





THE 68TH ANNUAL ASSEMBLY OF THE INTERNATIONAL

INSTITUTE OF WELDING

IIW 2015

HELSINKI, FINLAND



Surrounded by sea on three sides and known as the 'Pearl of the Baltic Sea' Helsinki, the capital of Finland, warmly welcomed 885 people from countries around the world to the 68th Annual Assembly and International Conference of the International Institute of Welding (IIW) from 28 June to 3 July this year.

The event, the third IIW Annual Assembly to be held in Finland, was organised by the Welding Society of Finland (WSF) which has been a member of IIW since 1949. Up to

96 Finnish delegates attended the event - an outstanding opportunity to meet with, contribute to, and learn from, the international welding community.

The near-record number of assembly and conference attendees came from 54 different countries, with the largest contingents from Germany, Japan, and the Republic of Korea which hosted the 2014 assembly. The IIW's recent focus on Young Professionals was rewarded by the attendance and participation of over 80 'future leaders' of the global welding sector.

Special meetings and events during the assembly included an Additive Manufacturing Workshop, Seminar on Structural Health Monitoring and a Workshop on Establishing a National Welding Capability – all discussed in more detail below. Such events, often jointly organised by a number of IIW Commissions, highlight the innovation and cross pollination of ideas and knowledge which are a hallmark of IIW and invaluable to the welding community worldwide.

IIW General Assembly

IIW President Prof Marquis (right) and CEO Dr Mayer (left) presented a token of recognition to Prof Hirata (centre) on completing his term on the IIW Board of Directors

Dr Emmanuel Gyasi from Ghana, applicant member country (left) and Dr Paul Kah from Cameroon, incoming member country (right)

The membership of IIW was boosted to an impressive 59 countries during the General Assembly held on Sunday 28 June, when applications from Algeria, Angola and Cameroon were approved. The expansion of IIW services and support in Africa, such as the introduction of the IIW Qualification and Certification Programme, can deliver significant positive outcomes for such developing nations.

Countries can be represented in IIW by more than one Member Society if they wish, and the National Agency of Welding Control (NAKS) was accepted by the assembly as a second Member Society of Russia.

Renewal of the Board of Directors

As the terms of office of **Prof Yoshinori Hirata** (Japan) and **Prof Dr-Ing Boyoung Lee** (Republic of Korea) as Directors were successfully completed, the General Assembly approved as incoming Directors **Prof Fumiyoshi Minami** (Japan), **Prof Américo Scotti** (Brazil) and **Prof Yixiong Wu** (PR of China).

Renewal of the Technical Management Board

The Technical Management Board (TMB) is chaired by **Dr Luca Costa** (Italy). Two members of the TMB had completed their terms of office, **Dr Solomon Edibiri** (Nigeria) and **Dr Zhen Sun** (Singapore), and the assembly approved the appointment of **Dr Stephan Egerland** (Austria) and **Prof Patricio Mendez** (Canada) for the next three years.

Prof Mendez (right) congratulated by Mr Levert for his appointment to the Technical Management Board

Welcome to the second Member Society in Russia, NAKS

Opening Ceremony

The iconic Finlandia Hall, designed by world-renowned Finnish architect, Alvar Aalto and completed in 1971, was the venue for the official opening of the IIW Annual Assembly 2015. Guests arrived to the music of legendary Finnish composer Jean Sibelius, celebrating the 150th anniversary of his birth.

Master of Ceremonies for the evening, **Martti Vannas**, warmed up the audience with his international wit and award-winning magic before moving to his more formal role of welcoming all present, and introducing the members of the IIW Board of Directors.

Mr Ismo Meuronen, Chairman of the Local Organising Committee and President of the WSF then welcomed everyone to Helsinki and praised the work of the event organisers, technical advisers and the event secretariat Confedent International Oy. **Mr Göran Mönefors**, Managing Director of the Nordic branch for event sponsors voestalpine Böhler Welding then added his welcome and wishes for a successful assembly.

The 68th IIW Annual Assembly was then officially opened by **Prof Gary Marquis**, IIW President and Dean of the Aalto University School of Engineering, Finland. He was joined on stage by Dr Cécile Mayer, IIW Chief Executive Officer, for the presentation of the IIW Annual Awards.

IIW Awards

Each year the IIW pays tribute to those who have given distinguished service or have demonstrated excellence in their field. The Awards Ceremony honours those who have made significant contributions to welding and joining technology, either by their recent outstanding technical achievements, or by singular career achievements and exceptional contributions to the IIW, to industry, to education or to regional and/or international quality of life.

Comedian and magician Martti Vannas was the entertaining MC at the Opening Ceremony

Mr Göran Mönefors delivered words of welcome from the sponsor Voestalpine Böhler Welding

The following 2015 IIW Awards were announced, with presentations made to the winners in attendance. Further details of these award winners and their work are found at the end of this article.

