C-XIX Physics of Welding

79th Annual Assembly Salzburg 2026

XIX-0041-2026

Chair: Prof. Isabelle Choquet

1. Agenda for the meetings

Monday 13 July 2026

Time	Item	Resp.	Action
09:45	1. Introduction	I.CHOQUET	
	1.1. Anti-Trust and Code of Conduct Briefing	I.CHOQUET	Information
	1.2. Attendees and Apologies, Identification of C-XIX delegates	I.CHOQUET	Information
	1.3. Adoption and Agreement of Agenda	I.CHOQUET	**Motion required**
	1.4. Brief report of Joint Intermediate Meeting in Linerace, Spain	I.CHOQUET	Information
	1.5. Direction and topics of Comm.XIX	I.CHOQUET	**Motion required**
10:00	2. Presentation of documents	Authors	Information
	2.1. Keynote lecture	M.TANAKA	
	2.2. Session I	I.CHOQUET	
12:40	Close of Day 1 Activities		

Tuesday 14 July 2026

Time	Item	Resp.	Action
8:30	3. Opening of Joint Session with C-I, C-IV, C-XII and C-XIC	Authors	Information
8:30	3.1. Session 1	S. YAMANE	Information
	3.2. Session 2	P. HOCHANADEL	Information
	3.3. Session 3	D. KAUTZ	Information
	3.4. Session 4,	I. CHOQUET	Information
17:55	Close of Day 2 Activities		Information

Wednesday 15 July 2026

Time	Item	Resp.	Action
8:30	**4. Presentation of documents**	Authors	
8:30	**4.1. Session II**	Y.OGINO	
10:45	**4.2. Session III**	Y.OGINO	
12:10	**5. Recommendation of submission to IIW Journal "Welding in the World"**	I. CHOQUET	**Motion required**
	6. Date and place of next meeting	I.CHOQUET	**Motion required**
12:40	**Close Out of Commission XIX**	I.CHOQUET	Information

2. Structure of Commission XIX

Chair : Prof. Isabelle Choquet
Vice-chair: Assoc. Prof. Yosuke Ogino

Delegate :

Delegate Name	Country
Stephan EGERLAND	AUSTRIA
Wim VERLINDE	BELGIUM
Patricio MENDEZ	CANADA
Xueming HUA	CHINA
Ivica GARASIC	CROATIA
Jesper SKOVFO	DENMARK
Mika SIREN	FINLAND
Sven-Frithjof GOECKE	GERMANY
Akos MEILINGER	HUNGARY
Deepak ACHARYA	INDIA
Alan AVON	ITALY
Satoru ASAI	JAPAN
Dae-won CHO	REPUBLIC OF KOREA
Arpad KOVES	SLOVENIA
Kristian KRUGER	SOUTH AFRICA
Paul KAH	SWEDEN
Savas DILIBAL	TURKEY
Marcello CONSONNI	UK
Sergey MAKSIMOV	UKRAINE
Yuming ZHANG	USA

Appendix (Schedule of Presentations)

79th Annual Assembly Salzburg 2026

C-XIX: Physics of Welding

July 13 - 15, 2026

Room: Karajan 1, 2, 3

Monday, July 13, 2026, 0945 – 1240
Commission XIX Meeting

0945 Administrative Tasks

1000: Keynote presentation

[01] Perspective on Evolution of Arc Welding Processes through the Understanding of Electrode Phenomena
Manabu Tanaka (Japan)
XIX-0042-2026

10:50 Session I, C-XIX Papers (20 minutes per paper including questions)
Session Chair: Prof. Isabelle Choquet

[02] 1055: High-speed synchrotron X-ray imaging of metal transfer process in flux-cored arc welding.
Shinichi Tashiro, Dang Khoi Le, Kieu Anh Duong Nguyen, Quang Ngoc Trinh, Tetsuo Suga, Shuji Sasakura, Kazuhiro Fukuda, Kousuke Yamaguchi, Masato Hoshino, Kentaro Uesugi, Patricio Fernando Mendez, Anthony B. Murphi, Van Hanh Bui, Manabu Tanaka.
XIX-0043-2026

