



Chair: Akio Hirose  
Delegation Japan

Doc. VII-0180-19  
July 8, 2019

## **COMMISSION VII: MICROJOINING AND NANOJOINING**

### **Agenda in the 72<sup>nd</sup> Annual Assembly and International Conference**

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Bratislava, Slovakia, 7–12 July 2019

#### **Program Summary**

<b>Time</b>	<b>Meetings</b>	<b>Room</b>
July 8 (Monday) 8:15-12:30	C-VII Workshop	CP Vienna
July 8 (Monday) 14:15-18:15	C-VII/C-XVII Joint Meeting	CP London III
July 9 (Tuesday) 14:15-18:15	C-VII Workshop	CP Paris
July 10 (Wednesday) 14:15-18:15	C-I/C-VII Joint meeting	CP London II & III

## Monday July 8, 8:15-12:30 (Room CP Vienna)

### 1. C-VII Annual Workshop

#### 1-1 Opening (8:15), Akio Hirose

- Welcome and Introduction to Commission VII
- Approval of the agenda (Doc. VII-0180-19)
- Approval of the minutes of the meeting held in Bali, Indonesia 15-20 July 2018 (Doc. VII-0181-19)

#### 1-2 Technical presentations (8:35)

#### Session I (Chair: Guisheng Zou)

Reference	Title	Presenter	Time
VIIA-0183-19	Controlling the brazing filler pattern through the nanomultilayer design: case study Ag-Cu/AlN nanomultilayers	Jolanta Janczak-Rusch, Empa, Switzerland	8:35-8:55
VIIA-0184-19	Cooperative Bilayer of Lattice-Disordered Nanoparticles: A Novel Nanoarchitecture for Low-Temperature Electronic Integrations	Lei Liu, Tsinghua University, China	8:55-9:15
VIIA-0185-19	Low-temperature metal-to-silicon joining using silver oxide decomposition without the metallized layer of substrate	Tomoki Matsuda, Osaka University, Japan	9:15-9:35
VIIA-0186-19	High performance printed electrically conductors adhesives by doping of polyaniline nanomaterials into silver paste	Jiayue Wen, Harbin Institute of Technology, China	9:35-9:55
VIIA-0187-19	Ultra-high yield strength of silver nanoporous materials	Peng Peng, Beihang University, China	9:55-10:15

Coffee break 10:15-10:45

#### Session II (Chair: Jolanta Janczak-Rusch)

VIIA-0188-19	Direct heterogeneous bonding of single crystalline SiC to Si, SiO <sub>2</sub> and glass	Chenxi Wang, Harbin Institute of Technology, China	10:45-11:05
VIIA-0189-19	Mass transportation of metal nanolayer fillers in confinement upon fast heating	Luchan Lin, Empa, Switzerland	11:05-11:25
VIIA-0190-19	Ag-Cu nanoalloy particles fabricated by pulsed laser deposition for lead-free interconnect materials	Qiang Jia, Tsinghua University, China	11:25-11:45
VIIA-0191-19	A novel Ag nanostructured film prepared by pulsed laser deposition for power devices interconnection	Wengan Wang, Tsinghua University, China	11:45-12:05



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VIIC-0205-19	Effect of Bonding Conditions on Peeling Strength in Bonded Region of LED Devices and Electrically Conductive Textile by Ultrasonic Bonding with Plastic Flow of Solder	Hiroaki Mori, Osaka University, Japan	12:05-12:25
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## Monday July 8, 14:15-18:15 (Room CP London III)

### 2. Joint meeting of C-VII and C-XVII on Brazing, Soldering and Diffusion Bonding with Nanomaterials

2-1 Opening (14:15), Huaping Xiong, Akio Hirose

- Welcome and Introduction to Commissions XVII and VII

2-2 Technical presentations (14:30)

