testing is replaced by lower scale models and nanostructure evolution computations. Finally the proposed models will be validated by using benchmark test on aluminium extrusions under axial and lateral loading conditions. Data from foam-filled extrusions will also be shown using aluminium foam.

Plenary Speakers

Prof. Nancy R. Sottos (Tuesday 08.30)

University of Illinois Urbana-Champaign — United States



Nancy Sottos is the Donald B. Willet Professor of Engineering in the Department of Materials Science and Engineering at the University of Illinois Urbana-Champaign. She is also a co-chair of the Molecular and Electronic Nanostructures Research Theme at the Beckman Institute. Sottos started her career at

Illinois in 1991 after earning a Ph.D. in mechanical engineering from the University of Delaware. Her research group studies the mechanics of complex, heterogeneous materials such as self-healing polymers, advanced composites, and thin film microelectronic devices, specializing in micro and nanoscale characterization of deformation and failure in these material systems. Sottos' research and teaching awards include the ONR Young Investigator Award (1992), Outstanding Engineering Advisor Award (1992, 1998, 1999 and 2002), the R.E. Miller award for Excellence in Teaching (1999), University Scholar (2002), the University of Delaware Presidential Citation for Outstanding Achievement (2002), the Hetényi Award from the Society for Experimental Mechanics (2004), Scientific American's SciAm 50 Award (2008), Fellow of the Society of Engineering Science Fellow (2007), and the M.M. Frocht and B.J. Lazan awards from the Society for Experimental Mechanics.

A multidisciplinary experimental approach to microvascular self-healing composites

Internal delamination damage in fiber-reinforced composites is difficult to detect, nearly impossible to repair by conventional methods, and remains one of the most significant factors limiting reliability and leading to conservative design of composites for lightweight structures. In contrast to the remarkable progress in self-healing polymers, autonomous and recurrent repair of fiber-composites still presents significant challenges due to stringent processing and integration requirements. This talk describes a vascular-based approach for achieving a continuous self-healing life cycle in structural, woven composites. Fluid-filled vascular networks are integrated directly into the woven, reinforcing textile architecture by vaporization of sacrificial fibers. The architecture and integrity of the network is characterized through X-ray computed microtomographic reconstructions. Self-healing performance is assessed by a Double Cantilever Beam (DCB) tensile opening (mode-I) fracture test. In the DCB specimen, controlled mid-plane crack growth ruptures undulating vasculature, autonomically releasing dual liquid healing agents into the fracture plane. Ensuing polymerization between reactive chemical species provides a mechanism for in situ recovery of fracture resistance. Mixing and degree of cure of the healed polymer are probed along the fracture plane via Raman spectroscopy. Healing efficiency is determined from recovery of resistance to interlaminar crack growth, and quantified through direct calculation of strain energy release rate, G_I . Interpenetrating vasculature results in full recovery (> 100%) of fracture resistance after delamination, demonstrating the potential for improved safety and durability throughout the service life of high-performance composite structures.

Plenary Speakers

Dr. Albert K. Wong (Wednesday 08.30)

Defence Science & Technology Organisation — Australia



Dr Albert Wong holds a B.E. and a Ph.D. from the University of NSW, and has worked for DSTO since 1985. His area of expertise spans a broad range, covering computational fluid dynamics, structural and fracture mechanics, finite element modelling, experimental stress

analysis, signal and image processing, and vibration based diagnostics. He received the 1995 Defence Minister's Award for Achievement for his fundamental work on thermoelastic stress analysis. This work is also reported in DSTO's Top Ten Papers in 100 years of Australian Defence R&D, 1907-2007. From 1995, he led R&D in a number of propulsion areas, then becoming head of the Propulsion Systems Branch in 2005. In 2011, he returned to the area where he started his DSTO career, Aircraft Structures, but this time as Head of Branch, where he now has the responsibility of overseeing a broad and active R&D base in Aircraft Structural Integrity that provides critical airworthiness advice to the Australian Defence Force.

Seeing stresses through the thermoelastic lens – a retrospective and prospective from an Australian viewpoint

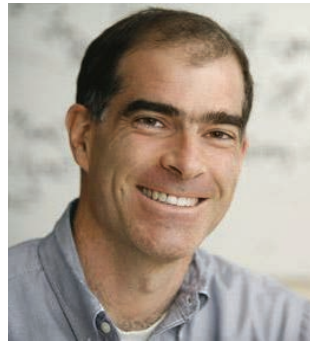
Thermoelastic, or Thermographic, Stress Analysis (TSA) has been around for the past 30 years, but to date, it is still a very much underrated and under-utilised experimental technique. Although there are devoted groups of practitioners in the automotive industry in Japan, this technology is practically unknown in the aerospace sector. On the other hand, the Defence Science and Technology Organisation (DSTO) in Australia has been in the forefront of this technology for some time, achieving many pioneering feats. Examples include the discovery and characterisation of a second order effect, the quantification of frequency effects when applied to composites, development of stress component separation techniques, discovery and description of the effects of motion, and the development of

motion compensation, to name just a few. In particular, two DSTO developments stand out as the most significant. One of these was the development of the world's first scanning array system that was based on a commercial infrared imager. This achieved a two orders of magnitude improvement on scanning time compared to its predecessor, thus allowing stress scans to be achieved in just minutes instead of hours. The other major DSTO development was the world's first (and still only) microbolometer-based system. As microbolometers are typically an order of magnitude lower in cost compared to the photodetectors, and much less bulky because they do not need to be cryogenically cooled, the access to and utility of this technology to the structural engineer or researcher have never been greater. Besides partaking in advanced development and fundamental research in this area, DSTO has also applied this technology with great effect on numerous practical problems involving the Royal Australian Air Force aircraft components and structures. To date, TSA has served as a tremendous validation tool for structural models. However, its full power has yet to be unleashed in the aerospace world in that its greatest payoff should be its application on aircraft full-scale fatigue tests (FSFT). Modern aircraft build cycles, particularly for military types, are characterised by very high levels of concurrency. Invariably, low rates of production runs are allowed to proceed in concurrency with FSFTs that may be required for certification. As recent events in the development of one of the next generation fighters has highlighted, unanticipated failures in the fatigue tests can incur very high costs as well as lengthy delays to the entire program. A means of detecting potential "hotspots" would be invaluable in such cases, and TSA can offer this potential unequivocally. Instead of the odd application to validate FE models, it should be used systematically and persistently to monitor any structure under fatigue testing. Likened to the Mars Rover, it should be deployed to piece together a complete stress map over the entire test article (at least wherever visible), thus allowing the reporting of any unanticipated hotspots and/or cracking, thus allowing re-analyses or fixes to be planned and designed well ahead of any actual failures. This presentation will show some earlier examples of TSA research and practical applications by DSTO, as well as how such proposed future use can be achieved.

Plenary Speakers

Prof. Philip V. Bayly (Friday 08.30)

Washington University, St Louis MO — United States



Philip Bayly is The Lilyan and E. Lisle Hughes Professor of Mechanical Engineering and Chair of the Department of Mechanical Engineering and Materials Science at Washington University in Saint Louis, where he has been on the faculty since 1993. Dr. Bayly received the A.B. degree in Engineering Science from Dartmouth College, an M.Sc. in Engineering from Brown University and his Ph.D. in Mechanical Engineering from Duke University. Dr. Bayly's interests include nonlinear dynamics, signal processing and image analysis. He has served on the editorial boards of the Journal of Biomechanical Engineering and the Journal of Vibration and Acoustics. His current research is focused on the application of dynamic imaging and image processing to understand

Probing the mechanical response of the brain with magnetic resonance elastography

Computer simulations of traumatic brain injury (TBI) promise to illuminate the mechanisms of TBI, and guide the development of strategies for injury prevention and therapy. However, experimental characterization of brain tissue is needed to define the form and parameters of constitutive models. Magnetic resonance elastography (MRE) is a technique to estimate elastic or viscoelastic properties of soft biomaterials and tissues from images of propagating shear waves. Three-dimensional (3D) displacement fields can be obtained throughout 3D image volumes, with sub-millimeter spatial resolution and effective temporal sampling rates of >10 kHz. MRE has been widely used to study isotropic materials in which the velocity of shear waves depends simply on shear modulus. The extension of MRE to fibrous materials, like white matter in the brain, is a topic of active research. MRE provides a powerful, non-invasive method to characterize the mechanical behavior of the living human brain, but a variety of technical issues in acquisition and processing of MRE data must be addressed carefully

BSSM Measurements Lecture

At each of its annual conferences BSSM invites a leading UK-based researcher to give the 'Measurements Lecture'.

As BSSM are the principal organisers of the current ICEM conference the organising committee has agreed to have this prestigious lecture at the conference for all to enjoy.

Prof. John P. Dear (Thursday 08.30)

Imperial College, London — United Kingdom



John has been an academic for 24 years in the Mechanics of Materials Division of the Department of Mechanical Engineering and is a Professor of Mechanical Engineering. Prior to joining Imperial in 1988, John was a SERC research fellow at the Cavendish Laboratory,

Cambridge University where he did his first degree and PhD.

John has been successful in obtaining research grants worth a total of over £7 million from the UK and US government (EPSRC, ONR, MRC & DTI/TSB), European Commission, UK and overseas companies. His research expertise is structural integrity of materials including manufacturing and micro-structural effects. He has published over 200 papers; contributed to 11 books, supervised 41 PhDs and 12 RAs. Examples include: creep life of materials in power-station plant, aerospace and automotive components, water distribution plant, high-strain rate properties of composites and a wide range of other materials for defence applications and also for medical research.

Materials at their limit

Identifying the limiting conditions for damage tolerance of existing and new structures is needed in evaluating their performance. To examine these effects, a range of measurement techniques have been developed on specimens in different engineering applications employing 3D Digital Image Correlation (DIC). For example, the blast response of laminated glass constructions has been investigated related to their fragmentation and retention in the frame. The DIC techniques were developed for full scale blast testing of laminate windows. The failure process of the joint seen in both blast testing and simulated blast loading is a combination of cohesive failure in the silicone and PVB/glass delamination. These experimental measurements along with dynamic finite element modelling of these blast events is presented to provide guidelines for design. The DIC experimental techniques are also applied to composite sandwich components employed in marine applications including offshore wind turbine blades, high temperature components for power-stations and forming of lightweight alloys for low-carbon vehicles of the future. Researchers who have contributed to this research are Dr Paul Hooper, Dr Hari Arora, Dr Liliang Wang, Paolo Del Linz, Alex Worley, Mike Cox, Mark Kelly, Hao Yang, Aditya Narayanan and Shouhua Chen.

BSSM Fylde Electronics Best Paper in Strain 2013

(Wednesday 15.30)

Each year BSSM sponsor a prize for the best paper in Strain supported by the generosity of Fylde Electronics. A shortlist of papers is created by the Editor and Associate Editors based on referees comments on the papers which is then passed onto a panel of experts selected from the Editorial Board. This year the organising committee agreed to have the presentation of the prize winning paper at ICEM conference.

Presented by Mr. Alexandros Rosakis

Brown University — United States



Alexandros Rosakis is currently a second year undergraduate at Brown University in Providence, Rhode Island. He plans on concentrating in Biomedical Engineering. He worked in the lab of Professor Ravichandran at Caltech under the supervision of Doctor Notbohm during the summers of 2011 and 2012. He also attended the SEM 2014 conferences where he presented his group's findings on the Diffraction Assisted Grid Method.



Three-dimensional displacement and shape measurement with a diffraction-assisted grid method by J. Notbohm, A. Rosakis, S. Kumagai, S. Xia and G. Ravichandran

The grid method is a full-field optical technique for computing surface displacements and strains of a material by analyzing the phase of grid lines patterned on the specimen. To date, most experiments using the grid method have measured only two-dimensional in-plane deformations. Here, the grid method is extended to three dimensions by using a crossed grid pattern and a diffraction grating which enables acquiring images from multiple viewing angles on a single camera. In-plane displacements and strains are computed using the conventional grid method, and the corresponding three-dimensional (3D) displacements—including out-of-plane displacements or shapes—are computed by analyzing the images collected at different viewing angles.

BSSM Young Stress Analyst Competition

The BSSM Young Stress Analyst (YSA) competition is an annual competition that is intended to encourage and reward young practitioners in the field of experimental mechanics.

The competition is generously sponsored by Airbus



Six finalists have been identified from 34 applications by a panel of experts in the field. The finalists will present their work during a plenary conference session on Wednesday 9th July in the West Road Concert Hall. All delegates are encouraged to attend this exciting event which has a first prize of £1000. The finalists will be judged by a panel of leading researchers.

Prizes will be awarded during the conference dinner at Duxford on Thursday 10th July.

Details of the finalists are given with the full papers in the YSA booklet in the delegate pack.



Young Stress Analyst Competition

YSA finalists

- Behnam Amin-Ahmadi
University of Antwerp (Belgium)
- Ryan Hurley
California Institute for Technology (USA)
- Christopher Sebastian
University of Liverpool (UK)
- Ramathasan Thevamaran
California Institute for Technology (USA)
- Maciej Trusiak
Warsaw University of Technology (Poland)
- Lukas Wittevrongel
University of Leuven (Belgium)
- First Reserve:**
Romain Mandard
Ecole Centrale de Lille (France)
- Second Reserve:**
Brett Krull
University of Illinois at Urbana-Champaign (USA)

Session Organisers

The conference programme is organized around three specialized tracks and three general themes. Within both tracks and general themes, sessions are organized by a number of lead academics in these areas, as detailed below.

TRACK1: Assessment of composite materials and structures

Organized by: Prof. Janice Barton — University of Southampton, United Kingdom and Prof. Ole Thybo Thomsen — Aalborg University, Denmark

Session dedicated to the achievements of Alain Vautrin (invitation only)

Prof. Frédéric Jacquemin — University of Nantes, France
Prof. Michel Grédiac — Blaise Pascal University, France

Fatigue and fracture

Prof. Marino Quaresimin — University of Padova, Italy

High strain rate characterization

Prof. Pedro Camanho — University of Porto, Portugal
Dr. Hannes Koerber — Technical University of Munich, Germany
Prof. Nik Petrinic — University of Oxford, United Kingdom

Interfacial characterization

Prof. Christian Berggreen — DTU, Denmark

Joining Composites - Bolting, Bonding and New Approaches to Joining

Dr. Conor McCarthy — University of Limerick, Ireland

Experimental assessment of the performance low cost composite materials

Dr. Michael Johnson — University of Nottingham, United Kingdom

Marine applications and fluid-structure interaction

Dr. Mark Battley — University of Auckland, New Zealand

Model validation/identification

Dr. Ana Maria Azevedo Neves — Oxford Brookes University, United Kingdom

Multifunctional composites

Prof. Nancy R. Sottos — University of Illinois at Urbana Champaign, United States
Dr. Andrew Hamilton — Queen’s University Belfast, United Kingdom

Optical sensors

Prof. Ioannis Botsis — EPFL, Switzerland

Sandwich structures

Prof. Arun Shukla — University of Rhode Island, United States

Thermomechanical behaviour

Prof. Geoff Gibson — Newcastle University, United Kingdom

TRACK2: High strain rate, shock, impact and blast testing

Organized by: Prof. Fabrice Pierron — University of Southampton, United Kingdom

Blast

Prof. John Dear — Imperial College London, United Kingdom
Prof. Genevieve Langdon — University of Cape Town, South Africa

Brittle materials

Prof. Pascal Forquin — Joseph Fourier Grenoble University, France

Cellular materials and structures

Prof. Han Zhao — ENS Cachan, France
Dr. Qingming Li — University of Manchester, United Kingdom

High-strain rate testing and behaviour of complex aerospace structures

Dr. Jason Foley — AFRL, United States
Dr. Jennifer Jordan — AFOSR, United States
Dr. Matt Snyder — EOARD, United Kingdom

High speed imaging

Dr. Philip Reu — Sandia National Laboratory, Albuquerque, United States
Dr. Leslie Lamberson — Drexel University, United States

Metals

Prof. Tore Borvik — Norwegian University of Science and Technology, Norway

Polymers

Dr. Clive R Siviour — University of Oxford, United Kingdom
Prof. Arild Clausen — Norwegian University of Science and Technology, Norway

Shear bands, localization

Prof. Daniel Rittel — Technion, Israel

Session Organisers

Shock

Dr. William Proud — Imperial College London, United Kingdom

SHPB methodological developments

Dr. Bo Song — Sandia, United States

Welds and joints

Dr. Kathryn Dannemann — SWRI, United States

Dynamic damage characterization using X-ray

Prof. Pengwan Chen — Beijing Institute of Technology, China

TRACK3: Volume-based experimental solid mechanics

Organized by: Prof. Jon Huntley — Loughborough University, United Kingdom

Digital Volume Correlation

Prof. Stéphane Roux — ENS Cachan, France
Dr. Fredrik Forsberg — Lulea University, Sweden

Interferometric techniques

Dr. Pablo Ruiz — University of Loughborough, United Kingdom

Magnetic Resonance Elastography

Prof. Philip Bayly — Washington University, St Louis, United States

Optical coherence tomography

Dr. David Stifter — Johannes Kepler University Linz, Austria

X-ray computed tomography

Prof. Ian Sinclair — University of Southampton, United Kingdom
Prof. Jean-Yves Buffiere — INSA Lyon, France

GT1: Materials

Biomaterials and tissues

Prof. Martin Browne — University of Southampton, United Kingdom
Prof. Sam Evans — University of Cardiff, United Kingdom

Glass / brittle materials

Prof. Jean-Christophe Sangleboeuf — University of Rennes 1, France

Cellular materials, foams and honeycombs

Dr. Robert Mines — University of Liverpool, United Kingdom

Elastomers

Prof. Jean-Benoit Le Cam — University of Rennes 1, France

Experimental methods in fracture, damage and durability mechanics of structural concrete

Prof. Gonzalo Ruiz — Universidad de Castilla-La Mancha, Spain
Dr. Xiaoxin Zhang — ETSI Caminos, Spain

Multifunctional materials

Prof. Fabrizio Scarpa — University of Bristol, United Kingdom

New trends in experimental mechanics for polymers

Dr. Noëlle Billon — Mines ParisTech, France

Rock and soil mechanics

Dr. Gioacchino Viggiani — INPG, Grenoble, France
Dr. Michel Bornert — Ecole des Ponts et Chaussees, France

Sheet metal forming

Dr. Dirk Mohr — MIT, United States
Prof. Frédéric Barlat — Postech, Korea, Republic Of

Shape memory alloys and polymers

Prof. Elzbieta Pieczyska — IFTR, Polish Academy of Sciences, Warsaw, Poland
Dr. Qingping Sun — The Hong Kong University of Science and Technology, Hong Kong

Thin films and coatings

Dr. Philippe Goudeau — Poitiers University, France

Wood and wood-based products

Prof. Josef Eberhardsteiner — TU Vienna, Austria
Prof. José Morais — UTAD, Portugal

GT2: Measurement Techniques

Acoustic emission

Prof. Karen Holford — Cardiff University, United Kingdom
Dr. Rhys Pullin — University of Cardiff, United Kingdom

Digital image correlation

Dr. Pascal Lava — University of Leuven, Belgium

Classic and modern interferometry at multiscale levels

Prof. Huimin Xie — Tsinghua University, China
Prof. Ramon Rodriguez-Vera — Research Centre in Optics, Leon, Mexico

Micro and nano-scale test methods

Dr. Johan Hoefnagels — TU Eindhoven, Netherlands

Session Organisers

Moiré and grid-based techniques

Prof. Harry Morimoto — 4D-sensors, Japan

Applications of novel sensors

Prof. Yu-Lung Lo — National Cheng Kung University, Taiwan

Prof. Wei-Chung Wang — National Tsinghua University, Taiwan

Photoelasticity

Prof. Krishnamurthi Ramesh — Indian Institute of Technology, India

Structured light

Prof. Andrew Moore — Heriot-Watt University, United Kingdom

Thermomechanics

Prof. Janice Barton — University of Southampton, United Kingdom

Prof. André Chrysochoos — Montpellier University, France

Dr. Albert Wong — DSTO, Australia

GT3: Analysis / Applications

Adhesive bonding

Prof. Takashi Yokoyama — Okayama University of Science, Japan

Prof. Chiaki Sato — Tokyo Institute of Technology, Japan

Experimental mechanics in art and conservation

Dr. Christina Young — The Courtauld Institute of Arts, United Kingdom

Fatigue and fracture

Prof. David Nowell — University of Oxford, United Kingdom

Prof. Krishnaswamy Ravi-Chandar — University of Texas in Austin, United States

Identification from full-field measurements

Prof. Michel Grédiac — Blaise Pascal University, France

Dr. Marco Rossi — Universita Politecnica delle Marche , Italy

Industrial applications

Prof. Wei-Chung Wang — National Tsinghua University, Taiwan

Prof. Terry (Yuan-Fang) Chen — National Cheng Kung University, Taiwan

Experimental characterization of multiscale manufacturing processes

Prof. Mohamed El Mansori — Arts et Métiers ParisTech, France

Model validation

Prof. Eann Patterson — University of Liverpool, United Kingdom

Non-destructive testing

Prof. Bruce Drinkwater — University of Bristol , United Kingdom

Residual stresses

Prof. Chris Truman — University of Bristol, United Kingdom

Dr. Michael Prime — Los Alamos National Laboratory, United States

Dr. Jeremy Robinson — University of Limerick, Ireland

Structural Health Monitoring (SHM)

