

Visual-JW 2014

26-28 November, 2014

Hotel Hankyu Expo Park, Osaka, Japan

The International Symposium
on Visualization in Joining & Welding Science through
Advanced Measurements and Simulation,

in conjunction with

Symposium on the Research Activities of
Joint Usage / Research Center on Joining and Welding

FINAL PROGRAM

Organized by Joining and Welding Research Institute, Osaka University

Co-organized by Japan Welding Society

Visual-JW 2014

In the year 2014, 3rd International Symposium on Visualization in Joining & Welding Science through Advanced Measurements and Simulation (Visual-JW 2014) in conjunction with symposium on the Research Activities of Joint Usage / Research Center on Joining and Welding will be held on 26-28, November at the Hotel Hankyu Expo Park in Osaka, Japan.

The symposium aims to promote direct exchange of the latest scientific and technological information related to visualization of complex phenomena in material processing through advanced measurements and simulation. It will also provide a good opportunity to discuss on the future and the strategy regarding R&D of materials processing.

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Chuan Song Wu, Shandong University, China
Satoshi Yamane, Saitama University, Japan

Schedule of the Symposium

Registration

26-November: 15:30 -18:30
 27-November: 8:00 -18:30
 28-November: 9:30 -17:00

26-November

- 17:30-19:30 : Welcome Party at Room Seiun

27-November

Thursday 27-November				
Room	Room A	Room B	Room C	Room D
Session Name				
8:50-9:00	Opening Ceremony at Room G			
9:00-9:30	Plenary Lecture 1 at Room G			
9:30-10:00	Plenary Lecture 2 at Room G			
10:00-10:30	Plenary Lecture 3 at Room G			
10:30-10:50	Coffee Break			
Session Name	Visualization of Joining and Welding Process (1)	Visualization of Mechanics in Joining and Welding (1)	Visualization of Joining and Welding Process (6)	Visualization of Metallurgy in Joining and Welding (1)
10:50-11:10	JWP-1	MCJW-1	JWP-31	MTJW-1
11:10-11:30	JWP-2	MCJW-2	JWP-32	MTJW-2
11:30-11:50	JWP-3	MCJW-3	JWP-33	MTJW-3
11:50-12:10	JWP-4	MCJW-4	JWP-34	MTJW-4
12:10-12:30	JWP-5		JWP-35	MTJW-5
12:30-13:30	Lunch			
Session Name	Visualization of Joining and Welding Process (2)	Visualization of Mechanics in Joining and Welding (2)	Visualization of Joining and Welding Process (7)	Visualization of Metallurgy in Joining and Welding (2)
13:30-13:50	JWP-6	MCJW-6	JWP-36	MTJW-6
13:50-14:10	JWP-7	MCJW-7	JWP-37	MTJW-7
14:10-14:30	JWP-8	MCJW-8	JWP-38	MTJW-8
14:30-14:50	JWP-9	MCJW-9	JWP-39	MTJW-9
14:50-15:10	JWP-10	MCJW-10		
15:10-15:30	Coffee Break			
Session Name	Visualization of Joining and Welding Process (3)	Visualization of Mechanics in Joining and Welding (3)	Visualization of Joining and Welding Process (8)	Visualization of Advanced Material Processing (1)
15:30-15:50	JWP-11	MCJW-11	JWP-41	AMP-1
15:50-16:10	JWP-12	MCJW-12	JWP-42	AMP-2
16:10-16:30	JWP-13	MCJW-13	JWP-43	AMP-3
16:30-16:50	JWP-14	MCJW-14	JWP-44	AMP-4
16:50-17:10	JWP-15	MCJW-15		
17:10-17:20	Break			
17:20-18:20	Poster at Room F			
18:20-18:30	Break			
18:30-20:30	Reception at Orbit Hall			

28-November

Friday 28-November				
Room	Room A	Room B	Room C	Room D
Session Name	The Research Activities of Joint Usage / Research Center on Joining and Welding (Joining / Welding Processing)	Visualization of Mechanics in Joining and Welding (4)	Visualization of Joining and Welding Process (9)	The Research Activities of Joint Usage / Research Center on Joining and Welding (Nano & Micro Materials)
10:20-10:40	RAJU-JW1 RAJU-JW2 RAJU-JW3 RAJU-JW4		JWP-51	RAJU-NM1 RAJU-NM2 RAJU-NM3 RAJU-NM4
10:40-11:00			JWP-52	
11:00-11:20		MCJW-16	JWP-53	
11:20-11:40		MCJW-17	JWP-54	
11:40-12:00		MCJW-18	JWP-55	
12:00-13:00	Lunch			
Session Name	Visualization of Joining and Welding Process (4)	Visualization of Mechanics in Joining and Welding (5)	Visualization of Joining and Welding Process (10)	Visualization of Nano & Micro Joining (1)
13:00-13:20	JWP-16	MCJW-21	JWP-61	NMJ-1
13:20-13:40	JWP-17	MCJW-22	JWP-62	NMJ-2
13:40-14:00	JWP-18	MCJW-23	JWP-63	NMJ-3
14:00-14:20	JWP-19	MCJW-24	JWP-64	NMJ-4
14:20-14:40	JWP-20	MCJW-25	JWP-65	NMJ-5
14:40-15:00	Coffee Break			
Session Name	Visualization of Joining and Welding Process (5)	Visualization of Mechanics in Joining and Welding (6)	Visualization of Joining and Welding Process (11)	Visualization of Nano & Micro Joining (2)
15:00-15:20	JWP-21	MCJW-26	JWP-66	NMJ-6
15:20-15:40	JWP-22	MCJW-27	JWP-67	NMJ-7
15:40-16:00	JWP-23	MCJW-28	JWP-68	NMJ-8
16:00-16:20	JWP-24	MCJW-29	JWP-69	NMJ-9
16:20-16:40	JWP-25	MCJW-30	JWP-70	NMJ-10

TECHNICAL PROGRAM

-Oral Presentation-

Thursday 27-November

Room G

8:50-9:00: Opening Ceremony

Greetings: Prof. Yu-ichi KOMIZO, Osaka University
The Conference Chairman

Prof. Seiji KATAYAMA, Osaka University
The Director of Joining and Welding Research Institute, Osaka University

9:00-10:30: Plenary Lecture

Plenary Lecture 1: “Numerical and Experimental Estimation on 3D Welding Residual Stresses in Engineering Parts and Structures”
Prof. JianXun ZHANG, Xian Jiaotong University

Plenary Lecture 2: “Visualization of the Plasma Arc and the Surface Temperature of Hafnium Cathode in Oxygen Plasma Arc Cutting”
Prof. Yasunori TANAKA, Kanazawa University

Plenary Lecture 3: “In-Situ Observation Techniques for Microstructural Evolution in Steel Materials”
Prof. Yu-ichi KOMIZO, Osaka University

Visualization in Joining & Welding Science through Advanced Measurements and Simulation

Room A

10:50-12:30: Visualization of Joining and Welding Process (1) (JWP)

Chair Persons: Yasunori TANAKA (Kanazawa University)
Fumikazu MIYASAKA (Osaka University)

- JWP-1 **Invited Lecture:** "A Desktop Computer Model of Arc Welding of Aluminium"
Anthony B. MURPHY, David G. THOMAS (CSIRO)
- JWP-2 "Influence of Different Shielding Gases on the GMA Welding Process"
Martin HERTEL, Uwe FÜSSEL, Sascha ROSE (Technische Universität Dresden)
- JWP-3 "Three-Dimensional Modelling of the GMAW Process Using Time-Dependent Electrode Shapes from Experimental Observations"
Sebastian JÄCKEL, Martin HERTEL, Uwe FÜSSEL, Sascha ROSE (Technische Universität Dresden)
- JWP-4 "Numerical Simulation of Short Circuiting Transfer in GMA Welding"
Kazuya ISHIDA, Yoshihiro TSUJIMURA, Masaya SHIGETA, Manabu TANAKA (Osaka University)
- JWP-5 "The Influence of Arc Interaction for TIG-MIG Hybrid Welding Process"
Ji CHEN, C. S. WU (Shandong University)

13:30-15:10: Visualization of Joining and Welding Process (2) (JWP)

Chair Persons: Anthony Bruce MURPHY (CSIRO)
Shinichi TASHIRO (Osaka University)

- JWP-6 **Invited Lecture:** "Visualization of Multi Wire SAW Process by CFD Simulations"
Suck Joo NA, Degala Venkata KIRAN (KAIST), Daewon CHO (HHI), Jason Hyunphil CHEON (KAIST)
- JWP-7 "Numerical Simulation of Joining Process in a TIG Welding System Using Incompressible SPH Method"
Masumi ITO, Yu NISHIO, Seiichiro IZAWA, Yu FUKUNISHI (Tohoku University), Masaya SHIGETA (Osaka University)
- JWP-8 "Dependence of TIG Arc Behavior on Gas Flow Control by a Constricted Nozzle"
Kyohei KONISHI, Masaya SHIGETA, Manabu TANAKA (Osaka University), Akihisa MURATA, Tadasuke MURATA (Murata Welding Laboratory Co., Ltd)
- JWP-9 "Effects of Surface Tension on Predictions of Weld Pool Formation in TIG Welding"
Masayoshi MIYAKE, Masaya SHIGETA, Manabu TANAKA (Osaka University)
- JWP-10 "Development of New Heat Source Model for Finger Type Penetration in MIG Welding"
Myu YOSHIYAMA, Fumikazu MIYASAKA, Hisashi SERIZAWA (Osaka University)