[03] 1115: Unravelling the role of electrode polarity in metal transfer behavior and arc appearance in Ar-CO2 FCAW using rutile-type and basic-type flux-cored wires.
Dang Khoi Le, Shinichi Tashiro, Kieu Anh Duong Nguyen, Quang Ngoc Trinh, Tetsuo Suga, Shuji Sasakura, Kazuhiro Fukuda, Kousuke Yamaguchi, Masato Hoshino, Kentaro Uesugi, Patricio Fernando Mendez, Anthony B. Murph, Van Hanh Bui, Manabu Tanaka. (Japan)
XIX-0044-2026

[04] 1135: Arc Ultrasonic Excitation Mechanism and Multiphysics Behavior in Ultrasonic Frequency Pulsed Current Assisted GMAW.
Ji Chen, Xuefei Cui, Shengli Li, Lei Shi, Dongsheng Wu, Chuansong Wu (China)
XIX-0045-2026

[05] 1155: Study on the Mechanism of Metal Transfer Driven by Arc Plasma Composition Change in 'Pulsed Gas MAG' welding.
Kohei Fujiwara, Tadahisa Tsuyama, Yosuke Ogino, Kazufumi Nomura, Masahiro Ohara, Takashi Mizyguchi, (Japan)
XIX-0046-2026

[06] 1215: Numerical study on arc plasma and metal transfer in CO2 welding with periodic Ar-gas injection.
Yosuke Ogino, Suguru Mitamura, Tomokazu Sano, Kohei Fujiwara, Tadahisa Tsuyama, Masahiro Ohara (Japan)
XIX-0047-2026

1240 Close of Day 1 Activities

Tuesday July 14, 2026, 0830 -1800
Joint Meeting of C-I, C-IV, C-XII, and C-XIX

Morning Session, 0830-1300
Session 1, Chair: Professor Satoshi Yamane

0830: Opening of Joint Meeting of C-I, C-IV, and C-XII – Professor Satoshi Yamane

[07] 0830: Fundamental energy-material interaction framework for process harmonisation and transferability in fusion based additive manufacturing and welding.
Stewart Williams (UK)
I-1732-2026/IV-1743-2026/XII-2834-2026/ XIX-0048-2026

[08] 0850: Experimental study of different multi-camera configurations for in-situ monitoring of the DED-arc process
Akshay Manoj Shahane, Götz-Friedrich Gottschalk, Sven-Frithjof Goecke (Germany)
I-1733-2026/IV-1744-2026/XII-2835-2026/XIX-0049-2026

[09] 0910: Influence of Environmental Pressure on Microstructure and Mechanical Properties of Wire-Arc Directed Energy Deposited Al-Cu Alloy
Ji Chen, Hairui Wang, Dongsheng Wu, Hao Su, Shengli Li, Chuansong Wu (China)
I-1734-2026/IV-1745-2026/XII-2836-2026/XIX-0050-2026

[10] 0930: Overhang Structure Fabrication in Wire Arc Directed Energy Deposition Using Sand-Printed Supports
Chang Young Choi, Hwi Jon Son, Yeong Jae Kim, Young Tae Cho (Korea)
I-1735-2026/IV-1746-2026/XII-2837-2026/XIX-0051-2026

[11] 0950: Combination of laser-MIG hybrid welding and submerged arc welding processes for medium to thick EH36 plates welding
Chen Shen, Xueming Hua, Yuelong Zhang, Fang Li, Xiaopeng Wei (China)
I-1736-2026/IV-1744-2026/XII-2838-2026/XIX-0052-2026

1010: Presentation by IIW Staff/Elisabetta Sciaccaluga (IIW)

Coffee Break (1015– 1045)

Session 2, Chair: Dr. Patrick Hochanadel

[12] 1045: Dissimilar copper-stainless steel welding by blue laser in heat pumps manufacturing
António Pereira, Miriam Tavares, Dina Silva, Catarina Bastos, Nélia Silva, Bernardo Mascate (Portugal)
I-1694-2026/IV-1748-2026/XII-2339-2026/XIX-0053-2026

[13] 1105: Fundamental mechanisms of spatter formation during full penetration laser welding revealed by high-speed synchrotron X-ray imaging
Christian Diegel, Leander ScFcohmidt, Klaus Schricker, Marc Seibold, Hannes Friedmann, Peter Hellwig, Fabian Fröhlich, Falk Nagel, Alexander Rack, Herwig Requardt, Yunhui Chen (Germany)
I-1695-2026/IV-1749-2026/XII-2840-2026/XIX-0054-2026