Prof. Wieslaw Ostachowicz — Polish Academy of Sciences, Gdansk, Poland

Prof. Huajiang Ouyang — University of Liverpool, United Kingdom

Structural testing

Dr. Nicholas Tsouvalis — NTUA, Athens, Greece

Prediction and measurement of residual stress and distortion in welding

Dr. Simon Smith — TWI, United Kingdom

Scientific Committee

Prof. Stéphane Avril — Ecole des Mines de St Etienne — France

Dr. Ana Maria Azevedo Neves — Oxford Brookes University — United Kingdom

Prof. Leslie Banks-Sills — Tel-Aviv University — Israel

Prof. Frédéric Barlat — Postech — Republic Of Korea

Dr. François Barthelat — McGill University — Canada

Dr. Elena Barton — National Physical Laboratory — United Kingdom

Dr. Mark Battley — University of Auckland — New Zealand

Prof. Philip Bayly — Washington University, St Louis — United States

Dr. Sabine Bensamoun — UTC — France

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Dr. Noëlle Billon — Mines ParisTech — France

Dr. Michel Bornert — Ecole des Ponts et Chaussees — France

Prof. Tore Børvik — Norwegian University of Science and Technology — Norway

Dr. Sven Bossuyt — Aalto University — Finland

Prof. Ioannis Botsis — EPFL — Switzerland

Prof. Martin Browne — University of Southampton — United Kingdom

Prof. Hugh Bruck — University of Maryland — United States

Prof. Jean-Yves Buffière — INSA Lyon — France

Dr. Richard Burguete — Airbus UK — United Kingdom

Prof. Pedro Camanho — University of Porto — Portugal

Prof. Alberto Carpinteri — Politecnico di Torino — Italy

Prof. Pengwan Chen — Beijing Institute of Technology — China

Prof. Terry (Yuan-Fang) Chen — National Cheng Kung University — Taiwan

Prof. Weinong Chen — Purdue University — United States

Prof. André Chrysochoos — Montpellier University — France

Prof. Arild Clausen — Norwegian University of Science and Technology — Norway

Dr. Samantha Daly — University of Michigan Ann Arbor — United States

Dr. Kathryn Dannemann — SWRI — United States

Prof. John Dear — Imperial College London — United Kingdom

Prof. Bruce Drinkwater — University of Bristol — United Kingdom

Dr. Veronica Eliasson — University of Southern California — United States

Prof. Mohamed El Mansori — Arts et Métiers ParisTech — France

Prof. Horacio Espinosa — Northwestern University — United States

Prof. Sam Evans — University of Cardiff — United Kingdom

Dr. Carol Featherston — Cardiff University — United Kingdom

Dr. Jason Foley — AFRL — United States

Prof. Pascal Forquin — Joseph Fourier Grenoble University — France

Dr. Fredrik Forsberg — Luleå University — Sweden

Prof. José Freire — Pontifica University Rio — Brazil

Prof. Emmanuel Gdoutos — Democritus University of Thrace — Greece

Dr. Katia Genovese — Università degli Studi della Basilicata — Italy

Prof. Geoff Gibson — Newcastle University — United Kingdom

Prof. Michael Gilchrist — University College Dublin — Ireland

Prof. Joaquim Gomes — University of Porto — Portugal

Dr. Philippe Goudeau — Poitiers University — France

Prof. K. Jane Grande-Allen — Rice University — United States

Prof. Michel Grédiac — Blaise Pascal University — France

Dr. Erwin Hack — EMPA — Switzerland

Dr. Andrew Hamilton — Queen’s University Belfast — United Kingdom

Prof. François Hild — ENS Cachan — France

Prof. Thierry Hoc — Ecole Centrale de Lyon — France

Dr. Johan Hoefnagels — TU Eindhoven — Netherlands

Prof. Karen Holford — Cardiff University — United Kingdom

Prof. Jon Huntley — Loughborough University — United Kingdom

Prof. Frédéric Jacquemin — University of Nantes — France

Dr. Michael Johnson — University of Nottingham — United Kingdom

Dr. Jennifer Jordan — AFOSR — United States

Prof. Yilan Kang — Tianjin University — China

Prof. Guillermo Kaufmann — National Rosario University — Argentina

Prof. Marie-Christine Lafarie-Frenot — ENSMA, Poitiers — France

Dr. Leslie Lamberson — Drexel University — United States

Prof. Genevieve Langdon — University of Cape Town — South Africa

Dr. Pascal Lava — KU Leuven — Belgium

Prof. Jean-Benoit Le Cam — University of Rennes 1 — France

Dr. Qingming Li — University of Manchester — United Kingdom

Prof. Javier Llorca — E.T.S. de Ingenieros de Caminos, Madrid — Spain

Prof. Yu-Lung Lo — National Cheng Kung University — Taiwan

Prof. Margaret Lucas — University of Glasgow — United Kingdom

Prof. Yiu-Wing Mai — University of Sydney — Australia

Dr. Conor McCarthy — University of Limerick — Ireland

Dr. Robert Mines — University of Liverpool — United Kingdom

Dr. Dirk Mohr — MIT — United States

Prof. Andrew Moore — Heriot-Watt University — United Kingdom

Scientific Committee

Prof. José Morais — UTAD — Portugal
Prof. Harry Morimoto — 4D-sensors — Japan
Prof. Gianni Nicoletto — Parma University — Italy
Prof. David Nowell — University of Oxford — United Kingdom
Prof. Gerald Nurick — Cape Town University — South Africa
Prof. Jean-José Orteu — Ecole des Mines d'Albi — France
Prof. Wieslaw Ostachowicz — Polish Academy of Sciences, Gdansk — Poland
Prof. Huajiang Ouyang — University of Liverpool — United Kingdom
Prof. Carmine Pappalettere — Politecnico di Bari — Italy
Prof. Eann Patterson — University of Liverpool — United Kingdom
Prof. Elzbieta Pieczynska — IFTR, Polish Academy of Sciences, Warsaw — Poland
Dr. Michael Prime — Los Alamos National Laboratory — United States
Dr. William Proud — Imperial College London — United Kingdom
Dr. Rhys Pullin — University of Cardiff — United Kingdom
Prof. Marino Quaresimin — University of Padova — Italy
Prof. Krishnamurthi Ramesh — Indian Institute of Technology — India
Prof. Krishnaswamy Ravi-Chandar — University of Texas in Austin — United States
Prof. Guruswami Ravichandran — Caltech — United States
Dr. Philip Reu — Sandia National Laboratory, Albuquerque — United States
Prof. Daniel Rittel — Technion — Israel
Dr. Jeremy Robinson — University of Limerick — Ireland
Prof. Ramon Rodriguez-Vera — Research Centre in Optics, Leon — Mexico
Dr. Marco Rossi — Universita Politecnica delle Marche — Italy
Prof. Stéphane Roux — ENS Cachan — France
Prof. Bob Rowlands — University of Wisconsin in Madison — United States
Prof. Gonzalo Ruiz — Universidad de Castilla-La Mancha — Spain
Dr. Pablo Ruiz — University of Loughborough — United Kingdom
Prof. Takahide Sakagami — Kobe University — Japan
Prof. Jean-Christophe Sangleboeuf — University of Rennes 1 — France
Prof. Chiaki Sato — Tokyo Institute of Technology — Japan
Prof. Fabrizio Scarpa — University of Bristol — United Kingdom
Prof. Damir Semenski — University of Zagreb — Croatia
Prof. Arun Shukla — University of Rhode Island — United States
Prof. Ian Sinclair — University of Southampton — United Kingdom

Dr. Clive R Siviour — University of Oxford — United Kingdom
Dr. Simon Smith — TWI — United Kingdom
Dr. Matt Snyder — EOARD — United Kingdom
Dr. Bo Song — Sandia National Laboratory, Albuquerque — United States
Prof. Nancy R. Sottos — University of Illinois at Urbana Champaign — United States
Dr. David Stifter — Johannes Kepler University Linz — Austria
Dr. Qingping Sun — The Hong Kong University of Science and Technology — Hong Kong
Prof. Michael Sutton — University of South Carolina — United States
Dr. Paul Tatum — AWE — United Kingdom
Prof. Jacek Tejchman — Gdansk Polytechnic — Poland
Dr. Rachel Tomlinson — University of Sheffield — United Kingdom
Prof. Chris Truman — University of Bristol — United Kingdom
Dr. Nicholas Tsouvalis — NTUA, Athens — Greece
Prof. Guillermo Urriolagoitia-Sosa — National Polytechnic Institute, Mexico — Mexico
Prof. Wim Van Paepegem — Ghent University — Belgium
Dr. Gioacchino Viggiani — INPG, Grenoble — France
Prof. Wei-Chung Wang — National Tsinghua University — Taiwan
Prof. Nick Warrior — University of Nottingham — United Kingdom
Prof. Michael Wisnom — University of Bristol — United Kingdom
Prof. Philip Withers — University of Manchester — United Kingdom
Dr. Albert Wong — DSTO — Australia
Prof. Huimin Xie — Tsinghua University — China
Prof. Takashi Yokoyama — Okayama University of Science — Japan
Prof. Satoru Yoneyama — Aoyama Gakuin University — Japan
Dr. Christina Young — The Courtauld Institute of Arts — United Kingdom
Dr. Tongxi Yu — Hong Kong University of Science and Technology — Hong Kong
Prof. Ramon Zaera — Carlos III University, Madrid — Spain
Prof. Dan Zenkert — KTH — Sweden
Dr. Xiaoxin Zhang — ETSI Caminos — Spain
Prof. Han Zhao — ENS Cachan — France

Social Programme

Sunday 6th July

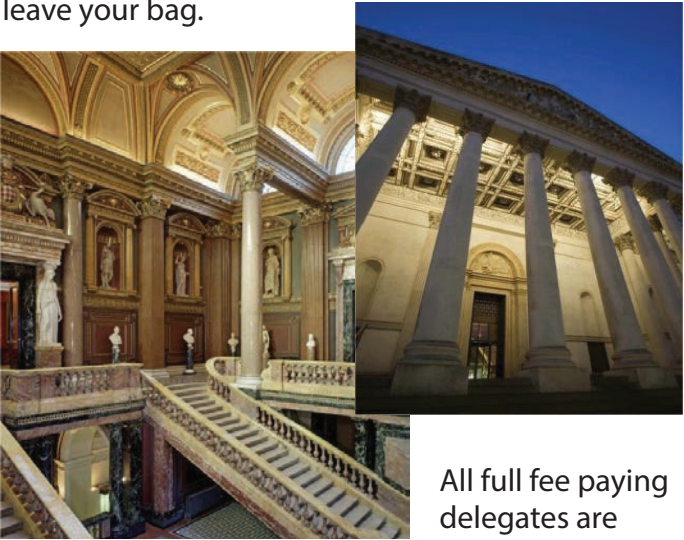
Welcome Reception and Barbeque

The reception will commence at 18.30 in the gardens of Robinson College. Delegates are to make their way to the main Dining Room to access the Gardens. If it is raining the reception will take place in the main Dining Room at Robinson College.

Monday 7th July

Strain and BSSM 50th Anniversary Celebration Reception – Fitzwilliam Museum

The reception commences at 19.00 and ends at 21.00. Tickets have been distributed for this event please look in your badge. The museum contains many valuable exhibits that are easily damaged. For this reason flash photography is strictly forbidden in the museum and large bags and backpacks are also not allowed. There is a cloakroom where you may leave your bag.



All full fee paying delegates are invited to join in the celebration of the bi-centenary of BSSM and Strain. A unique venue has been chosen for this event. The Fitzwilliam museum is housed in the spectacular Founder's building which opened to the public in 1848. It has a unique collection of paintings, which delegates will have the opportunity to browse during the reception. The collections on view at the reception include some remarkable works by the French Impressionists and 19th and 20th Century British Artists. The museum has masterpieces by Nicolas Poussin in the reception galleries including their recently acquired Extreme Uction, c.1638-40. The reception is sponsored by Wiley, the publishers of *Strain*, who have enabled this unique and

exciting event to take place. The champagne reception is included in the conference fee, as well as champagne, beer and soft drinks will be served with some delicious canapés. An expert historian will be in the exhibition room to provide unobtrusive insight into the art works.



To accompany the event musical entertainment will be provided by the Sensky Trio of string instruments. We hope you will join us for this memorable event.
<http://www.fitzmuseum.cam.ac.uk>.

This event is not open to students who will be offered a 'student mixer' instead (with punting followed by music and drinks at Robinson College).

Student Mixer

Please meet at 18.30 at Mill Lane Punting Station <http://www.scudamores.com/punting-mill-lane>. The party will commence at 20.00 at Robinson College in the Dining Room. Tickets have been distributed for this event please look in your badges. We shall be departing on a traditional guided river punting tour along the River Cam to take in some of the sights (www.scudamores.com) followed by an evening of food, drink and live music from Avalon back at Robinson College
<http://andyvellacott.wix.com/avalon3#biography/c13dn>



Social Programme

Thursday 10th July

Gala Conference Banquet, Imperial War Museum Duxford

Coaches will depart from outside Robinson College from 17.45 to 18.30 to take delegates to Duxford. Please assemble for boarding in the courtyard next to the Marquee. Coaches will depart when full in pairs until 18.30. Tickets are available in your badges.

BSSM have chosen a very special and memorable venue for the conference dinner. Imperial War Museum Duxford is set within the spacious grounds of the famous former First and Second World War airfield. It is home to some of the most iconic aircraft in the world.

On arrival there will be reception which will take place in the AirSpace Aviation Hall under the wings of Concorde. Delegates will have the opportunity to go on board BAC / Aerospatiale Concorde 101 G-AXDN, the world's fastest Concorde. Three other historic aircraft will be open for conference delegates: the Avro York G-ANTK long-range transport that was designed to use the same wings, engines, undercarriage, and tail unit as the Lancaster bomber, the Handley Page HP81 Hermes 4 G-ALDG (Fuselage only) and the De Havilland DH106 Comet 4 G-APDB the world's first commercial jet liner, this one was built at Hatfield as the second of a batch of 19 Comet 4s ordered by BOAC in 1955.

At 20.00 a three course dinner will follow in the



Conservation Hall. Food and drink will be plentiful and a cash bar will be available until 23.30. If you have requested a special meal including the vegetarian choice please inform your server.

The coaches will start to leave Duxford at 22.30 with the last one leaving before midnight. A map of the Aircraft in the hangar is shown below.



Accommodation

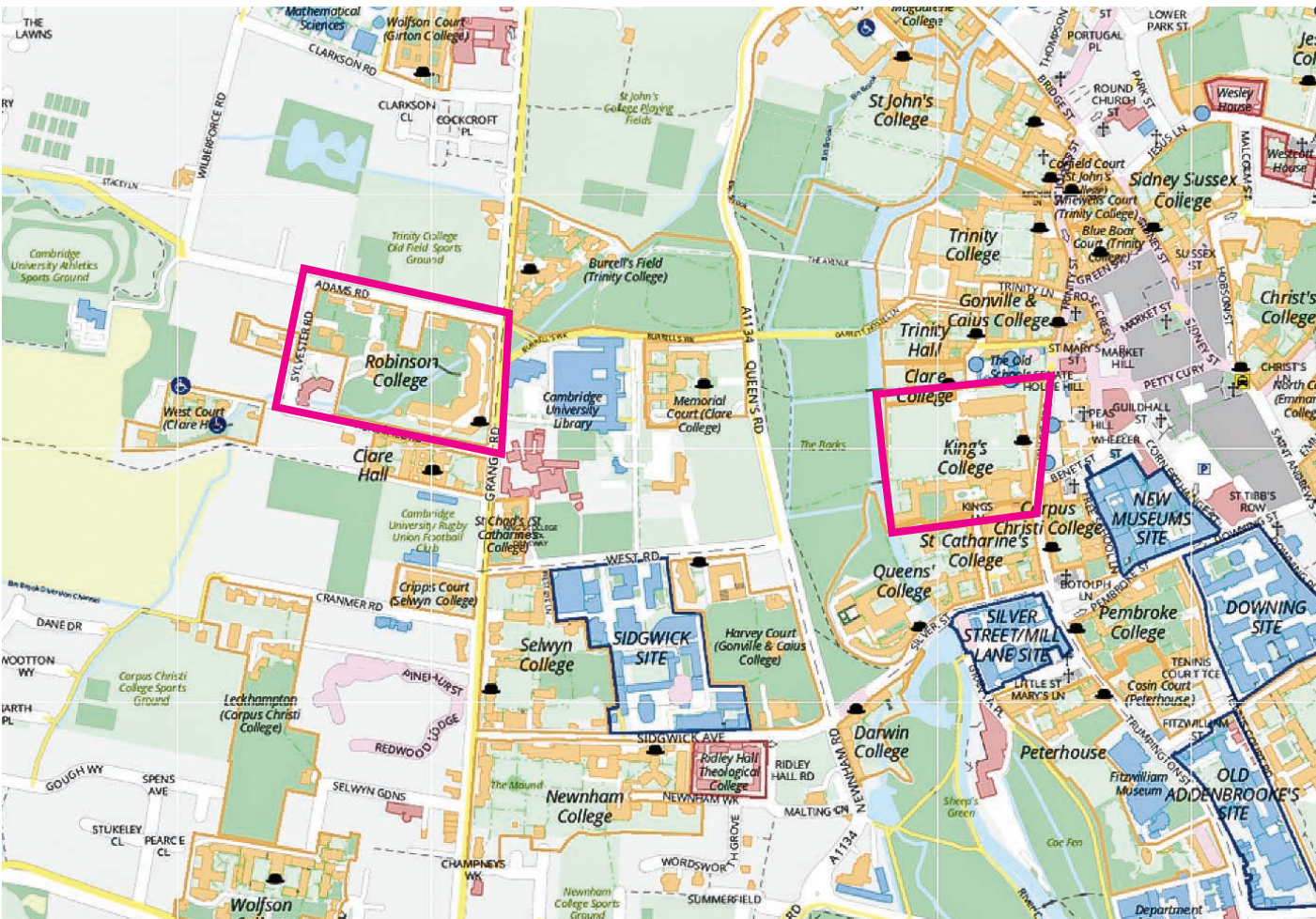
(for those staying at Robinson College or Kings College)

Check in is from 13.00 at Robinson College and 12.00 at Kings College. Your keys will be available at the Porters Lodge for the accommodation you have booked on arrival. The Porters lodges at both Kings and Robinson are open 24 hours. Please return you key to the Porters Lodge on departure. You will be requested to complete an accommodation form on arrival.

College accommodation is designed for students to lodge during their studies. The rooms are clean and comfortable with basic furnishings. All rooms have facilities for making hot drinks and supplies of tea and coffee are replenished daily; bottled water is also provided. Towels and bed linen are provided. The rooms are serviced daily. The ensuite rooms have their own bathroom and toilet. The rooms with shared bathrooms are situated with their doors on the landing adjacent to the shared facilities; the toilet and bathroom are in separate rooms.

All of the rooms have free access to Wi-Fi (either the College system or Eduroam). At Robinson, all rooms also have high speed internet sockets, if you wish to use this please remember to bring a cable. Hairdryers are not provided in the rooms but there is a limited supply available at the Porters Lodge.

The Porters Lodge is staffed 24 hours. If you arrive late you will be able to pick up your key and access your room from here. Access to the bedrooms maybe up several flights of stairs, please bear this in mind if you plan to bring heavy luggage. The porters are very helpful but it should be considered that their role is not that of a hotel reception and services like concierge, room service, laundry etc. cannot be provided. There is a launderette on site and if you wish to wash clothes a pass is available at the Porters Lodge.



BSSM and Strain 50th Anniversary

Editorial appearing in Volume 50 of *Strain* pp 95-97 by J.M. Dulieu-Barton

The journal *Strain* was launched in January 1965 by the British Society for *Strain* Measurement (BSSM); 2014 marks its 50th anniversary. The year 2014 also marks the 50 years of the BSSM, and it is planned to have special events to mark the occasion. Of particular interest is the 16th International Conference on Experimental Mechanics, which is organised by the BSSM. Around 450 delegates are expected to attend representing wide-ranging international expertise in the topic that has become known as ‘Experimental Mechanics’. More details on the conference can be found at www.icem16.org, but most importantly for *Strain*, there will be a 50-year celebration held at the Fitzwilliam Museum in Cambridge sponsored by Wiley where all delegates will be invited to attend. Throughout 2014, *Strain* will be publishing an overview paper in each issue covering the progress and prospects of key techniques and application areas. They will be made freely available online as well as the top 20 most cited papers in *Strain*.

Back in the 1960s, the fledgling BSSM was committed to industrial applications and decided that a journal that promoted the ‘more practical side of stress analysis’ was necessary to introduce the new experimental techniques to a wider audience. The first editor was G. S. Holister; in his editorial, he stated ‘the prime concern of the editor and the editorial panel is to see that the standard of contributions should be both of the highest calibre and the greatest possible general interest’. These values are still today at the top of the agenda of the *Strain* editorial board.

In 2004, a retrospective of 40 years of *Strain* [1] appeared in the journal giving a complete overview of the changing profile of publications in the journal over the preceding four decades. From this, some interesting facts emerge about the changing profile of experimental stress analysis and its development into the more wide-ranging genre of experimental mechanics. In the first 10 years, the publications were dominated by contributions on the application and development of *strain* gauges, with photoelasticity as a close second. In the second decade of *Strain*, the number of contributions dropped from 210 to 159 with the main contributions once again photoelasticity and strain gauge applications. In the decade 1985–1994, techniques such as holography emerged, and there were six contributions on finite element analysis. Still of the 160 contributions, 63 were on strain gauges. In the decade running up to *Strain*’s 40th anniversary, 159 papers were published with special issues on new techniques such as thermoelastic stress analysis and optical fibre sensors. The pages of *Strain* also included news about BSSM, new product guides and, on one occasion, a crossword.