15:30-17:10: Visualization of Joining and Welding Process (3) (JWP)

Chair Persons: Suck Joo NA (KAIST)
Manabu TANAKA (Osaka University)

- JWP-11 **Invited Lecture:** "Forming Beads under Low and High Heat Input with GMAW"
Gerd HUISMANN (Helmut Schmidt University)
- JWP-12 **Invited Lecture:** "Suppression of Humping Bead by Exerting Electromagnetic Field in High-Speed Gas-Metal-Arc Weld Pool"
Chuan Song WU, F. Z. YANG, J.Q. GAO (Shandong University)
- JWP-13 "Effect of External Magnetic Field on the Weld Shaping and Interface Microstructure of Aluminum/Steel Joint"
Yibo LIU, Qingjie SUN, Yan TENG, Haibo SANG, Jinping LIU, Jicai FENG (Harbin Institute of Technology)
- JWP-14 "Fluid and Arc Behavior with Ultra High Frequency Pulsed Arc Welding"
Mingxuan YANG, Zhou YANG, Qiang WANG, Baoqiang CONG, Bojin QI (Beijing University of Aeronautics and Astronautics)
- JWP-15 "Visualisation and Control of the Heat Input in MAG Welding of Ultra-High-Strength Manganese-Boron Steels"
Sven Frithjof GOECKE (Brandenburg University of Applied Sciences)

Room B

10:50-12:10: Visualization of Mechanics in Joining and Welding (1) (MCJW)

Chair Persons: Jianxun ZHANG (Xian Jiaotong University)
Yoshiki MIKAMI (Osaka University)

- MCJW-1 **Invited Lecture:** “Deformation and Residual Stress Comparison between Mismatch and Normal Butt-Joints with Laser-Arc Hybrid Welding”
Liqun LI (Harbin Institute of Technology), Ninshu MA, Hui HUANG (Osaka University), Shuai CHANG (Harbin Institute of Technology), Hidekazu MURAKAWA (Osaka University)
- MCJW-2 **Invited Lecture:** “Buckling Mitigation of Stiffened Panels through Thermomechanical Tensioning and Heat Sinking”
Nisith Ranjan MANDAL, Sharat KUMAR (Indian Institute of Technology Kharagpur),
Anudeep Dhananjay JOSHI (Mazagon Dock Ltd.)
- MCJW-3 “Numerical Investigation on Influence of Accelerated Cooling on Welding Temperature Field Induced by Electro Slag Welding”
Jiamin SUN, Linyin XIA, Dean DENG (Chongqing University)
- MCJW-4 “Finite Element Analysis of Initial Deformation in Multi-Pass Circumferential Welding with Narrow Gap”
Yusuke OKUDA (Osaka University), Kyosuke KANBE (West Japan Railway Company), Hisashi SERIZAWA,
Hidekazu MURAKAWA (Osaka University)

13:30-15:10 Visualization of Mechanics in Joining and Welding (2) (MCJW)

Chair Persons: Aiping WU (Capital Aerospace Machinery Company)
Seiichiro TSUTSUMI (Osaka University)

- MCJW-6 **Invited Lecture:** “Online Monitoring of Reaction Forces and Stresses in Welded Components”
Dirk SCHROEPFER, Thomas KANNENGIESSER (BAM Federal Institute for Materials Research and Testing)
- MCJW-7 **Invited Lecture:** “Evaluation of Weld Residual Stress Field by the Deep Hole Drilling Technique based on Three-Dimensional Elasto-Plasticity Theory”
Houichi KITANO (National Institute for Materials Science), Shigetaka OKANO, Masahito MOCHIZUKI (Osaka University)
- MCJW-8 “Local Mechanical Properties and Tensile Behavior of 2A14-T6 Aluminum Alloy VPTIG Joints”
Yanjun LI, Aiping WU, Guoqing WANG, Yanjun GAO (Capital Aerospace Machinery Company)
- MCJW-9 “Effect of Weld Pass Deposition on Residual Stress Distribution of Repair Welds Using Low-Transformation-Temperature Welding Wire”
Yoshiki MIKAMI, Naoki YABUUCHI (Osaka University), Terumi NAKAMURA (National Institute for Materials Science), Masahito MOCHIZUKI (Osaka University)
- MCJW-10 “Prediction of Residual Stresses Produced by Low Transformation Temperature Weld Wires and its Validation Using Contour Method”
Ramy GADALLAH, Seiichiro TSUTSUMI, Hidekazu MURAKAWA (Osaka University)

15:30-17:10: Visualization of Mechanics in Joining and Welding (3) (MCJW)

Chair Persons: Thomas KANNENGIESSER (BAM Federal Institute for Materials Research and Testing)
Dean DENG (Chongqing University)

- MCJW-11 **Invited Lecture:** "Numerical Comparison of the Effectiveness of Different Techniques used in the Straightening of Welding Distortion"
Adan VEGA (Technological University of Panama)
- MCJW-12 "Comparison of Welding Deformation and Residual Stresses at Jig Constraint Condition and Non-Constraint Condition"
Hui HUANG (Osaka University), Ninshu MA (JSOL), Seiichiro TSUTSUMI, Hidekazu MURAKAWA (Osaka University)
- MCJW-13 "Application of Inertia Relief in the Prediction of Welding Deformation for Large Complex Structures"
Yang WANG, Yu LUO (Shanghai Jiao Tong University), Jian XUE (Jiangsu Newyangzi Shipbuilding Co.)
- MCJW-14 "Numerical Simulation of Plate Rigid Restraint Cracking (PRRC) Tests based on Cohesive Element Model"
Shi CHU, Wang YANG, Yu LUO (Shanghai Jiao Tong University)
- MCJW-15 "Investigation on Fracture Toughness of Welded Joint based on Simulation"
Fenggui LU, Zhuguo LI (Shanghai Jiao Tong University), Xia LIU (Shanghai Electric Power Generation Equipment Co. Ltd), Yixiong WU (Shanghai Jiao Tong University)

Room C

10:50-12:30: Visualization of Joining and Welding Process (6) (JWP)

Chair Persons: Yoshiaki MORISADA (Osaka University)
Yufeng SUN (Osaka University)

- JWP-31 **Invited Lecture:** "Method on Design, Manufacturing and Wear Property of Electronic Aided Friction Stir Welding Tool"
Wei CHEN, Jian LUO (Chongqing University)
- JWP-32 "Dissimilar Direct Joining of SUS304/CFRTP by Friction Lap Joining"
Daiki KITAGAWA, Tsuyoshi MIWA, Kimiaki NAGATSUKA, Kazuhiro NAKATA (Osaka University)
- JWP-33 "Spot Bonding of 5052 Alloy by Non-Penetration Motion of Rotation Tool"
Hiroshi KAWAKAMI, Koji YOSHIMURA, Atsushi NISHIKAWA, Jippe SUZUKI (Mie University)
- JWP-34 **Invited Lecture:** "A New Cutting-Friction Stir Welding Hybrid Processing Method"
Jian LUO (Chongqing University)
- JWP-35 "Experimental Study on Microstructure and Mechanical Properties of Friction Stir Welded Thick AZ31B Plate"
Chao TAN, Wenbing DING, Yangang TONG, Dean DENG (Chongqing University), Yang RAN, Fei ZHU (Chongqing Academy of Science and Technology)

13:30-15:10: Visualization of Joining and Welding Process (7) (JWP)

Chair Persons: Hidetoshi FUJII (Osaka University)
Kimiaki NAGATSUKA (Osaka University)

- JWP-36 **Invited Lecture:** "The Stepwise Method of a Simulation of the Shortening Process during the Linear Friction Welding with Visualization"
Alfiya YAMILEVA, Fedor ZHELEZNOV, Alexander BIKIMEYEV, Rafail GAZIZOV (Ufa State Aviation Technical University)
- JWP-37 "Visualization of Material Flow Enhanced by Ultrasonic Energy in Friction Stir Welding"
Xiaochao LIU, Chuan-Song WU (Shandong University)
- JWP-38 "Microstructure of Zigzag Line in Friction Stir Welded A6082-T6 Alloy Joint and its Effect on Tensile and Bend Properties"
Qing-Yu SHI, Qi-Lei DAI (Tsinghua University)
- JWP-39 "Influence of Post Welding Heat Treatment on the Corrosion Behaviour of Friction Stir Welded High Strength 7050-T7451 Aluminium Alloys"
Hua ZHANG (TWI)

15:30-17:10: Visualization of Joining and Welding Process (8) (JWP)

Chair Persons: Masayuki AONUMA (Tokyo Metropolitan Industrial Technology Research Institute)
Yasuyuki MIYANO (Akita University)