Henry Granjon Prize

Category / Fabricatio	A: Joining and n Technology	Dr-Ing André Hälsig (Germany)
Category B: Materials Behaviour and Weldability		Dr Eun-Joon Chun (Japan)
Category (Structural	C: Design and Integrity	Dr Philipp Schempp (Germany)
Category I Related Sເ	D: Human Ibjects	Dr Yukang Liu (USA)
Welding in the World Best Paper Award 2014		Dr Elin Marianne Westin (Austria)
Yoshiaki Arata Award		Prof Dr Emeritus Einar Halmøy (Norway)
Walter Edström Medal		Prof Dr-In Jan Pawel Pilarczyk (Poland)
Arthur Smith Award		Prof Luisa Coutinho (Portugal)
Thomas Medal		Dr H Glenn Ziegenfuss (USA)
Halil Kaya Gedik Award		Prof Dr Stephen Liu (USA)
Regional Activities Award		Dr-Eng Marin Georgiev Beloev (Bulgaria) and A Prof Dr Petar Ivanov Darjanov (Bulgaria)

After the ceremony the guests enjoyed a range of Finnish food delicacies in the restaurant at Finlandia Hall while experience the amazing light summer night and the bay view through the wide windows of the hall.

IIW Working Units

Technical Commissions, Select Committees, Study Groups and other Working Units (WU) met over the period of the Annual Assembly, attended by Delegates, Experts and Observers from IIW member countries.

The IIW's Commissions and technical working units operate as 'think tanks' and drivers of technical progress for scientists and engineering and other specialist personnel involved in the research, development and application of materials joining technologies.

The Helsinki meetings facilitated expert exchange and networking between engineers, academics from major universities and research institutes worldwide, as well as top R&D personnel and executives from leading global companies.

Meetings of the International Authorisation Board (IAB) and its working groups furthered the development and delivery of the IIW Qualification and Certification Programme, while other groups worked in areas such as standardisation, research and collaboration, regional activities and communications.

Views of the presentations and discussions held during the technical sessions

Special WU Events

Welding/Joining and Additive Manufacturing Workshop

The rapid global move towards additive manufacturing (AM) technologies was highlighted by the range of countries – from USA, Finland and Germany to Japan and PR China - contributing technical papers to the Tuesday workshop organised jointly by Commissions I (*Additive Manufacturing, Surfacing and Thermal Cutting*), IV (*Power Beam Processes*) and XII (*Arc Welding Processes and Production Systems*) and Study Group 12 (*Physics of Welding*).

Metal AM is essentially a welding process where material is added in successive layers to build up a part from scratch. High performance alloys of metals such as titanium, cobalt and nickel as well as stainless and carbon steels can all be utilised, and AM allows production of parts and devices that are impossible using traditional manufacturing techniques. No modification is required to produce different designs, which makes limited production runs viable, including one-off products and designs that incorporate data from 3D scans.

AM uses less raw material and energy than traditional methods like billet production and CNC machining because near net production is achieved by building input material up from zero, rather than cutting it down from a larger size. Certain tools essentially operate as computer-controlled welders, whereby wire or powder feed is fused using a plasma arc, electron beam, or laser.

Papers at the workshop, attended by 149 people from 31 different countries, explored the latest developments in modelling and optimisation of dimensional accuracy as well as AM process and materials innovations and their applications in industry.

Seminar on Structural Health Monitoring

Structural health monitoring (SHM) involves introducing a sensor, or an array of sensors, into an engineered structure to monitor it periodically for structural degradation due to its operating environment. The sensors provide non-destructive measurements to give information about critical structural properties, such as wall thickness measurements for corrosion detection, crack initiation or growth monitoring for welds susceptible to cracking, vibration monitoring of a structure that is susceptible to fatigue, and stress measurements for structures where either peak stresses or detailed stress measurements must be monitored. This data is then statistically analysed to determine the current health of the structure, to estimate its remaining life and to allow decisions to be made for follow-up maintenance.

Commissions V (*Non-destructive Testing and Quality Assurance of Welded Products*), XI (*Pressure Vessels, Boilers and Pipelines*), XIII (*Fatigue of Welded Components and Structures*) and XV (*Design, Analysis and Fabrication of Welded Structures*), held a joint seminar on the Wednesday afternoon on this important subject. Many countries and industries around the world are managing aging infrastructure, and examining ways of extending life within economic constraints and requirements for public and environmental safety. The attendance by over 60 representatives from 17 countries demonstrated the importance of this forum and the knowledge shared by attendees.

Papers were presented in the area of sensor development, including macro fibre composite sensors for crack detection and optical fibre Bragg gratings for flaw detection. The use of welds in the structure as SHM sensors, and simulation to determine the probability of detection for different SHM sensor configurations were also discussed. The novel method of using natural resonances in the structure was presented, both for small components using flexural modes of vibration and for large structures where vibrations in the hull of a container ship were considered. There were also application-specific papers describing SHM applied to industrial components and a nuclear boiler support spine and for corrosion monitoring.

SHM is a multi-disciplinary field that is changing rapidly due to technological advances, and one that currently does not have well established standardisation. It is an important field for the IIW, as all welded or otherwise joined structures require monitoring to extend their lifetimes and to ensure continued safe operation. SHM is of interest to a number of IIW Commissions and is a topic that the IIW will continue to have involvement in through seminars and joint Commission activities.