In May 2000, I took over as Editor in Chief of *Strain*; at that time, *Strain* had a dual purpose as the BSSM newsletter and publishing of peer-reviewed technical papers. It was still produced in house and managed in the same way as it was in 1964. In the face of the online publishing revolution, the BSSM realised that for *Strain* to survive as a learned journal, some radical changes needed to be made. It was decided

that *Strain* should be published by a scientific publishing house, and following negotiations throughout 2001, a contract was agreed with Blackwell Publishing (now Wiley). The first Wiley edition of *Strain* appeared in 2002 with a new design of front cover. This volume had 169 pages and appeared as four issues, with papers on photoelasticity, thermoelastic stress analysis, acoustic emission and shearography, to name a few. It is clear from this volume that the field of experimental mechanics was diversifying thanks to the ever increasing computational power enabling faster and more plentiful data acquisition and the improvements in sensors particularly charge-coupled devices and complementary metal–oxide–semiconductor devices to enable digital imaging in a way we could have never imagined a decade previously.

The most important development for *Strain* following the publication agreement with Wiley was its inclusion on the Institute for Scientific Information index and, for the first time ever, having an impact factor. The journal was yet to be published online, but this followed very quickly. We were fortunate to have a strong and committed editorial board who promoted and helped grow the journal. In 2004, Dr Bob Mines from the University of Liverpool took over as Editor in Chief and paved the way for the launch of an online submission system in 2007. In 2006, *Strain* was given a new front cover and given the new subtitle ‘an international journal for experimental mechanics’. Professor Emmanuel Gdoutos was Editor in Chief from 2007 to 2010 when the journal grew dramatically, going to six issues a year in 2008. Emmanuel was key in bringing a more European flavour to the journal, and the journal became the official journal of the European Society for Experimental Mechanics, as well as being the BSSM journal. In 2011, paper flow had grown to such an extent that two supplementary issues were published, the first sponsored by BSSM. The present editor, Professor Fabrice Pierron, from the University of Southampton took over as Editor in Chief in 2011, with a mission to build on the efforts of the previous editors and to raise the overall quality of the published papers to even higher standards. To aid in the endeavour, two associate editors were appointed, Professor Ole Thybo Thomsen from Aalborg University in Denmark and myself. Ole stood down in 2012 and was replaced by Professor Josef Eberhardsteiner from Vienna University of Technology.

Over the past decade, *Strain* has clearly matured from a society journal to an internationally leading publication in the world of solid and structural mechanics. To compare and contrast with the previous study described in [1], a similar compilation of the types of papers published in *Strain* over the past decade is provided in Table 1. Here, the approach was to use some of the headings used in [1], that is, PE, photoelasticity; SG, strain gauges; XR, X-ray (in Table 1, this also includes neutronbased techniques); M, moiré interferometry; FE, finite element analysis; and FFM, fatigue and fracture mechanics. Table 1 also includes techniques based on infrared thermography (IR), kinematic techniques that use white light illumination (WL), interferometric techniques to include digital speckle pattern interferometry and holography (I), sensors and signal processing (SSP) and others (O). How the papers are categorised is somewhat

subjective, but in the main, it is done by the major subject area. Table 1 gives also the total number of papers per volume (TOT) and the printed pages (PP). The count does not include editorials, news items and other such material. It was also decided not to include the two ‘bumper’ supplements as this significantly distorts the data for the 2011 volume.

The first item to note in Table 1 is the increase in issues in 2008 and the subsequent increase in papers. Notwithstanding this, one can observe a steady growth in papers. More interesting is the profile of the papers with most topics showing a steady turnover, with a slight decline in photoelasticity. Most marked is the increase in papers for the white light topic; these are primarily papers on digital image correlation with the submissions showing the increased interest in this technique from both an applications point of view as well as error analyses and algorithm development. In 2009, it was clear that there was a significant increase in the papers defined as ‘others’; these included microscale and nanoscale testing methodologies as well as destructive residual stress analysis and general mechanical testing as its main constituents. The interesting feature here is the growth in novel techniques that do not fit the general headings of white light, infrared thermography, photoelasticity or interferometry. It should also be mentioned that *Strain* gauges are now standard instrumentation for most researchers in experimental mechanics and no well-equipped laboratory would be without them. It is interesting to note that the majority of papers on strain gauges in the last decade covered embedded gauges, which is still a developing area for 3D strain analysis.

To summarise, there is a healthy level of activity in experimental mechanics in general revitalised by the use of imaging approaches. The future will see more work using X-ray and other tomographic techniques to elicit interior strains and the development of high-speed imaging systems to capture the strain fields generated in high rate events. The growth in the capability of the techniques is strongly technology driven; hence, we can recognise a

trend that is shared with many other scientific areas. The goal is to understand better the factors that affect structural performance; hence, residual stress is a hot topic, with more researchers looking towards full-field approaches. Materials characterisation studies in soft matter and heterogeneous materials necessitate the non contact nature of imaging. The future is rich in extraordinary challenges with many problems to solve and methodologies to develop.

In 2011, *Strain* was published as online only, clearly as an academic journal, publishing leading edge research. Much of the applications aspects and aspirations of the founders has been replaced with novel techniques, sensors and testing methods. The BSSM has replaced the application aspect with regular seminars, workshops and courses to take the research to industry, hence maintaining the original concept of the BSSM.

In a final note, I would like to thank all my colleagues who have contributed to BSSM and *Strain* for providing a rich and open environment in which to exchange ideas and develop new research collaborations. Involvement in the BSSM and *Strain* has kept me busy over the past 15 years; it has been an honour and a delight to be involved.

Reference

1. Stanley, P. (2004) 40 years of strain: a retrospective review. *Strain* 40, 95–101.



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Table 1: Spread of topic in *Strain* over the last decade (2004–2013)

	IR	PE	WL	I	SG	XR	M	FE	SSP	FFM	O	TOT	PP
2004	2	3		2	1			1	5	1	6	21	219
2005		2	1		5	1	1	1	6	2	2	21	216
2006		4	6	2	4		1	1	5	2	4	29	319
2007		2	3	1	3		1	1	4	2	5	22	357
2008	4	2	7	13	2			1	4	6	13	52	481
2009	3	1	6	2	1		1	1	3	9	27	54	553
2010	3	2	10	8	1	3		2	1	4	20	54	600
2011	1	1	3	2	1		1	4	5	5	35	58	555*
2012	1		17		2	1		4	6	8	18	57	538
2013	2	1	13	3	3	2		1	1	3	20	48	551

*Not including papers in the two supplementary issues totalling 1062 pages.

Pre-conference Short Courses

Sunday July 6th 2014, 11.00 to 15.00

Registration will take place from 10.30 to 11.00 for all delegates attending the short courses in the Robinson Auditorium Lounge.

Refreshments are available on the Dining Room Balcony from 10:00.

Lunch will be served at 12:30 in the Garden Restaurant

Practical considerations in DIC measurements

*Instructor: Dr Pascal Lava, KU Leuven, Belgium
Location: Robinson Games Room*

Digital Image Correlation (DIC) is gradually becoming a standard tool in experimental mechanics, for both industry and academia. Despite the fact that the measurement system is often sold with the argument of being easy in use and setup, a poor understanding of issues arising in the whole measurement chain (imaging, noise, correlation algorithm, smoothing, ...) can result in poor or misinterpreted results. The principal goal of this workshop is not to provide a detailed theoretical study on these, but to focus on possible problems of the participants via the practical experience of some well-experienced soldiers in the field. Moreover, this workshop wants to put focus on an online DIC user group forum, assembling practical issues of DIC users worldwide that are often concealed at the publication stage but are of major importance for a successful experiment. Amongst these we recognize e.g. speckle pattern generation (which paint suitable for which material), camera alignment, calibration issues , ...

The workshop is aimed at practitioners of DIC at post graduate level working in both academia and industry.

Programme:

11.00 – 12.30

- Basic principles of DIC: Image matching. Why is a speckle pattern needed? What is subset size and step size (what are their limitations)?
- From displacements to strains
- Resolution/spatial resolution: what is the meaning and relationship of these concepts and what is their role in an actual experiment.
- Discussion

12.30 – 1.30 Lunch

13.30 – 15.00

- Field of View, depth of field, aperture, exposure time: how to setup a DIC experiment, including practical demonstration
- Practical considerations for speckling and lighting
- Artificial strain fields due to out-of-plane motion
- DIC game show: anticipating matching problems.
- Discussion

Course Instructor

The workshop will be held by Dr Pascal Lava of University of Leuven in Belgium.

Pascal was born January 19th 1980 in Belgium. In June 2002 he acquired a Master degree in mathematics at Ghent University. On May 16th 2006, he acquired a PhD in sciences – nuclear physics at Ghent University.

Since January 1st 2008, he works as an associate professor at the department Metallurgy and Materials engineering (MTM) at Leuven University. His research topics include Digital Image Correlation (DIC) and material identification via virtual fields and finite element updating. Pascal Lava is author of more than 25 peer-reviewed articles and the founder and main developer of the DIC platform MatchID. www.matchid.org

Infra-red thermography in experimental mechanics: using temperature measurement to evaluate stresses, strains and damage evolutions

Instructor: Prof. Janice Dulieu-Barton, University of Southampton, UK

Location: Robinson Garden Room

The purpose of the short course is to introduce the range of applications of infra-red thermography in experimental mechanics. Thermography is a full field, non-contact non-destructive measurement technique. It has been used for many years a qualitative tool for non-destructive evaluations of structures where 'hot-spots' are used to infer damage sites. The short course shows how thermography can be used to obtain quantitative information about the extent of damage, its effect on the temperature field and how to obtain accurate measurements. A detailed introduction to thermography is provided as well as introductions to techniques such as pulse phase thermography and thermoelastic stress analysis.

Pre-conference Short Courses

The workshop is aimed at

Engineers and researchers who have an interest in the use of full-field strain measurements to extract information regarding the fatigue and damage mechanisms in materials. The basics will be taught from the beginning so no prior knowledge of infrared thermography is required. The focus is on practical application and industrial relevance. The course will not require any specific mathematical background, although an understanding of basic solid mechanics is required.

Programme

11.00 Welcome, refreshments and brief introductions

11.15 Physics of thermography

11.45 Thermography in NDE applications

12.30 Lunch

13.00 Thermoelastic stress analysis – theory, assumptions and applications

14.30 High speed thermography

15.00 Refreshment break and closing remarks

Physics of thermography

This starts with the derivation of Planck's law and demonstrates how infra-red imaging systems work. It covers the mode of operation of both Bolometers and photo-detectors. The aim is to highlight the key important points for consideration when using infra-red detectors in experimental mechanics applications.

Thermography in NDE applications

Here the physics of the main NDE techniques such as pulse, pulse phase thermography are described. The application of these techniques to defect detection is covered in detail.

Thermoelastic stress analysis

Although the thermoelastic stress analysis (TSA) technique has been part of the experimental mechanics tool box for many years it is still under-utilized in industry. The aim of this section will be describe the underlying theory and identify the limitations of the technique before showing how it can successfully applied to a range of materials and structures. Some new emerging work on TSA for strain based NDE and low cost TSA will be presented.

High speed thermography

How can we make thermal imaging systems faster? The underlying limitations of photo-detectors and Bolometers will be discussed. A detailed description of some recent work to measure temperature evolutions in high strain rate events will be provided on how a standard camera can be customised to take measurements at 15 kHz.

Course notes and materials

A set of course notes will be developed that can be downloaded from the ICEM web site prior to the short course.

Course Instructor

Professor Janice Dulieu-Barton has worked in experimental mechanics and non-destructive testing since 1989 and has published more than 250 papers on these topics. She received a BSc in Mechanical Engineering in 1988 from the University of Salford and a PhD from the University of Manchester in 1993. Currently she is a Professor of Experimental Mechanics in the Faculty of Engineering and the Environment at the University of Southampton. Professor Barton's primary research interest is in imaging. Focus areas include: high speed imaging particularly thermography, residual stresses, damage analysis of composite/sandwich/ textile materials, crack-tip stress studies and small scale full-field experimental stress analysis. Professor Dulieu-Barton is a Fellow of the UK Institute of Physics and a Chartered Mechanical Engineer. She was the Editor-in-Chief of the international journal for experimental mechanics, Strain, and is now its Associate Editor. She has numerous roles with the Institute of Physics (IOP) including chairman of the Applied Physics and Technology Division. She is also past chairman of the British Society for Strain Measurement (BSSM). She is chairman of the 16th International Conference on Experimental Mechanics.

Pre-conference Short Courses

The Virtual Fields Method: an introduction

Instructor: Prof. Fabrice Pierron, University of Southampton, UK

Location: Robinson Linnett Room

Full-field measurement techniques are gradually becoming routine procedures in industrial and academic mechanical testing labs thanks to the wide range of commercially available systems. Having access to the spatial distribution of strains at the surface of the material (or sometimes in the bulk, as in Digital Volume Correlation from X-ray tomography or OCT reconstructed volumes) enables the use of more complex test configurations to identify the mechanical behavior of materials, with the potential of tackling difficult problems like heterogeneous materials (welds, locally damaged composites, multi-materials, functionally graded materials etc...) or complex constitutive equations (viscoplasticity at high strain rate, hyperelasticity, phase changes as in SMAs etc...). However, in this case, the data processing is not straightforward and inverse problem resolution is usually required.

The present course will introduce the participants to a tool specifically developed to solve the above problem, the so-called Virtual Fields Method (VFM). This method is an alternative to Finite Element Model Updating over which it has a number of specific advantages, among which much shorter computation times. The idea of the course is to start from scratch on the subject and gradually lead the participants to an understanding of the basic concept of the method through simple examples in linear elasticity. The VFM will then be explored in more depth to demonstrate how it can be applied to non-linear constitutive laws, heterogeneous materials etc. The important issue of virtual fields selection will also be briefly addressed. Finally, the course will be concluded by examples of application of the VFM to many different materials and situations.

The course is aimed at

Engineers and researchers who have an interest in the use of full-field strain measurements to extract mechanical properties of materials. Although inverse problems are usually considered to be mathematically demanding, this course will focus on rather simple concepts that will not require any specific mathematical background. Basic solid mechanics training (graduate level) is enough to benefit from the course.

Participants can submit their own application/problem to the instructor for advice or even their own measurements for processing with the VFM.

Programme

- 11.00 Introduction
- 11.15 The Principle of Virtual Work
- 11.45 The Virtual Fields Method in elasticity
- 12.30 Lunch
- 13.00 Complements on the VFM (non-linear VFM, dynamics etc.)
- 14.00 Examples of application
- 15.00 Refreshment break and closing remarks

Introduction

The determination of parameters driving the constitutive mechanical behaviour of materials from experimental tests is an inverse problem. This section presents a brief overview of the problem to be solved and a number of different approaches used to solve it, with their advantages and shortcomings. The benefits of having access to full-field measurements to address this problem will be underlined.

The Principle of Virtual Work

One of the difficulties in understanding the VFM is the so-called Principle of Virtual Work on which the technique relies. This part of the course will recall the basics of this principle and detail how it can be used to derive integral equilibrium equations. The simple case of a cantilever beam will serve as an example.

The Virtual Fields Method in elasticity

The Virtual Fields Method (VFM) will be described in detail in the case of linear elasticity. This simple situation is chosen for its didactical value. Simple examples in linear elasticity will demonstrate the basic principle of the VFM as well as some of its important features (virtual fields' selection, virtual boundary conditions etc.).

Complements on the VFM

After having acquired a basic understanding of how the VFM works, this session will be dedicated to exploring the method in more depth. It will first be shown how the VFM can be adapted to non-linear constitutive models and how it can

Pre-conference Short Courses

deal with heterogeneous materials. The important issue of the selection of virtual fields will also be addressed. Finally, it will be shown how the VFM can be applied in dynamics (vibration, high strain rate testing...).

Practical examples of application of the VFM

The course will be concluded by an overview of experimental application of the VFM to composites (elasticity, damage), metals (including welds), wood and novel high strain rate testing applications.

Course handouts

The participants will be given a CD containing the slides used for the presentations, a set of scientific papers relevant to the subject as well as the CAMFIT software. There will also be an option for the participants to buy the VFM book at a reduced rate.

<http://www.springer.com/materials/mechanics/book/978-1-4614-1823-8>

Course Instructor

Professor Fabrice Pierron graduated from the Ecole Nationale Supérieure d'Electricité et de Mécanique (ENSEM) in Nancy, France, in 1989, and received his PhD from Lyon University, France, in 1994. He has held an Assistant Professor post at the Ecole des Mines de Saint-Etienne from 1994 to 1999, and was a Professor at Arts et Métiers ParisTech (Châlons-en-Champagne, France) before moving to his current position in Southampton in May 2012. Prof. Pierron is an expert in the use of novel identification strategies based on full-field deformation measurements and heterogeneous tests. He has been instrumental in the development of the Virtual Fields Method (VFM, www.camfit.fr). He has published more than 85 international journal papers, the vast majority of which are in composites testing and the Virtual Fields Method. Prof. Pierron has also co-authored the first book ever on the VFM, released in March 2012.

Prof. Pierron was awarded a prestigious Royal Society Wolfson Research Merit Award in May 2012 and made a Fellow of the Society for Experimental Mechanics in 2013. He is currently Editor-in-Chief of the journal Strain (Wiley).

Local Information

Local services can all be located in the city centre including Banks/nearest cash-points/chemists

Public Transport

http://www.robinson.cam.ac.uk/contact-us/visiting-robinson/public-transport

Taxis CamCab – 01223 704704.

Nearest ATM/Bank: Lloyds, TSB, Barclays, Halifax - Market Square, Cambridge (about a 15 minute walk away)

Nearest Chemist: Boots the Chemist, Petty Cury, Cambridge (about a 15 minute walk away)

EURASEM Technical Committee Meetings

EURASEM is setting up a number of technical committees to reflect the activities of the Society. If you are interested to join in you are welcome to attend the meeting.

All will take place in the Linnett Room at Robinson College except for the High Strain Rate Behaviour and Thermo-mechanics committees which will be in the Garden Room at Robinson.

Mon Jul 07	Tue Jul 08	Wed Jul 09	Thu Jul 10	Fri Jul 11
	9:20 - 10:40	9:20 - 10:40	9:40 - 10:20	9:20 - 10:40
11:10 - 12:50	11:10 - 12:50	10:50 - 11:50	10:50 - 11:50	11:10 - 12:50
		Non-Destructive Techniques Dimitrios Aggelis	Interferometry Mário Vaz	
	Residual Stresses Jeremy Robinson			
14:00 - 16:00	14:30 - 16:00		14:00 - 16:00	14:00 - 16:00
Wood Mechanics and Timber Engineering Josef Eberhardsteiner	Rock and Soil Mechanics Gioacchino Viggiani		Structural Health Monitoring Wieslaw Ostachowicz	
High Strain Rate Behavior Han Zhao	Thermo-mechanics Umberto Galletti			
16:30 - 18:10	16:30 - 18:10	16:30 - 18:10		
Structural Concrete Gonzalo Ruiz		Smart Materials Elzbieta A. Pieczyska		

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Sunday, July 06, 2014

10:30	<i>Short course registration</i> ♦ Robinson Auditorium Lounge
11:00	<i>Short course VFM</i> ♦ Robinson Linnett Room <i>Short course IRT</i> ♦ Robinson Garden Room <i>Short course DIC</i> ♦ Robinson Games Room
15:00	<i>Registration</i> ♦ Robinson Marquee
18:30	<i>Welcoming barbeque</i> ♦ Robinson Dining Room and Gardens

Monday, July 07, 2014

08:00	<i>Registration</i> ♦ West Road Foyer
09:30	<i>Opening ceremony</i> ♦ West Road Concert Hall Auditorium
10:00	Plenary 1 (chair: Prof. Carmine Pappalettere) • <i>Crashworthiness of aluminium structures</i> ► Prof. Magnus Langseth ■ <i>Norwegian University of Science and Technology, NTNU, Trondheim</i> ♦ West Road Concert Hall Auditorium
10:40	<i>Coffee break</i> ♦ Robinson Marquee and West Road Foyer