- JWP-41 “Effect of Mg Content in Al Alloys on Al Alloys / Polyamide 6 Dissimilar Materials Joint Characteristics by Friction Lap Joining”
Kimiaki NAGATSUKA, Hironobu TANAKA, Toshiki ONODA (Osaka University), Toshiya OKADA (UACJ Corporation), Kazuhiro NAKATA (Osaka University)
- JWP-42 “Real Time Metallurgical Phenomena of Nugget Formation of Dissimilar Aluminum in FSLW by Exit Hole Continuous Observation”
Taejin YOON, Chungyun KANG (Pusan National University)
- JWP-43 “Effects of Reducing FSP Heat Input on Fatigue Life of TIG Welded SS400 Plates”
Ryota YAMASAKI, Kazuhiro ITO, Tatuya OKUDA, Kazuyuki KOHAMA, Rintaro UEJI, Hidetoshi FUJII, Chiaki SHIGA (Osaka University)
- JWP-44 “Influence of Initial Microstructure on FSW Joint of Ti-6Al-4V Alloy”
Sungook YOON, Rintaro UEJI, Yoshiaki MORISADA, Hidetoshi FUJII (Osaka University)

Room D

10:50-12:30: Visualization of Metallurgy in Joining and Welding (1) (MTJW)

Chair Persons: Yu-ichi KOMIZO (Osaka University)
Hidenori TERASAKI (Osaka University)

- MTJW-1 “Theoretical Analysis for Solidification Cracking Susceptibility in Type 316FR Stainless Steel Laser Welds”
Eun-joon CHUN, Hayato BABA (Osaka University), Kazutoshi NISHIMOTO (Fukui University of Technology)
Kazuyoshi SAIDA (Osaka University)
- MTJW-2 “Investigation of Evaluation Method for Hot Cracking Susceptibility of 310S Stainless Steel during Laser Welding Using Trans-Varestraint Test”
Dan WANG, Shuntaro SAKODA, Kota KADOI, Kenji SHINOZAKI, Motomichi YAMAMOTO (Hiroshima University)
- MTJW-3 “Underwater Wet Welding of 304L Stainless Steel and 16Mn with Flux-Cored Wire”
Qiang MA, Ji, Duo LIU, Jicai FENG (Harbin Institute of Technology at Weihai)
- MTJW-4 “Hydrogen Diffusion Simulation in Dual Phase Microstructure Considering the Difference in Diffusion Constants”
Gen OGITA (Chiyoda Corporation), Yoshiki MIKAMI, Masahito MOCHIZUKI (Osaka University)
- MTJW-5 “Interface Characteristics and Thermochemical Analysis of Phases Formed during Laser Welding-Brazing Dissimilar Mg to Steel”
Caiwang TAN, Liqun LI, Jicai FENG (Harbin Institute of Technology at Weihai)

13:30-15:10: Visualization of Metallurgy in Joining and Welding (2) (MTJW)

Chair Persons: Rintaro UEJI (Osaka University)
Hidenori TERASAKI (Osaka University)

- MTJW -6 **Invited Lecture:** “Controlling Factors for Both Strength and Ductility in Bainitic Steels”
Kiyomichi NAKAI, Toshiki YOSHIKAWA, Tatsuaki SAKAMOTO, Sengo KOBAYASHI (Ehime University)
- MTJW-7 “Formation of Stable Dislocation Network in Austenite and Its Effect on Nucleation of BAINITE in Bainitic Steels”
Tatsuaki SAKAMOTO, Takafumi HIRAMOTO, Kiyomichi NAKAI, Sengo KOBAYASHI (Ehime University)
- MTJW-8 “Effect of Isothermal Heat Treatment on Microstructures and Properties of Laser Clad Nanobainitic Coatings”
Zhuguo LI, Yanbing GUO, Ke ZHANG, Yixiong WU (Shanghai Jiao Tong University)
- MTJW-9 “Role of Inclusions for Acicular Ferrite Nucleation in Low Carbon Steel Deposits”
Atsushi TAKADA, Hidenori TERASAKI, Yu-ichi KOMIZO (Osaka University), Naoya HAYAKAWA, Kenji OI (JFE Steel Corporation)

15:30-17:10: Visualization of Advanced Material Processing (1) (AMP)

Chair Persons: Soshu KIRIHARA (Osaka University)
Minoru OSADA (MANA, NIMS)

- AMP -1 **Invited Lecture:** "Nanoscale LEGO with 2D Nanosheets"
Minoru OSADA (MANA, NIMS)
- AMP -2 "Visualization of Nanoparticles Behavior Introduced into Gas Flame Spraying"
Kazuto TAKAI, Toshio YOSHIOKA (Nippon Coating Industry Co. Ltd), Soshu KIRIHARA (Osaka University)
- AMP -3 "Fabrication of Photonic Crystal with Twinned Diamond Structures and Double Cavity Defects"
Koki NONAKA, Soshu KIRIHARA (Osaka University)
- AMP -4 "Effective Injection of Ceramics Nanoparticles Pastes into Plasma Spray for Speedy Layer Formation"
Soshu KIRIHARA (Osaka University)

Friday 28-November

The Research Activities of Joint Usage / Research Center on Joining and Welding

Room A

10:20-12:00: The Research Activities of Joint Usage / Research Center on Joining and Welding (Joining / Welding Processing) (RAJU-JW)

Chair Person: Rintaro UEJI (Osaka University)
Yousuke KAWAHITO (Osaka University)

RAJU-JW-1 **Invited Lecture:** "Effect of Heat Input on Microstructure and Hardness of Friction Stir Welded Joints of Middle Carbon Steel"

Yasuyuki MIYANO (Akita University), Rintaro UEJI (Osaka University), Osamu KAMIYA, Ryou OKUBO (Akita University), Hidetoshi FUJII (Osaka University)

RAJU-JW-2 **Invited Lecture:** "The Effect of Laser Welding Conditions on the Microstructure of F82H/SUS316L Weld Joint"

Hiroaki ABE, Akira OBA, Sho KANO, Yoshitaka MATSUKAWA, Yuhki SATOH (Tohoku University), Hiroyasu TANIGAWA (Japan Atomic Energy Agency), Hisashi SERIZAWA (Osaka University)

RAJU-JW-3 **Invited Lecture:** "Cohesive Crack Model to Reflect Chemical Action at Grain and Its Boundaries in Polycrystalline Metals"

Yuichi SHINTAKU, Mayu MURAMATSU, Shinsuke TAKASE (Tohoku University), Seiichiro Tsutsumi (Osaka University), Kenjiro Terada (Tohoku University)

RAJU-JW-4 **Invited Lecture:** "Study on Real-time Observation of Laser Cutting Front by Using X-Ray Transmission System"

Hitoshi OZAKI, Minh Quang LE, Hiroshi KAWAKAMI, Jippe SUZUKI (Mie University), Yousuke UEMURA, Yuichiro DOI, Masami MIZUTANI, Yousuke KAWAHITO (Osaka University)

Room D

10:20-12:00: The Research Activities of Joint Usage / Research Center on Joining and Welding (Nano & Micro Materials) (RAJU-NM)

Chair Person: Katsuyoshi KONDOH (Osaka University)
Kazuhiro ITO (Osaka University)

RAJU-NM-1 **Invited Lecture:** "Surface/Interface as a Foundation to Realizing Designer Materials"

Wilson Agerico DINO, Kazuki KOJIMA, Hideaki KASAI, Yousuke KAWAHITO, Seiji KATAYAMA (Osaka University)

RAJU-NM-2 **Invited Lecture:** "Bioactive Titanium Surface Using Carbon Nanotube Net Film"

Hirofumi MIYAJI, Erika NISHIDA (Hokkaido University), Junko UMEDA, Katsuyoshi KONDOH (Osaka University), Hiroko TAKITA, Bunshi FUGETSU, Saori TANAKA, Akihito KATO, Tsukasa AKASAKA, Masamitsu KAWANAMI (Hokkaido University)

RAJU-NM-3 **Invited Lecture:** "Charge Trap Mechanism of Memory Capacitors with Al₂O₃/(Ta/Nb)O_x/Al₂O₃ Multi-Layer"

Toshihide NABATAME, Akihiko OHI (NIMS WPI-MANA), Kazuhiro ITO, Makoto TAKAHASHI (Osaka University), Toyohiro CHIKYO (NIMS WPI-MANA)

RAJU-NM-4 **Invited Lecture:** "Joining and Interface Control of Metal Oxide Nanocrystals in Aqueous Solutions for Molecular Sensors"

Yoshitake MASUDA (AIST)

Visualization in Joining & Welding Science through Advanced Measurements and Simulation

Room A

13:00-14:40: Visualization of Joining and Welding Process (4) (JWP)

Chair Persons: Gerd HUISMANN (HSU)
Kazufumi NOMURA (Osaka University)

- JWP-16 “Visualization of Gas Flow in Gas Metal Arc Welding with Double Shield Nozzle”
Keiji KADOTA, Tetsuo ERA (DAIHEN Corporation), Masanobu ISHII, Yoshifumi YOSHIDA (Iwatani Corporation)
- JWP-17 “Heat Source Characteristics on GHTA Using CO₂ Gas”
Hisaya KOMEN (Osaka University), Keigo TANAKA, Shinichiro SHOBAKO, Yoshikazu SUITA, Noboru TERAJIMA (Kagawa National College of Technology), Manabu TANAKA (Osaka University)
- JWP-18 “Quantitative Evaluation for Arc Stability in Shielded Metal Arc Welding”
Takahiro IKEDA, Hisaya KOMEN (Osaka University), Makoto OTA (Kobe Steel, Ltd.), Tetsuo SUGA, Masaya SHIGETA, Manabu TANAKA (Osaka University)
- JWP-19 “Image Processing of the Weld Pool and Tracking of the Welding line in Pulsed MAG Welding”
Satoshi YAMANE, Katsuhito SHIROTA, Sota TSUKANO, Da Lu WANG (Saitama University)
- JWP-20 “Plasma Diagnosis and Temperature Measurements for Welding Arcs”
Tasuku YAMAGUCHI, Kyohei KONISHI, Masaya SHIGETA, Manabu TANAKA (Osaka University), Akihisa MURATA, Tadasuke MURATA (Murata Welding Laboratory Co., Ltd)

