

JAAA2018

27-28 November, 2018

Kitakyushu International Conference Center

Kitakyushu, Japan

International Symposium on Joining Technologies in Advanced Automobile Assembly 2018

Tentative Program

Organized by
Committee of Joining and Materials Processing for Light Structures,
Japan Welding Society

Co-organized by
Automobiles Division, The Japan Welding Engineering Society
Joining and Welding Research Institute, Osaka University

Schedule of the Symposium

27 November, 2018

Tuesday 27 November		
Room	Main Hall	
10:30 - 10:40	Opening Ceremony	
10:40 - 11:50	Keynote Lecture 1	
11:50 - 13:00	Lunch	
Room	Main Hall	
13:00 - 13:30	Invited Lecture 1	
Room	Main Hall	International Conference Hall
Session Name	Various Joining Method	Arc Welding
13:35 - 13:55	JM-1	AW-1
13:55 - 14:15	JM-2	AW-2
14:15 - 14:35	JM-3	AW-3
14:35 - 14:50	Coffee Break	
Room	Main Hall	
14:50 - 15:20	Invited Lecture 2	
Room	Main Hall	International Conference Hall
Session Name	Resistance Spot Welding	Laser Welding
15:25 - 15:45	RS-1	LW-1
15:45 - 16:05	RS-2	LW-2
16:05 - 16:25	RS-3	LW-3
16:25 - 16:45	RS-4	
Room	Subfoyer	
16:25 - 17:40	Poster Presentations TP-1 - TP-16	
18:00 - 20:00	Banquet at RIHGA Royal Hotel Kokura	

28 November, 2018

Wednesday 28 November		
Room	Main Hall	
09:00 - 10:00	Keynote Lecture 2	
10:00 - 10:15	Coffee Break	
Room	Main Hall	
10:15 - 10:45	Invited Lecture 3	
Room	Main Hall	International Conference Hall
Session Name	Friction Based Processes 1 (Aluminum Alloys / Steel)	New Simulation Method
10:50 - 11:10	FS-1	SM-1
11:10 - 11:30	FS-2	SM-2
11:30 - 11:50	FS-3	SM-3
11:50 - 13:00	Lunch	
Room	Main Hall	
13:00 - 13:30	Invited Lecture 4	
Room	Main Hall	International Conference Hall
Session Name	Friction Based Processes 2 (Metal Materials)	Fracture Analysis
13:35 - 13:55	FS-4	FA-1
13:55 - 14:15	FS-5	FA-2
14:15 - 14:35	FS-6	FA-3
Room	Main Hall	
14:40 - 14:50	Closing Remarks	

Technical Program

- Oral Presentation -

Tuesday 27 November

Main Hall

10:30 - 10:40 : Opening Ceremony

Greetings : Prof. Hisashi SERIZAWA, Osaka University
The Symposium Chairperson
The Chair of the Committee of Joining and Materials Processing
for Light Structures, Japan Welding Society (JWS)

10:40 - 11:50 : Keynote Lecture

Keynote Lecture 1 : “Joining & Process Control Technologies of Advanced Japanese Car Body”

- Toyota Lexus LC
- Honda ACCORD
- Nissan Infiniti QX50

Automobiles Division, The Japan Welding Engineering Society
(Toyota Motor Corp., Nissan Motor Co., Ltd. & Honda Engineering Co., Ltd.)

13:00 - 13:30 : Invited Lecture

Invited Lecture 1 : “Numerical Simulation and Optimization of Resistance Welding and Mechanical Joining Processes”
Dr. Wenqi Zhang (SWANTEC Software and Engineering ApS)

13:35 - 14:35 : Various Joining Method

Chair Person : ***

- JM-1 “Disc Friction Joining of Aluminum to Mild Steel”
Toshiya Shibayanagi (University of Toyama), Syuhei Hirose (University of Toyama; Present Affiliation: KYB Co.Ltd), Satoru Ishihara, Norihiro Tajiri (University of Toyama)
- JM-2 “Improvement of Material Flow in Mechanical Clinching Process Using Preforming of Lower Sheet”
Yohei Abe, Takato Maeda, Ken-ichiro Mori (Toyohashi University of Technology)
- JM-3 “Numerical Simulation of Heat Source Property in Arc Spot Welding Process”
Satoshi Eda, Yosuke Ogino, Satoru Asai (Osaka University)