[14] 1125: 6kW High-power and High-brightness Blue Laser using Wavelength Beam Combining Technology
Kazuya Hatakeyama, Norihiro Dejima, Yoshio Okamoto, Yasuo Tanahashi, Yuto Oki, Takuya Tsujimoto, Nao Senga, Yoshihiro Kimura, Ryohei Hirose, Yojiro Ichiraku, Tsutomu Yamada, Kaname Saito, Masaki Omori (Japan)
I-1696-2026/IV-1750-2026/XII-2841-2026/XIX-0055-2026

[15] 1145: Numerical and experimental investigation of metal vapour dynamics in electron beam welding for in-orbit manufacturing
Federico Faustini, Tiberiu Minea, Adrien Revel, Guillaume Mohara (France)
I-1697-2026/IV-1751-2026/XII-2842-2026/XIX-0056-2026

[16] 1205: Modeling Temperature Dependence of Laser Absorptivity for Copper in Laser Additive Manufacturing
Susumu Kato, Haruhisa Koguchi, Tetsuji Shimizu, Keisuke Takenaka, Yuji Sato, Masahiro Tsukamoto, (Japan)
I-1698-2026/IV-1752-2026/XII-2843-2026/XIX-0057-2026

Afternoon Session, 1400-1800
Session 3, Chair: Mr. Doug Kautz

1400: Opening of Afternoon Session of C-I, C-IV, and C-XII – Dr. Patrick Hochanadel

[17] 14:05: Development of net-shape wire based additive manufacturing for the International Space Station
Goncalo Pardal, Xin Chen, Stewart Williams, Anthony Lecossais, Batiste Allilaire, Sebastien Girault, Mathieu Chevalier, Advenit Makaya, Caterina Lantaffi, Rob Postema (United Kingdom)
I-1699-2026/IV-1753-2026/XII-2844-2026/XIX-0058-2026

[18] 14:25: Wire Arc Directed Energy Deposition of High-Strength Steels: Initial Results and Future Directions
Ruslan Kim, Kaue C. Riffel, Antonio J. Ramirez (United States)
I-1700-2026/IV-1754-2026/XII-2845-2026/XIX-0059-2026

[19] 1445: Analysis of Mechanical and Metallurgical Properties of ER110S-G HSLA Steel Parts Manufactured by Wire Arc Additive Manufacturing (WAAM)
Bruno Cota, Matheus Miranda, Valdemar Duarte, Telmo Santos, Tarcísio Brito, Gustavo Carvalho (Brazil)
I-1701-2026/IV-1755-2026/XII-2846-2026/XIX-0060-2026

[20] 1505: Geometrical and mechanical properties of mild steel DED-Arc plates
Max Mierzwa, Erhan Özel, Mirco Olesch, Rahul Sharma, Nils Rittich, Helen Bartsch, Markus Feldmann (Germany)
I-1702-2026/IV-1756-2026/XII-2847-2026/XIX-0061-2026

[21] 1525: Experimental Investigation and Process Window Development for Bead Geometry Control in SS316L SI DED-Arc Additive Manufacturing
Antti Salminen, Ashish Ganvir, Mohsen Amraei, Shafi Uddin (Finland)
I-1703-2026/IV-1757-2026/XII-2397-2026/XIX-0062-2026

1545: Presentation by *Welding in the World* (Editor in Chief – Prof. Norbert Enzinger – confirmed)

Coffee Break (1600 – 1615)

Session 4, Chair: Prof. Isabelle Choquet

[22] 1615: Influence of Ultrasonic Frequency Pulsing on Arc Characteristics, Droplet Transfer, and Melt Flow in GMAW
Yuan Zhao, Zewu Qi, Bojin Qi (China)
I-1737-2026/IV-1758-2026/XII-2848-2026/ XIX-0063-2026

[23] 1635: Influence of the electromagnetic weld pool support on arc stability.
F. Akyel, Ö. Üstündag, N. Bakir, C. Brunner-Schwer (Germany)
I-1738-2026/IV-1759-2026/XII-2849-2026/XIX-0064-2026