15:00-16:40: Visualization of Joining and Welding Process (5) (JWP)

Chair Persons: Chuan Song WU (Shandong University)
Masaya SHIGETA (Osaka University)

- JWP-21 **Invited Lecture:** “Initiation of Plasmas for (1) Materials Processing and (2) Formation of Lightning in Thunderclouds”
John James LOWKE, Eugene TAM, Anthony B. MURPHY (CSIRO Manufacturing)
- JWP-22 “Intelligent Sensor Systems for Smart Welding Robots”
Jean-Paul BOILLOT, Nobumasa TORII, Takuya NOMATA (Servo-Robot Inc.)
- JWP-23 “Mechanism of Spatter Reduction in Welding Al-Mg Alloys Using Plasma-MIG Hybrid Welding”
Hee keun LEE, Sang Hyeon PARK (Pusan National University), Kwang San CHUN, Jin Yong KIM, Ha Taek CHUNG (Daewoo Shipbuilding Marine Engineering Co.Ltd), Chung Yun KANG (Pusan National University)
- JWP-24 “Suppression of Weld Defects by Ultrasonic Tungsten Inert Gas Welding of AZ31 Magnesium Alloys”
Kai KAWASUMI, Rintaro UEJI, Yoshiaki MORISADA, Masayoshi KAMAI, Hidetoshi FUJIII (Osaka University)
- JWP-25 “Influence of Oxide Film Formed on Groove Face on Properties of Butt-Welded Joints Using Laser-Arc Hybrid Process”
Kaoru TAKEZAKI, Tomo OGURA, Tomokazu SANO, Akio HIROSE, Masami MIZUTANI, Seiji KATAYAMA (Osaka University), Hikotaro OCHIAI, Ryosuke KIMURA, Shozo ONO (Mitsui Engineering & Shipbuilding)

Room B

11:00-12:00: Visualization of Mechanics in Joining and Welding (4) (MCJW)

Chair Person: Makoto TAKAHASHI (Osaka University)

- MCJW-16 **Invited Lecture:** "Ultrafast Visualization of Structural Dynamics in Femtosecond Laser-Driven Shocked Iron Probed with XFEL"
Tomokazu SANO, Akio HIROSE (Osaka University)
- MCJW-17 **Invited Lecture:** "Derivation of Best Heat Treatment Condition in Welded Materials Using Synchrotron Radiation X-Ray Diffraction"
Takahisa SHOBU, Shuoyuan ZHANG, Ayumi SHIRO, Tomonori YAMADA, Toshiharu MURAMATSU, Fumiaki KONO, Takayuki OZAWA (Japan Atomic Energy Agency)
- MCJW-18 "Tangential Plasticity Effect on Buckling Behavior of a Thin Wall Pier under Cyclic Loading Condition"
Seiichiro TSUTSUMI (Osaka University), Hideto MOMII (Estech Corp), Riccardo FINCATO (Osaka University)

13:00-14:40: Visualization of Mechanics in Joining and Welding (5) (MCJW)

Chair Persons: Nisith Ranjan_MANDAL (Indian Institute of Technology Kharagpur)
Hisashi SERIZAWA (Osaka University)

- MCJW-21 **Invited Lecture:** "Development of Three-Dimensional Coupling Analysis Method for Spot Welding by Idealized Explicit FEM"
Kazuki IKUSHIMA, Masakazu SHIBAHARA (Osaka Prefecture University)
- MCJW-22 "Effects of Strain and Contents of Impurity Elements on Center-Line Crack Susceptibility in Laser Beam Welds of Type 316L Stainless Steel"
Hideki MITSUNARI, Hiroaki MORI (Osaka University), Satoshi KON, Masakazu SHIBAHARA (Osaka Prefecture University)
- MCJW-23 "Fatigue Crack Initiation and Propagation Life Prediction of a Non-load Carrying Fillet Joint"
Seiichiro TSUTSUMI, Riccardo FINCATO (Osaka University), Daiki YAJIMA (Kawasaki Technology Co., Ltd.), Kasumi MORITA (Osaka University), Hideto MOMII (Estech Corp.)
- MCJW-24 "Experimental and Numerical Study on Laser Spot Welding of Nickel-Base Alloy Overlap Joints with Different Weld Path Geometries"
Chuang CAI, Fuquan LI, Zhibo DONG, Liqun LI (Harbin Institute of Technology)
- MCJW-25 "Study for Deformation Behavior of Multilayer Welding Joints for I-shape Girders Bridge with Idealized Explicit FEM"
Shinji TAKABA (Osaka University), Hidekazu SHIBAHARA (Osaka Prefecture University), Masahito MOCHIZUKI (Osaka University)

15:00-16:40: Visualization of Mechanics in Joining and Welding (6) (MCJW)

Chair Persons: Qing-Yu SHI (Tsinghua University)
Seiichiro TSUTSUMI (Osaka University)

- MCJW-26 **Invited Lecture:** "Investigation of Influence of Phase Transformation on Welding Residual Stress in P91 Steel"
Dean DENG, Xiaozhan LIU, Xiaohua JIANG, Yangang TONG, Tao BI (Chongqing University)
- MCJW-27 **Invited Lecture:** "Buckling Instability of a Welded Plate Subjected to Cyclic Fatigue Loading"
Riccardo FINCATO, Seiichiro TSUTSUMI (Osaka University)
- MCJW-28 "Influence of Fatigue Strength for Electron Beam Weld Joint with Thin Steel Plate"
Takuya NAGAI (Shinko Welding Service Co., Ltd.), Ryu KASAI (Shinko Welding Service Co., Ltd.), Kunika UENO (Tosei Electrobeam Co., Ltd.), Masahito MOCHIZUKI, Tetsuo SUGA (Osaka University)
- MCJW-29 "Guarantee System of Back-Side Temperature with a Low-Heat Input Welding Method"
Yosuke SASAKI, Osamu AZUMAYA, Motohiro YAMADA (Hitachi Zosen Corp.), Mitsuyoshi NAKATANI (Osaka University)
- MCJW-30 "Experimental Measurement and Numerical Computation of Residual Stresses in Lap Welded Joints"
Tadafumi HASHIMOTO (Hashimoto Iron Works Co. LTD), Ninshu MA, Hui HUANG, Hidekazu MURAKAWA (Osaka Univeristy)

Room C

10:20-12:00: Visualization of Joining and Welding Process (9) (JWP)

Chair Person: Yasuo TAKAHASHI (Osaka University)
Kazuyuki KOHAMA (Osaka University)

- JWP-51 “ZrC-ZrC Bonding Using Spark Plasma Sintering System”
Kazuyuki KOHAMA, Kazuhiro ITO (Osaka University)
- JWP-52 “Metal-to-Metal Bonding Using Heat of Combustion Reaction”
Yuma MICHIIYA, Tomo OGURA, Tomokazu SANO, Akio HIROSE (Osaka University)
- JWP-53 “Interfacial Contact Process Controlled by Superplastic Flow in Solid-State Bonding of Superplastic High Carbon Steel”
Zhonghao HENG, Tsuma MATSUSHIMA, Yusuke NASHIKI (Osaka University), Masakatsu MAEDA (Nihon University), Keke ZHANG (Henan University of Science and Technology), Yasuo TAKAHASHI (Osaka University)
- JWP-54 “Visualization of Temperature Distribution in Ultrasonic Metal Welding of Dissimilar Tabs in Battery Manufacturing”
Yansong ZHANG, Kunkun CHEN, Yangyang ZHAO (Shanghai Jiao Tong University)
- JWP-55 “Numerical Simulation of the Electron-Beam Welding Processes with the Beam Oscillations”
Dmitriy N. TRUSHNIKOV, Gleb L. PERMYAKOV (Perm National Research Polytechnic University)

13:00-14:40: Visualization of Joining and Welding Process (10) (JWP)

Chair Persons: Motomichi YAMAMOTO (Hiroshima University)
Hitoshi OZAKI (Mie University)

- JWP-61 “Three-Dimensional Analysis and Melt Flow in High-Power and High-Brightness Laser Welding”
Yousuke UEMURA, Yousuke KAWAHITO, Seiji KATAYAMA (Osaka University)
- JWP-62 “Stereoscopic Observation of Spatter and Tracer Particle Movement in Laser Beam Welding”
Michael DOBLER, Sebastian HÜTTNER, Franz-Josef GÜRTLER, Felix TENNER, Florian KLÄMPFL, Michael SCHMIDT (Friedrich-Alexander-University)
- JWP-63 “In-situ Temperature Measurement Using Multi-Sensor Camera during Laser Welding”
Shotaro YAMASHITA, Motomichi YAMAMOTO, Kenji SHINOZAKI, Kota KADOI (Hiroshima University), Kenji MITSUI (Mitsui Photonics Ltd.), Hiroyuki USUI (Nobby Tech. Ltd.)
- JWP-64 “Numerical Analysis and In-Situ Observation of Bubble Behavior and Microporosity Formation in Laser Beam Welds of Aluminium Alloy”
Qiaofeng ZHOU, Yasuhito HONSHOU, Hiroakil MORI, Fumikazi MIYASAKA, Yousuke UEMURA, Yousuke KAWAHITO, Masmi MIZUTANI, Seiji KATAYAMA (Osaka University)
- JWP-65 “Numerical Analysis of Heat Transfer and Fluid Flow in Dual Beam Laser Keyhole Welding”
Guolong MA, Liqun LI, Yanbin CHEN (Harbin Institute of Technology)