Workshop on Establishing a National Welding Capability

Sixty-six people attended a workshop, organised by Commission XIV *Education and Training* on the Thursday, looking at the challenges for industries utilising welding and joining technologies and the various initiatives throughout the world to meet these challenges.

IIW strategies for international cooperation, such as the publication of the IIW White Paper and the IIW project 'To Improve the Global Quality of Life through the Optimum Use of Welding Technology', were reviewed and presentations and demonstrations focused on the essential elements needed by a country to build a national welding capability, such as: Education, training, skills and career paths, Qualification and certification, Technology transfer, Research and development, and National and international networks

In the first session, Commission Chairman **Mr Chris Smallbone** (Australia) presented an overview of the IIW White Paper and explained that the contents contained many examples of the experiences of countries in building up the different aspects of a national welding capability. One C-XIV Working Group project focuses on the education, training, qualification and certification aspects and he presented 11 possible programmes that a country could investigate for implementation to help build their welding capabilities.

Cases studies were then presented by **Prof Dorin Dehelean** (Romania) and **Dr Arun Bhaduri** (India) on recent workshops held towards establishing national welding capability projects in IIW member countries in South Eastern Europe and India, illustrating the common themes and challenges.

In Session 2, a presentation from **Ms Yvonne Olgers** (The Netherlands), Convenor of the C-XIV Working Group *Digital Training* project, illustrated progress and innovation in this area. It is intended to contact companies on a global basis to incorporate their digital training products and services into the project.

Presentations in Session 3, chaired by **Mr Jorge Huete** (Spain), Convenor of the Commission project on *Simulation*, explored the latest innovations from around the world in welding virtual reality and simulation, and highlighted their value in augmenting traditional welding training methods. Uptake of such simulation technology by training providers and companies is rapidly increasing due to consumable and material economies, WHS benefits, real time feedback to multiple students, on-going monitoring facilities, and the synergy with modern technologies utilised by students on a day-to-day basis.

Attendees at the workshop were able to trial the equipment with specialists on hand from 123 Certification Inc., EWM, Fronius International, The Lincoln Electric Company, and Seabery, while group discussion sessions throughout the workshop highlighted the importance of the various C-XIV projects.

It was agreed to hold a similar C-XIV Workshop in July 2016 in Australia, during the next IIW Annual Assembly.

Young Professionals Evening

The Only Real Challenge... is to have fun and make new friends! This was the maxim at the quiz challenge presented for Young Professionals (YP) on the Tuesday evening hosted at the Aalto University School of Engineering.

Over 80 participants were welcomed by **Prof Gary Marquis**, local event organisers **A Prof Pedro Vilaca** and **Dr Heikki Remes** and group leaders **Mr Christoph Esser-Ayertey** (Germany) and **Mr Levente Bakos** (Hungary). After an introduction to the university and Finnish industry, the attendees were broken into five teams – aptly named 'filler metal' (the winner on the night), 'base material', 'shielding gas', 'power source' and 'HAZ'. As well as the more light-hearted activities of darts, croquet and mölkky (a Finnish throwing game similar to skittles), the teams visited the welding and strength of materials laboratories and were challenged by a series of technical questions.

Each team also gave a considered answer to the million dollar question, 'What's going to be the welding technology leap by 2050?'. The winning idea 'Welding in the atmospheres of the Moon and Mars' captured the essence of the YP Group which has been established by IIW to provide a thought-provoking networking and learning forum for the upcoming leaders of the welding community, and to encourage their participation in IIW Annual Assemblies and Working Unit activities.

Mr Esser-Ayertey (German Group of IIW YP)

Discussion with the IIW President Prof Marquis

Activities during the YP evening

Find out more about the IIW Young Professionals Group on Facebook and Twitter under keywords IIW YP.

Outcomes of Working Unit Meetings

A total of 144 decisions were adopted by the various IIW Working Units, with 110 documents recommended for publication in the IIW's peer-reviewed journal, *Welding in the World*.

Commission I recommended to the Board of Directors that its title be changed to Additive Manufacturing, Surfacing and Thermal Cutting, and terms of reference expanded to better reflect the recent innovations in global manufacturing. Commission III (*Resistance Welding, Solid State Welding and Allied joining Processes*) proposed a new standardisation project for the revision and correction of ISO 25239 Parts 1-5 *Friction Stir Welding – Aluminium,* while Commission VI (*Terminology*) had completed IIW contributions to parts of the ISO Technical Report ISO/TR 25901 *Welding and related processes – Vocabulary* and passed a resolution to forward them to ISO.