	◆ Robinson Umney Lecture Theatre	◆ West Road Recital Room	◆ Robinson JCR	◆ Robinson Auditorium	◆ West Road Concert Hall Auditorium	◆ West Road Lecture Theatre
	G2 Micro and nano-scale test methods 1 - In-situ mechanical tests Chair: Prof. Todd Hufnagel	G2 Photoelasticity 1 Chair: Prof. Krishnamurthi Ramesh	G3 Adhesive bonding 1 Chair: Prof. Takashi Yokoyama	T1 Session dedicated to the achievements of Prof. Alain Vautrin Chair: Prof. Shahram Aivazzadeh	T2 Blast 1 Chair: Prof. John Dear Roux	T3 Digital Volume Correlation 1
11:10	- Characterizing graphene transfer across scales ► Kenneth Liechti, Seung Na, Ji Suk, Rodney Ruoff, Rui Huang ■ <i>United States</i>	- Force analysis in porous media ► Tejas Gotkhindi, K.R.Y. Simha ■ <i>India</i>	- Determination of a cohesive law in mode I and mode II for a ductile adhesive interface layer by strength and fracture mechanics tests ► Johannes Neumayer, Hannes Koerber ■ <i>Germany</i>	- Effects of stacking sequence on the mode -I delamination of carbon/epoxy laminates ► Muhammad Saifuddin Ben Mohamed Rehan, Xiao-Jing Gong, Jérôme Rousseau, Stéphane Fontaine, Shahram Aivazzadeh ■ <i>France</i>	- Experimental study on deformation and rupture of thin metal plates with pre-cracks subjected to dynamic loading ► Han Liu, Pengwan Chen, Haibo Liu, Dalin Xiang, Jili Rong, Baoqiao Guo, Ang Chen ■ <i>China</i>	- An approach to running digital volume correlation on personal computer ► Zhenxing Hu¹, Huimin Xie², Hongbing Lu³, Jianxin Gao¹ ■ (1) <i>United Kingdom</i> (2) <i>China</i> (3) <i>United States</i>
11:30	- Investigation of the fracture behavior of tungsten at the micro-scale ► Nicola Julia Schmitt, Christoph Bohnert, Ruth Schwaiger, Chris Eberl, Sabine Maria Weygand, Oliver Kraft ■ <i>Germany</i>	- Processing behaviour of particulate materials using photo stress analysis technology ► S. Joseph Antony¹, Thabit Barakat² ■ (1) <i>United Kingdom</i> (2) <i>Saudi Arabia</i>	- Effects of adhesive curing temperature and time on the strength of adhesively bonded joint ► Baker Alghadeer, Takuya Takahashi, Koichiro Kihara, Yasusuke Kawabata, Toshio Sugibayashi ■ <i>Japan</i>	- On the mechanical characterization of sunflower/chitosan biocomposites with a full-field measuring technique ► Shengnan Sun, Evelyne Toussaint, Jean-Denis Mathias, Michel Grédiac ■ <i>France</i>	- The energy-absorbing characteristics of composite tube-reinforced foam structures ► Ruzanna Alia¹, Zhongwei Guan², Genevieve Langdon³, Gerald Nurick³, Wesley Cantwell⁴ ■ (1) <i>Malaysia</i> (2) <i>United Kingdom</i> (3) <i>South Africa</i> (4) <i>United Arab Emirates</i>	3D strain patterning in polycrystalline halite ► Ababacar Gaye, Michel Bornert, Alexandre Dimanov, Ludwig Wolfgang, Mathieu Bourcier, Hakim Gharbi, Eva Heripre, David Picaud, <i>et al.</i> ■ <i>France</i>

	◆ Robinson Umney Lecture Theatre	◆ West Road Recital Room	◆ Robinson JCR	◆ Robinson Auditorium	◆ West Road Concert Hall Auditorium	◆ West Road Lecture Theatre
	G2 Micro and nano-scale test methods 1 - In-situ mechanical tests Chair: Prof. Todd Hufnagel	G2 Photoelasticity 1 Chair: Prof. Krishnamurthi Ramesh	G3 Adhesive bonding 1 Chair: Prof. Takashi Yokoyama	T1 Session dedicated to the achievements of Prof. Alain Vautrin Chair: Prof. Shahram Aivazzadeh	T2 Blast 1 Chair: Prof. John Dear Roux	T3 Digital Volume Correlation 1
11:50	- Comparison of micro-mechanical behavior and reliability of micro-injection-molded and shape cut 17-4 PH stainless steel based mems by small-scale-testing ► Stefan Slaby, Tobias Müller, Volker Piötter, Oliver Kraft, Chris Eberl ■ <i>Germany</i>	- Temporal phase unwrapping works at stress concentration zones ► Min-Jui Huang, Z.W. Huang ■ <i>Taiwan</i>	- Quantitative characterization of wrinkled textured surfaces using areal surface texture parameters based on geometrical product specifications ► Makiko Yonehara¹, Hirokazu Yoshino², Kazunari Takamura¹, Hiroaki Isono¹, Toshio Sugibayashi¹ ■ (1) <i>Japan</i> (2) <i>United Kingdom</i>	- Failure mode of thermohydraulically aged composites: case of NC2© carbon fibre laminates ► Quynh Nguyen, Jérôme Molinard, Alain Vautrin, Jean-Marc Beraud ■ <i>France</i>	- Impact response of a cellular block with varying cross-section ► Changjian Shen¹, Guoxing Lu¹, Tongxi Yu², Dong Ruan³ ■ (1) <i>Singapore</i> (2) <i>Hong Kong</i> (3) <i>Australia</i>	- Ductile fracture of thin aluminum plates assessed by digital volume correlation on laminography synchrotron volumes. ► Thibault Taillandier-Thomas¹, Thilo Morgeneyer¹, Lukas Helfen², François Hild¹ ■ (1) <i>France</i> (2) <i>Germany</i>
12:10	- Custom built setups for micro mechanical tests focusing on fatigue ► Tobias Kennerknecht, Thomas Straub, Chris Eberl ■ <i>Germany</i>	- Novel photoelastic materials and methods for validation of biomechanics models ► Rachel Tomlinson, Zeike Taylor ■ <i>United Kingdom</i>	- Evaluation of elastic modulus and strength of inorganic polymer adhesives ► Kiyomi Mori, Shan Wu, Kazuhiro Ookubo, Kensuke Kawarada ■ <i>Japan</i>	- Explicit expression of transient and cyclical hygrothermoelastic fields in composite cylinders and plates subjected to periodically varying hygrothermal environments ► Marco Gigliotti, Frédéric Jacquemin ■ <i>France</i>	- Response of panels to blast loading: the influence of material ► Genevieve Langdon¹, Wei Chi Lee¹, Luke Louca² ■ (1) <i>South Africa</i> (2) <i>United Kingdom</i>	3D analysis of free-edge effects in laminate composites using DIC, X-ray tomography and DVC ► Pauline Lecomte-Grosbras, Julien Réthoré, Nathalie Limodin, Jean-François Witz, Mathias Brieu ■ <i>France</i>

	◆ Robinson Umney Lecture Theatre	◆ West Road Recital Room	◆ Robinson JCR	◆ Robinson Auditorium	◆ West Road Concert Hall Auditorium	◆ West Road Lecture Theatre
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12:30		- Automatic photoelastic methods for the analysis of membrane residual stresses in glass ► Augusto Ajovalasit, Giovanni Petrucci, Michele Scafidi ■ <i>Italy</i>		- Full-field measurements and identification of textile composites and fabrics ► Stepan Lomov ■ <i>Belgium</i>	- Modification of shock tube output using granular beds ► Teresa Davey, Thuy-Tien Ngoc Nguyen, William Proud ■ <i>United Kingdom</i>	- A kinematic approach in formulating iterative DIC algorithms ► Wei Tong ■ <i>United States</i>
12:50	Lunch ◆ Robinson Dining Room					

	◆ Robinson Umney Lecture Theatre	◆ West Road Recital Room	◆ Robinson JCR	◆ Robinson Auditorium	◆ West Road Concert Hall Auditorium	◆ West Road Lecture Theatre
	G2 Micro and nano-scale test methods 2 - diffraction techniques Chair: Dr. Johan Hoefnagels	G2 Photoelasticity 2 Chair: Dr. Rachel Tomlinson	G3 Industrial applications 1 Chair: Prof. José Freire	T1 Fatigue and fracture 1 Chair: Prof. Marino Quaresimin	T2 Brittle materials 1 - ceramics Chair: Prof. Victor Shim	T3 Digital Volume Correlation 2 Chair: Dr. Fredrik Forsberg
14:00	- Miniaturized mechanical testing during Xray Laue diffraction ► Helena Van Swygenhoven, Steven Van Petegem ■ <i>Switzerland</i>	- Stress singularity and neutrality around a stiffener revealed by photoelasticity ► Giovanni Noselli, Davide Bigoni, Francesco Dal Corso, Diego Misseroni, Antonio De Simone ■ <i>Italy</i>	- Investigation of self-gravity influence on glass plates by a symbiotic measurement system ► Po-Chi Sung, Wei-Chung Wang, Chi-Hung Hwang, Meng-Hsiu Li, Yu-An Chiang ■ <i>Taiwan</i>	- Accelerated delamination propagation tests based on structural resonance ► Irène Maillet, Laurent Michel ■ <i>France</i>	- Reverse ballistic penetration experiments with jacketed and non-jacketed bullets ► Paul Hazell¹, Gareth Appleby-Thomas², David Philbey¹, Shannon Lemanski¹ ■ (1) <i>Australia</i> (2) <i>United Kingdom</i>	3-D strain measurement towards identification of mechanical properties in the bulk ► Jiawei Fu, Fabrice Pierron, Pablo Ruiz ■ <i>United Kingdom</i>
14:20	- Using high-energy X-ray scattering to map crack-tip strains on the micron scale in an amorphous metal ► Todd Hufnagel, Uday Vempati, Jonathan Almer ■ <i>United States</i>	- Influence of thermal cycling on residual stress generated in glass using digital photoelasticity ► Vivek Ramakrishnan, Krishnamurthi Ramesh ■ <i>India</i>	- Measurement of interior wall displacement of hollow cylinders by digital image correlation method ► Chun-I Chu, Wei-Chung Wang, Chi-Hung Hwang, Yung-Hsiang Chen ■ <i>Taiwan</i>	- The effects of bridging on mixed-mode delamination in carbon/epoxy composite ► Marco Borotto, Roohollah Sarfaraz, Ioannis Botsis ■ <i>Switzerland</i>	- Mesomechanical simulation of dynamic brittle failure with cohesive elements and experimental validation ► Martin Sauer, Elmar Straßburger ■ <i>Germany</i>	- Full 3D time-resolved strain measurement by optical rotating scanning tomography and DVC; application on a non-static tensile test ► Pierre Morandi, Fabrice Bremand, Pascal Dournalin, Arnaud Germaneau, Jean-Christophe Dupre ■ <i>France</i>

	◆ Robinson Umney Lecture Theatre	◆ West Road Recital Room	◆ Robinson JCR	◆ Robinson Auditorium	◆ West Road Concert Hall Auditorium	◆ West Road Lecture Theatre
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14:40	● <i>Film brittleness revealed at small deformations by biaxial loading at different ratios</i> ► Philippe Goudeau, Eric Le Bourhis, P Renault, R Guillou, S Djaziri, D Faurie, G Geandier, Dominique Thiaudière ■ <i>France</i>	● <i>Photoelastic and optical study of polymeric microcapsules dispersed in epoxy matrix</i> ► Mallikarjunachari Gangapuram, Amrita Rath, Krishnamurthi Ramesh, Pijush Ghosh, Vivek Ramakrishnan ■ <i>India</i>	● <i>Primarily study on lens-surface deformation measurement by Fizeau interferometer</i> ► Chi-Hung Hwang, Hsien-I You, Chih-Min Hsu, Wei-Chung Wang ■ <i>Taiwan</i>	● <i>The response of hybrid composite structures to low-velocity impact</i> ► Denise Niewerth, Daniel Stefaniak, Christian Hühne ■ <i>Germany</i>	● <i>Through-thickness tensile strength of carbon/epoxy laminated composites under impact loading</i> ► Kenji Nakai, Takashi Yokoyama ■ <i>Japan</i>	● <i>Fourier-series-based virtual fields method for the identification of 3-D stiffness distributions</i> ► Tho Nguyen, Jon Huntley, Ian Ashcroft, Pablo Ruiz, Fabrice Pierron ■ <i>United Kingdom</i>
15:00	● <i>A method of determining full components of stress field with micrometer spatial resolution by Laue microdiffraction</i> ► Fengguo Zhang, Olivier Castelnau, Michel Bornert, Johann Petit, Jean-Sébastien Micha ■ <i>France</i>	● <i>Analysis of obliquely oriented edge cracked semicircular ring (OECsR)</i> ► Surendra K.V.N., K.R.Y. Simha ■ <i>India</i>	● <i>On the torque – preloading force relationship in screw connections for planetary gearboxes</i> ► Dario Croccolo, Massimiliano De Agostinis, Stefano Fini, Giorgio Ohmi ■ <i>Italy</i>	● <i>DIC analysis of SiC/SiC composite damage mechanisms at the tow scale</i> ► Fabien Bernachy-Barbe, Lionel Gélébart, Jérôme Crépin, Michel Bornert ■ <i>France</i>	● <i>Flow and fracture of silicate glass under a laser shock</i> ► Jean-Christophe Sangleboeuf, Jean-Pierre Guin, Mariette Nivard, Didier Loison, Laurent Berthe, Michel Boustie, Emilien Lescoutte, Arnaud Sollier, <i>et al.</i> ■ <i>France</i>	● <i>Identification of local pore collapse criterion from spherical indentation test on foamed plaster</i> ► Amine Bouterf, Eric Maire, Jérôme Adrien, Sylvain Melle, Xavier Brajer, François Hild, Stéphane Roux ■ <i>France</i>

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15:20	● <i>Subsurface 3D measurement of microstructure and elastic strain in deformed polycrystals with micrometric spatial resolution by DAXM</i> ► Jean-Baptiste Marijon, Odile Robach, Fanny Grennerat, Jean-Sébastien Micha, Olivier Castelnau ■ <i>France</i>	● <i>A measurement system based on photoelasticity to observe residual stresses in scintillating crystals</i> ► Luigi Montalto, Lorenzo Scalise, Daniele Rinaldi, Nicola Paone ■ <i>Italy</i>	● <i>Automated phase-unwrapping for phase-shifted shadow moiré fringe patterns</i> ► Terry (Yuan-Fang) Chen, Jie Lin ■ <i>Taiwan</i>	● <i>Fatigue delamination propagation in a multi-directional woven composite</i> ► Leslie Banks-Sills, Chaim Ishbir, Victor Fourman, Rami Eliasi ■ <i>Israel</i>	● <i>Impact effects on spacecraft outer materials by laser driven flyer system</i> ► Jiyun Yang, Ziliang Ma, Yan Cao, Kumbo Xu ■ <i>China</i>	● <i>Measuring volumetric micro-scale displacements in a composite using a PGD-based DVC</i> ► Luis Gomes Perini, Bernard Douchin, Philippe Margueres, Jean-Charles Passieux, Jean-Noel Perie ■ <i>France</i>
15:40	● <i>Shape memory alloy thin films for nanoplasmonic solar cell applications</i> ► Vasundara Varadan, Sayan Seal, Abhijit Bhattacharyya, Mete Ozturk ■ <i>United States</i>	● <i>Photoelastic study of an inclined crack from a fillet of a biaxially loaded cruciform specimen</i> ► Shreesudha Bhaskara Mohan, Abhinav Thiyagarajan, Krishnamurthi Ramesh ■ <i>India</i>	● <i>High fidelity multiaxial testing of composite wind turbine blade substructures</i> ► Steffen Laustsen ¹ , Erik Lund ¹ , Lennart Kühlmeier ¹ , Ole Thybo Thomsen ² ■ (1) <i>Denmark</i> (2) <i>United Kingdom</i>	● <i>Experimental and numerical analysis of the tensile behaviour of silicon carbides subjected to spalling</i> ► Jean-Luc Zinszner, Benjamin Erzar, <u>Pascal Forquin</u> ■ <i>France</i>	● <i>Digital volumetric speckle photography and its application to strain measurement in rocks</i> ► Lingtao Mao ¹ , Nai Hao ¹ , Zexun Yuan ¹ , Fu-Pen Chiang ² ■ (1) <i>China</i> (2) <i>United States</i>	

16:00	Coffee break	◆ Robinson Marquee and West Road Foyer
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	♦ West Road Recital Room	♦ Robinson JCR	♦ West Road Lecture Theatre	♦ Robinson Umney Lecture Theatre	♦ Robinson Auditorium	♦ West Road Concert Hall Auditorium
	G1 Elastomers Chair: Prof. Jean-Benoit Le Cam	G1 Polymers 1 Chair: Dr. Noëlle Billon	G1 Wood and wood products 1 Chair: Prof. Peter Niemz	G2 Micro and nano-scale test methods 3 - small scale tests Chair: Prof. Helena Van Swygenhoven	T1 Sandwich structures Chair: Prof. Christian Berggreen	T2 Cellular materials and structures Chair: Prof. Han Zhao
16:30	● <i>In-situ synchrotron mechanical testing to investigate strain-induced crystallization in natural rubber</i> ► Bertrand Huneau, Stéphanie Beurrot, Pierre Rublon, Erwan Verron, Adrien Leygue, Nicolas Saintier, Cristian Mocuta, Dominique Thiaudière ■ <i>France</i>	● <i>Electro-mechanical instability patterns on hydrogel surface with micro-engineered topographical electrodes and in vivo strain measurement</i> ► Ben Xu¹, Ryan Hayward² ■ (1)<i>United Kingdom</i> (2)<i>United States</i>	● <i>Variation of transverse and shear stiffness properties of lodgepole pine (pinus contorta) pith to bark</i> ► David Kretschmann¹, John Considine¹, Fabrice Pierron² ■ (1)<i>United States</i> (2)<i>United Kingdom</i>	● <i>Unravelling plasticity mechanisms in nanocrystalline metallic thin films using advanced in-situ tem micro/nanomechanical testing</i> ► Hosni Idrissi¹, Marie-Stephane Colla¹, Behnam Amin-Ahmadi¹, Aaron Kobler², Michael Coulombier¹, Jean-Pierre Raskin¹, Christian Kuebel², Stephane Godet¹, <i>et al.</i> ■ (1)<i>Belgium</i> (2)<i>Germany</i>	● <i>Material characterisation of polyurethane-based paper honeycomb sandwich structures</i> ► Gerhard Kopp, Jan Friedrich ■ <i>Germany</i>	● <i>Experimental investigation of mechanical behaviour of brittle foam under multiaxial loadings</i> ► Omar Kraiem, Nicolas Schmitt, Han Zhao ■ <i>France</i>
16:50	● <i>On the nature of Mullins effect in swollen nitrile rubber</i> ► Mei Sze Loo¹, Andri Andriyana¹, Jean-Benoit Le Cam², Gregory Chagnon², Erwan Verron², Amalina Muhammad Afifi¹ ■ (1)<i>Malaysia</i> (2)<i>France</i>	● <i>Polymer deformation measurements on multiple scales: X-ray scattering & DIC</i> ► Jonas Engqvist, Stephen Hall, Mathias Wallin, Matti Ristinmaa, Tomás Plivelic ■ <i>Sweden</i>	● <i>Identification of failure modes of CLT plates by means of DIC measurements</i> ► Georg Hochreiner, Josef Füssl, Josef Eberhardsteiner ■ <i>Austria</i>	● <i>On-wafer long-duration nano-tensile testing</i> ► Lambert Bergers, Johan Hoefnagels, Marc Geers ■ <i>Netherlands</i>	● <i>Preferentially filled foam core corrugated steel sandwich structures for improved blast performance</i> ► Murat Yazici¹, Jefferson Wright², Damien Bartin², Arun Shukla² ■ (1)<i>Turkey</i> (2)<i>United States</i>	● <i>Split Hopkinson pressure bar testing of PMI foam</i> ► John Harrigan, Elisavet Palanidi, Qingming Li ■ <i>United Kingdom</i>

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17:10	● <i>Thermomechanical analysis of rubber specimens in the crack tip zone using full-field measurements</i> ► José-Ricardo Samaca-Martinez, Xavier Balandraud, Evelyne Toussaint, Jean-Benoit Le Cam, Daniel Berghезan ■ <i>France</i>	● <i>Polymers at high stress triaxialities</i> ► Anne Serine Ognedal, Arild Clausen, Anfrid Dahlen, Odd Sture Hopperstad ■ <i>Norway</i>	● <i>Ablation approach for v and u type notches in natural fibers, exploring the mechanisms of crack propagation by μsecond camera recording and finite element simulation</i> ► Johnny Beaugrand, Sofiane Guessasma ■ <i>France</i>	● <i>Lattice deformation measurements in micropillar compression using high-resolution digital image correlation</i> ► Fabio Di Gioacchino, Bill Clegg ■ <i>United Kingdom</i>	● <i>Blast resistance of polymeric foam sandwich composites</i> ► Mark Kelly, Hari Arora, John Dear ■ <i>United Kingdom</i>	● <i>Physically and finite element based modeling of 3D polymer foam microstructure for the analysis of their mechanical behavior</i> ► Thierry Roland, Patrick Kekicheff, Christian Gauthier, Mouhamadou Dabo ■ <i>France</i>
17:30	● <i>Geometry features of cruciform specimens used for atypical experiments on a Zwick biaxial testing machine</i> ► Kseniia Mokhireva, Alexander Svistkov, Vladimir Shadrin ■ <i>Russian Federation</i>	● <i>Experimental validation of polymer melts constitutive equations using conventional and flow optical rheometers</i> ► Rudy Valette, Jean-François Agassant ■ <i>France</i>	● <i>Load direction dependency of the embedment behaviour of dowel-type fasteners in laminated veneer lumber</i> ► Michael Schweigler, Thomas K. Bader, Josef Eberhardsteiner ■ <i>Austria</i>	● <i>Use of laser doppler vibrometry to probe crack propagation at small length scales in pt-nickel aluminate bond coats</i> ► Kaustubh Venkatraman, Vikram Jayaram ■ <i>India</i>	● <i>The effect of elevated temperature on the indentation of polymer foam cored sandwich structures</i> ► Shufeng Zhang¹, Yashun Wang¹, Chunhua Zhang¹, Janice Barton², Ole Thomsen² ■ (1)<i>China</i> (2)<i>United Kingdom</i>	● <i>Dynamic behaviour of a cellular solid subjected to shock</i> ► Y.L. Sun, Qingming Li ■ <i>United Kingdom</i>