15:00-17:00: Visualization of Joining and Welding Process (11) (JWP)

Chair Persons: Hitoshi OZAKI (Mie University)
Dino Wilson Agerico (Osaka University)

- JWP-66 “Nd-YAG Laser Beam and GTA Welding of Ti-6Al-4V Alloy”
Abdel-Monem EL-BATAHGY (Central Metallurgical R&D Institute), T DEBROY (The Pennsylvania State University)
- JWP-67 “Welding Phenomena during Vertical Welding Process on Thick Steel Plate Using Hot-Wire Laser Welding Method”
Eakkachai WARINSIRIRUK, Koei HASHIDA, Motomichi YAMAMOTO, Kenji SHINOZAKI, Kota KADOI (Hiroshima University), Tadakazu TANINO, Hiroshi YAJIMA (Nagasaki Institute of Applied Science), Tsutomu FUKUI (Nippon Kaiji Kyokai), Shin NAKAYAMA (Mitsubishi Heavy Industries, Ltd.), Tetsuro NOSE (Nippon Steel & Sumikin Welding Co., Ltd.), Syoko TSUCHIYA (Nippon Steel & Sumitomo Metal Corporation), Hiroshi WATANABE, Tatsunori KANAZAWA (Bab-Hitachi Industrial Co.)
- JWP-68 “Hot-Wire Laser Welding Process Using Laser Diode for Large Diameter Pipe with Narrow Gap Joint”
Masatomo TODO, Kenji SHINOZAKI, Motomichi YAMAMOTO, Kota KADOI (Hiroshima University), Masayuki YAMAMOTO (Nippon Steel & Sumitomo Metal Corporation), Rittichai PHAONAIM (Rajamangala University of Technology Krungthep), Toshinari OKAGAITO (Babcock-Hitachi K.K.)
- JWP-69 “Weld Defect Prevention for Fillet Welded Joint on Steel Plate Coated with Shop Primer Using Hot-Wire Laser Welding”
Daiki OKITA, Motomichi YAMAMOTO, Kenji SHINOZAKI, Kota KADOI (Hiroshima University), Tadashi KADO (Hiroshima Prefectural Technology Research Institute)
- JWP-70 “Application of Welding Simulation Method to Simulate Additive Manufacturing”
Adhish MAJUMDAR, Laurent D'ALVISE (GEONX S.A.)

Room D

13:00-14:40: Visualization of Nano & Micro Joining (1) (NMJ)

Chair Persons: Kiyokazu YASUDA (Osaka University)
Omid MOKHTARI (Osaka University)

- NMJ-1 **Invited Lecture:** "Advanced Bonding Technology with High Accuracy of Micro-Bump on Thin Wafer"
Young-Ki KO, Yong-Ho KO, Junghwan BANG, Sang-Woo KIM, Chang-Woo LEE (Korea Institute of Industrial Technology)
- NMJ-2 "Soldering and Interfacial Characteristics of Sn-1.0Ag-0.5Cu Solder with Minor Aluminium Addition"
Y.M. LEONG, A.S.M.A. HASEEB (University of Malaya)
- NMJ-3 "Properties of Au-to-Al₂O₃ Joint Bonded Using Silver Oxide Paste"
Koji ASAMA, Tomo OGURA, Tomokazu SANO, Akio HIROSE (Osaka University)
- NMJ-4 "Interfacial Reaction and Joint Strength of Ag Nanoporous Bonding with Electroless Nickel/Immersion Gold Substrate"
Min-Su KIM, Hiroshi NISHIKAWA (Osaka University)
- NMJ-5 "Wettability of Sn_{2.5}Ag_{0.7}Cu_{0.1}RE/Cu-2.35Fe-0.1Zn-0.03P under the Ultrasonic Vibrations Assisted"
Yu-Jie LIU (Henan University of Science and Technology)

15:00-16:40: Visualization of Nano & Micro Joining (2) (NMJ)

Chair Persons: Chang-Woo LEE (Korea Institute of Industrial Technology)
Hiroshi NISHIKAWA (Osaka University)

- NMJ-6 "Microstructure, Thermal, and Phase Analysis of Sn-Bi Solder with 30 Mass% Cu Particle Additions"
Omid MOKHTARI, Hiroshi NISHIKAWA (Osaka University)
- NMJ-7 "Reactions in Nanolayered Cu/Sn and Cu/Ni/Sn systems for ultra-small interconnects in electronic packages"
P.Y. CHIA, A.S.M.A. HASEEB (University of Malaya)
- NMJ-8 "Conformation Analysis of Solder Micro Particles in Resin Liquids for the Self-Forming Micro Bumping"
Kiyokazu YASUDA (Osaka University)
- NMJ-9 "Analysis of Electrical Conductivity Evolution Focused on Chemical Factors in Ag-Loaded Conductive Adhesives"
Yoshiaki SAKANIWA, Yasunori TADA, Masahiro INOUE (Gunma University)
- NMJ-10 "Microstructures Observation of n-Type GaN Contacts and the Electrical Properties"
Aiman bin Mohd HALIL, Kota KIMURA (Osaka University), Masakatsu MAEDA (Nihon University), Yasuo TAKAHASHI (Osaka University)

TECHNICAL PROGRAM

-Poster Presentation-

Thursday 27-November

Room F

17:20-18:20: Poster (PT)

- PT-1 "Laser Enhanced Ar-GMA Welding"
Terumi NAKAMURA (National Institute for Materials Science)
- PT-2 "Study on Solidification Crack under High Speed Narrow Gap Welding with Tandem Torches"
Masakazu SHIBAHARA, Takaaki HARADA, Masayuki YAMAMOTO (Osaka Prefecture University), Takuya MORIMOTO, Fumiaki KIMURA (Nippon Steel & Sumikin Engineering Co., Ltd.)
- PT-3 "Observation of Keyhole in Visual Plasma Welding Robot"
Weixi WANG, Satoshi YAMANE, Jiro TOUMA, Tomoyuki KOIKE (Saitama University), Kazumichi HOSOYA, Toru NAKAJIMA, Hikaru YAMAMOTO (Hitachi Construction Machinery Co., Ltd.)
- PT-4 "Observation of Behavior of Cathode Spot in AC Tungsten Inert Gas Welding on Aluminum Plate"
Toshifumi YUJI, Atsushi FUJIMARU (University of Miyazaki), Toshio BOUNO (Salesian Polytechnic), Hiroyuki KINOSHITA (University of Miyazaki), Shinichi TASHIRO, Manabu TANAKA (Osaka University)
- PT-5 "Investigation of Droplet Ejection Mechanism from Electrode in Multi-Phase AC Arc"
Taro HASHIZUME, Manabu TANAKA, Takayuki WATANABE (Kyushu University)
- PT-6 "3D Spectroscopic Observation of Argon and Metal Vapor in MIG Welding"
Kotaro KATAOKA, Kohei MIMURA, Kazufumi NOMURA, Yoshinori HIRATA, Takashi KISHI (Osaka University)
- PT-7 "3D Numerical Model of Weld Pool with Free Surface"
Yohihiro TAKABE, Yosuke OGINO, Yoshinori HIRATA (Osaka University)
- PT-8 "Numerical Simulation of GMA Free Flight Transfer Process"
Natsuki NITTA, Yosuke OGINO, Yoshinori HIRATA (Osaka University)
- PT-9 "Estimation of the Current Density Distribution of TIG Arc Plasma by Spectroscopic Method"
Kaichiro YOSHII (Osaka University)
- PT-10 "Numerical Simulation of GMA Short-Circuiting Transfer Process by Control of Wire Feeding Speed"
Shogo KIHANA, Yoshinori HIRATA (Osaka University)
- PT-11 "Visualization of gas flow in the development of electric arc devices for Surface treatment of metals"
Victor A. Dostovalov (Far Eastern Federal University), Damian V. Dostovalov (Institute of Marine Technology Problems)
- PT-12 "Direct Joining of Glass Fiber-Reinforced Thermo Plastic and Al Alloy Using Friction Lap Joining"
Hironobu TANAKA, Kimiaki NAGATSUKA, Kazuhiro NAKATA (Osaka University)
- PT-13 "The Heat Effect on Electronic Current Aided Friction Stir Welding Process"
Hong WANG, Jian LUO (Chongqing University)
- PT-14 "Effect of Joining Speed on Formation of SUS304 / Polyamide 6 Joint by Friction Lap Joining"
Tsuyoshi MIWA, Daiki KITAGAWA, Kimiaki NAGATSUKA, Kazuhiro NAKATA (Osaka University)
- PT-15 "Effect of Zirconium Addition on Interfacial Microstructure between Commercial Pure Titanium and Magnesium Alloy Joint by Friction Stir Welding"
Masayuki AONUMA (Tokyo Metropolitan Industrial Technology Research Institute), Kazuhiro NAKATA (Osaka University)