Election/Appointment of Chairs of IIW Working Units

Commission II	Arc Welding and Filler Metals
	Dr Gerhard Posch (Austria) was elected for a second term as Chairman
Commission V	Non-destructive Testing and Quality Assurance of Welded Products
	Dr Eric Sjerve (Canada) was elected for a second term as Chairman
Commission VIII	Health, Safety and Environment
	Dr Med. Wolfgang Zschiesche (Germany) was elected as Chairman
Commission IX	Behaviour of Materials Subjected to Welding
	Dr Hee Jin Kim (Republic of Korea) was elected as Vice-Chairman
Commission X	Structural Performances of Welded Joints – Fracture Avoidance
	Prof Dr-Eng Fumiyoshi Minami (Japan) was elected for a second term as
	Chairman
Commission XIII	Fatigue of Welded components and Structures
	Prof. Kenneth A. MacDonald (Norway) Was elected as Chairman
Commission XV	Design, Analysis and Fabrication of Welded Structures
	Dr Stefano Botta (Italy) was elected as Chairman
Commission XVI	Polymer Joining and Adhesive Technology
	Prof Dr-Ing Volker Schöppner (Germany) was re-elected as Chairman.
	A Prof David Grewell (USA) was re-elected as Vice-Chairman
Study Group 212	The Physics of Welding
	Prof Manabu Tanaka (Japan) was elected for a second term as Chairman
Study Group Research	Welding research strategy and collaboration
	Prof Américo Scotti (Brazil) was elected for a second term as Chairman

Attendance Recognition Certificates

Attendance Recognition certificates and commemorative lapel pins were presented during the various Working Unit meetings to honour those who have contributed significantly to the work of IIW. **Prof Luisa Coutinho** (Portugal) was recognised for having attended 30 IIW Annual Assemblies, **Prof Veli Kujanpää**

(Finland) and **Prof Ing Jaroslav Koukal** (Czech Republic) for 20 Annual Assemblies while a total of 10 people were recognised for having attended 10 IIW Annual Assemblies.

A 10-year Attendance Recognition pin was presented to Mrs Viera Whalen (Slovakia) by IIW President Prof Gary Marquis

Dr Luca Costa (left), Chairman of the Technical Management Board, presented Mr Robert Shaw (USA) with a Chair Service Recognition award

Mr Davis (left photo) and Prof Park (right photo) were presented Attendance Recognition awards for 10 years of attendance and involvement in standardisation activities in the IIW

International Conference

The IIW International Conference on *High Strength Materials – Challenges and Applications* was held on the Thursday and Friday after the conclusion of the Annual Assembly, capitalising on the presence of so many world experts in Helsinki, and making their knowledge and vision for the future of the welding industry accessible to delegates who attended from local organisations and industry and from around the world.

After the welcome from the IIW President and Conference Chairman, **Prof Gary Marquis**, the proceedings were opened with the distinguished Portevin Lecture delivered by eminent scientist **Prof David Porter** from Oulu University, Finland, on the theme *Weldable high strength steels - Challenges and engineering applications*.

Conference sessions focused on challenges and solutions covering all aspects of joining, processing and design performance of high strength materials, highlighting their successful applications in industrial and commercial products.

International keynote presentations were given by:

- Dr Petteri Jernström (Finland): Advanced Pipe Welding with Gas Metal Arc Welding
- Mr Boyan Ivanov and Mr Johannes Wirth (Germany): Degaussing of Ferromagnetic Materials
- Mr Anders Ohlsson (Sweden): Applications in High Strength Steels Possibilities on New Segments

During the conference more than 100 high quality papers from 26 countries were delivered in the areas of:

- Pressure vessel and process industry applications
- Materials performance subject to welding
- Design and fabrication
- Aeronautical and aerospace applications
- Welding physics
- Shipbuilding

- Energy industry applications
- Fatigue and fracture
- Transportation industry applications
- Keyhole phenomena in laser welding
- Innovative joining methods for high strength materials
- Laser hybrid welding

Proceedings are free-of-charge to IIW members and *Welding in the World* subscribers, and available for sale through the IIW Secretariat.

The Gala Banquet

Over 750 people attended the banquet on the Wednesday evening at the Finlandia Hall, the most popular social event of the assembly which marks the end of the IIW technical sessions. This was an excellent opportunity for networking and to confirm friendships forged during the week, including at the Finnish Evening which had featured various traditions such as barbecue, mölkky, boot throwing and Finnish folk dance.

Welcome words from the Gala Banquet sponsor Kemppi Oy represented by Mr Frederic Lanz and Mrs Teresa Kemppi-Vasama

From left: Dr Luca Costa (TMB Chairman) with the 2015 IIW Fellows Prof Dr-Ing Cetin Morris Sonsino, Prof Chitoshi Miki, Dr Thomas Siewert, Prof Dr Takashi Miyata and Prof Pingsha Dong

Mr Ismo Meuronen, Chairman of the Local Organising Committee, President of the WSF and Master of Ceremonies for the evening, greeted all participants on behalf of the WSF. He then introduced **Mrs Teresa Kemppi-Vasama**, Chairman of the Board, and **Mr Frederic Lanz**, Vice-President Marketing and Sales, of the banquet sponsor Kemppi Oy, a world-leading manufacturer of arc welding equipment established in Finland in 1949. Together they welcomed everyone to Helsinki and spoke of the development of the welding industry in the host country and achievements and innovations in welding productivity.

Later in the evening, Mr Meuronen introduced IIW Vice-President **Mr Chee-Pheng Ang** to say some words of thanks, and to present the Certificate of Appreciation to the local organising committee.

A Service Recognition Award was presented by **Dr Luca Costa**, Chairman of the Technical Management Board, to **Mr Robert Shaw** in appreciation of his outstanding voluntary service as Chairman of Commission XV *Design, analysis and fabrication of welded structures* for nine years.

