Joint International Symposium on Friction Stir Welding and Processing

28-30 September 2022,
Leuphana University Lüneburg, Germany

Wednesday, 28th September, 2022

TIME	Auditorium (C 40)	Room 7th floor (C40.704)
09:00 - 09:10	**Welcome and introduction**	
09:10 - 09:55	**Plenary Lecture:** ***Friction Based Processes: What Stirs Us*** **Glenn Grant, PNNL, USA**	
	New Technologies	**Metallurgy & Properties**
09:55 - 10:15	*Manufacturing of integrated thermal management solutions using CoreFlow*, S. Holdsworth, TWI Ltd., United Kingdom	*Investigation into the influence of Friction Stir Welding in thick section aluminium alloys*, G. Brooks, Atkins & Sheffield Hallam University, United Kingdom
10:15 - 10:35	*Manufacturing of advanced fuselage structures by friction stir, welding using Al-Cu-Li alloys*, J. Vivas Mendez, LORTEK Technological Centre, Basque Research and Technology Alliance (BRTA), Spain	*Study of the interface evolution during friction stir lap welding of AA7020-T6,* T. Bufflier, TRA-C Industrie, France
10:35-10:55	**Coffee Break**	
10:55 - 11:15	*Friction Stir Bridging Gap*, P. De Sousa Santos, TWI Ltd., United Kingdom	*Fatigue Performance of Half Overlap Friction Stir Welds*, Henrik Nystrom, Hydro Extrusion USA, LLC, Innovation & Technology, USA
11:15 - 11:35	*Elimination of Exit Keyhole using Friction Stir Plunging with Consumable Tool*, B.K. Barik, Veer Surendra Sai University of Technology Burla, Odisha, India	*Comparison of Friction Stir Welding with different fusion welding processes in joining Aluminium EN AW-6063 T6*, I. Golubev, RIFTEC GmbH, Germany
11:35 - 11:55	*Microstructure and mechanical properties evolution of CoreFlow Al 6082-T6 wire based on a novel bulk-consolidation friction stir extrusion*, D. Guan, The University of Sheffield, United Kingdom	*Friction Stir Welding of a Precipitation-Hardening Nickel-base Alloy*, B. Mansoor, Texas A&M University, USA
11:55 - 12:15	*SmartUniversalSpindle (SUS) for high-speed robotic SSFSW*, M. Guillo, Institut Maupertuis, France	*Effect of Tool Geometry and Process Parameters on Micro Friction Stir Welding of Magnesium AZ31*, B. Mansoor, Texas A&M University, USA
12:15 - 12:35	*Joining dissimilar titanium and aluminium alloy by friction stir welding and friction melt bonding process*, S. Krishnamurthy, Université Catholique de Louvain, Belgium	*Tribological behaviour of a friction stir welded alloy 625 in dry and wet environments*, G. Vieira Braga Lemos, Federal University Rio Grande do Sul, Brazil
12:35 - 13:40	**Lunch**	
13:40 - 14:00	*Tool shoulder end features and pin design on material flow and microstructural development of friction stir welded Al 6082 alloy*, K.K. Mugada, Sardar Vallabhbhai National Institute of Technology, India	*Influence of Kissing Bond on Mechanical Properties of Friction Stir Welded AA5083 Alloy*, A.G. Rao, Naval Materials Research Laboratory, India
14:00 - 14:20	*Coated tools in Friction Stir Welding: The influence of the coating type on process thermomechanical conditions*, C. Leitao, Universidade de Coimbra, Portugal	*Friction Stir Welding of Nickel-Based Superalloys for High Temperature Applications*, C. Smith, Pacific Northwest National Laboratory, USA
14:20 - 14:40	*Preliminary study on channel formation characteristics in Aluminium and Copper materials in case of Friction Stir Channelling*, K. Metha, Lappeenranta-Lahti University of Technology, Finland	*Mechnical Properties of Low Temperature Carbon Steel FSW joints*, X. Wang, Dalian Maritime University & CPM, PR China.
14:40 - 15:00	*Development of a new tool-tilted friction stir welding method*, A. Noguchi, Osaka University, Japan	*Effect of static shoulder friction stir welding on microstructural and textural evolution of advancing and retreating side in aluminum welds*, S. Sundar, National Institute of Technology, India
15:00 - 15:20	*High speed friction stir welding of Al alloy in lightweight battery trays for EV industry*, V. Patel, University West, Sweden	*Study of the bonding mechanisms in copper/stainless steel FSSW using pinless tools*, I. Galvão, Polytechnic Institute of Lisbon, Portugal
15:20 - 15:40	**Coffee Break**	
15:40 - 16:00	*Development of refill friction stir spot welding (RFSSW) for electrical copper components*, T. Weinberger, Stirtec GmbH, Austria	*In Process Quality for Friction Stir Technologies*, Y. Hovanski, Brigham Young University, USA
16:00 - 16:20	*Dual-Rotation Tool Friction Stir Welding of Magnesium and Aluminium alloys*, A. Weglowska, Institute of Welding, Gliwice, Poland	*FSW and subsequent creep forming on Al5028 alloy designed for aircraft applications*, N. Nothomb, Université Catholique de Louvain, Belgium
16:20 - 16:40	*Hybrid FSW tools – A combination of monolithic and stationary shoulder variants*, M. Weigl, Grenzebach Maschienenbau GmbH, Germany	*Fatigue life of dissimilar AA6061-AA7075 FSW joints*, N. Dimov, Thales Global Services, France
		Modelling
16:40 - 17:00	*A novel approach for producing AZ31B Mg alloy wire with a promising combination of strength and ductility using CoreFlow*, X. Zhao, The University of Sheffield, United Kingdom	*Methodologies for simulation of Friction Stir Welding*, H. Schmidt, HBS Engineering ApS, Denmark
17:00 - 17:20	*Process Development in FSW of Skin-Stiffener-Structures for Aluminium Alloys in Aeronautical Applications*, S.F. Grassel, Helmholtz-Zentrum Hereon, Germany	*Using Artificial Intelligence in the Computer Aided Manufacturing of Friction Stir Welds*, S.D, Smith, Transforming Stress Limited, United Kingdom
	Solid State Additive Manufacturing	
17:20 - 17:40	*Additive friction stir deposition of aluminium AA7075: identification of the process window, microstructure and mechanical properties*, J. Li, Université Catholique de Louvain, Belgium	*Predictive modeling of void formation and material flow with novel correlations between process forces and void morphology*, F.E. Pfefferkorn, University of Wisconsin-Madison, USA
17:40 - 18:00	*Temperature Control Strategies for Friction Stir Additive Manufacturing – An Analysis*, M. Sigl, Technical University Munich, Germany	*A process modelling approach to the development of FSW lap welding procedures*, S.D. Smith, Transforming Stress Limited, United Kingdom
18:15 - 19:00	**Transfer to Helmholtz-Zentrum Hereon**	
19:00 - 21:30	**"Elbe Evening". Buffet Dinner combined with demonstrations in Hereon's Solid-State Processing Laboratory**	
21:30 - 22:30	**Transfer to Lüneburg**	