- PT-16 “On the Visualization of the Dynamics of Material Flow and Adhesion during Linear Friction Welding”
Alexander Timerzyanovich BIKMEYEV, Alfiya Maratovna YAMILEVA, Rafail GAZIZOV (Ufa State Aviation Technical University), Achillefs VAIRIS (Technological Educational Institute of Crete), Fedor ZHELEZNOV (Ufa State Aviation Technical University)
- PT-17 “Fundamental Numerical Research of Keyhole Formation in High-Power and High Brightness Laser Welding by MPS Method and X-Ray Transmission Observation”
Munehiro HIGASHIGAWA, Masami MIZUTANI, Yousuke KAWAHITO, Seiji KATAYAMA (Osaka University)
- PT-18 “Numerical Simulation on Laser Welding Considering Surface Deformation and Convective Heat Transfer”
Shinichi TASHIRO, Manabu TANAKA (JWRI, Osaka University), Masataka TAMURA, Wataru KOUNO (Toshiba Corporation)
- PT-19 “Study on the Influence of Beam Profile in Laser Cladding Phenomena by High Speed Video Observation”
Daichi TANIGAWA, Nobuyuki ABE, Masahiro TSUKAMOTO, Yoshihiko HAYASHI, Hiroyuki YAMAZAKI (Osaka University), Yoshihiro TATSUMI, Mikio YONEYAMA (Osaka Fuji Corporation)
- PT-20 “Composition Dependence of Titanium in Silver-Copper-Titanium Braze Alloys on Dissimilar Laser Brazing of Single Crystal Diamond and Tungsten Carbide”
Yoshihisa SECHI, (Kagoshima Prefectural Institute of Industrial Technology), Kimiaki NAGATSUKA, Kazuhiro NAKATA (Osaka University)
- PT-21 “Dissimilar Laser Brazing of Polycrystalline Diamond and WC-Co Alloy”
Takahiro FUJIMOTO, Kimiaki NAGATSUKA (Osaka University), Yoshihisa SECHI (Kagoshima Prefectural Institute of Industrial Technology), Kazuhiro NAKATA (Osaka University)
- PT-22 “Evaluation of Transient Temperature Characteristics in High Power Fiber Laser Cutting of Thick Steel Plate”
Nguyen Phi LONG, Toshihiko TAKEBE, Toshihide HANARI, Tomonori YAMADA, Toshiharu MURAMATSU (Japan Atomic Energy Agency)
- PT-23 “Comparison of BPN and SVM Prediction Models for Welding Inherent Deformations in a T-Joint Fillet Weld”
Liang TIAN, Yu LUO, Yang WANG, An Yuan BI, Xiao WU (Shanghai Jiao Tong University)
- PT-24 “Numerical Simulation of Welding Distortion in 6061-T6 Al Alloy Thin-Plate Joints and Verification by Experiment”
Jing HE, Weideng WANG, Yanhong YE, Dean DENG (Chongqing University)
- PT-25 “Improving Accuracy of X-Ray Stress Measurement in Welds with Texture”
Akihiro TSUJI, Shigetaka OKANO, Masahito MOCHIZUKI (Osaka University)
- PT-26 “Comparative Computation Combining Process and Mechanics for GMA Welding”
Kousuke ISHII, Shigetaka OKANO, Masahito MOCHIZUKI (Osaka University)
- PT-27 “Weld Shrinkage and Distortion in Fillet T-Joint Produced by Single and Twin Welding”
Shinji KOBAYASHI, Shigetaka OKANO, Masahito MOCHIZUKI (Osaka University)
- PT-28 “Application of Homogenization Approach to Evaluation of Welding Residual Stress of Plate-Fin Type Heat Exchanger”
Kaname TATANI, Yoshiki MIKAMI (Osaka University), Kenji OTANI, Norihiro HISADA, Shigeru AOKI (Sumitomo Precision Products), Masahito MOCHIZUKI (Osaka University)
- PT-29 “Numerical Simulation of Strain Distribution around Crack Tip in Lamellar Microstructured Steel under Cyclic Loading”
Mikoto KANI, Yoshiki MIKAMI (Osaka University), Hiroshi SHIMANUKI (Nippon Steel & Sumitomo Metal Corporation), Masahito MOCHIZUKI (Osaka University)
- PT-30 “Impact Analysis of Plate Panels Utilizing Hybrid Materials”
Yehia Salam NASSER (Alexandria University), Ninshu MA, Hidekazu MURAKAWA (Osaka University), Islam EI-MALAH (Alexandria University)
- PT-31 “Study on Welding Residual Stress and Distortion in Q345/SUS304 Dissimilar Steel Butt Welds”
Jianpeng CAI, Deping DAI, Yangang TONG, Dean DENG (Chongqing University)
- PT-32 “Simulation of Specimens Analogous to Weld Metal for Hydrogen Distribution Analysis”
Girish Kumar PADHY, Hidenori TERASAKI, Yu-ichi KOMIZO (Osaka University)
- PT-33 “A Crystal Plasticity FE Analysis Considering Mechanically Induced Martensitic Phase Transformation”
Seiichiro TSUTSUMI, Riccardo FINCATO, Kazushi UEDA (Osaka University), Kenjiro TERADA (Tohoku University)
- PT-34 “Effect of Weld Toe Shapes on Welding Residual Stress Relaxation under Cyclic Loading Condition”

- Seiichiro TSUTSUMI, Riccardo FINCATO, Kasumi MORITA (Osaka University), Daiki YAJIMA (Kawasaki Tech. Co., Ltd.), Hideto Momii (Estech Corp.)
- PT-35 “Effects of Magnetic Field Interactions on Plume Divergences of Cluster Systems”
Mikoto YOSHIDA, Takeshi MIYASAKA, Katsuo ASATO, Daiki FURUTA, Daichi SHIMIZU, Yudai UYAMA, Ryota GOTO (Gifu University)
- PT-36 “Heat Affected Zone Softening of Gas Tungsten Arc Welded Carbon Steels with Different Initial Microstructures”
Rintaro UEJI, Kohei YOKOCHI, Hidetoshi FUJII (Osaka University)
- PT-37 “The Change of Microstructures and Inclusion Compositions with Ti Addition in Low-Carbon Steel Weld Metals”
Tomohiro OHASHI, Atsushi TAKADA, Hidenori TERASAKI, Yu-ichi KOMIZO (Osaka University)
- PT-38 “Effects of Pretreatments before Austenitization on Mechanical Properties in Bainitic Steels”
Sanae KONISHI, Kiyomichi NAKAI, Tatsuki SAKAMOTO, Sengo KOBAYASHI (Ehime University)
- PT-39 “The Rule of Variant Selection during Martensitic Transformation in Medium Carbon Steels”
Akihiro FUJII, Takuya OHBA, Shigekazu MORITO (Shimane University), Yuichi Komizo, Hidenori TERASAKI (Osaka University)
- PT-40 “Quantification of Retained-Austenite in Weld Metal of Cr-Ni Steel”
Hidenori TERASAKI, Yu-ichi KOMIZO (Osaka University)
- PT-41 “In-Situ Characterization of Transient Liquid Phase Bonding of Steel Alloys”
Hidenori TERASAKI, Hajime YAMAMOTO, Yu-ichi KOMIZO (Osaka University)
- PT-42 “Fractal Analysis of Welded Joints Structure Formation”
Krivosova Ekaterina ALEKSANDROVNA, Schicin Yuriy DMITRIEVICH, Krivosova Ekaterina KONSTANTINOVNA (Perm National Research Polytechnical University)
- PT-43 “Growth of Interfacial Oxide in Anodic Bonding of Aluminum to Silicate Glass”
Makoto TAKAHASHI (Osaka University)
- PT-44 “Low-Temperature Cu-Cu Bonding Using Spark Plasma Sintering System”
Kazuhiro ITO, Kazuyuki KOHAMA, Tadashi SAITO (Osaka University)
- PT-45 “Interfacial Observation of Parallel Seam Welded-Aluminum Sheets by Magnetic Pulse Welding Method with Collision between Metal Jets”
Tomokatsu AIZAWA, Kazuo MATSUZAWA (Tokyo Metropolitan College of Industrial Technology)
- PT-46 “Direct Bonding Behavior of Pure Ti with Cast AZ31B and Extruded AZ31B Alloys by Spark Plasma Sintering”
Patchara PRIPANAPONG, Makoto TAKAHASHI, Junko UMEDA, Katsuyoshi KONDOH (Osaka University)
- PT-47 “Effect of Heat Treatment on Hot Cracking Phenomena in Electron-Beam-Remelted Surface Region of Co-Cr-Mo Alloy”
Shigeki KAKIUCHI, Shogo TOMIDA, Kiyokazu HIMI, Hideki YAMAGISHI (Toyama Industrial Technology Center), Takashi YONEDA (Yoneda Advanced Casting Co., Ltd), Kazuhiro NAKATA (Osaka, Japan)
- PT-48 “Microstructure and Mechanical Properties of Vacuum-Brazed BN/Si₃N₄/Ti₆Al₄V Joints”
Meirong WANG, Xiaoguo SONG, Jingbo YU, Jingfan CHEN (Harbin Institute of Technology at Weihai)
- PT-49 “Study on Welding Distortion of Stiffened Thin Plate Structure Using Idealized Explicit FEM”
Kazuki IKUSHIMA, Masakazu SHIBAHARA (Osaka Prefecture University)
- PT-50 “Study on Nugget Shapes under Spot Welding Using Three-Dimensional Coupling Analysis”
Ryohei NATSUME, Takumi SHIGEMASA, Kazuki IKUSHIMA, Masakazu SHIBAHARA (Osaka Prefecture University)
- PT-51 “Bonding Process Using Mixed Ag Particle Paste for High Temperature Application”
Hiroshi NISHIKAWA, Keiichi NIWA (Osaka University)
- PT-52 “Effect of Metal Filler Content on Ionic Migration Property of Ag-Filled Electrically Conductive Adhesives”
Hiroshi NISHIKAWA, Kunio UEDA (Osaka University)
- PT-53 “Hierarchically-Organized Aluminum Surface Formed by Anode Oxidation for Direct Bonding on Polyphenylene Sulfide ““
Ryo SAITO, Kiyokazu YASUDA, Yoshinori HIRATA (Osaka University)

