



INTERNATIONAL INSTITUTE OF WELDING

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Chair: Prof. Huaping Xiong
Delegation: China

Doc. XVII-0074-24
8th-10th July, 2024

Commission XVII: Brazing, Diffusion Bonding and Soldering

Agenda for the 77th Annual Assembly and International Conference

Rhodes, Greece, 8th -10th July 2024

Program Summary

Time	Meetings	Venue
July 8 (Monday) 9:00am-13:00pm	C-XVII Workshop	EXECUTIVE D
July 9 (Tuesday) 9:00am-13:10pm	C-XVII & C-VII Joint Meeting	Nafsika B [40]
July 10 (Wednesday) 9:00am-13:00pm	C-XVII Workshop	Nafsika B [40]

Remarks:

The presentation time of 20 minutes includes 15-min presentation and 5-min discussion.

77th IIW Annual Assembly, Commission XVII meeting

FIRST DAY, 8th July, 2024, 9:00am — 13:00pm

Session I (9:00am — 10:40am)

- 1) Introduction to each other (9:00am — 9:05am)
- 2) Welcome speech and introduction to IIW & Commission XVII by Huaping Xiong (9:05am — 9:15am)
- 3) Work Program identification and technical presentations (9:15am — 12:50pm)

Presentations, chaired by Simon Jahn and Huaping Xiong

(The presentation time of 20 minutes includes 15-min presentation and 5-min discussion)

- 4.1) Presentation 1 (Invited): (Doc XVIIA-0292-24) “Distribution of gamma-prime precipitates in brazes of Inconel 738LC using a boron- and silicon-free multi-principal element alloy filler”
- By Zhenzhen Yu, Colorado School of Mines, United States (9:20am — 9:40am)
- 4.2) Presentation 2: (Doc XVIIA-0293-24) “Deposition brazed coatings for improving tribological properties of plain bearings”
- By Sophie Vinke, RWTH Aachen University, Germany (9:40am — 10:00am)
- 4.3) Presentation 3: (Doc XVIIA-0294-24) “Simultaneous metallization and brazing seam reconstruction to strengthen SiC_f/SiC composites heterogeneous brazed joints”
- By Yu Zhang, Beihang University, China (10:00am — 10:20am)
- 4.4) Presentation 4: (Doc XVIIA-0295-24) “Wetting and reactivity during brazing of ceramics by reactive alloys”
- By Figiri Hodaj, Grenoble INP - Université Grenoble Alpes, France
(10:20am — 10:40am)

COFFEE/TEA BREAK, (10:40am – 11:10am)

Session II (11:10am — 13:00pm)

Presentations, chaired by Lukas Wojarski and Peng He

- 4.5) Presentation 5 (Invited): (Doc XVIIA-0296-24) “Investigation on brazing of Zirconia ceramic with Bi₂O₃-B₂O₃-Al₂O₃ glass”
- By Wei Guo, Northwestern Polytechnical University, China (11:10am — 11:30am)
- 4.6) Presentation 6: (Doc XVIIA-0297-24) “Influence of microstructure and residual stresses on the mechanical capability of brazed tungsten carbide/steel joints”
- By Hanigah Kanagarajah, TU Dortmund University, Germany (11:30am — 11:50am)
- 4.7) Presentation 7: (Doc XVIIA-0306-24) “Dissimilar material brazing interface microstructure and mechanical properties of brazing C/C composite and superalloy honeycomb”
- By Runzhou Xu, AVIC Manufacturing Technology Institute, China
(11:50am — 12:10pm)
- 4.8) Presentation 8: (Doc XVIIA-0298-24) “Effect of Ge and In on the structure and thermodynamic characteristics of high-entropy MnCoNiCu alloys”
- By Svitlana Maksymova, The E.O. Paton Electric Welding Institute, Ukraine
(12:10pm — 12:30pm)
- 4.9) Presentation 9: (Doc XVIIA-0305-24) “Mechanical properties and microstructure of a Co-base superalloy/PIP-SiC_f/SiC joint by using the alloying process”