#### Session III (Chair: Akio Hirose)

VIIA-0192-19 XVIIIB-0046-19	FineSol- Assembly of miniaturized PCBs by using low cost hyper-fine solder powders	Luisa Coutinho, Universidade de Lisboa, Portugal	14:30-14:55
VIIA-0193-19 XVIIIA-0170-19	Wetting of AgCuTi alloy on the quartz fiber reinforced composite modified by vertical few-layer grapheme	Lixia Zhang, Harbin Institute of Technology, China	14:55-15:20
VIIA-0194-19 XVIIC-0049-19	Joining with reactive nano-multilayers: joint design and heat management	Jolanta Janczak-Rusch, Empa, Switzerland	15:20-15:45
VIIC-0195-19 XVIIA-0171-19	Development of high entropy alloys for brazing applications	W. Tillmann, TU Dortmund University, Germany	15:45-16:10

Coffee break 16:10-16:35

#### Session IV (Chair: Huaping Xiong)

VIIA-0196-19 XVIIA-0172-19	Low temperature joining of steels by Ni nanopaste	Susann Hausner, Technische Universität Chemnitz, Germany	16:35-17:00
VIIC-0197-19 XVIIIB-0047-19	Low temperature transient liquid phase sintering with SnAgCu-Ag mixed powders for Power Device Packaging	Aiping Wu, Tsinghua University, China	17:00-17:25
VIIC-0198-19 XVIIIB-0048-19	Design of A Selective Solder Deposition Process for Nanowire Assembly and Joining	Zhiyong Gu, University of Massachusetts Lowell, USA	17:25-17:50
VIIC-0199-19 XVIIA-0173-19	Vacuum brazing of Nbss/Nb <sub>5</sub> Si <sub>3</sub> composites using TiNbNi filler alloys	Xinyu Ren, Neng Li, Beijing Institute of Aeronautical Materials, China	17:50-18:15



## Tuesday July 9, 14:15-18:15 (Room CP Paris)

### 3. C-VII Annual Workshop

#### Session V (Chair: Lei Liu)

Special presentation	IIW Presentation Welding in the World	IIW President Cécile Mayer	14:15-14:35
VIIB-0200-19	Study on the thermal stress to the sensitive substrate during the LIMBO process	Woo-Sik Chung, Fraunhofer Institute for Laser Technology ILT, Germany	14:35-14:55
VIIB-0201-19	Dissimilar joining between aluminum alloy and galvanized steel using laser brazing	Tomo Ogura, Osaka University, Japan	14:55-15:15
VIIB-0202-19	Study on overlap joining of aluminum and copper using laser micro welding with spatial power modulation	Sören Hollatz, Fraunhofer Institute for Laser Technology ILT, Germany	15:15-15:35
VIIB-0203-19	Effect of numerical aperture on molten area characteristics in micro-joining of glass by picosecond pulsed laser	Yasuhiro Okamoto, Okayama University, Japan	15:35-15:55
VIIB-0204-19	Ablation of dielectric and metal materials using femtosecond pulse laser	Jianfeng Yan, Tsinghua University, China	15:55-16:15

Coffee break 16:15-16:45

#### Session VI (Chair: Tomokazu Sano)

VIIC-0206-19	Effect of Formate Coating Treatment on Bond Strength of A5052/SUS316L	Tomohiro Ishikawa, Gunma University, Japan	16:45-17:05
VIIC-0207-19	Influence of Processing Conditions on Boronizing of SCM 440 Steel by Al Added Fused Salt Bath	Shun Yoshida, Gunma University, Japan	17:05-17:25
VIIC-0208-19	Improvement of Mechanical Properties by T6 Heat Treatment of Aluminum Casting Alloy Joint with Formate Coated Zn Sheet	Yuto Shinohara, Gunma University, Japan	17:25-17:45

#### 3-1 Discussions and Closing Remarks (17:45), Akio Hirose

- Submission of Documents
- Paper recommendations to Welding in the World
- Discussion of Sub-Commission VIIA, VIIB and VIIC
- Discussion of Terms of Reference (VII-0182-19)
- International Conferences on Nanojoining and Microjoining: NMJ2020 (Germany)
- Chairs' meeting (after closing remarks)