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	G1 Elastomers Chair: Prof. Jean-Benoit Le Cam	G1 Polymers 1 Chair: Dr. Noëlle Billon	G1 Wood and wood products 1 Chair: Prof. Peter Niemz	G2 Micro and nano-scale test methods 3 - small scale tests Chair: Prof. Helena Van Swygenhoven	T1 Sandwich structures Chair: Prof. Christian Berggreen	T2 Cellular materials and structures Chair: Prof. Han Zhao
17:50		• Large strain measurement of polymers subjected to uniaxial loading using stereo digital image correlation ► Marius Andersen, Arild Clausen, Odd Sture Hopperstad ■ Norway		• Differential strain gauge-A new microscale sensor ► Martin Stockmann, Ingolf Mönch, Jörn Ihlemann ■ Germany	• Optimised location and orientation of passive viscoelastic dampers for lightweight sandwich structures. ► Pierre Aumjaud, Jonathan Fieldsend, Kenneth Evans, Christopher Smith ■ United Kingdom	• Impact of scaled laminated wood specimens with energy dissipating layers ► Tiberiu Polocoser, Frank Stoeckel, Bohumil Kasal ■ Germany

19:00	Reception at Fitzwilliam museum Student mixer - Punting starts at 18:30 - Mill Lane Punting Station - Party starts 20:00 Robinson Dining Room
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Tuesday, July 08, 2014

08:00	Registration ♦ West Road Foyer
08:30	Plenary 2 (chair: Prof. Ole Thybo Thomsen) • A multidisciplinary experimental approach to microvascular self-healing composites ► Prof. Nancy R. Sottos ■ University of Illinois Urbana-Champaign ♦ West Road Concert Hall Auditorium

	♦ Robinson JCR	♦ West Road Lecture Theatre	♦ West Road Recital Room	♦ Robinson Umney Lecture Theatre	♦ Robinson Auditorium	♦ West Road Concert Hall Auditorium
	G1 Sheet metal forming Chair: Dr. Joris Degrieck	G1 Wood and wood products 2 Chair: Dr. Stefania Fortino	G2 Interferometry 1 Chair: Prof. Terry (Yuan-Fang) Chen	G2 Micro and nano-scale test methods 4 - nano-indentation Chair: Prof. Olivier Castelneau	T1 Multifunctional materials 1 Chair: Prof. Peter Ifju	T2 Metals 1 Chair: Dr. Clive R Siviour
09:20	• An investigation on the subsurface micro-cracking induced by coating process in automotive steels ► Hassan Ghadbeigi ¹ , Christophe Pinna ¹ , Steven Celotto ² ■ (1) United Kingdom (2) Netherlands	• Moisture-dependent mechanical properties of softwood and hardwood cell walls: a nanoindentation study ► Leopold Wagner, Clémence Bos, Thomas K. Bader, Josef Eberhardsteiner ■ Austria	• Micro-waveguide 3D topographic measuring by a Mirau interferometer ► Ramon Rodriguez-Vera, Maribel Juarez-Hernandez, Karim G. Hernández-Chahin ■ Mexico	• Effects of thickness on the nano-mechanical measurement of biological tissue cryosections ► Craig Williams, Helen Graham, Xuegen Zhao, Alistair Selby, Carole Maldonado-Codina, Rachel Watson, Michael Sherratt, Brian Derby ■ United Kingdom	• Magneto-mechanical characterization and constitutive description of magneto-rheological elastomers ► Tobias Pössinger, Christian Bolzmacher, Laurence Bodelot, Kostas Danas, Nicolas Triantafyllidis ■ France	• Evaluation of dynamic constitutive models for OFHC using Taylor impact tests ► Xicheng Huang, Fangju Zhang, Ruozhe Xie, Wenjun Hu ■ China

	◆ Robinson JCR	◆ West Road Lecture Theatre	◆ West Road Recital Room	◆ Robinson Umney Lecture Theatre	◆ Robinson Auditorium	◆ West Road Concert Hall Auditorium
09:40	G1 Sheet metal forming Chair: Dr. Joris Degrieck ● Identification of post-necking hardening behaviour of sheet metal: influence of the yield function. ► Sam Coppieters ¹ , Kazuhiro Ichikawa ² , Dimitri Debruyne ¹ , Toshihiko Kuwabara ² ■ (1)Belgium (2)Japan	G1 Wood and wood products 2 Chair: Dr. Stefania Fortino ● Micro-structural adhesion in bio-composite materials during their heated consolidation ► Philip Humphrey ■ United States	G2 Interferometry 1 Chair: Prof. Terry (Yuan-Fang) Chen ● Study of extraoral force delivery systems using holographic techniques ► Jaime Monteiro ¹ , Nuno Viriato ¹ , Joaquim Gomes ¹ , Maria Ponces ¹ , Laiz Cavalcanti ² , Mário Vaz ¹ ■ (1)Portugal (2)Brazil	G2 Micro and nano-scale test methods 4 - nano-indentation Chair: Prof. Olivier Castelnau ● Instrumented indentation-based studies of the residual stresses near fatigue crack-tips of an aluminum alloy subjected to single tensile overloads ► Lei Xiao, Duiyi Ye, Chuanyong Chen, Xiaoxia Yin ■ China	T1 Multifunctional materials 1 Chair: Prof. Peter Ifju ● 1D to 3D nanomechanical testing of multiphase materials ► Asa Barber ■ United Kingdom	T2 Metals 1 Chair: Dr. Clive R Siviour ● Deformation and fracture of steel projectiles during Taylor bar impact tests ► Knut Rakvåg, Tore Borvik, Odd Sture Hopperstad ■ Norway
10:00	● The influence of microstructural morphology on the failure of dual phase steel: a statistical / computational / experimental approach ► Chaowei Du, Tom De Geus, Johan Hoefnagels, Ron Peerlings, Marc Geers ■ Netherlands	● A stochastic approach for virtual tests on wood furniture ► Heba Makhlouf, Luc Chevalier, Eric Launay ■ France	● Applying the raspberry pi to digital shearography ► Dirk Findeis, Sachin Ramjee, Jasson Gryzagoridis ■ South Africa	● Characterizing the mechanical properties of shear bands in metallic glass ► Yujie Wei, Xianqi Lei ■ China	● Nanocomposite-coated open-cell foams with tunable mechanical and multifunctional properties ► Andrew Hamilton, Monika Ziminska, Jacek Korzeniewski, Nicholas Dunne ■ United Kingdom	● Study on the ballistic resistance of explosively weled multi-layer metal targets impacted by spherical fragments ► Jinxiang Wang, Nan Zhou ■ China
10:20	● Experimental study of sheet metal forming process ► Bhakti Patel, Sivakumar M. Srinivasan ■ India	● Selected physical and mechanical behaviour of european beech (Fagus sylvatica L.) ► Peter Niemz, Tomasz Ozyhar ■ Switzerland	● Calibration of quantitative shearography for use in local stiffness identification ► Filip Zastavnik, Lincy Pyl, Jun Gu, Hugo Sol, Mathias Kersemans, Wim Van Paepegem ■ Belgium	● Mechanical behavior of lithiated silicon in energy storage applications ► Pradeep Guduru, Siva Nadimpalli, Vijay Sethuraman, Michael Chon, Naba Karan ■ United States	● Microstructured composites inspired by nature ► André R. Studart ¹ , Rafael Libanori ¹ , Randall M. Erb ² ■ (1)Switzerland (2)United States	● How long should dynamic tensile specimens be ? ► Yonatan Rotbaum, Daniel Rittel ■ Israel

10:40	Coffee break ◆ Robinson Marquee and West Road Foyer				
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	◆ West Road Recital Room	◆ Robinson Umney Lecture Theatre	◆ Robinson JCR	◆ West Road Lecture Theatre	◆ Robinson Auditorium	◆ West Road Concert Hall Auditorium
11:10	G2 Interferometry 2 Chair: Prof. Ramon Rodriguez-Vera ● Phase retrieval using compressive sensing in digital holography ► Deepan Balakrishnan, Chenggen Quan, Cho Jui Tay ■ Singapore	G2 Moiré and grid-based techniques 1 Chair: Prof. Yoshiharu Morimoto ● 3D shape measurement technique using a printed line pattern ► Frederik Allaey, Geert Luyckx, Wim Van Paepegem, Ljubomir Jovanov, Wilfried Philips ■ Belgium	G2 Thermomechanics Chair: Dr. Albert Wong ● Effect of surface coating on the accuracy of thermoelastic stress analysis ► Hirotugu Inoue, Shin Yanagisawa, Yousuke Irie ■ Japan	Structural testing 1 Chair: Dr. Evelyne Toussaint ● Component testing and analysis of wind turbine blade root bushings with multi-axial loading ► Troels Vestergaard Lukassen, Christian Berggreen ■ Denmark	T1 Thermomechanical behaviour Chair: Prof. Wesley Cantwell ● Effects of fabric based unbalances on process induced distortions of composite materials ► Christian Brauner, Axel Herrmann ■ Germany	T2 Metals 2 Chair: Prof. Pengwan Chen ● On the way to solve the "system ringing" effect for servo-hydraulic tensile machine by means of stress wave analysis ► Jie Li, Xiangfan Fang ■ Germany
11:30	● Investigation of residual thermal stress in 2D aramid braid composite using moiré interferometry and hole-drilling technique ► Lifu Wu, Huimin Xie, Jianguo Zhu ■ China	● Sampling moire used with X-ray imaging to measure deformation within a molten-salt battery ► Philip Reu ■ United States	● Fatigue limit estimation based on dissipated energy measurement for surface modified materials ► Tsuyoshi Inagawa, Daiki Shiozawa, Atsushi Akai, Ken Inaba, Takahide Sakagami ■ Japan	● The effect of the optimal linear quadratic weighted matrices on the optimal configuration of actuators for active vibration control ► Ali Daraji ¹ , Jack Hale ² ■ (1)Iraq (2)United Kingdom	● Key issues in the fire behaviour of aerospace composites under compressive load ► Geoff Gibson ■ United Kingdom	● Temperature effect on dynamic tensile mechanical behavior of V-5Cr-5Ti alloy ► Fangju Zhang, Xicheng Huang, Wenjun Hu ■ China

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	G2 Interferometry 2 Chair: Prof. Ramon Rodriguez-Vera	G2 Moiré and grid-based techniques 1 Chair: Prof. Yoshiharu Morimoto	G2 Thermomechanics Chair: Dr. Albert Wong	Structural testing 1 Chair: Dr. Evelyne Toussaint	T1 Thermomechanical behaviour Chair: Prof. Wesley Cantwell	T2 Metals 2 Chair: Prof. Pengwan Chen
11:50	- A two-step method for the grating characterization ► <u>Xianglu Dai</u>, Huimin Xie ■ <i>China</i>	- Accurate and low-cost displacement measurement of space structures by utilizing the sampling moire method ► <u>Shien Ri</u>, Hiroshi Tsuda, Takeshi Yoshida, Takashi Umebayashi, Akiyoshi Sato, Eiichi Sato ■ <i>Japan</i>	- Experimental study of relationship between dissipated energy and fatigue damage initiation based on observation of slip band by atomic force microscope ► Daiki Shiozawa, Ken Inaba, Atsushi Akai, Takahide Sakagami ■ <i>Japan</i>	- Buckling modal test of stiffened plates under shear load by full-field digital optical method ► <u>Juan Zhang</u> ■ <i>China</i>	- Mechanical behavior and constitutive model of particulate-reinforced titanium matrix composites at elevated temperatures ► <u>Weidong Song</u>, Lijium Xiao, Huiping Tang ■ <i>China</i>	- Mesoscopic mechanism of dynamic deformation of vanadium alloy by electric beam melting method ► Ruoze Xie, Wenjun Hu, Fangju Zhang, Xiaoxia Pan, Jie Feng, Xicheng Huang ■ <i>China</i>
12:10		- In-plane displacement analysis using moiré interferometry aided by empirical mode decomposition based algorithm for crossed fringe pattern processing ► <u>Maciej Trusiak</u>, Krzysztof Patorski, Krzysztof Pokorski ■ <i>Poland</i>	- Effect of plastic deformation on the thermoelastic constant and opportunity for residual stress assessment ► <u>Geoffrey Howell</u>, Andrew Robinson, Janice Barton ■ <i>United Kingdom</i>	- Prestressed concrete structures : cracking analysis and strand behavior ► <u>Alexandre Michon</u>, Farid Benboudjema, Yves Berthaud, Georges Nahas, Pierre Wyniecki, Aghiad Khadour ■ <i>France</i>	- Influence of Al2O3 and CuO nanoparticles on the thermal properties of polyester and epoxy based nanocomposites ► <u>Juliana Souza</u>, João Reis ■ <i>Brazil</i>	- Grain size influence on dynamic compressive deformation of AZ31 magnesium alloy ► <u>Xia Yu</u>, Yulong Li, Tao Suo ■ <i>China</i>
12:30			- Thermal stress analysis applied to chalcogenide glass ► <u>Jean-Benoit Le Cam</u>, Eric Robin, Xavier Balandraud, Evelyne Toussaint, Laurent Brilland ■ <i>France</i>	- Dynamic and static behaviour of side beam set for composite boogie ► <u>Jan Chvoján</u>¹, Jaroslav Václavík¹, Rayner Mayer² ■ (1)<i>Czech Republic</i> (2)<i>United Kingdom</i>		- Identification of behavior laws of materials by micro-impact tests ► <u>Halim Al Baida</u>, Guillaume Kermouche, Cecile Langlade ■ <i>France</i>

12:50	Lunch ◆ Robinson Dining Room
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	G1 Cellular materials Chair: Prof. Frédéric Jacquemin	G2 Digital Image Correlation 1 Chair: Dr. Wei Tong	G2 Moiré and grid-based techniques 2 Chair: Prof. Fu-Pen Chiang	Structural testing 2 Chair: Prof. Danny Van Hemelrijck	T1 Fatigue and fracture 2 Chair: Prof. Stepan Lomov	T2 Metals 3 Chair: Prof. Ares Rosakis
14:00	3D observation of the hygroexpansion of wood fibres ► <u>Mamadou Toungara</u>¹, Pierre Latil¹, Pierre J. J. Dumont¹, Sabine Rolland Du Roscat¹, Laurent Orgeas¹, Thomas Joffre², Raphaël Passas¹ ■ (1)<i>France</i> (2)<i>Sweden</i>	- Structured-light based 3D-DIC measurements ► <u>Volker Ludwikowski</u>¹, Richard K. Fruehmann², Bernhard Wieneke¹ ■ (1)<i>Germany</i> (2)<i>United Kingdom</i>	- Some new cameras using moire and grid methods for measuring shape and deformation ► <u>Yoshiharu Morimoto</u>, Akihiro Masaya, Akifumi Takagi ■ <i>Japan</i>	- Critical velocity measurement for fluid-elastic instability of plate-type research reactor fuel ► Kanghee Lee, Heungseok Kang, Jungsik Yim ■ <i>Korea, Republic Of</i>	- A coupled approach for analyzing the damage investigation in carbon fibre reinforced plastic submitted to constant amplitude loading using in situ computer tomography and energy-based numerical fatigue analysis. ► Peter Wagner¹, Oliver Schwarzhaupt¹, Michael May¹, Wilfried Eichlseder² ■ (1)<i>Germany</i> (2)<i>Austria</i>	- High speed tensile properties and measurement uncertainty of auto-body steel sheets at intermediate strain rates ► Min Kuk Choi, Sehwan Jeong, Hoon Huh, Chang Geun Kim, Kyun Shik Chae ■ <i>Korea, Republic Of</i>
14:20	- X-ray microtomographic observations of deformation and failure process in selectively laser melted microlattice structures ► <u>Peifeng Li</u>¹, Nik Petrinic², Clive R Siviour² ■ (1)<i>Singapore</i> (2)<i>United Kingdom</i>	- An adaptive DIC algorithm for measuring small strains in composites ► <u>Lukas Wittevrongel</u>, Stepan Lomov, Dimitri Debruyne, Pascal Lava ■ <i>Belgium</i>	- Strain distribution measurements in the microstructure of hot damaged steels ► <u>Min Fung Kiu</u>, Christophe Pinna, Didier Farrugia ■ <i>United Kingdom</i>	- The effect of artificial aging on the aircraft alloy 2024 tensile mechanical properties degradation due to exfoliation corrosion exposure ► <u>Nikolaos Alexopoulos</u>, Zaneta Velonaki, Stavros Kourkoulis, Constantinos Stergiou, Eleftherios Telis ■ <i>Greece</i>	- Influence of the thin ply size on mode I and mode II energy release rate of unidirectional carbon epoxy laminates ► Guillaume Frossard, Joël Cugnoni, Thomas Gmür, Ioannis Botsis ■ <i>Switzerland</i>	- Scaling law for size distribution of ejecta due to hypervelocity impact ► <u>Masahiro Nishida</u>, Koichi Hayashi, Kenta Nozaki, Naoto Miyokawa, Kazuki Toya, Sunao Hasegawa ■ <i>Japan</i>

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14:40	- Compressive deformation behaviour of aluminium foam and bending property of aluminium foam sandwich panels ► <u>Fujun Yang</u>, Xiaoyuan He, Yaqing Yao ■ <i>China</i>	- Coupled use of DIC and nonlinear FEA for the mechanical analysis of shear-critical prestressed concrete beams ► <u>Kristof De Wilder</u>, Yueqi Wang, Guido De Roeck, Lucie Vandewalle, Dimitri Debruyne, Pascal Lava ■ <i>Belgium</i>	- Fast and accurate displacement distribution measurement method by utilizing arbitrary repeated pattern ► <u>Satoshi Hayashi</u>, Shien Ri, Hiroshi Tsuda, Shinji Ogihara ■ <i>Japan</i>	- Multi-axial real-time hybrid testing with high-precision control ► <u>Jacob Høgh</u> ■ <i>Denmark</i>	- Damage evolution in natural composite dynamic fatigue and fracture ► <u>Leslie Lamberson</u>, Steven Pagano ■ <i>United States</i>	- Strain rate sensitivity of metallic materials in tension and compression. ► <u>Michael Cox</u>, Alexander Worley, Paul Hooper, John Dear ■ <i>United Kingdom</i>
15:00	- Mechanical behaviour of structural sandwich panels with a cellular grid ► <u>Marin Sandu</u>, Adriana Sandu, Florian Vladulescu, Dan Constantinescu, Dragos Apostol ■ <i>Romania</i>	- Biaxial behavior tests on Inco718DA cross-shaped samples using DIC and XRD ► <u>Vasile-Ionut Prisacari</u>, Martin Poncelet, Hubert Olivier, Rodrigue Desmorat, Arnaud Longuet, Alexandre Seror ■ <i>France</i>	- Fringe projection technique at large incident angle using the light-source-stepping method for shape measurement ► <u>Kentarou Kaneko</u>, Motoharu Fujigaki, Yorinobu Murata ■ <i>Japan</i>	- Bridging the scales from observed deformation characteristics of aluminium and composite crash absorbers in drop tower experiments to full vehicle crash tests ► <u>Stephan Noessner</u>, Gian Antonio D'Addetta, Heiko Freienstein, Matthias Kroeger ■ <i>Germany</i>	- Intralaminar mode I fracture and bridging of a unidirectional carbon/epoxy composite ► <u>Georgios Pappas</u>, Ioannis Botsis ■ <i>Switzerland</i>	- Dynamic crushing behaviour of deep-drawn combined geometry of AISI 304L stainless steel shells ► <u>Alper Tasdemirci</u>, Selim Sahin, Ali Kivanc Turan, Ali Kara, Mustafa Guden ■ <i>Turkey</i>

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15:20	- Behavior of combined aluminum honeycomb under out-of-plane compressive loading and analysis of shock-resisting property ► <u>Xuejun Wen</u>, Fangyun Lu, Yao Shujian, Chen Rong ■ <i>China</i>	- Displacements measurements using CAD-based stereo-correlation with meshes ► <u>John-Eric Dufour</u>, Benoit Beaubier, François Hild, Stéphane Roux ■ <i>France</i>	- Single frame high resolution Fourier fringe analysis ► <u>Paulo Tavares</u>, Mário Vaz ■ <i>Portugal</i>	- Evolution of ferritic iron resistance through silicon content ► <u>Akram Alhussein</u> ■ <i>France</i>	- Damage evolution at microscopic scale in off-axis laminates under fatigue loading ► <u>Marino Quaresimin</u>, Paolo Andrea Carraro ■ <i>Italy</i>	- Local measurements of stress-strain behaviour of ductile materials at elevated temperature and strain rates ► <u>Vincent Vilamosa</u>, Arild Clausen, Odd Sture Hopperstad, Tore Borvik ■ <i>Norway</i>
15:40	- Static and impact behaviour of a wing leading edge configuration with a micro lattice core ► <u>Matthew Smith</u>, Robert Mines, Wesley Cantwell ■ <i>United Kingdom</i>	- Consistency of strain fields and thickness reduction in thermoforming experiments through 3D DIC ► <u>Bart Van Mieghem</u>, Jan Ivens, Albert Van Bael, Dimitri Debruyne, Pascal Lava ■ <i>Belgium</i>	- How noise propagates from camera sensor to displacement and strain maps obtained with the grid method ► <u>Michel Grédiac</u>, Frederic Sur ■ <i>France</i>	- Study of vibrations in a motorcycle frame ► <u>Pedro Paiva</u>, Mário Vaz, Hernâni Lopes ■ <i>Portugal</i>		- Investigation on constitutive models characterizing different metals over wide temperature and strain rate ranges ► <u>Zejian Xu</u>, Fenglei Huang ■ <i>China</i>