- By Jia Yang, Harbin Institute of Technology, China (12:30pm — 12:50pm)

5) Closing Remarks (12:50pm — 13:00pm) Huaping Xiong and Simon Jahn

SECOND DAY, *9th July (Tuesday)*, 2024, 9:00am — 13:10pm

**JOINT MEETING BETWEEN C-XVII and C-VII:
Morning Session III (9:00am — 10:50am)**

- 1) Opening (9:00am — 9:05am), **Jolanta.Janczak-Rusch and Huaping Xiong**
 - Welcome and Introduction to Commissions VII and XVII
- 2) Special presentations from Prof. Xiaoyan Li (chair of IIW-TMB) and Stephan Egerland (previous chair of IIW-TMB) (9:05am — 9:15am) (flexible)
- 3) Special presentations from Prof. Majid Farajian and Erdmuth Raufelder (WITW) (9:15am — 9:25am) (flexible)
- 4) Special presentations from Elisabetta (IIW Secretariat) /Luca Costa (IIW-CEO) (9:25am — 9:35am) (flexible)
- 5) Technical presentations (9:35am — 13:00pm)

Chaired by Jolanta Huaping Xiong and Janczak-Rusch

- 5.1) Presentation 1: (Doc XVIIA-0300-24, Doc VII-0266-24) “Effect of vacuum brazing on the microstructure and pseudoelasticity of NiTi shape memory alloy joints”
- By Lukas Wojarski, TU Dortmund University, Germany (9:35am — 9:55am)
- 5.2) Presentation 2: (Doc XVIIIB-0074-24, Doc VII-0267-24) “Ultrastrong and ductile transient liquid phase (TLP) bonding joints reinforced by ordered multi-precipitates”
- By Lin Yuan, City University Of Hong Kong, China (9:55am — 10:15am)
- 5.3) Presentation 3: (Doc XVIIA-0302-24, Doc VII-0268-24) “Ceramic to metal dissimilar brazing for high temperature applications”
- By Zhenzhen Yu, Colorado School of Mines, United States (10:15am — 10:35am)
- 5.4) Presentation 4: (Doc VII-0269-24, Doc XVIIA-0304-24) “Dissimilar laser brazing of aluminum alloy and galvanized steel using dual beam”
- By Tomo Ogura, Osaka University, Japan (10:35am — 10:55pm)

COFFEE/TEA BREAK, (10:55am – 11:20am)

Morning Session IV (11:20am — 13:10pm)

Chaired by Simon Jahn and Susann Hausner

- 5.5) Presentation 5: (Doc XVIIIB-0073-24, Doc VII-0270-24) “Investigation on pulsed-current-assisted low temperature rapid diffusion bonding of Ti-6Al-4V alloy”
- By Qiuguang Zhang, Harbin Institute of Technology, China (11:20am — 11:40am)
- 5.6) Presentation 6: (Doc VII-0271-24, Doc XVIIC-0071-24) “Investigation of multiple chemical systems for the preparation of nickel nanopastes”
- By Benjamin Sattler, Technical University Chemnitz, Germany (11:40pm — 12:00pm)
- 5.7) Presentation 7: (Doc XVIIA-0307-24, Doc VII-0272-24) “Dissolving brittle phases in Ni based filler metals by adding W”
- By Marvin Erck, RWTH Aachen University, Germany (12:00pm — 12:20pm)
- 5.8) Presentation 8: (Doc XVIIA-0308-24, Doc VII-0273-24) “Research on the in-situ high-entropy strengthening and toughening mechanism of TZM/Kovar alloy dissimilar brazed joints”
- By Xinyu Ren, Beijing Institute of Aeronautical Materials, China (12:20pm — 12:40pm)