The IIW President Prof Gary Marquis announced the recipients of the 2015 Fellow Awards:

- Prof Dr-Ing Cetin Morris Sonsino
- Prof Chitoshi Miki
- Dr Thomas Siewert
- Prof Dr Takashi Miyata
- Prof Pingsha Dong

After dinner, Prof Marquis returned to deliver the closing speech, thanking all the organisers and participants for their outstanding contributions.

The official handover of the IIW flag to the Member Society hosting the next IIW Annual Assemby forms an important and emotional part of the banquet and closing ceremony. **Mr John Burnett**, President and **Mr Geoff Crittenden**, Chief Executive Officer, of the Welding Technology Institute of Australia (WTIA),

represented the organising committee for the 69th IIW Annual Assembly and International Conference in Melbourne, Australia. They accepted the flag from **Mr Jouko Lassila**, Executive Director and **Mr Juha Kauppila**, Training and Qualification Manager of the WSF and invited all members of the IIW family to join him 'Down Under' in 2016.

From the left: Mr Geoff Crittenden and Mr John Burnett, CEO and President of WTIA (Australia), received the IIW flag from Mr Juha Kauppila and Mr Jouko Lassila, ANB Chief Executive and Executive Director of WSF (Finland)

Closing speech from Mr Ismo Meuronon, President of the Welding Society of Finland

Future IIW Annual Assemblies will be held as follows:

- 2016: Melbourne (Australia), 10-15 July
- 2017: Shanghai (PR China), 25-30 June
- 2018: Istanbul (Turkey)
- 2019: Bratislava (Slovakia)

Future International Congresses and IIW-Associated Events

YEAR	PLACE	DATE	EVENT
2015	Nürnberg, GERMANY	16 Sept	IIW-Associated Event Welding Trainer Conference 2015
	Seggau, AUSTRIA	27-30 Sept	IIW-Associated Event 11th International Seminar on Numerical Analysis of Weldability
	Budapest, HUNGARY	7-9 Oct	IIW-Associated Event 2 nd Young Professionals International Conference (YPIC)
	Munich, GERMANY	28-30 Oct	IIW-Associated Event 5 th IIW Welding Research and Collaboration Colloquium
2016	Halle (Saale), GERMANY	20-21 April	IIW-Associated Event 10 th International Conference on Beam Technologies
	Hyderabad, INDIA	22-24 April	IIW SG-RES Event 6 th IIW Welding Research and Collaboration Colloquium
	Halle (Saale),	11-12 May	IIW-Associated Event

	GERMANY		4th European Conference Join-Trans 2016
	Gijón, SPAIN	17-19 May	IIW-Associated Event 3 rd International Welding Congress & 21 st Conference on Material Joining
	Paris, FRANCE	13-15 Sept	IIW-Associated Event ESOPE 2016 "Construction and life of pressure equipment: the challenges of globalization"
2017	Metz, FRANCE	15-17 May (Provisional)	IIW International Congress Welding, Additive manufacturing and associated non-destructive testing
	Chennai, INDIA	7-9 Dec	IIW International Congress 4 th IIW International Congress

2015 IIW AWARDS

This section presents in detail the winners listed under the item 'Opening Ceremony'.

Henry Granjon Prize

The Henry Granjon prizes were presented by Dr Abdelkrim Chehaibou, General Manager of the Institut de Soudure (French Welding Institute).

Dr-Ing André Hälsig (left) and Dr Abdelkrim Chehaibou

Category A: Joining and Fabrication Technology

The prize was awarded to **Dr-Ing André Hälsig** (Germany) for his paper *Energy balance of welding processes.*

Dr Hälsig received his degree of Diplomingenieur in Mechanical Engineering in 2007 from the Technische Universität Chemnitz, Germany, with a focus on Welding Engineering, and in 2014 received his PhD degree in Welding Engineering. His PhD thesis on the characterisation of welding processes in terms of efficiency and energy balance was awarded the 2014 TU Chemnitz prize for the best doctoral thesis in mechanical engineering of the year. As all experiments for several different welding processes were carried out in one laboratory under the same conditions and applying the same experimental procedure, it was possible for the first time to reliably compare process efficiencies.

At present, Dr Hälsig heads the Welding Technologies Research Group at the Department of Welding Engineering at the TU Chemnitz. He is also highly active in national and international efforts to develop new standards (DIN, ISO) implementing the results of his research.

In parallel, Dr Hälsig is strongly involved in multi-material design. He and his research group developed several joining technologies for lightweight structures, especially for applications in transportation and aeronautics. These technologies are mainly focused on the safe and economic joining of metals and fibre-reinforced plastics with a thermoplastic matrix.

Dr Hälsig has authored 29 publications including six peer-reviewed journal papers (three of them in *Welding in the World*) and holds one patent.

Category B: Materials Behaviour and Weldability

The prize was awarded to **Mr Eun-Joon Chun** (Japan) for his paper Development of transverse-Varestraint test procedure with laser beam welding and evaluation of solidification cracking susceptibility in type 316FR stainless steel welds.

Eun-Joon Chun received his Master's Degree from the Department of Materials Science and Engineering, Pusan National University, South Korea in 2012. His dissertation was entitled *Continuous-cooling phase transformation behaviour in hot-rolled high strength steel for automotive chassis.* Since then, he has been attending the Department of Materials and Manufacturing Science at the Graduate School of Engineering, Osaka University, Japan.