16:00	Coffee break	◆ Robinson Marquee and West Road Foyer
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	◆ Robinson Umney Lecture Theatre	◆ Robinson JCR	◆ West Road Recital Room	◆ West Road Lecture Theatre	◆ Robinson Auditorium	◆ West Road Concert Hall Auditorium
	G2 Moiré and grid-based techniques 3 Chair: Prof. Mário Vaz	G2 Applications of novel sensors 1 Chair: Prof. Yu-Lung Lo	G3 Identification from full-field measurements 1 Chair: Prof. Michel Grédiac	Structural testing 3 Chair: Dr. Nicholas Tsouvalis	T1 Optical sensors Chair: Prof. Nancy R. Sottos	T2 High speed imaging 1 Chair: Dr. Philip Reu
16:30	● Fabrication of micro/submicro grids without resist on adhesive polymers based on UV nanoimprint lithography ► <u>Qinghua Wang</u>, Hiroshi Tsuda, Satoshi Kishimoto, Yoshihisa Tanaka, Yutaka Kagawa ■ <i>Japan</i>	● Real-time measurement of Stokes parameters by polarization camera - Invited talk ► Yukitoshi Otani, Shuhei Shibata, Takashi Onuma ■ <i>Japan</i>	● Identification of anisotropic elasto-plastic and damage behaviour from arcan tests instrumented with digital image correlation ► <u>Maxime Winter</u>, Karine Lavernhe-Taillard, Jean-Pierre Cordebois, René Billardon ■ <i>France</i>	● Experimental characterization of cover-plate steel bolted connections using the grid method ► <u>Evelyne Toussaint</u>, Abdelhamid Bouchair, Michel Grédiac ■ <i>France</i>	● Scaling effects assessments on mode I delamination of unidirectional carbon fiber reinforced laminates ► <u>Ebrahim Farmand-Ashtiani</u>, Joël Cugnoni, Ioannis Botsis ■ <i>Switzerland</i>	● High-speed imaging of the dynamics of an oscillating bubble in a narrow gap ► <u>Fahad Ibn Azam</u>, Badarınath Karri, Siew-Wan Ohl, Evert Klaseboer, <u>Boo Cheong Khoo</u> ■ <i>Singapore</i>
16:50	● Structural deformation measurement using weighting phase analysis method ► <u>Takaaki Yoshikawa</u>, Daiki Tomita, Motoharu Fujigaki, Yōrinobu Murata ■ <i>Japan</i>	● Quantitative relationship of damage-induced magnetization on the plastic deformation for X80 steel ► <u>Qiang Wan</u>, Li Ming Wei, Yun Fei Li, Dong Jia ■ <i>China</i>	● An integrated identification method applied to glassy polymer characterization ► <u>Jan Negers¹</u>, Johan Hoefnagels¹, Marc Geers¹, François Hild², Stéphane Roux² ■ (1) <i>Netherlands</i> (2) <i>France</i>	● Bi-axial sub-structural testing of a wind turbine blade trailing edge ► <u>Mehrtash Manouchehr</u>, Christian Berggreen ■ <i>Denmark</i>	● Investigation of strain development during hardening of a biocement using a fiber Bragg grating ► <u>Alexios Bimis</u>, Dimitris Karalekas ■ <i>Greece</i>	● Full field measurement of ultra fast deformation based on digital image correlation method ► <u>Tao Suo</u>, Shaopeng Ma, Xiangfu Zeng, Busheng Zhang ■ <i>China</i>
17:10	● Model-based sensor positioning and measurement in a multi-scale inspection system ► <u>Marc Gronle</u>, Florian Mauch, <u>Wolfram Lyda</u>, Wolfgang Osten ■ <i>Germany</i>	● Evaluation of pressure mapping system for testing medical devices ► <u>Rébecca Bonnaire</u>, Marion Verhaeghe, Jérôme Molimard, Paul Calmels, Reynald Convert ■ <i>France</i>	● Inverse sheet steel material parameter identification via FEMU and DIC using biaxial testing ► <u>Stefan Schmaltz</u>, Kai Willner ■ <i>Germany</i>	● Behaviour of a thermoplastic composite automotive wishbone under mechanical test cases ► <u>Patrick Lapeyronnie</u>, Pascal Paulmier, Cedric Julien, Christian Fagiano, Agnes Exertier, Laurent Rota ■ <i>France</i>	● Optical fiber coating optimization tool for composite embedded health monitoring purposes through a novel transfer matrix method ► <u>Nicolas Lammens</u>, Geert Luyckx, Eli Voet, Wim Van Paepegem, Joris Degrieck ■ <i>Belgium</i>	● Application of high-speed DIC in dynamic deformation and failure of materials ► <u>Pengwan Chen</u>, Jingjing Chen, Han Liu, Baoqiao Guo, Haibo Liu, Bo Wang, Kaida Dai ■ <i>China</i>

	◆ Robinson Umney Lecture Theatre	◆ Robinson JCR	◆ West Road Recital Room	◆ West Road Lecture Theatre	◆ Robinson Auditorium	◆ West Road Concert Hall Auditorium
	G2 Moiré and grid-based techniques 3 Chair: Prof. Mário Vaz	G2 Applications of novel sensors 1 Chair: Prof. Yu-Lung Lo	G3 Identification from full-field measurements 1 Chair: Prof. Michel Grédiac	Structural testing 3 Chair: Dr. Nicholas Tsouvalis	T1 Optical sensors Chair: Prof. Nancy R. Sottos	T2 High speed imaging 1 Chair: Dr. Philip Reu
17:30	● Impact measurement using fringe projection and digital image correlation ► <u>Luis Felipe-Sesé¹</u>, Francisco Alberto Díaz¹, Siegmund Philip¹, Eann Patterson² ■ (1) <i>Spain</i> (2) <i>United Kingdom</i>	● Synthesis and measurement of linear birefringence and dichroism in a water-based ferrofluid ► <u>Jing-Fung Lin</u>, Chun-Chin Tsai, Meng-Zhe Lee ■ <i>Taiwan</i>	● Advanced 2D and 3D digital image correlation of the full field displacements of cracks and defects ► <u>Selim Barhl¹</u>, David Hollis¹, Bernhard Wieneke², Mahmoud Mostafavi¹, James Marrow¹ ■ (1) <i>United Kingdom</i> (2) <i>United States</i>	● Sub-structural experimental investigations of the effects of torsional stiffeners in wind turbine blades ► <u>Christian Berggreen¹</u>, Andrei Buliga¹, <u>Umberto Vantini²</u> ■ (1) <i>Denmark</i> (2) <i>Italy</i>	● Validation and calibration of FBG sensors for an SHM program ► <u>Mathhieu Mulle¹</u>, Gilles Lubineau², Samuel Durand², Didier Falandry², Philippe Olivier² ■ (1) <i>Saudi Arabia</i> (2) <i>France</i>	● Analytical constitutive modeling at high strain rate by high speed imaging ► <u>Marco Sasso</u>, Edoardo Mancini, Gianluca Chiappini, <u>Marco Rossi</u> ■ <i>Italy</i>
17:50	● Interlaminar tension testing of composite materials ► <u>Peter Ifju¹</u>, Satoru Yoneyama², Sean Rohde¹ ■ (1) <i>United States</i> (2) <i>Japan</i>	● Structure design, dynamic testing and analysis on the micro piezoelectric vacuum gauge ► <u>Yu-Ting Wang</u>, Kuan-Chen Lin, Chi-Jia Tong, Fan-Chun Hsieh ■ <i>Taiwan</i>	● On the interactions between full-field measurements errors and identification ► <u>Michele Badaloni¹</u>, Gianluca Chiappini¹, Dimitri Debruyne², Pascal Lava², Marco Rossi¹ ■ (1) <i>Italy</i> (2) <i>Belgium</i>	● Calibration of fem model of graded metal plate arches by means of digital image correlation ► <u>Krzysztof Malowany</u>, Artur Piekarczyk, Przemysław Więch, Małgorzata Kujawińska, Paweł Skrzypczak, <u>Marcin Malesa</u> ■ <i>Poland</i>		

18:30	EuraSEM general assembly ◆ Robinson Auditorium				
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Wednesday, July 09, 2014

08:00	Registration ♦ West Road Foyer				
08:30	Plenary 3 (chair: Prof. Janice Barton) ● Seeing stresses through the thermoelastic lens – a retrospective and prospective from an Australian viewpoint ▶ Dr. Albert K. Wong ■ Defence Science & Technology Organisation ♦ West Road Concert Hall Auditorium				
	♦ Robinson Umney Lecture Theatre	♦ West Road Recital Room	♦ Robinson JCR	♦ Robinson Auditorium	♦ West Road Concert Hall Auditorium
	G1 Fracture, damage and durability of concrete 1 Chair: Prof. Gonzalo Ruiz	G3 Industrial applications 2 Chair: Dr. John Considine	G3 Testing techniques Chair: Dr. Sven Bossuyt	T1 Low cost materials 1 Chair: Dr. Mark Battley	T2 High speed imaging 2 Chair: Dr. Leslie Lamberson
09:20	● Use of acoustic emission to characterize matrix cracking and interlaminar shear in textile reinforced mortars ▶ <u>Dimitrios Aggelis</u> , Johan Blom, Micheal Elkadi, Jan Wastiels ■ <i>Belgium</i>	● Modeling and experimental validations on residual stress evolution of PECVD films during rapid thermal annealing ▶ Yin-Geng Tsai, Kuo-Shen Chen ■ <i>Taiwan</i>	● Dynamic characterisation of high resistance fibres ▶ Simone Caron ¹ , Vishvendra Bhanu ² , Andrea De Marchi ¹ , Rosario Ceravolo ¹ , Cecilia Surace ¹ ■ (1) <i>Italy</i> (2) <i>India</i>	● Study on the minimum pressure required to minimise porosity in out-of-autoclave processes with high heating rate ▶ Kishen Rengaraj, Thomas Turner, Lee Harper, Nick Warrior ■ <i>United Kingdom</i>	● Imaging ultrasonic lamb waves using deflectometry ▶ Cédric Devivier, Peter Glynn-Jones, Fabrice Pierron, Martyn Hill ■ <i>United Kingdom</i>
					♦ West Road Lecture Theatre T3 Magnetic Resonance Elastography Chair: Dr. Pablo Ruiz
					● Effects of quasistatic internal pressure loads on a multi-layered pressure vessel phantom in MR elastography ▶ Spencer Brinker, Steven Kearney, Thomas Royston, Dieter Klatt ■ <i>United States</i>

	◆ Robinson Umney Lecture Theatre	◆ West Road Recital Room	◆ Robinson JCR	◆ Robinson Auditorium	◆ West Road Concert Hall Auditorium	◆ West Road Lecture Theatre
	G1 Fracture, damage and durability of concrete 1 Chair: Prof. Gonzalo Ruiz	G3 Industrial applications 2 Chair: Dr. John Considine	G3 Testing techniques Chair: Dr. Sven Bossuyt	T1 Low cost materials 1 Chair: Dr. Mark Battley	T2 High speed imaging 2 Chair: Dr. Leslie Lamberson	T3 Magnetic Resonance Elastography Chair: Dr. Pablo Ruiz
09:40	● Neutron and X-ray imaging to characterize crystallization-induced deformations in porous media ► Hannelore Derluyn¹, Peter Vontobel², Jan Devanckele¹, Iwan Jerjen², Dominique Derome², Veerle Cnudde¹, Jan Carmeliet² ■ (1) <i>Belgium</i> (2) <i>Switzerland</i>	● An improved grid image processing method based on windowed Fourier transform for strain measurement ► Jiancheng Xu, Jianxin Gao, Yang Yang ■ <i>United Kingdom</i>	● Mapping of stress distribution along the fibre in FRPs using carbon-based nanomaterials ► Bin Hao, Peng-Cheng Ma ■ <i>China</i>	● Nano-reinforcement of resin infused carbon fibre laminates using carbon nano-tubes and graphene ► Mark Eaton, Wayne Ayre, Martin Williams, Sam Evans, Rhys Pullin ■ <i>United Kingdom</i>	● A digital gradient sensor for investigating dynamic fracture of transparent layered materials ► Balamurugan Sundaram, Hareesh Tippur ■ <i>United States</i>	● Computing poroelastic and viscoelastic mechanical properties of tissue using MR elastography ► Matthew McGarry, Curtis Johnson, Brad Sutton, John Georgiadis, John Weaver, Keith Paulsen ■ <i>United States</i>
10:00	● Crack velocities in SFRC at a wide range of loading rates ► Xiaoxin Zhang, Adris Mohamed Abd Elazim, Gonzalo Ruiz ■ <i>Spain</i>	● Multi-step phase-shifting functions in white-light interferometer ► Wei-Chung Wang, Ming-Hsing Sheng, Chi-Hung Hwang ■ <i>Taiwan</i>	● Measuring strain and deflections of moving machine parts by a dual-system magnetostrictive sensor ► Pavel Procházka, František Vaněk ■ <i>Czech Republic</i>	● Effect of delamination on the bending response of composite materials ► Eris Skampis, Vassilios Karatzas, Nicholas Tsouvalis ■ <i>Greece</i>	● A novel procedure to identify the strain rate dependence of the in-plane shear modulus of composites using inertial impact tests ► Haibin Zhu, Fabrice Pierron, Clive R Siviour ■ <i>United Kingdom</i>	● Three-dimensional strains and wave propagation patterns in the human brain via high-resolution magnetic resonance elastography ► Ruth Okamoto, Curtis Johnson, Erik Clayton, Brad Sutton, John Georgiadis, Philip Bayly ■ <i>United States</i>

10:20	Coffee break ◆ Robinson Marquee and West Road Foyer					
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	◆ West Road Lecture Theatre	◆ Robinson JCR	◆ West Road Recital Room	◆ Robinson Umney Lecture Theatre	◆ Robinson Auditorium	◆ West Road Concert Hall Auditorium
	G1 Wood and wood products 3 Chair: Prof. Josef Eberhardsteiner	G2 Acoustic emission Chair: Dr. Rhys Pullin	G3 Manufacturing processes Chair: Prof. Christopher Smith	G3 Residual stress 1 Chair: Prof. Chris Truman	T1 Marine applications and FSI Chair: Prof. Geoff Gibson	T2 Shear bands, localization Chair: Prof. Daniel Rittel
10:50	● Empirical study of the mechanical behaviour of dowel-type joints with expansive kits in timber structures ► Jose G. Fueyo, Jose Antonio Cabezas, Manuel Dominguez ■ <i>Spain</i>	● Acoustic emission source localization in bearing tests of fiber reinforced polymers by neural networks ► Markus Sause, Sinan Kalafat, Andreea-Manuela Zelenyak, Birte Hoeck, Siegfried Horn ■ <i>Germany</i>	● An innovative gleeble electrical upsetting system for turbine blade preforming: experimental and numerical study ► Shouhua Chen, Fakir Omar, Liliang Wang, Jianguo Lin, John Dear ■ <i>United Kingdom</i>	● Time transient validation of residual stress prediction models for solution heat treating aluminium alloys ► David Tanner, Jereny Robinson ■ <i>Ireland</i>	● Structural responses of composite panels with complex loads, boundary conditions and geometry ► Mark Battley, Tom Allen ■ <i>New Zealand</i>	● On the spacing of spontaneous adiabatic shear bands in collapsing thick-walled cylinders ► Zev Lovinger, Zvi Rosenberg, Daniel Rittel ■ <i>Israel</i>
11:10	● The effects of moisture and temperature on the mechanical response of cellulose-based materials: from paper to pressboard ► Eric Linvill, Denny Tjahjanto, Sören Östlund ■ <i>Sweden</i>	● Optimisation of acoustic emission sensor positioning on aerospace structures using 3D scanning laser vibrometry ► Ryan Marks, Karen Holford, Luiz Kawashita, Rhys Pullin, Carol Featherston, Alastair Clarke ■ <i>United Kingdom</i>	● In-situ monitoring of strain build up and temperature in a 3D polymer printing process ► Antreas Kartaros, Dimitris Karalekas ■ <i>Greece</i>	● Resolving the anomalies in XRD and hole drilling near-surface residual stress measurements in stainless and high strength steels ► Agnieszka Ratzke, Jerry Lord, Tony Fry ■ <i>United Kingdom</i>	● Durability of sustainable composites in ship design for enhanced environmental performance: a multiscale approach ► Agnieszka Dzielendziak, James Blake, Alan Chambers, Robert Raja ■ <i>United Kingdom</i>	● Competition between dynamic recrystallization and thermal softening effects in dynamic necking ► Jose Antonio Rodriguez-Martinez¹, Guadalupe Vadillo¹, Ramon Zaera¹, Jose Fernandez-Saez¹, Daniel Rittel² ■ (1) <i>Spain</i> (2) <i>Israel</i>
11:30	● Scratch tests of peg-impregnated samples of green wood ► Stefania Fortino¹, Lauri Salminen¹, Jari Sirviö¹, Jarkko Metsäjoki¹, Helena Ronkainen¹, Ingela Bjurhager² ■ (1) <i>Finland</i> (2) <i>Sweden</i>	● Damage assessment of rolling element bearings using acoustic emission ► Aaron Cockerill, Alastair Clarke, Karen Holford, Tim Bradshaw, Phillip Cole, Rhys Pullin ■ <i>United Kingdom</i>	● Experimental validation of shot velocities in discrete numerical simulations of ultrasonic shot peening ► Cecile Nouguiet-Lehon, Thomas Rousseau, Hassan Zabouani, Dominique Hertz, Philippe Gilles, Thierry Hoc ■ <i>France</i>	● Sensitivity analysis of integrated digital image correlation approach for residual stress measurement ► Antonio Baldi, Filippo Bertolino, Francesco Ginesu ■ <i>Italy</i>	● Experimental investigation of structural material failure under high loading rate ► Patrice Longère, Olivier Cherrier, Thierry Millot, Didier Capdeville ■ <i>France</i>	

12:00	<i>Exhibitor presentations</i> ♦ RED SPOT: Robinson Auditorium – GREEN SPOT: West Road Concert Hall Auditorium
12:30	<i>Lunch and exhibition</i> ♦ RED SPOT: Robinson Marquee – GREEN SPOT: West Road Foyer
14:00	BSSM Young Stress Analyst Competition Chair: Dr. Simon Quinn ♦ West Road Concert Hall Auditorium ● Dislocation mediated hardening and relaxation in nanocrystalline palladium films revealed by on-chip HRTEM in-situ nano mechanical testing ▶ Mr. Behnam Amin-Ahmadi ■ <i>University of Antwerp</i> ● Measuring Dynamic Inter-Particle Force Transmission in Opaque Granular Materials ▶ Mr. Ryan Hurley ■ <i>California Institute of Technology</i> ● Validation of a modal frequency response model using Pulsed Laser DIC and image decomposition ▶ Mr. Christopher Sebastian ■ <i>University of Liverpool</i> ● Dynamic Response of Hierarchical Materials ▶ Mr. Ramathasan Thevamaran ■ <i>California Institute of Technology</i> ● Optical metrology with Hilbert-Huang fringe pattern analysis for experimental mechanics ▶ Mr. Maciej Trusiak ■ <i>Warsaw University of Technology</i> ● P-Adaptivity in Digital Image Correlation ▶ Mr. Lukas Wittevrongel ■ <i>University of Leuven Campus Ghent</i>
15:30	Fylde Electronics BSSM Best Paper in Strain (chair: Dr. Robert Mines) ● Three-dimensional displacement and shape measurement with a diffraction-assisted grid method ▶ Mr. Alexandros Rosakis ■ <i>Brown University</i> ♦ West Road Concert Hall Auditorium
16:00	<i>Coffee break</i> ♦ Robinson Marquee and West Road Foyer

	♦ West Road Recital Room	♦ Robinson JCR	♦ West Road Lecture Theatre	♦ Robinson Umney Lecture Theatre	♦ Robinson Auditorium	♦ West Road Concert Hall Auditorium
	G1 Glass and brittle materials 1 Chair: Prof. Jean-Christophe Sangleboeuf ● Slow cracks in brittle crystals ▶ Dov Sherman ■ <i>Israel</i>	G1 Fracture, damage and durability of concrete 2 Chair: Dr. Xiaoxin Zhang ● Detection of early age phenomena and identification of fracture characteristics in a concrete nuclear waste container using combined nondestructive techniques ▶ Sokratis Iliopoulos ■ <i>Belgium</i>	G1 Rock and soil mechanics 1 Chair: Dr. Gioacchino Viggiani ● Deformation mechanisms in experimentally deformed claystones from geological underground laboratories (boom and callovo-oxfordian clays): first results ▶ Guillaume Desbois¹, Janos Urai¹, Nadine Hoehne¹, Pierre Bésuelle², Ben Laurich¹, Sohrab Noorsalehi-Garakani¹, Gioacchino Viggiani² ■ (1) <i>Germany</i> (2) <i>France</i>	G3 Residual stress 2 Chair: Dr. Jeremy Robinson ● A novel method for determining superficial residual stress based on spherical indentation ▶ Lei Shen, Yuming He, Dabiao Liu, Bo Zhang, Zhipeng Gan ■ <i>China</i>	T1 High strain rate Chair: Prof. Ramon Zaera ● The influence of textile architecture on the temperature and strain-rate dependent material behaviour of CFRP ▶ Ralph Bochynek, Werner Hufenbach, Albert Langkamp ■ <i>Germany</i>	T2 Polymers 1 Chair: Prof. Arild Clausen ● Experimental behaviour, damage and failure of a filled semi-crystalline polymer on a large strain rate range. ▶ Franck Lauro¹, Romain Balieu¹, Bruno Bennani¹, Gregory Haugou¹, Tsukatada Matsumoto², Ernesto Mottola² ■ (1) <i>France</i> (2) <i>Belgium</i>
16:50	● Crack healing in a borosilicate glass ▶ Véronique Doquet, Neji Ben Ali ■ <i>France</i>	● An X-ray tomography study of the interfacial zone in concrete ▶ Lauren Flanders, Eric Landis ■ <i>United States</i>	● An experimental investigation on the deformation of Fontainebleau sandstone ▶ Joana Fonseca¹, Zeynep Karatza², Pierre Bésuelle², Gioacchino Viggiani² ■ (1) <i>United Kingdom</i> (2) <i>France</i>	● Determination of deformation mechanism in an alsi alloys using neutron diffraction and 3D synchrotron tomography ▶ Michael Schöbel, Georg Baumgartner, Stefan Gerth, Michael Hofmann ■ <i>Germany</i>	● Direct tensile behavior of ultra-high-performance fiber-reinforced concrete under impact ▶ Dong Joo Kim¹, Ngoc Thanh Tran¹, Tuan Kiet Tran² ■ (1) <i>Korea, Republic Of</i> (2) <i>Viet Nam</i>	● The virtual fields method to elastomeric materials under dynamic loading ▶ Sung-Ho Yoon, Clive R Siviour ■ <i>United Kingdom</i>