14:50 - 15:20 : Invited Lecture

Invited Lecture 2 : “Quality and Safety Management Standards for Resistance Welding and Mechanical Joining”

Prof. Kin-ichi Matsuyama (Osaka University)

15:25 - 16:45 : Resistance Spot Welding

Chair Person : ***

- RS-1 “Prediction of Welding Range for TRIP Steel Using Response Surface Methodology in Resistance Spot Welding”
Sang-Gyu Choi, Insung Hwang, Munjin Kang (Korea Institute of Industrial Technology), Soonkeun Hyun (Inha University), Young-Min Kim (Korea Institute of Industrial Technology)
- RS-2 “Microstructural Change and Strength Enhancement in Resistant Spot Welds of UHSS Sheets by Applying Pulsed Current Post Heating Pattern”
Yasuaki Okita, Hiroshi Matsuda, Koichi Taniguchi (JFE Steel Corporation), Rinsei Ikeda (JFE Steel Corporation; Present Affiliation: JFE Techno-Research Corporation), Kenji Oi (JFE Steel Corporation)
- RS-3 “Evaluation of Corona Bond Area Strength of Resistance Spot Welding”
Kazuki Matsuda, Shinji Kodama (Nippon Steel & Sumitomo Metal Corporation)
- RS-4 “Modeling of Hydrogen Diffusion in UHSS Resistance Spot Welding”
Nao Kawabe, Hiroshi Matsuda, Yasuaki Okita (JFE Steel Corporation), Rinsei Ikeda (JFE Steel Corporation; Present Affiliation: JFE Techno-Research Corporation), Yoshiki Mikami, Masahito Mochizuki (Osaka University)

International Conference Hall

13:35 - 14:35 : Arc Welding

Chair Person : ***

- AW-1 “A Study With Regard To the Measurement of Ferrite Content in Welding Zones Using Hydrogen Containing Shielding Gas During the TIG Welding of Duplex Stainless Steel”
Jong-Gun Lee, Hyun-Jun Park (Sungkyunkwan University), Won-Bae Lee (POSCO), Seung-Boo Jung (Sungkyunkwan University)
- AW-2 “Numerical Analysis of Penetration Shape in Steel MAG Welded Joint By Using Point Heat Source”
Shingo Sato, Hisashi Serizawa, Fumikazu Miyasaka (Osaka University)
- AW-3 “Development of the Technique to Predict Penetration of the Arc-Welding”
Yoshinori Sugimoto, Yusuke Takatou, Takahiro Ikuta, Takayuki Azama (SUZUKI MOTOR CORPORATION), Fumikazu Miyasaka, Hisashi Serizawa (Osaka University)

15:25 - 16:45 : Laser Welding

Chair Persons : ***

- LW-1 “Effects of Interlayer on Dissimilar Joining between Aluminum Alloy and Magnesium Alloy using Laser Brazing”
Tomo Ogura, Kazuyoshi Saida (Osaka University)
- LW-2 “Fracture Strength Evaluation of Steel / Aluminum Alloy Lap Fillet Joint made by Hot-wire Laser Brazing”
Hiroki Shoji, Motomichi Yamamoto, Kenji Shinozaki (Hiroshima University), Chikaumi Sawanishi, Hiroshi Matsuda (JFE Steel Corporation)
- LW-3 “Hot-wire Laser Welding for Lap Fillet Joint of High-strength Galvanized Steel Sheets”
Motomichi Yamamoto (Hiroshima University), Tadashi Kado (Hiroshima Prefectural Technology Research Institute), Kenji Shinozaki (Hiroshima University)

Wednesday 28 November

Main Hall

09:00 - 10:00 : Keynote Lecture

Keynote Lecture 2 : “An Appraisal of Possible Applications of Solid-State Process in Automotive Structures”

U. Suhuddin, J. Shen, M. Reimann, B Fu, H. Su, N. Manente, N. Zocoller,
L. Blaga and J.F. dos Santos
Dr. Jorge F. dos Santos (Helmholtz-Zentrum Geesthacht GmbH)

10:15 - 10:45 : Invited Lecture

Invited Lecture 3 : “Resistance Spot Welding Aluminium and Aluminium to Steel Joining for Low Cost Automotive Applications”