His PhD studies on the repair welding of stainless steels (Type 316FR) for aged fast breeder reactors focus on the welding metallurgy of stainless steel (precipitation kinetics of brittle phases in 316FR weld metals, prediction of 6-phase embrittlement during long-term service exposure, effects of 6-phase and Na on the hot cracking susceptibility in order to investigate the repair weldability of aged 316FR steels), simulation of the metallurgical behaviour of welds and hot cracking in laser welds, as well as the effect of welding speed on the solidification segregation of solute elements in arc and laser welding.

Eun-Joon Chun has published nine papers (SCI: 5) as a first author and has been an invited speaker at six international conferences. He was also commended for the achievement, in 2014-2015, of the William Spararagen Memorial Award (Welding Journal Best Paper Award), Best Presentation Award from the Japan Welding Society, and Best Paper Award from the Visual-JW2014 International Symposium.

Category C: Design and Structural Integrity

From left: Dr Cécile Mayer, Dr Philipp Schempp and Dr Abdelkrim Chehaibou

The prize was awarded to **Dr Philipp Schempp** (Germany) for his paper Understanding grain refinement in aluminium welding.

Dr Schempp studied Mechanical Engineering at the Universities of Stuttgart, Germany and Valencia, Spain from 2003 to 2009. After receiving his diploma, he started his professional career in the Welding Technology Department of BAM Federal Institute for Materials Research and Testing in Berlin, Germany, where he dedicated himself to aluminium welding and metallurgy of fusion welds.

In 2013 he received his PhD degree with distinction (summa cum laude) from the Technical University of Berlin for his thesis *Grain refinement in aluminium GTA welds*. Dr Schempp is currently working as Materials and Corrosion Engineer for the inspection department of Royal Dutch Shell's Rhineland Refinery, Germany's largest crude oil refinery.

Dr Schempp published experimental results in thirteen peerreviewed articles and nine conference proceedings.

Category D: Human Related Subjects

The prize was awarded to **Dr Yukang Liu** (USA) for his paper *Toward intelligent welding robots: virtualized welding based learning of human welder behaviours.*

Dr Liu is currently a senior software engineer at The MathWorks, Natick, MA, USA. He received his BEng in Electrical Engineering from Northwestern Polytechnical University, Xi'an, PR China in 2009,

MSc and PhD in Electrical Engineering from the University of Kentucky, Lexington, KY, USA in 2012 and 2014, respectively.

His research interests include adaptive control of the welding process, machine vision/image processing, and machine learning applications. As the leading student researcher, he contributed to two NSF funded projects. He has authored/co-authored over 20 peer-reviewed journal publications, including the Welding Journal. He also published over 20 refereed conference papers, as well as one book chapter on welding, system modelling, and control. His paper presented at the 2012 IEEE Symposium on Industrial Electronics was honoured as one of the top ten scored papers over 300 papers. He also received the Best Presentation in Session Award at the 2013 American Control Conference.

He has held multiple industrial internship positions: research intern at Corning Inc., working on image understanding/classification for industrial glass forming application and thermal process modelling (2014); C++ algorithm software engineer intern at The MathWorks, Natick, MA, working on code generation and Autosar project for automobile applications (2013-2014); and, electrical engineer intern at Adaptive Intelligence Systems, Lexington, KY, focusing on embedded controller development for welding applications (2010).

Welding in the World Best Paper Award

From left: Dr Elin Marianne Westin, Prof John Lippold, Dr Cécile Mayer

The Welding in the World Best Paper Award, sponsored by the IIW, was presented by **Prof John C Lippold**, Chair of the Welding in the World Board of Editors, to **Dr Elin Marianne Westin** (Austria) for her paper *Element distribution in lean duplex stainless steel welds.*

Dr Westin holds an MSc degree in mechanical engineering from Luleå University of Technology, Sweden, an International Welding Engineer certificate and a PhD in materials sciences from the Royal Institute of Technology (KTH) in Stockholm.

From 2002 to 2010 she worked for Outokumpu Stainless where she was responsible for welding research on duplex alloys. In 2011 she joined Voestalpine Böhler Welding GmbH Austria, where she works as the global product manager focusing on high-alloyed flux-cored wires.

Dr Westin has published 14 peer-reviewed journal papers and 20 conference papers on welding of stainless steel. She is the Chairman of IIW Sub-Commission IX-H *Welding of Stainless Steel and Nickel Alloys*.

Yoshiaki Arata Award

From left: Dr Cécile Mayer, Prof Yoshinori Hirata and Prof Einar Halmøy

The Yoshiaki Arata Award, sponsored by the Japanese Delegation, was presented by **Prof Dr-Eng Yoshinori Hirata**, Head of the Japanese Delegation, to **Prof Dr Emeritus Einar Halmøy** (Norway).

Prof Halmøy received his MSc degree in physics from the Norwegian Institute of Technology in Trondheim, Norway, in 1966 and his PhD in plasma physics from Columbia University in New York, USA in 1971.