- PT-54 “Effect of Surface Pretreatment of Patterned Substrates on the Formation of Micro Bumps by Hybrid System of Sn-Bi-Ag Solder Particles and Epoxy”
Kiyokazu YASUDA, Mizuki ISHIDA, Yoshinori HIRATA (Osaka University)
- PT-55 “Organic-Ligand-Assisted Hydrothermal Synthesis of Rare Earth Doped Ceria Nanocubes for Low-Temperature SOFCs”
Kazuhiro YAMAMOTO (Osaka University), Takeshi HASHISHIN (Kumamoto University), Nan QIU, Zhenquan TAN, Satoshi OHARA (Osaka University)
- PT-56 “Deposition of Zinc Oxide Film Using Atmospheric-Pressure Non-Equilibrium Plasma”
Kosuke TAKENAKA, Giichiro UCHIDA, Yuichi SETSUHARA (Osaka University)
- PT-57 “Macroscopic and Microscopic Structure Evaluation of Plasma Sprayed Al₂O₃ Coatings”
Jun-ichi TAKEUCHI, Ryo YAMASAKI, Kensuke TAGUCHI (Tocalo Co.,Ltd), Yasuo TAKAHASHI (Osaka University)
- PT-58 “Mg-Cu Alloy Layer Formation via Friction Stir Processing”
Yoshihisa KIMOTO, Toru NAGAOKA, Hiroyuki WATANABE, Masao FUKUSUMI (Osaka Municipal Technical Research Institute), Yoshiaki MORISADA, Hidetoshi FUJII (Osaka University)
- PT-59 “Crack Solution Method of Thin-Welld Stainless Steel Tube for Nuclear Industry by Gas Tungsten Arc Welding Hybrid Magnetic Field”
Ying WANG, Jian LUO (Chongqing University)
- PT-60 “Development of Numerical Method for Predicting Intermetallic Compound Formation in Spot Welding of Steel and Aluminum Alloy”
Genki KASHIYAMA, Hidekazu MURAKAWA (Osaka University)
- PT-61 “Numerical Study on Influence of Specimen Size upon Welding Residual Stress”
Ramy GADALLAH, Hidekazu MURAKAWA (Osaka University)
- PT-62 “Effect of Ti and holding time on strength of α -Al₂O₃/Cu-Al-Ti/ STS joints brazed at solid-liquid state joining”
Hoejun HEO, Chungyun KANG (Pusan National University, Korea), Keeyoung JUNG (Pohang, Korea)
- PT-63 “The Interface Characteristics and Quality Control of the Friction Welded Turbocharger Transmission Shaft”
Feibo ZHI, Jian LUO (Chongqing University)

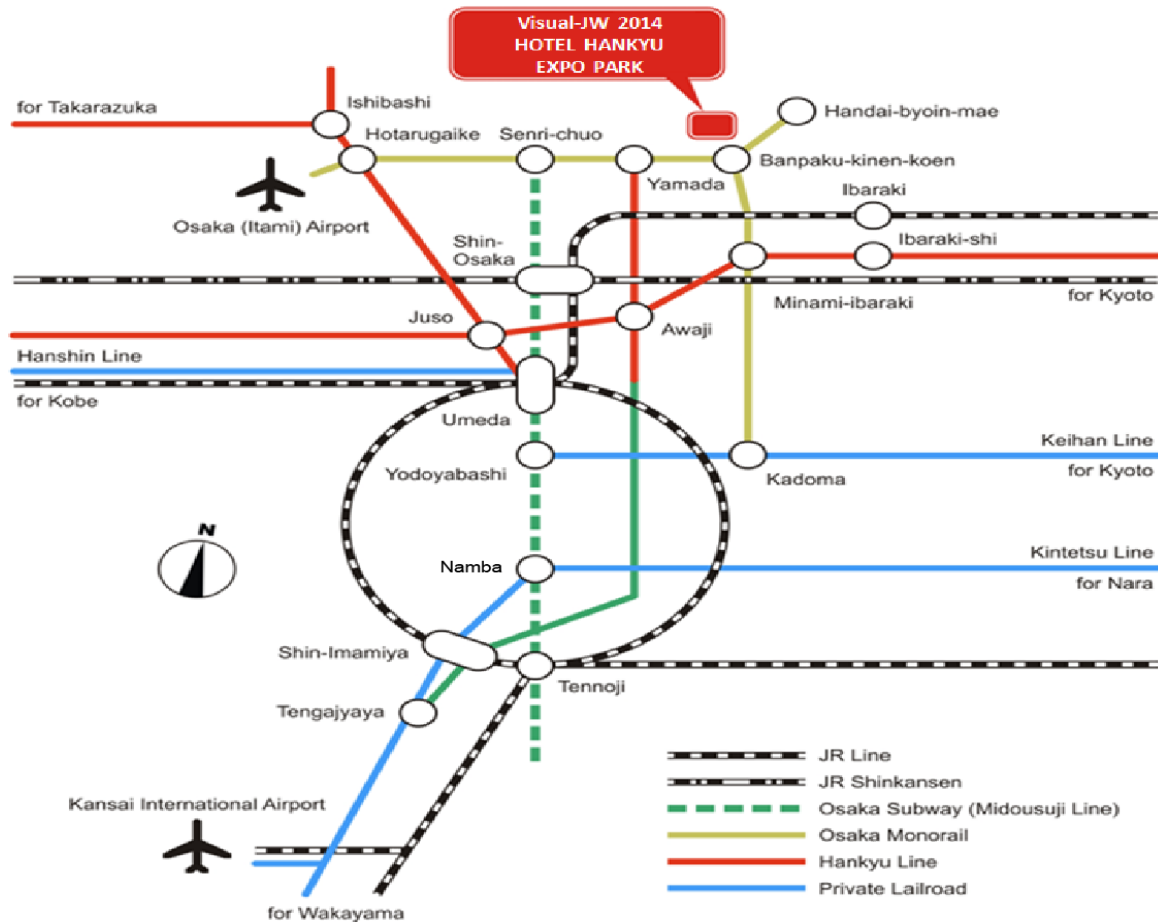
Oral Presentation Guide

- (1) A crystal-liquid projector will be equipped for presentation at each room. Overhead projector for transparencies will be NOT available.
- (2) A laptop computer with Windows 7(64 bit) is also equipped in each room. PowerPoint 2013(Office2013) can be used. A USB memory is available for installation of your PowerPoint file to the laptop computer.
- (3) You are able to use your own laptop computer for your presentation. The projector has only a usual analog mini D-sub 15 pin connector. Please bring an adapter for interface conversion, if necessary.
- (4) The presentation time including discussion for Visual-JW2014 is 20min (presentation: 15min, discussion: 5min)
- (5) The presentation time including discussion for the research activities of Joint Usage / Research Center on Joining and Welding is 25min (presentation: 20min, discussion:5min)
- (6) You are requested to confirm if your presentation slides are properly projected on a screen before the session.

Author's Guide to Prepare Posters for the Poster Session at Room F

- (1) Language:** Poster must be written in English.
- (2) Poster size:** A0 size (841 mm× 1189 mm)
- (3) Your poster board:** The author can find your board due to a sign of your presentation number, for example "PT-1" at the upper left on the board. The author must finish pinning your poster on the board by 17:00 on November 27. The room F opens from 13:00 on November 27.
- (4) Presentation:** The author must stand at the front of your board during the Poster Session from 17:20 to 18:20 on November 27 and can present your paper to attendees. Presentation must be done in English.
- (5) After Poster Session:** Please take off your poster from the board at once.

Location of Hotel Hankyu Expo Park



HOTEL HANKYU EXPO PARK

1-5 Senri-Banpaku-koen Suita, 565-0826 Osaka, Japan

TEL: +81-6-6878-5151 / FAX: +81-6-6878-3456

URL: <http://www.htl-expopark.jp/en>

Access to the hotel by train

From Umeda and Shin-Osaka Stations

-Take the Midousuji subway line to Senri Chuo Station and change to the Osaka Monorail bound for Kadoma-shi or Saito-nishi. Get off at Banpaku Kinen Koen Station and walk for five minutes.

From Osaka International Airport

-Take the Osaka Monorail and get off at Bampaku Kinen Koen Station. The hotel is a five-minute walk away.