Dr. Sullivan Smith (The Welding Institute)

10:50 - 11:50: Friction Based Processes 1 (Aluminum Alloys / Steel)

Chair Person : ***

FS-1 “Effect of Welding Tool Shape on Material Flow during Friction Stir Butt Welding of Al/Fe”
Toshiaki Yasui, Huilin Xu, Masahiro Fukumoto (Toyohashi University of Technology)

FS-2 “Mechanical Properties of Joint between Aluminum Alloy and Ultra-High Strength Steel by Friction Stir Spot Welding”
Naoki Takeoka, Yoshitaka Kobayashi, Takuya Fukuda (Kawasaki Heavy Industries, Ltd.)

FS-3 “Tensile Strength of Friction Welded Joint between 7075-T6 Al Alloy and Low Carbon Steel with Using Insert Metal of Pure Al”
Masaaki Kimura, Masahiro Kusaka, Koichi Kaizu (University of Hyogo)

13:00 - 13:00 : Invited Lecture

Invited Lecture 4 : “Liquid Metal Embrittlement Cracks in Resistance Spot Welded Advanced High Strength Steels”

Prof. Yeongdo Park (Dong-Eui University)

13:35 - 14:35: Friction Based Process 2 (Metal Materials)

Chair Person : ***

- FS-4 “Microstructure and Interface Characteristics of Dissimilar Material Friction Welds”
Muralimohan Cheepu (Kyungsung University), Daegy Kim (Pukyong National University),
Woo-Seong Che (Kyungsung University), Young-Whan Park, Yu-Sik Kong (Pukyong National
University)
- FS-5 “Microstructure and Mechanical Properties of Friction Stir Welded Superlight Duplex Mg-Li-Zn
Alloy”
Mengran Zhou, Yoshiaki Morisada, Hidetoshi Fujii (Osaka University), Jian-Yih Wang
(National Dong-Hwa University)
- FS-6 “Microstructure and Mechanical Properties of Ti-6Al-4V Friction Stir Welding Joints”
Kwangjin Lee, Youngbin Lim (Korea Institute of Industrial Technology)

14:40 - 14:50 : Closing Remarks

International Conference Hall

10:50 - 11:50 : New Simulation Method

Chair Person : ***

- SM-1 “Characteristic Tensor Method for Simulation of Fatigue Crack Growth in Thin Welded Structures”
Hidekazu Murakawa (Osaka University)
- SM-2 “Development of Large-Scale Thermal Elastic-Plastic Solver Based on Domain Decomposition Method”
Yasunori Yusa, Yuma Murakami, Hiroshi Okada (Tokyo University of Science)
- SM-3 “Parallel Thermal Elastic-Plastic Welding Simulation by Domain Decomposition Method Using PC Cluster”
Yuma Murakami, Yasunori Yusa, Hiroshi Okada (Tokyo University of Science)

13:35 - 14:35 : Fracture Analysis

Chair Person : ***

- FA-1 “Computations of 3D Fracture Mechanics Parameters for Crack in Welded Joint and Functionally Graded Material”
Hiroshi Okada, Yasunori Yusa (Tokyo University of Science)
- FA-2 “The Hot Cracking Behavior of Laser Welded Al Alloys Using Multi-Beam Laser”
Minjung Kang, Sanghoon Kang, Cheolhee Kim (Korea Institute of Industrial Technology)
- FA-3 “Effects of Heating and Cooling Conditions on Mechanical Property of Stainless steel and Polyamide 6 Specimen under Tensile Test”
Hiroaki Kobayashi, Makoto Uchida (Osaka City University), Houichi Kitano (National Institute for Materials Science), Yoshihisa Kaneko (Osaka City University)