[24] 1655: Predicting and Mitigating Distortion in Wire L DED Using Thermomechanical Simulations and Experimental Validation
Dik Baas, Björn Nijhuis, Christiaan Kok, Constantinos Goulas (Germany)
I-1739-2026/IV-1760-2026/XII-2850-2026/XIX-0065-2026

[25] 1715: Tailoring Microstructure and Mechanical Properties in Deep-Penetration Vacuum Laser Welding of Inconel 718 via High-Frequency Beam Oscillation
Meng Jiang, Lijun Yang, Xi Chen, Yanbin Chen (China)
I-1740-2026/IV-1761-2026/XII-2851-2026/XIX-0066-2026

[26] 1735: Hot cracking in welding: A multiscale simulation study
Fang Han, Zhihang Zhang, Zhibo Dong (China)
I-1741-2026/IV-1762-2026/XII-2852-2026/XIX-0067-2026

1755: Close Out of First Day Joint Meeting of C-I, C-IV, C-XII, and C-XIX – Prof. Isabelle Choquet

Wednesday 15 July 2026, 0830 – 1240
Commission XIX Meeting (continued from Monday)

Session II, C-XIX Papers (20 minutes per paper including questions)
Session Chair: Assoc. Prof. Yosuke Ogino

[27] 0830 Experimental investigation of electrode erosion and deformation mechanisms in Ar-N_2 TIG welding.
Keigo Tanaka, Hisaya Komen, Takuto Yamaguchi, Manabu Tanaka. (Japan)
XIX-0068-2026

[28] 0850 In-situ Evaluation of Convection Behavior in Aluminum Alloy Melting Zone during Resistance Spot Welding of Fe-Al Dissimilar Materials.
Muneyoshi Iyota, Yuta Funabiki, Mizuki Tachibana, Takahisa Shobu, Tomoki Matsuda, Yujiro Hayashi, Tomokazu Sano (Japan)
XIX-0069-2026

[29] 0910 Evaluation of Heat Generation Characteristics and Fluid Behavior at the Interface in a Linear Friction Joining Process Using the Particle Method.
Takaaki Yoshii, Fumikazu Miyasaka, Kazushi Okada (Japan)
XIX-0070-2026

[30] 09:30 Discussion on transition prediction in metal transfer with axial droplet elongation in gas metal arc welding.
Yuriko Sato, Yosuke Ogino, Tomokazu Sano (Japan)
XIX-0071-2026

[31] 09:50 Investigation of metal transfer stability in LDED-w
Ali Abadi, Yongcui Mi, Fredrik Sikström, Isabelle Choquet (Sweden)
XIX-0072-2026

1015-1045: Coffee break

Session III, C-XIX Papers (20 minutes per paper including questions)
Session Chair: Assoc. Prof. Yosuke Ogino

[32] 10:45 Investigation of blowhole formation mechanism in gas metal arc welding by gas-liquid two-phase flow simulation using particle method.
Hisaya Komen, Masato Miwa, Yoshihiro Tanabe, Yutaro Matsuo, Kengo Hyoma, Koutarou Inose, Manabu Tanaka. (Japan)
XIX-0073-2026

[33] 11:05 Effect of Base Metal Geometry on Molten Pool Behavior and Solidification in GMAW Bead-on-Plate Welding.
Gwang-Ho Jeong, Sang-Hyun Ahn, Dae-Hwan Kim, Dae-Won Cho, Young Tae Cho (Korea)
XIX-0074-2026

[34] 11:25 From Arc Plasma Simulation to Virtual Imaging: A Framework for Welding Parameter Interpretation
Feng Shi, Hui Jin (China)
XIX-0075-2026

[35] 11:45 A unified simulation method for the entire welding processes based on smoothed particle hydrodynamics
Lukas Westhofen, Jan Bender, Oleg Mokrov, Sergej Warkentin, Rahul Sharma, Uwe Reisgen (Germany)
XIX-0076-2026

[36] 1205: Analysis of weld pool and weld bead formation during gas metal arc welding (GMAW) using parameterized surrogate model accounting for the distributed dynamic effects of the arc
Oleg Mokrov, Rahul Sharma, Uwe Reisgen, Sergej Warkentin, Lukas Westhofen, Jan Bender (Germany)
XIX-0077-2026