From Kyoto Station

-Take the JR Tokaido Honsen line and get off at Ibaraki Station. The hotel is a 10-minute bus or taxi ride away.

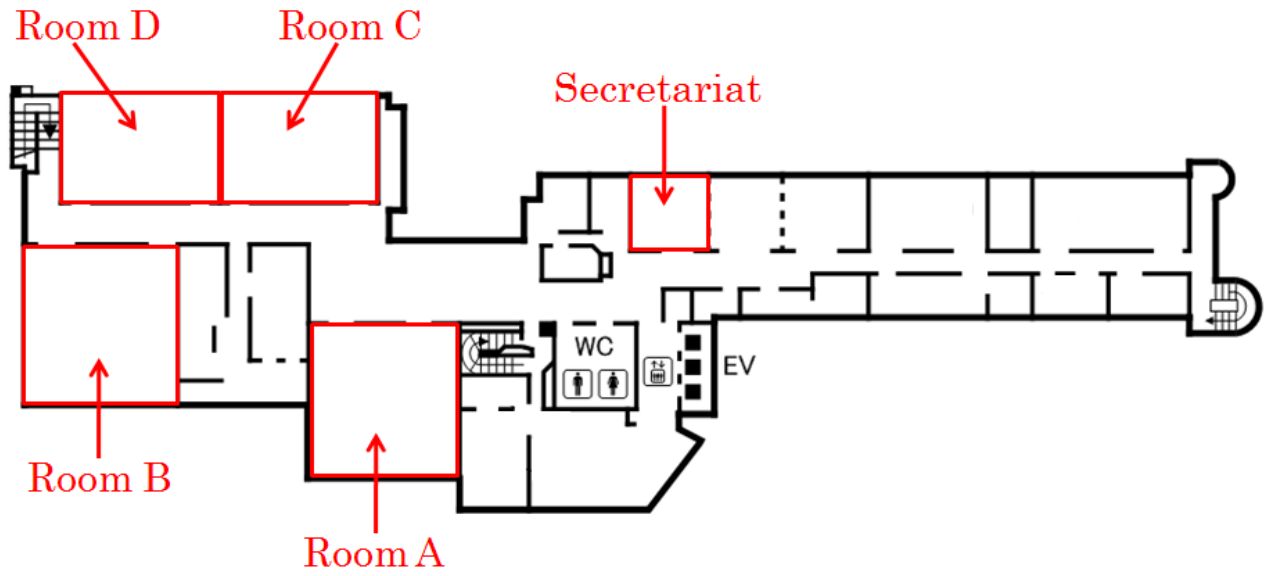
-Take the Hankyu Kyoto Line and transfer to the Osaka Monorail bound for Osaka International Airport. Get off at Banpaku Kinen Koen Station. The hotel is a five-minute walk from here.

From Kansai International Airport

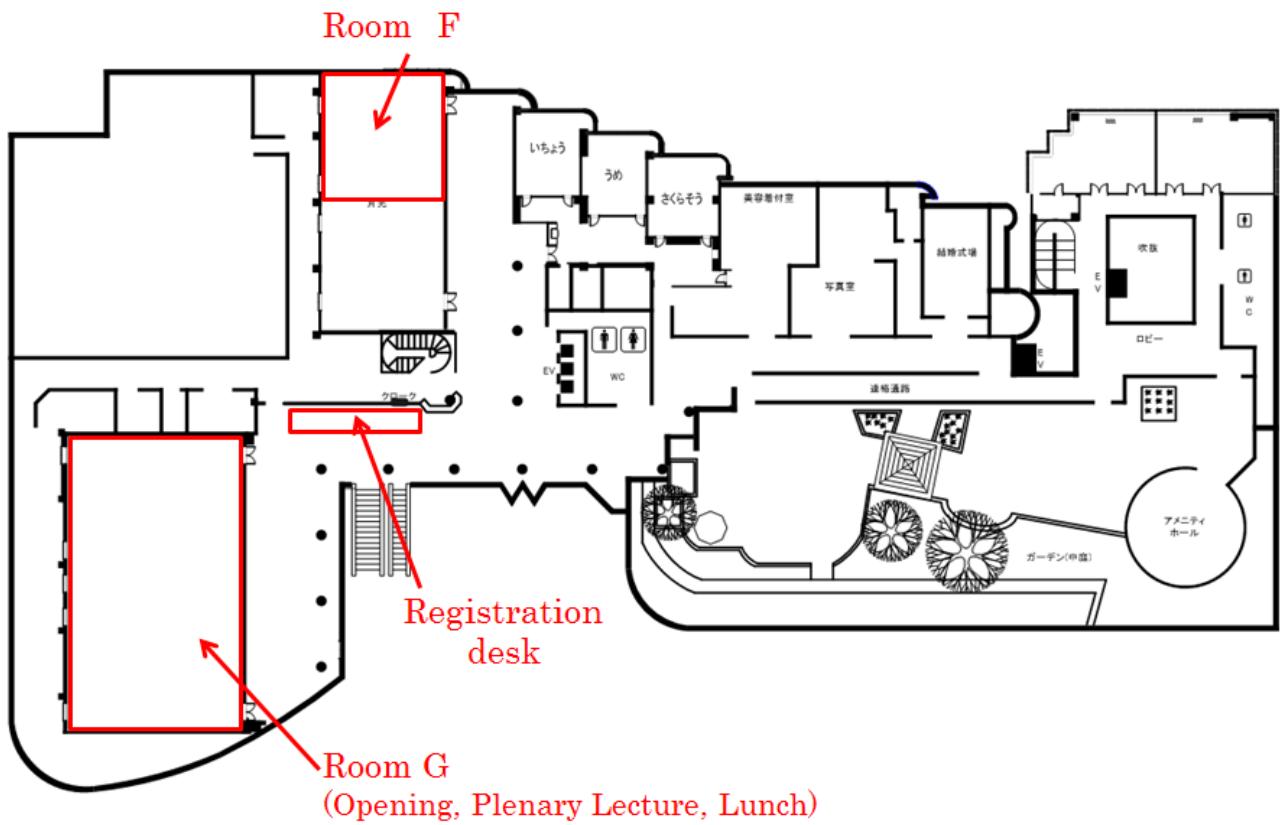
-Take the Nankai Line to Namba Station and change to the Midousuji subway line to Senri Chuo Station. Then change to the Osaka Monorail bound for Kadoma-shi or Saito-nishi. Get off at Banpaku Kinen Koen Station and walk for five minutes.

-Take the bus to Itami Airport/Osaka Airport, and change to the Osaka Monorail bound for Kadoma-shi or Saito-nishi. Get off at Banpaku Kinen Koen Station and walk for five minutes.

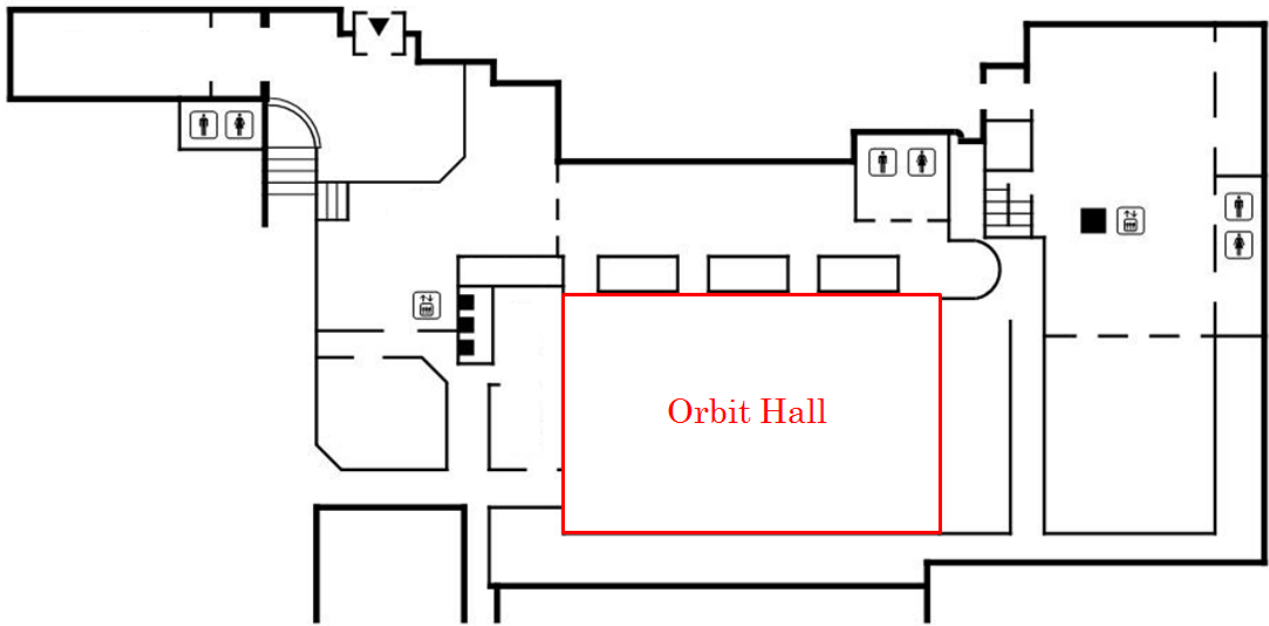
Map of Hotel Hankyu Expo Park



3rd Floor



2nd Floor



B Floor

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