Technical Program

- Poster Presentation -

Tuesday 27 November

Subfoyer

16:25 - 17:40 : Poster Presentations

- TP-1 “Effect of Post Weld Heat Treatment on Mechanical Properties and Microstructure of Friction Stir Welded Cu-Be Alloy”
Youngbin Lim, Yeongseok Lim, Kwangjin Lee (Korea Institute of Industrial Technology)
- TP-2 “Investigation of Circular Stud Shape for Low Carbon Steel Joint Fabricated By Friction Stud Welding with Low Force Condition”
Haru Saito, Masaaki Kimura, Masahiro Kusaka, Koichi Kaizu (University of Hyogo)
- TP-3 “Joint Characteristics of Friction Welded Joint between Ductile Cast Iron and 5052 Al Alloy”
Akira Yoneda, Masaaki Kimura, Masahiro Kusaka, Koichi Kaizu (University of Hyogo), Kazuhiro Hayashida, Harumi Hashimoto (Kitami Institute of technology)
- TP-4 “Joint Characteristics of Friction Welded Joint between 6063 Al Alloy and 304 Stainless Steel through PWHT”
Shota Sakino, Masaaki Kimura, Masahiro Kusaka, Koichi Kaizu (University of Hyogo), Kazuhiro Hayashida, Harumi Hashimoto (Kitami Institute of technology)
- TP-5 “Producing Aluminum Alloy / Copper Alloy Dissimilar Materials Joint Thin Plate By Using Friction Stir Welding and Rolling”
Shinya Fujimoto, Yukio Miyashita (Nagaoka University of Technology), Hisashi Hori (Nippon Light Metal Company, Ltd.)
- TP-6 “Friction Stir Spot Welding and Evaluation of its Reliability in Dissimilar Materials Joint between A1100 and Zn Plated Steel Inserted PET Film”
Shun Onoduka, Yukio Miyashita, Yuichi Otsuka (Nagaoka University of Technology), Hisashi Hori, Nobushiro Seo (Nippon Light Metal Company, Ltd.)
- TP-7 “Tool Shoulder and Pin Design Effects on Material Flow and Mechanical Properties in Friction Stir Welding of Al-Mg-Si Alloy”
Krishna Kishore Mugada, Adepu Kumar (National Institute of Technology, Warangal)
- TP-8 “Possibility of Obtaining Steel Pipe Joint with No Inner Flash By Friction Welding Method”
Masaaki Kimura, Shuhei Iwamoto, Masahiro Kusaka, Koichi Kaizu (University of Hyogo),

- TP-9 “Influence of Nugget Size on the Fatigue Behavior of Resistance Spot Welded 980 MPa Grade Steel”
Heewon Cho, Sangwoo Nam, Munjin Kang (Korea Institute of Industrial Technology), Je-Hoon Oh (Hanyang University), Young-Min Kim (Korea Institute of Industrial Technology)
- TP-10 “Numerical Simulation on Effects of Weld Rigidity on Joint Strength of Resistance Spot Welded Joints”
Keisuke Maeno, Muneyoshi Iyota (Osaka Institute of Technology)
- TP-11 “Numerical Study on Effects of Material Properties for Prediction of Temperature Distribution in Resistance Spot Welding”
Akira Sato, Muneyoshi Iyota (Osaka Institute of Technology)
- TP-12 “A Study on Evaluation of Nugget Formation by Calorific Value in Resistance Spot Welding”
Hiroki Kawakami, Muneyoshi Iyota (Osaka Institute of Technology)
- TP-13 “Prediction of Tensile Strength for GMAW Lap Fillet Joints of 590 MPa Grade Steel Sheet Using Artificial Neural Network”
Joo-Heon Park, Dong-Yoon Kim, Young-Min Kim, Mun-Jin Kang (Korea Institute of Industrial Technology)
- TP-14 “Tandem MAG Welding in Galvanized Steel for the Improvement of Mechanical Properties of Weld”
Dong-Yoon Kim (Korea Institute of Industrial Technology), Geun-Ho Jeong (Hanyang University), Young-Min Kim, Mun-Jin Kang, Dong-Cheol Kim (Korea Institute of Industrial Technology)
- TP-15 “Laser Weldability of Dissimilar 6061-T6-to-5182 Aluminum Alloy Sheet”
Young-Gon Kim, Young-Hyun Kim, Eui-Pyo Kwon (Korea Institute of Industrial Technology)
- TP-16 “Evaluation of Weld Cracking Susceptibility on Ultra-High Tensile Strength Steel Sheet During Laser Welding”
Naoya Takemoto, Ryota Mori, Motomichi Yamamoto, Kenji Shinozaki (Hiroshima University), Kyohei Maeda, Reiichi Suzuki (Kobe Steel Ltd.)