	◆ West Road Recital Room	◆ Robinson JCR	◆ West Road Lecture Theatre	◆ Robinson Umney Lecture Theatre	◆ Robinson Auditorium	◆ West Road Concert Hall Auditorium
	G1 Glass and brittle materials 1 Chair: Prof. Jean-Christophe Sangleboeuf	G1 Fracture, damage and durability of concrete 2 Chair: Dr. Xiaoxin Zhang	G1 Rock and soil mechanics 1 Chair: Dr. Gioacchino Viggiani	G3 Residual stress 2 Chair: Dr. Jeremy Robinson	T1 High strain rate Chair: Prof. Ramon Zaera	T2 Polymers 1 Chair: Prof. Arild Clausen
17:10	● Impact resistance of laminated glass transparencies ► <u>Yi Wang</u>¹, Xiaowen Zhang², Liangbao Jiang², Iman Mohagheghian¹, Hari Arora¹, John Dear¹ ■ (1) <i>United Kingdom</i> (2) <i>China</i>	● Testing of anchorage plates with welded ribbed steel bars embedded in precast concrete elements ► Rocio Porras, Jacinto Carmona, Gonzalo Ruiz, Xiaoxin Zhang ■ <i>Spain</i>	● Characterization of strain localization in a porous rock in plane strain conditions using a true triaxial apparatus ► Patrizia Lanatà, Pierre Bésuelle, Gioacchino Viggiani, Anne-Marie Boullier ■ <i>France</i>	● Numerical analysis of electron beam welding of P91 steel plates ► Kiranmayi Abburivenkata, Chris Truman ■ <i>United Kingdom</i>	● High strain rate behaviour of textile composites under compression and combined compression-shear loading ► Hannes Koerber¹, Jose Xavier², Pedro Camanho², Jose Ramon Sainz De Aja³, Yasser Essa³ ■ (1) <i>Germany</i> (2) <i>Portugal</i> (3) <i>Spain</i>	● High strain rate, path dependent deformation of polymer o-rings ► Chienwei Lee, Vitali Nesterenko ■ <i>United States</i>
17:30	● Probing plasticity and damage under nanoindentations and scratches in oxide glasses: a reliable benchmark for numerical simulations. ► Jean-Pierre Guin, Kun Han ■ <i>France</i>	● Experimental investigation of strengthening a deteriorated RC bridge by adding a concrete overlay ► Yvonne Theiner, Helmut Hartl, Martin Drexel, Günter Hofstetter ■ <i>Austria</i>	● Characterisation of 3D force transmission in real granular media ► Stephen Hall¹, Jonathan Wright² ■ (1) <i>Sweden</i> (2) <i>France</i>	● Heating effect in hole drilling technique ► Claudia Barile, Katia Casavola, Giovanni Pappalettera, Carmine Pappalettere ■ <i>Italy</i>	● Characterising strain rate dependent delamination initiation parameters ► Werner Hufenbach, Andreas Hornig, Sandro Nitschke, Albert Langkamp ■ <i>Germany</i>	● Sensitivity of yield stress and volume variation in PEEK to temperature and strain-rate ► Zakaria El Qoubaa¹, Ramzi Othman² ■ (1) <i>France</i> (2) <i>Saudi Arabia</i>
17:50	● Irradiation impact on mechanical properties of simplified borosilicate glasses ► Marina Barlet, Cindy Rountree, Daniel Bonamy, Jean-Marc Delaye ■ <i>France</i>	● 3D detection of damage evolution in porous brittle cement based materials ► Thanh Tung Nguyen, Michel Bornert, Camille Chateau, Julien Yvonnet, Qizhi Zhu ■ <i>France</i>	● Strain fields and mechanical behaviour of fissured clays ► Claudia Vitone¹, Federica Coteccchia¹, Gioacchino Viggiani², Stephen Hall³, Jacques Desrues² ■ (1) <i>Italy</i> (2) <i>France</i> (3) <i>Sweden</i>		● An innovative experimental device for ice impact onto composite panel ► Gerald Portenont, Bertrand Langrand, Jean-Michel Mortier ■ <i>France</i>	● Wave propagation in viscoelastic materials and its application to SHPB tests ► Yongchao Huang, Clive R Siviour ■ <i>United Kingdom</i>

	◆ West Road Recital Room	◆ Robinson JCR	◆ West Road Lecture Theatre	◆ Robinson Umney Lecture Theatre	◆ Robinson Auditorium	◆ West Road Concert Hall Auditorium
	G1 Glass and brittle materials 1 Chair: Prof. Jean-Christophe Sangleboeuf	G1 Fracture, damage and durability of concrete 2 Chair: Dr. Xiaoxin Zhang	G1 Rock and soil mechanics 1 Chair: Dr. Gioacchino Viggiani	G3 Residual stress 2 Chair: Dr. Jeremy Robinson	T1 High strain rate Chair: Prof. Ramon Zaera	T2 Polymers 1 Chair: Prof. Arild Clausen
18:10	● Mechanical property of a silica/silica composite by sol-gel method ► Yani Zhang ■ <i>China</i>	● "drawing with a crack in concrete": a hybrid test to control mixed-mode crack propagation ► Andreea Carpiuc, Martin Poncelet, Kyrylo Kazymyrenko, François Hild, Hugo Leclerc ■ <i>France</i>				

18:30	<i>BSSM General Assembly</i> ◆ Robinson Auditorium					
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Thursday, July 10, 2014

08:00	Registration ♦ West Road Foyer	
08:30	BSSM Measurements lecture (chair: Dr. Simon Quinn) • <i>Materials at their limit</i> ► Prof. John P. Dear ■ <i>Imperial College, London</i> ♦ <i>West Road Concert Hall Auditorium</i>	

	♦ West Road Recital Room	♦ Robinson JCR	♦ Robinson Umney Lecture Theatre	♦ West Road Lecture Theatre	♦ Robinson Auditorium	♦ West Road Concert Hall Auditorium
	G1 Glass and brittle materials 2 Chair: Dr. Véronique Doquet	G1 Polymers 2 Chair: Prof. Andrew Makeev	G3 Fatigue and fracture 1 Chair: Prof. Leslie Banks-Sills	G3 Residual stress in welds Chair: Dr. Jerry Lord	T1 Joining Chair: Dr. Conor McCarthy	T2 Polymers 2 Chair: Prof. Franck Lauro
09:40	• <i>A thermomechanical study of soda lime glass</i> ► Eric Robin, Jean-Benoit Le Cam, Xavier Balandraud, Evelyne Toussaint ■ <i>France</i>	• <i>Viscoelastic characterization; how to fill experimental gap between solid and liquid techniques</i> ► Coraly Cuminatto, Jean-Luc Bouvard, Rudy Valette, Michel Vincent, Noëlle Billon ■ <i>France</i>	• <i>Experimental evaluation of fatigue crack shielding from isochromatic data</i> ► José Manuel Vasco-Olmo, Francisco Alberto Diaz, Alberto García-Collado, Rubén Dorado ■ <i>Spain</i>	• <i>The effects of peak temperature and repetitive austenisation on phase transformations and their significance in the simulation of multi-pass welds</i> ► Nicholas O'Meara, John Francis, Simon Smith, Philip Withers ■ <i>United Kingdom</i>	• <i>Adhesive bonding of laser processed CFRP panels</i> ► Mark Madge, Emmanuel Brousseau, Carol Featherston, Eleri Williams, Mark Eaton ■ <i>United Kingdom</i>	• <i>Determination of viscoelastic properties of PMMA bars by ultrasonic testings</i> ► Yuji Sogabe, Zhiqiang Wu, Takayuki Tamaogi ■ <i>Japan</i>

	◆ West Road Recital Room	◆ Robinson JCR	◆ Robinson Umney Lecture Theatre	◆ West Road Lecture Theatre	◆ Robinson Auditorium	◆ West Road Concert Hall Auditorium
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10:00	● <i>Computational investigation of crack patterns in brittle materials</i> ► <u>Shanna Tune</u> , Ibrahim Guven ■ <i>United States</i>	● <i>Characterization of bi-axial fatigue resistance of short glass fiber reinforced thermoplastic cruciform specimen</i> ► Victor Fabré, Sabine Cantournet, Noëlle Billon, Alain Thionnet ■ <i>France</i>	● <i>Strain-based fatigue life evaluation for thin sheet steel</i> ► Shuiqiang Zhang, Shuangshuang Mao, Dongsheng Zhang ■ <i>China</i>	● <i>Finite element simulation of welding distortion</i> ► David Tanner ■ <i>United Kingdom</i>	● <i>Obtaining a thought the thickness reinforced composite joint</i> ► Ives De Baere ¹ , Marino Quaresimin ² , Joris Degrieck ⁴ , Wim Van Paepegem ¹ ■ (1) <i>Belgium (2)Italy</i>	● <i>Longitudinal waves propagating in a viscoelastic hollow cylinder</i> ► Yuji Sogabe, Takayuki Tamaogi, Zhiqiang Wu ■ <i>Japan</i>

10:20	Coffee break ◆ Robinson Marquee and West Road Foyer					
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	◆ West Road Recital Room	◆ Robinson Umney Lecture Theatre	◆ Robinson JCR	◆ Robinson Auditorium	◆ West Road Concert Hall Auditorium	◆ West Road Lecture Theatre
	Biomaterials and tissues 1 Chair: Prof. Martin Browne	G2 Micro and nano-scale test methods 5 - surface mechanics Chair: Prof. Kenneth Liechti	G3 Art conservation Chair: Prof. Takahide Sakagami	T1 Multifunctional materials 2 Chair: Prof. Arun Shukla	T2 Weld and joints Chair: Dr. William Proud	T3 Optical Coherence Tomography Chair: Prof. Jon Huntley
10:50	● <i>Effect of cellulose-nanofibers on the mechanical properties of PEGDMA hydrogel</i> ► Azadeh Khoshabi, Andreas Schomöcker, Daniele Casari, Constantin Schizas, Philippe Tingaut, Tanja Zimmermann, Dominique Pioletti, Christophe Moser, <i>et al.</i> ■ <i>Switzerland</i>	● <i>Novel micro-contacts test fixture for the simultaneous measurement of contact resistance and contact force</i> ► Christopher Stilson, Tod Laurvick, Ronald Coutu ■ <i>United States</i>	● <i>Mechanism of craquelure pattern formation on panel paintings</i> ► Michal Lukonski, Leszek Krzemien ■ <i>Poland</i>	● <i>Mechanical characterization of carbon nano-tubes/cement nanocomposites</i> ► Emmanuel Gdoutos, Maria Konsta-Gdoutos ■ <i>Greece</i>	● <i>Improvement of steel welded joints for blast threat</i> ► Frank Pursche, Lothar Werner Meyer, Norman Herzig, Klaus Hüsing ■ <i>Germany</i>	● <i>Optical coherence elastography for measuring the deformation and strain within glass fibre composite</i> ► Ping Liu, Roger Groves, Rinze Benedictus ■ <i>Netherlands</i>
11:10	● <i>The mechanical properties of cortical bone in children suffering from osteogenesis imperfecta</i> ► Laurianne Imbert, Jean-Charles Aurégan, Stéphane Avril, Ophélie Pollet, Benoît Ponsard, Catherine Bosser, Bernard Jeanpierre, Thierry Hoc ■ <i>France</i>	● <i>An automated torsion balance for characterization of torsional behavior of microscale wires</i> ► Dabiao Liu, Yuming He, Zhipei Gan, Lei Shen, Bo Zhang ■ <i>China</i>	● <i>Clays, archeological tablets and ethyl silicate: evaluation of the consolidation mechanisms</i> ► Mathilde Tiemot, Ann Bourgès, Jean-Didier Mertz ■ <i>France</i>	● <i>Self sensing properties of cementitious nanocomposites</i> ► Maria Konsta-Gdoutos, Chrysoula Aza ■ <i>Greece</i>	● <i>Design of threaded joints for Kolsky bars</i> ► Richard Rhorer, Steven Mates ■ <i>United States</i>	● <i>Polarization-sensitive full field optical coherence microscopy in material research</i> ► Bettina Heise, Boris Buchroithner, Stefan Schausberger, David Stifter ■ <i>Austria</i>

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11:30	● Measurement of cell compressibility via ultrasound ► Kian-Meng Lim, Heow Pueh Lee, Lany Lin Yue Yung, Boo Cheong Khoo ■ Singapore	● Ldv based shear-force probe and its application in surface interaction ► Xide Li ¹ , Fengli Gao ¹ , Yu Fu ² ■ (1) China (2) Singapore	● 3D digital image correlation for tracking displacements of canvas paintings with natural texture ► Krzysztof Malowany, Justyna Chrzanowska, Malgorzata Kujawińska, Piotr Targowski, Ludmila Tymińska-Widmer, Bogumila Rouba ■ Poland			● Velocity measurements of polymer melts by means of doppler optical coherence tomography and particle image velocimetry ► Ivana Burzic, Marc Egger, Andreas Buchsbaum, Thomas Koepplmayr, Michael Aigner, Michael Leitner, Juergen Miethlinger ■ Austria

12:00	Exhibitor presentations ◆ GREEN SPOT: Robinson Auditorium - RED SPOT: West Road Concert Hall Auditorium	
12:30	Lunch and exhibition ◆ GREEN SPOT: Robinson Marquee - RED SPOT: West Road Foyer	

	◆ Robinson JCR	◆ Robinson Umney Lecture Theatre	◆ West Road Lecture Theatre	◆ West Road Recital Room	◆ Robinson Auditorium	◆ West Road Concert Hall Auditorium
	G1 Shape memory alloys and polymers 1 Chair: Prof. Xavier Balandraud	G2 Digital Image Correlation 2 Chair: Dr. Pascal Lava	G3 Fatigue and fracture 2 Chair: Prof. Karen Holford	G3 Identification from full-field measurements 2 Chair: Dr. Marco Rossi	T1 Interfacial characterization Chair: Dr. Carol Featherston	T2 Brittle materials 2 - concrete and geomaterials Chair: Prof. Pascal Forquin
14:00	● Experimental investigation of the effect of phase transformation on fracture parameters of NiTi ► Behrouz Haghighouyan, Nima Shafaghi, Günay Anlas, C. Can Aydiner ■ Turkey	● Segmentation, geometric modeling and motion tracking for evaluation of pelvic system mobilities ► Zhifan Jiang, Jean-François Witz, Pauline Lecomte-Grosbras, Jeremie Dequidt, Stephane Cotin, Christian Duriez, Mathias Brieu ■ France	● Measurement of crack opening displacement of rapidly bifurcating crack ► Shinichi Suzuki, Kenichi Sakaue, Tepppei Ishida, Shinichi Saka ■ Japan	● Elasto-plastic parameters identification by integrated digital image correlation ► Florent Mathieu, Hugo Leclerc, François Hild, Stéphane Roux ■ France	● Stress evolutions at crack arresting devices in sandwich structures ► Wei Wang, Janice Barton, Ole Thybo Thomsen ■ United Kingdom	● Wave separation in the experiments of obliquely incident wave propagation across rock fractures ► Yang Zou ¹ , Jianchun Li ² , Qianbing Zhang ¹ , Jian Zhao ¹ ■ (1) Switzerland (2) China
14:20	● Characterisation of nitinol for the design of tunable transducers ► Andrew Feeney, Margaret Lucas ■ United Kingdom	● Kriging regression for full-field digital image correlation based on global and local error estimates ► Dezhi Wang, John Mottershead, Francisco Alejandro Diaz De La O, Weizhuo Wang ■ United Kingdom	● Examining the deformation behavior of bicrystal copper under tensile loading ► Yazhou Guo, Fadong Li, Yulong Li ■ China	● Damage identification from full-field measurements of vibrations ► Olli Puustinen, Antti Huhtala, Sven Bossuyt ■ Finland	● Investigation of the interface deformation in Al/Mg-compounds using digital image correlation ► Carola Kirbach, Thomas Lehmann, Martin Stockmann, Jörn Ihlemann ■ Germany	● Impact testing of reinforced concrete slabs ► Ari Vepsä, Ilkka Hakola, Matti Halonen, Erkki Järvinen ■ Finland

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14:40	- Thermomechanical analysis of shape memory polymer under cyclic loading and relaxation conditions ► Elzbieta A. Pieczyska¹, Michal Maj¹, Katarzyna Kowalczyk-Gajewska¹, Maria Staszczak¹, Hisaaki Tobushi², Shunichi Hayashi², Mariana Cristea³ ■ (1) <i>Poland</i> (2) <i>Japan</i> (3) <i>Romania</i>	- Normalized gradient-based inverse compositional gauss-newton (ng-ic-gn) algorithm for digital image correlation under non-uniform illumination variations ► Jiangping Xu¹, Ali Moussawi², Renaud Gras³, Gilles Lubineau³ ■ (1) <i>China</i> (2) <i>United States</i> (3) <i>France</i>	- The influence of strain on crack length measurements using the potential drop technique ► Keith Tarnowski, Catrin Davies, Kamran Nikbin, David Dean ■ <i>United Kingdom</i>	- Stiffness identification of heterogeneous paperboard with VFM ► John Considine¹, Fabrice Pierron², Kevin Turner¹ ■ (1) <i>United States</i> (2) <i>United Kingdom</i>	- Mixed-mode interface characterization by image correlation integrated with beam bending kinematics ► Benoit Blaysat¹, Johan Hoefnagels¹, Gilles Lubineau², Marc Geers¹ ■ (1) <i>Netherlands</i> (2) <i>Saudi Arabia</i>	- Analyzing the impact behaviour of porous concrete ► Ayda Agar Ozbek¹, Jaap Weerheijm² ■ (1) <i>Turkey</i> (2) <i>Netherlands</i>
15:00	- Validation of shape memory alloys multiscale modeling thanks to in-situ X-rays diffraction ► Fall Maine Daro, Lavernhe-Taillard Karine, Maynadier Anne, Hubert Olivier ■ <i>France</i>	- Experimental and numerical investigations of fracture process in plain and reinforced concrete beams ► Lukasz Skarżyński, Jacek Tejchman ■ <i>Poland</i>	- Influence of cold-rolling and swaging on fatigue properties of Ti-3Al-5V alloy ► Naofumi Ide, Tatsuro Morita, Takashi Maeda, Hideto Seto, Mamoru Shimamura ■ <i>Japan</i>	- A method for measuring three-dimensional properties of composites ► Andrew Makeev, Guillaume Seon, Julia Cline, Yuri Nikishkov, Erian Armanios ■ <i>United States</i>	- A method to distinguish damage and plasticity ► Anders Biel, Ulf Stigh, Svante Alfredsson ■ <i>Sweden</i>	- Response of high strength concrete to dynamic loading ► Victor Shim, Yangbo Guo, Lin Jing ■ <i>Singapore</i>

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15:20	- Multiaxial thermomechanical behaviour of nitinol wire meshes ► Ludek Heller¹, Katerina Janouchova¹, Petr Sittner¹, Francois Tissot², Nathanael Connesson², Denis Favier² ■ (1) <i>Czech Republic</i> (2) <i>France</i>	- Direct measurement of damage field from speckle images: principle and preliminary result ► Xian Wang, Shaopeng Ma ■ <i>China</i>	- Experimental investigation of the thickness effect for large as-welded SAW S355 steel specimens ► Ólafur Ólafsson, Christian Berggreen ■ <i>Denmark</i>		- Fracture characterization of interfaces with a new DCB-UBM test rig ► Christian Berggreen, Konstantinos Anyfantis ■ <i>Denmark</i>	- Effect of pre-existing cracks on the fracture pattern of granite ► Mahdi Saadati¹, Pascal Forquin², Kenneth Weddfelt¹, Per-Lennart Larsson¹ ■ (1) <i>Sweden</i> (2) <i>France</i>
15:40	- Mechanical characterization of NiTi wires under pure bending ► Gabriel Antherieu, Nathanael Connesson, Denis Favier, Yohan Payan, Pierre Mozer ■ <i>France</i>	- Digital image correlation for determination of local constitutive properties of fibre laser welding joints in AA2024-T3 ► Joseph Ahn¹, Li Chen², Catrin Davies¹, John Dear¹ ■ (1) <i>United Kingdom</i> (2) <i>China</i>	- Determination of microscopic strain components by digital image correlation in combination with crystal orientation information ► Yoshiki Mikami, Kazuo Oda, Masahito Mochizuki ■ <i>Japan</i>			

16:00	Coffee break ◆ Robinson Marquee and West Road Foyer				
17:45	Conference banquet in Duxford ◆ 17:45 to 18:30 Coaches depart for Conference Gala Banquet and Reception. Assemble in Robinson Courtyard.				