He then became involved in welding research and arc physics at the Royal Institute of Technology in Stockholm, Sweden. From 1973 to 1983 he was a research scientist at SINTEF in Trondheim working mainly with welding automation and underwater welding as well as, initially, laser metrology. In 1983 he joined the newly established Statoil research centre in Trondheim as Research Manager for materials. The main focus was on offshore structures and pipelines. Novel joining methods included forge welding and diffusion brazing.

In 1989 he was appointed Professor of Materials and Processes, with welding technology as the primary field, at the Norwegian University of Science and Technology, also in Trondheim. His main research interest has been mathematical modelling of the dynamics of gas metal arc welding. In 2008 he became Professor Emeritus while continuing with some teaching and consulting.

Prof Halmøy has served as Chairman of Study Group 212 *Physics of Welding* in the IIW as well as Chairman of the Norwegian Welding Association.

Walter Edström Medal

From left: Mr Lars Johansson and Prof Jan Pilarczyk

The Walter Edström Medal, sponsored by the Swedish Delegation, was presented by **Mr Lars Johansson**, Head of the Swedish Delegation, to **Prof Dr-In Jan Pawel Pilarczyk** (Poland).

Prof Pilarczyk graduated in Mechanical Engineering from the Silesian University of Technology in Gliwice, Poland in 1963. In 1967 he received the Graduate Welding Engineering degree from ESSA in Paris, France. Back at the Silesian University of Technology he worked for his PhD dissertation (1972) on different types of cracking in high strength steels.

Since 1963 Prof Pilarczyk has been with the Polish Welding Institute, where he was Institute Director for 25 years. In 1991 he received the title of Professor. He was a researcher on the weldability of steels and mechanical testing of welded structures, then Head of the Weldability Department, managing weldability investigations, mechanical testing of welded structures and metallographic examination of materials. He later held the position of Director of Research and Management. Finally, as Institute Director he coordinated important welding research programmes.

Prof Pilarczyk is a member of several national and international societies. He is particularly involved in both IIW and European Welding Federation (EWF) to develop and implement these activities in Poland.

In IIW, Prof Pilarczyk is head of the Polish Delegation, member of the General Assembly, of Commissions IX *Behaviour of Metals Subjected to Welding*, XIV *Education and Training* and SG-Res *Welding Research Strategy and Collaboration*, as well as IAB Groups A and B. He has been IIW Vice-President in 1998-2000, and received the 20- and 30-year Attendance Recognitions awards.

During his 52-year activity Prof Pilarczyk has published several tens of papers in journals and conference proceedings and authored five books. He has lectured in several Technical Universities in Poland.

Arthur Smith Award

From left: Mr Norman Cooper and Prof Luisa Coutinho

The Arthur Smith Award, sponsored by the United Kingdom Delegation, was presented by the Head of the UK Delegation, **Mr Norman Cooper**, to **Prof Luisa Coutinho** (Portugal).

Luisa Coutinho is a Professor in Manufacturing Technology at the Insituto Superio Técnico, Lisbon University, Portugal and a visiting professor at Cranfield University UK. She is a Senior Consultant of ISQ, the Portuguese Welding Institute. Her contribution to welding and joining technology has been recognised internationally through eight international awards and two honorary doctorates.

She has published over 200 papers and several books on welding and joining. As an entrepreneur, Prof Coutinho has created three companies, one ICT company and two manufacturing companies. She is a member of the investment committee of ASK, a venture capital company.

At IIW she has been a member of the Technical

Management Board for nine years, has chaired Study Group *Welding Research Strategy and Collaboration* (SG-RES) also for nine years, and served ten years as Director and Vice-President on the Board of Directors. Prof Coutinho has also been Delegate, Observer and Member on several Commissions, Task Groups and Select Committees.

In 2000 she was involved in the negotiations with the EWF for the establishment of the IIW International Authorisation Board (IAB) and since then has been involved in its operational role in managing the IIW training, qualification and certification system.

Prof Coutinho's attendance at IIW Annual Assemblies started in 1984 with a paper presentation in Study Group 212 *Arc Physics*, and as Delegate on Commission XII *Arc Welding Processes and Production Systems*. Since then she has attended 31 IIW Annual Assemblies.

Thomas Medal

From left: Mr David Landon and Dr Glenn Ziegenfuss

The Thomas Medal, sponsored by the American Welding Society (AWS), was presented by **Mr David J. Landon**, President of the AWS, to **Dr H. Glenn Ziegenfuss** (United States).

Dr Ziegenfuss received a BSc in Physics and a PhD in Solid State Science from the Pennsylvania State University in 1966 and 1973, respectively. After college, he was employed at the Westinghouse Bettis Atomic Power Laboratory in Pittsburgh, Pennsylvania, responsible for automatic welding operations for most of the US Navy's nuclear submarines and aircraft carriers.

After leaving Westinghouse, he became Technical Director of the AWS, and after that Executive Director of the Standards Engineering Society (SES). Overlapping this position, he chaired the American National Standards Institute's Executive Standards Council. He is a retired American Society of Association Executives (ASAE) Certified Association Executive and a SES Certified Standards Manager and SES Fellow.