## Wednesday July 10, 14:15-18:15 (Room CP London II & III)

### 4. Joint meeting of C-I & C-VII

4-1 Opening (14:15), Doug Kautz, Akio Hirose

- Welcome and Introduction to Commissions I and VII

4-2 Technical presentations (14:35)

#### Session VII (Chair: Akio Hirose) 14:15-16:15

Doc. I-1418-19 VII-0209-19	Analysis of influencing factors on powder quality of Ti64 in L-PBF	A. Sebastian Matthes, Germany	14:15-14:35
Doc. I-1420-19 VII-0210-19	Microstructural Evolution of Ultrasonic-Welded Cu Stranded Wire	Chihiro Iwamoto, Ibaraki University, Japan	14:35-14:55
Doc. I-1414-19 VII-0211-19	Laser metal deposition using a coaxial direct diode laser head	F. Silze, N. Brocke, and M. Schnick, Germany	14:55-15:15
Doc. I-1421-19 VII-0212-19	Friction Stir Welding Technology of Curved Thin-walled Lap Joint with Aluminum Alloy	Li Fu, Northwestern Polytechnical University, China	15:15-15:35
Doc. I-1402-19 VII-0213-19	Development of Parameters and Comparison of Mechanical and Microstructural Properties of Tungsten Nickel Iron (W-Ni-Fe) with Parts Fabricated from Laser Powder Bed Fusion (PBF)	Michael Brand, Colt Montgomery, Robin Pacheco, Joel Montalvo, Jessica Lopez, Adam Wachtor and John Carpenter, USA	15:35-15:55
Doc. I-1402-19 VII-0220-19	Microstructure and mechanical properties of CrCoNi medium-entropy alloy fabricated by selective laser melting	Kai Feng, Chengcheng Zhang, Hiroyuki Kokawa, Zhuguo Li, Paul K. Chu, China	15:55-16:15

Coffee break 16:15-16:45

#### Session VIII (Chair: Doug Kautz) 16:45-18:15

Doc. I-1422-19 VII-0214-19	Microstructure and Mechanical Properties of Additively Manufactured Co-Cr-W Alloy using Laser Metal Deposition Method	Tomokazu Sano, Osaka University, Japan	16:45-17:00
Doc. I-1407-19 VII-0215-19	Mechanical Properties and Formation Mechanism of Ti6Al4V/TiSiC System Gradient Material Fabricated by In-Situ Reaction Laser Deposition	Neng Lia, Wei Liua, Huaping Xionga, Shuai Huang, Guohui Zhanga, Chao Gaoa, China	17:00-17:15
Doc. I-1423-19 VII-0216-19	Design of Colloid Particles for Solvent-Free 3D Deposition	Hiroya Abe, Osaka University, Japan	17:15-17:30



Doc.I-1409-19 VII-0217-19	Effects of Thermal Cycling on Wire and Arc Additive Manufacturing of Aluminum Components	Markus Köhler, Jonas Hensel, and Klaus Dilger, Germany	17:30-17:45-
Doc.I-1445-19 VII-0218-19	PRACTICAL TRANSIENT THERMAL MODELLING FOR HARDNESS PREDICTION IN WIRE AND ARC ADDITIVE MANUFACTURED STEEL BLOCKS FOR DESIGN OPTIMISATION	Dennis van Kleinwee, Bin Hu, Zhaoxiang Chen, Marcel Hermans, Netherlands	17:45-18:00
Doc. I-1424-19 VII-0219-19	Discussion on: Strategy to make IIW a Leading Organization for the Additive Manufacturing Community	D. Kautz, A. Hirose, S. Egerland (if available) (USA)	18:00-18:15

Closing by Akio Hirose and Doug Kautz