- 5.9) Presentation 9: (Doc VII-0274-24, Doc XVIIC-0072-24) “Electrohydrodynamic printing of self-reduced soldered silver nanowire electrodes for flexible aqueous zinc ion batteries”
- By Shang Wang, Harbin Institute of Technology, China (12:40pm — 13:00pm)
- 6) Future joint meeting between VII and XVII, and Closing Remarks, **Jolanta Janczak-Rusch and Huaping Xiong**
• Submission of documents, paper recommendations to WITW, etc (13:00pm — 13:10pm)

THIRD DAY, *10th July*, 2024, 9:00am — 13:00pm
Session VII (9:00am — 10:40am)

1) Technical presentations (9:00am — 15:50pm)

Presentations, chaired by Huaping Xiong and Robin Grunert

- 1.1) Presentation 1 (Invited): (Doc XVIIIA-0310-24) “Microstructural analysis of PBF-LB/M-bulk hybrid joints of IN718 brazed with VZ2177”
- By Lukas Wojarski, TU Dortmund University, Germany (9:00am — 9:20am)
- 1.2) Presentation 2: (Doc XVIIB-0075-24) “A new strategy for preparing high-strength and high-precision diffusion bonding GH536 joints via pulsed current and subsequent heat treatment”
- By Tong Wu, Harbin Institute of Technology, China ((9:20am — 9:40am)
- 1.3) Presentation 3: (Doc XVIIB-0076-24) “Microstructure and mechanical properties of diffusion bonded joints of Haynes 230 superalloy with Haynes 188 superalloy”
- By Zhaoxi Li, Northwestern Polytechnical University, China (9:40am — 10:00am)
- 1.4) Presentation 5: (Doc XVIIB-0078-24) “Modeling of interfacial void closure and prediction of bonding time in solid-state diffusion bonding”
- By Yu Peng, Northwestern Polytechnical University, China (10:00am — 10:20am)
- 1.5) Presentation 6 (Invited): (Doc XVIIIA-0311-24) “A novel design for a YIG/YIG magnetic homogenization integrated structure”
- By Ce Wang, Zhengzhou Research Institute of Harbin Institute of Technology, China (10:20am — 10:40am)

COFFEE/TEA BREAK, (10:40am – 11:10am)

Session VIII (11:10am — 13:00pm)

Presentations, chaired by Warren Miglietti

- 1.6) Presentation 6 (Invited): (Doc XVIIIA-0312-24) “Effects of local gas shielding on induction brazing of chromium-containing brazing materials: an experimental approach”
- By Robin Grunert, WHZ Westsächsische Hochschule Zwickau, Germany (11:10am — 11:30am)
- 1.7) Presentation 7: (Doc XVIIIA-0299-24) “Microstructure and properties of TiB_w/TA15 titanium matrix composites vacuum brazing interface”
- By Yao Zhang, AVIC Manufacturing Technology Institute, China (11:30am — 11:50am)
- 1.8) Presentation 8: (Doc XVIIIA-0301-24) “Research on the fracture behavior of the TiAl intermetallics brazed joint based by the in-situ tensile test”
- By Xinyu Ren, Beijing Institute of Aeronautical Materials, China (11:50am — 12:10pm)
- 1.9) Presentation 9: (Doc XVIIIA-0309-24) “Microstructural evolution of sapphire/Kovar alloy joints brazed with Ag-Cu-Ti filler”

- By Shuai Huang, Beijing Non-ferrous Metals and Rare Earth Research Institute Co., Ltd,
China (12:10pm — 12:30pm)

1.10) Presentation 10: (Doc XVIIIA-0303-24) “Braze welding of rod-type art structures”

- By Serhii Minakov, The E.O. Paton Electric Welding Institute, Ukraine
(12:30pm — 12:50pm)

3) Discussions and Closing Remarks (12:50pm —13:00pm), Huaping Xiong and Simon Jahn
Next intermediate meeting of C-XVII, Information of several international conferences,
Submission of documents, Recommendations of WITW, etc

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