Dr Ziegenfuss began his IIW standardisation involvement in 1984 as the United States Delegate on Select Committee Standardization (SC-STAND) during the IIW Annual Assembly in Boston,

Massachusetts, USA. The last meeting of SC-STAND was held in July 2007 when it became Working Group Standardization (WG-STAND) under the IIW Board of Directors. Dr Ziegenfuss has attended and participated in every meeting of these two groups since July 1984, a total of 62 consecutive meetings.

Dr Ziegenfuss also attended and participated in the ISO TC 44 *Welding and Allied Processes* plenary meetings as the United States Delegate from 1985 through 1998, then as the IIW liaison representative from 1999 through 2009. In addition, he attended and participated in the CEN TC 121 *Welding* plenary meetings as the ISO TC 44 representative from 1991 through 1998, then as the IIW liaison representative from 1999 through 2010.

From 1999 through 2010, Dr Ziegenfuss served as the Standards Officer for IIW. He currently is Chairman of IIW Commission VI *Terminology* on which he has been the United States Delegate since 1985.

Halil Kaya Gedik Award

From left: Mrs Hülya Gedik-Sadiklar and Prof Dr Stephen Liu

Sponsored by the Turkish Delegation, the Halil Kaya Gedik Award was presented by **Mrs Hülya Gedik-Sadiklar**, Chair of the Board of Gedik Holding and President of GEV - Gedik Education and Social Benefits Foundation, to **Prof Dr Stephen Liu** (USA).

Dr Liu is a Professor of Metallurgical and Materials Engineering at the Colorado School of Mines (CSM). He holds a degree in Industrial Chemistry, Bachelor's and Master's degrees in Metallurgical Engineering from the Universidade Federal de Minas Gerais in Brazil. He received his PhD degree in Metallurgical Engineering from CSM. Before joining the CSM faculty in 1987, Dr Liu was a steel research metallurgist at ACESITA, an integrated steel mill in Brazil, and an Assistant Professor in Industrial and Manufacturing Engineering at the Pennsylvania State University, University Park Campus.

Prof Liu is the Director of the Center for Welding, Joining and Coatings Research and the Site Director of the NSF-Center for Integrative Materials Joining Science for Energy Applications. He is the interim American Bureau of Shipping Chair Professor at CSM. He is also the 2015 Fulbright-FACEPE Distinguished Chair of Oil and Gas Science and Engineering at the Universidade Federal de Pernambuco in Recife, Brazil.

Prof Liu has served as US Delegate for IIW Commission XVII *Brazing, Soldering and Diffusion Bonding* for a number of years and received the IIW Jaeger Lecture Award in October 2014.

He has supervised 80 Masters and PhD graduates and has authored over 360 technical publications and reports. He has received several prestigious AWS honours, including the Comfort A Adams Lecture Award (2008), Honorary Membership Award, William Spraragen Award, McKay-Helm Award, Robert L Peaslee Brazing Award, Charles H Jennings Award, Adams Memorial Membership Award, and District Meritorious Award.

He is an AWS Distinguished Member, was elected AWS Fellow in 1996, and delivered the AWS Plummer Lecture in 1998. He has also received the ASME Special Achievement Award and the SAE Teetor Educational Award. He was elected ASME Fellow in 1999 and ASM Fellow in 2001.

IIW Regional Activities Award

From left: Prof Petar Darjanov, Mr John Burnett and Prof Marin Beloev

Sponsored by the Australian Delegation, the Regional Activities Award was presented by **Mr John Burnett**, head of the Australian Delegation jointly to **Dr-Eng Marin Georgiev Beloev** and **A Prof Dr Petar Ivanov Darjanov** (Bulgaria).

Dr Beloev graduated in Mechanical Engineering from the TU Sofia, Bulgaria in 1962 and received his PhD from the Paton Institute in Kiev, Ukraine in 1973. He has worked in the fields of metallurgical industry equipment, pipelines and power plants and since 1992 owns a company engaged in pipeline construction projects. He is the author or co-author of over 30 innovations.

He has been active in IIW since 1965. He was a co-organiser the 1987 IIW Annual Assembly in Sofia and was the initiator of the creation of the Walding Society.

Bulgarian ANB. He is Co-President of the Bulgarian Welding Society.

Prof Darjanov studied electrical engineering at the TU Sofia, Bulgaria and the Moscow Institute of Energetics, Russia and received his PhD from the TU Sofia in 1976.

He commenced as a junior researcher at the TU Sofia in the field of welding power sources. He became Associate Professor at the TU Sofia (1969-2007), where he was also Vice-Dean of the English language department (1995-2005). He currently leads the Bulgarian Center for Qualification in Welding (BCQW). He is the author or co-author of over 20 innovations and 100 papers. Prof Darjanov's activity in IIW started in 2002.

Both **Beloev** and **Darjanov** are currently members of the IIW General Assembly and the Board of Directors Working Group for Regional Activities and Liaison with Developing Countries (WG-RA). They have played an active role in developing cooperation at the regional level through the South East European Network (SEENet) with the objective of implementing welding technology innovations and education. They organised the 2nd South East European IIW International Congress in Sofia and were co-organisers of the 3rd such IIW International Congress held in Timisoara, Romania in June this year.