Friday, July 11, 2014

08:30	Plenary4 (chair: Prof. Jon Huntley) ● <i>Probing the mechanical response of the brain with magnetic resonance elastography</i> ► Prof. Philip V. Bayly ■ <i>Washington University in Saint Louis</i> ◆ <i>West Road Concert Hall Auditorium</i>	
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	◆ West Road Lecture Theatre	◆ Robinson Umney Lecture Theatre	◆ West Road Recital Room	◆ Robinson JCR	◆ Robinson Auditorium	◆ West Road Concert Hall Auditorium
	G1 Rock and soil mechanics 2 Chair: Dr. Michel Bornert	G1 Thin films and coatings Chair: Dr. Philippe Goudeau	G3 Adhesive bonding 2 Chair: Dr. Hannes Koerber	G3 Structural Health Monitoring Chair: Prof. Bruce Drinkwater	T1 Low cost materials 2 Chair: Dr. Michael Johnson	T2 Blast 2 / Shock Chair: Prof. Genevieve Langdon
09:20	● <i>A novel method for measuring dynamic force transmission in granular materials</i> ► Ryan Hurley, Keng-Wit Lim, Jose Andrade ■ <i>United States</i>	● <i>Interfacial strength of INP/Si substructure</i> ► Eric Le Bourhis, K Pautzas, G Patriarche, I Sagnes, D Troadec, A Talneau ■ <i>France</i>	● <i>Experimental analysis of the temperature-dependent behaviour of a M10 hexply prepregs adhesive under tensile/compression-shear loads</i> ► Claudiu Badulescu, Jean Yves Cognard, Nicolas Carrère, Pierre Védrine ■ <i>France</i>	● <i>Research on the displacement monitoring system for the medium-and-short span bridge structure monitor</i> ► Fangyuan Li, Xiaoshuai Guo, Hao Tian ■ <i>China</i>	● <i>Determining elastic properties of composites using DIC</i> ► Renato Vieira, Pedro Azevedo, Leonardo Rodrigues, Ronaldo Vieira, José Freire ■ <i>Brazil</i>	● <i>The cylindrical isentropic compression by ultrahigh magnetic field</i> ► Zhuowei Gu, Hao Luo, Hengdi Zhang, Xiaosong Tang, Yanjin Tong, Jianheng Zhao, Chengwei Sun ■ <i>China</i>

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09:40	● Stick-slip experiments on sawcut sandstone specimens ► Elli Maria Charalampidou, Georg Dresen, Hiroki Sone ■ <i>Germany</i>	● Effect of hybrid treatment composed of gas nitriding and DLC coating on friction-wear characteristics of steel ► Kenta Inoue, Tatsuro Morita, Yoshitaka Usui, Kensuke Hirata, Masaru Ikenaga ■ <i>Japan</i>	● High strain-rate compressive response of bulk structural adhesives: experiments and constitutive modeling ► Takashi Yokoyama, Kenji Nakai ■ <i>Japan</i>	● Misclassification minimization for structural health monitoring of a reciprocating compressor using time-frequency analysis and a probability neural network ► Yih-Hwang Lin, Wen-Sheng Lee, Chung-Yung Wu ■ <i>Taiwan</i>	● The loaded surface profile of gold coated carbon nanotubes. ► Michael Down¹, John McBride² ■ (1) <i>United Kingdom</i> (2) <i>Malaysia</i>	● Magnetically driven high-velocity flyer plates and its applications in shock compression of materials on CQ-4 ► Guiji Wang ■ <i>China</i>
10:00	● Development and application of time-lapse ultrasonic tomography for laboratory characterisation of localised deformation in hard soils/soft rocks ► Erika Tudisco¹, Stephen Hall¹, Philippe Roux², Giulia Viggiani³, Giacchino Viggiani² ■ (1) <i>Sweden</i> (2) <i>France</i> (3) <i>Italy</i>	● A miniaturized, pure bending test setup for investigating flexible electronics. ► Andre Ruybalid, Johan Hoefnagels, Marc Geers ■ <i>Netherlands</i>	● The effects of surface texture and bending stiffness of adhesive single lap joint on adhesive strength under applied tensile loading ► Kaoru Nagase, Shun Yoshida, Makiko Yonehara, Yasusuke Kawabata, Hiroaki Isono, Toshio Sugibayashi ■ <i>Japan</i>	● Electromechanical impedance technique for bonds assessment ► Pawel Malinowski, Tomasz Wandowski, Wieslaw Ostachowicz ■ <i>Poland</i>	● The applicability of micro-scale interface characterisation for low cost, high performance composite parts ► David Burn, Michael Johnson, Nick Warrior, Lee Harper ■ <i>United Kingdom</i>	● Strain rate effects influencing the dynamic strength of steel – GRP double lap joints ► Reuben Brambleby, Luke Louca ■ <i>United Kingdom</i>

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10:20	● A transparent soil model for visualizing soil-structure interactions during pull-out tests of small diameter steel rods ► Gregor Supp, Karin Poprask, Roman Marte ■ <i>Austria</i>	● Strain measurement in thin layer helium implanted polycrystal using X-ray micro diffraction ► Marcelle Ibrahim, Etienne Castelier, Michel Bornert, Herve Palancher, Sabine Care, Jean-Sébastien Micha ■ <i>France</i>	● Adhesive joint strength under high rate combined loading ► Chiaki Sato, Hiroki Hattori ■ <i>Japan</i>	● Airborne acoustic damage location for structural health monitoring applications ► Matthew Pearson, Rhys Pullin, Richard Burquete, Eszter Sziget, Carol Featherston, Karen Holford, Mark Eaton ■ <i>United Kingdom</i>	● Studying the influence of fibre bundle ends on damage initiation in low cost discontinuous fibre composites ► Kevin Johnson, Michael Johnson, Lee Harper, Nick Warrior ■ <i>United Kingdom</i>	

10:40	Coffee break	◆ Robinson Marquee and West Road Foyer
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	◆ Robinson Auditorium	◆ Robinson Umney Lecture Theatre	◆ West Road Recital Room	◆ West Road Lecture Theatre	◆ Robinson JCR	◆ West Road Concert Hall Auditorium
	Biomaterials and tissues 2 Chair: Prof. Fabrice Bremand ● Grit blasting surface treatment of dental implants : beneficial or detrimental ? ► <u>Keren Shemtov-Yona</u>, Daniel Rittel, Avraham Dorogoy ■ <i>Israel</i>	G2 Digital Image Correlation 3 Chair: Dr. Jean-Noel Perie ● Improving strain field measurements for textile composites ► Guan Lu¹, Mikhail Matveev², Arthur Jones², Andrew Long² ■ (1) <i>China</i> (2) <i>United Kingdom</i>	G2 Applications of novel sensors 2 Chair: Prof. Wei-Chung Wang ● Novel high-temperature fiber-optic strain sensors - Invited talk ► Yun Jiang Rao ■ <i>China</i>	G3 Fatigue and fracture 3 Chair: Prof. David Nowell ● Investigation on fatigue life of metal rubber under alternating load ► Yanhong Ma, Xiaolong Tong, Hongwei Lu, Dayi Zhang, Jie Hong ■ <i>China</i>	G3 Structural Health Monitoring 2 Chair: Prof. Philip Bayly ● Spectral finite element method for solving a wave propagation problem between viscoelastically coupled beams ► Asmi Rizvi¹, Srinivasan Gopalakrishnan², Amuthan Arunkumar Ramabathiran³, Christopher Smith¹, Jonathan Rouffel², Kenneth Evans¹ ■ (1) <i>United Kingdom</i> (2) <i>India</i> (3) <i>United States</i>	T2 SHPB methological developments 1 Chair: Dr. Bo Song ● On the impact shear tests using Hopkinson bar ► Han Zhao ■ <i>France</i>
11:10						
11:30	● Measuring the stiffness of the ex vivo prostate gland using dynamic instrumented palpation ► Steven Hammer, Paul Scanlan, Daniel Good, Simon Phipps, Grant Stewart, Alan McNeill, Will Shu, Robert Reuben ■ <i>United Kingdom</i>	● Errors in digital image correlation due to colour filter array interpolation ► Richard Stubbing, Mark Battley ■ <i>New Zealand</i>	● Optical diagnosis for metastatic cancer cell lines by using hybrid model in mueller matrices ► Chia-Chi Liao, Chih-Ling Huang, Wen-Tai Chiu, Yu-Lung Lo ■ <i>Taiwan</i>	● A trilinear cohesive law for modelling cracks within nuclear graphite structures ► Si Kyaw, Adib Becker, Wei Sun ■ <i>United Kingdom</i>	● Integrated eSHM system with additive manufacturing ► Maria Straniza, Dieter De Baere, Marleen Rombouts, Patrick Guillaume, Gert Maes, Danny Van Hemelrijck ■ <i>Belgium</i>	● Experimental study on stress wave propagation in viscoelastic rods ► Wenjun Hu, Xicheng Huang, Fangju Zhang, Ruoze Xie ■ <i>China</i>

	◆ Robinson Auditorium	◆ Robinson Umney Lecture Theatre	◆ West Road Recital Room	◆ West Road Lecture Theatre	◆ Robinson JCR	◆ West Road Concert Hall Auditorium
	Biomaterials and tissues 2 Chair: Prof. Fabrice Bremand ● Influence of loading direction on impact damage in spinal nerve root ► Junji Ohgi, Yoshitaka Sugata, Masataka Fukuda, Yu Suizu, Kazuhiko Ichihara, Xian Chen, Syunich Kawano ■ <i>Japan</i>	G2 Digital Image Correlation 3 Chair: Dr. Jean-Noel Perie ● Implementation of the extreme learning machine for sub-pixel interpolation for digital image correlation ► Matthew Molteno, Thorsten H. Becker ■ <i>South Africa</i>	G2 Applications of novel sensors 2 Chair: Prof. Wei-Chung Wang ● Development of the thick film piezoelectric sensors to measure load distribution in adhesive joints ► Aikaterini Deligianni, George Kotsikos, Jack Hale ■ <i>United Kingdom</i>	G3 Fatigue and fracture 3 Chair: Prof. David Nowell ● Estimating the coefficient of friction between contacting ni-based superalloys in partial slip ► Rodolfo Fleury, Robert Paynter, David Nowell ■ <i>United Kingdom</i>	G3 Structural Health Monitoring 2 Chair: Prof. Philip Bayly	T2 SHPB methological developments 1 Chair: Dr. Bo Song ● High temperature SHPB and shfb with pneumatic assembling system ► Wei-Guo Guo, Kai-Ye Liu, Ping Zhou, Jian-Jun Wang ■ <i>China</i>
11:50						
12:10	● Evaluation of the influence of implant material on femoral bone strains in total knee replacement using digital image correlation ► Kathryn Rankin, Alexander Dickinson, Adam Briscoe, Martin Browne ■ <i>United Kingdom</i>			● Improvement in fatigue strength of notched Ti-6Al-4V alloy by short-time heat treatment using lithium baths ► Chika Tsuda, Tatsuro Morita, Satoshi Tanaka, Mamoru Shimamura, Susumu Ninomiya ■ <i>Japan</i>		● Study on determining dynamic elastic modulus of materials using Hopkinson pressure bar apparatus ► Yinggang Miao¹, Yulong Li¹, Hong-Yuan Liu², Qiong Deng¹, Luming Shen², Yiu-Wing Ma^{1,2}, Haitao Hu¹ ■ (1) <i>China</i> (2) <i>Australia</i>
12:30	● Identification of Poisson's ratio and young's modulus of trabecular bone from full-field measurements during compression ► Faye Gillard, Martin Browne, Fabrice Pierron ■ <i>United Kingdom</i>			● Effects of self-heating and specimen design in composites fatigue testing ► Peter Bailey, Christopher Cowan, Austin Lafferty ■ <i>United Kingdom</i>		● Dynamic stress wave propagation across preloaded bar interfaces in cylindrical bars ► Jacob Dodson, Jason Foley ■ <i>United States</i>

12:50	Lunch ♦ Robinson Dining Room			
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	♦ Robinson JCR	♦ Robinson Umney Lecture Theatre	♦ West Road Lecture Theatre	♦ Robinson Auditorium	♦ West Road Concert Hall Auditorium
	G1 Shape memory alloys and polymers 2 Chair: Prof. Elzbieta Pieczyska	G2 Digital Image Correlation 4 Chair: Dr. Sam Coppieters	G3 Fatigue and fracture 4 Chair: Mr. Richard Rhorer	G3 Non-destructive testing Chair: Prof. Jérôme Molimard	T2 SHPB methological developments 2 Chair: Dr. Jason Foley
14:00	- Frequency-dependent fatigue behaviors of superelastic NiTi shape memory alloy ► Lin Zheng, Yongjun He, Ziad Mounni ■ France	- Repeatable fracture specimen preparation for 2D and 3D digital image correlation ► Nithiananthan Kuppusamy, Rachel Tomlinson ■ United Kingdom	- Investigation of crack tip strain fields in non-uniform loading using digital image correlation ► David Nowell, Samuel O'Connor ■ United Kingdom	- On-site wind turbine blade inspection by shearography ► Jianxin Gao, Jiancheng Xu ■ United Kingdom	- Some problems relating to the accuracy of SHPB test ► Li Song, Shisheng Hu ■ China
14:20	- Shear tests of NiTi alloy for a large range of strain rates from 10-5 to 10-1/s ► He Huang¹, Bumedijen Raka², Liu Jiagu¹, Han Zhao³ ■ (1) China (2) Albania (3) France	- A generic, time-resolved, integrated digital image correlation identification approach ► Johan Hoefnagels¹, Jan Neggers¹, Benoît Blaysat¹, François Hild², Stéphane Roux², Marc Geers¹ ■ (1) Netherlands (2) France	- A controlled bending fracture method for introducing precracks into ct-specimens made of brittle materials ► Koichiro Matsuu, Shintaro Tamura, Atsushi Hashimoto ■ Japan	- Enhancing the thermal detectability of defects in adhesive bonds ► Rachael Waugh, Janice Barton, Simon Quinn ■ United Kingdom	- Rock dynamic fracture toughness measured by using crack propagation gaude and universal function ► Q. Z. Wang, J. R. Yang, C. G. Zhang, Y. Zhou ■ China
14:40	- Rotation and temperature jumps in non-linear torsional vibration of NiTi wire ► Minglu Xia, Qingping Sun ■ Hong Kong	- Theoretical study of the random displacement error in 2D DIC ► Yueqi Wang, Paul Van Houtte, Dimitri Debruyne, Pascal Lava ■ Belgium	- SIF evaluation from strain field by the use of multi parameter equation employing QR decomposition ► Yezhil Arasu A, Abhinav Thiyagarajan, Krishnamurthi Ramesh ■ India	- Low velocity impact assessment on solid laminate composites using high speed infrared imaging ► David Moore, Ciji Nelson ■ United States	- Dynamic compression of an iridium alloy at very high temperatures ► Bo Song, Kevin Nelson, Ronald Lipinski, John Bignell, George Ulrich, Easo George ■ United States

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15:00	- A proposal experimental stress analysis method based on stress-induced-martensite-transformation in mono-crystalline SMA samples ► Jacinto Corté-Pérez¹, Salvador Cabrera-Gonzalez¹, Vicente Amigo², Nestor García-Castillo¹, Francisco Sanchez-Arevalo¹, Alberto Reyes-Solis¹, Horacio Flores-Zuñiga¹ ■ (1) Mexico (2) Spain	- Dynamic calibration comparison of high speed and standard DIC ► Christopher Sebastian, Eann Patterson ■ United Kingdom	- High temperature ultrasonic fatigue testing for ti-17 ► Jhukai Li, Y.J. Liu, C. He, Qingyuan Wang ■ China	- The pulsed ultrasonic backscatter polar scan for ndt and material evaluation ► Mathias Kersemans, Wim Van Paepegem, Koen Van Den Abeele, Babs Lemmens, Lincy Pyl, Filip Zastavnik, Hugo Sol, Joris Degrieck ■ Belgium	
15:20	- An instrumented test rig prototype to test the performance of high-strain endodontic rotary files subjected to flexural cyclic loading ► André Carvalho¹, Diogo Montalvão², Manuel Freitas¹, Luís Reis¹ ■ (1) Portugal (2) United Kingdom	- Multiscale fe-based DIC for improved full field measurements and identification ► Jean-Charles Passieux, Florian Bugarin, Jean-Noël Perie, Laurent Robert, Christoph David ■ France	- Rupture of microcapsules under compression ► Ruben Mercade Prieto¹, Zhibing Zhang² ■ (1) China (2) United Kingdom	- Detection of fibre waviness in composites using ultrasonic arrays ► Damien Pain, Bruce Drinkwater ■ United Kingdom	
15:40		- Complex study of the spatial-time inhomogeneity of the plastic flow in metals and alloys ► Tatyana Tretyakova, Valery Wildemann, Eugene Lomakin ■ Russian Federation			

Coffee break ♦ West Road Foyer

16:00

Closing ceremony ♦ West Road Concert Hall Auditorium

16:30

10th International Conference on Advances in Experimental Mechanics

1-3 September 2015

Heriot Watt University, Edinburgh

The British Society for Strain Measurement's (BSSM) 10th International Conference on Experimental Mechanics will offer industry and academia the opportunity to discuss advances in experimental mechanics.

Conference Highlights include

The BSSM Measurements Lecture

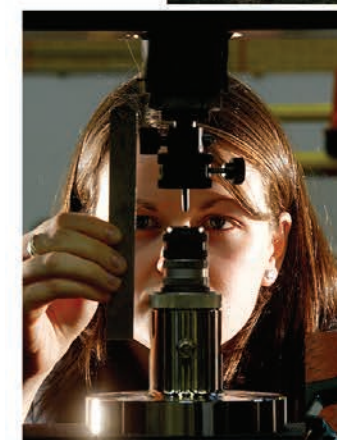
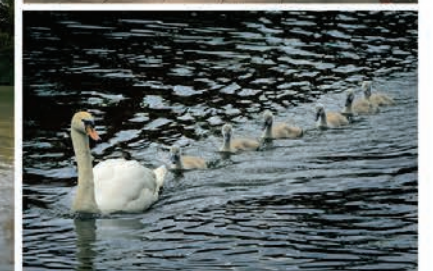
EMex, the BSSM's annual Exhibition of Experimental Mechanics

The BSSM's Young Stress Analyst (YSA) Competition

Conference themes

Papers are welcome from any area of experimental mechanics.

Key dates and Call for Papers to be announced shortly at www.bssm.org



ICEM17

17th International Conference on Experimental Mechanics

Rhodes, Greece
July 3-7, 2016

<http://www.icem17.org>

Under the auspices of the
European Society for Experimental
Mechanics (EuraSEM)

Conference Chairman

Emmanuel E. Gdoutos
egdoutos@civil.duth.gr

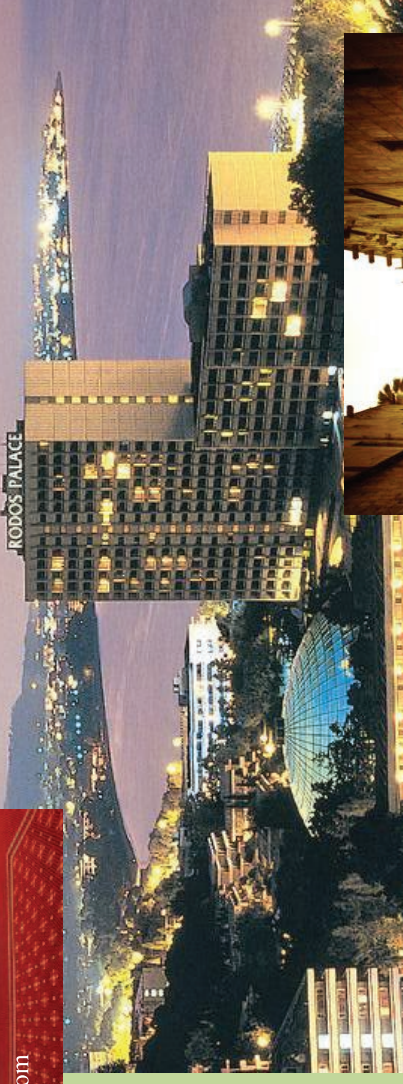
Location

The conference will take place in the Rodos Palace hotel in the idyllic island of Rhodes, located in the south east part of Greece between the Aegean and Mediterranean seas. Rhodes has a unique scenic beauty with areas of historical interest and archeological importance. Take a stroll and admire the gates, the towers, the squares, the medieval churches, the bridges, the Castle of Knights, the old Clock, the Acropolis, the ancient monuments, the Temple of Zeus, Athena and Apollo, the Palace of the Grand Master, the stadium.



Meeting Room

Conference Venue: Rodos Palace Hotel



Avenue of the Knights

Special Symposia

A series of special cutting edge technology symposia honoring renowned scientists will be organized.

Transportation

There are regular international flights to and from Rhodes International airport from most European cities.

Important Dates

Abstract due:	July 30, 2015
Notification on abstract:	October 31, 2015
Registration (Early):	January 31, 2016
Hotel reservation:	January 31, 2016

Castle-Old Town