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Thursday, 29th September, 2022

TIME	Auditorium (C 40)	Room Room 7th floor (C40.704)
09:00 - 09:55	**Plenary Lecture:** ***Use of Friction Stir Welding on Main Landing Gear Bay*** **Damien Desgaches, AIRBUS Atlantic, France**	
	Solid State Additive Manufacturing	**Modelling**
09:55 - 10:15	*Metal Cutting Chips into a Consolidated Coating with Friction Surfacing,* F.E. Pfefferkorn, University of Wisconsin-Madison, USA	*Fatigue Life Predictions of Additive Friction Stir Deposition Repairs using a Smooth Particle Hydrodynamic Model,* N. Palya. University of Alabama, USA
10:15 - 10:35	*Aluminum Plates Fatigue Behavior which is Additive Manufactured and Welded by Friction Stir Welding,* O. Tekelioğlu, Coşkunöz Kalıp Makina San. ve Tic. A.Ş., Turkey	*Towards Real-Time Physics Based Friction Stir Welding Simulation,* K. Fraser, Aluminium Technology Centre, Canada
10:35-10:55	**Coffee Break**	
10:55 - 11:15	*In-situ Resource Utilization of Silica for Metal Matrix Composites Produced by Additive Friction Stir Deposition,* J.J. Lopez, The University of Alabama, USA	*Meshfree Modeling Framework for Friction Stir Welding and Processing of Al Alloys,* A. Soulami, Pacific Northwest National Laboratory, USA
11:15 - 11:35	*Tribo-Mechanical Analysis of a Titanium Plate Surface Coated with Al-10 wt.% B4C MMC by using Friction Surfacing Process,* S.J. Vijay, Karunya Institute of Technology and Sciences, India	*Combined Refinement Strategies using Mixed Finite Element Technology in Friction Stir Welding Analysis,* H. Venghaus, Otto von Guericke Universität Germany
		Processing
11:35 - 11:55	*Understanding Thermo-Mechanical Transformations During Friction Surfacing of 304L Stainless Steels,* F.E. Pfefferkorn, University of Wisconsin-Madison, USA	*Constrained Friction Processing of AM50 Magnesium Alloy,* C.C. Castro, Helmholtz-Zentrum hereon, Germany
11:55 - 12:15	*Process-Structure-Property-Performance Relationship of Solid-State Additively Manufactured Magnesium Alloy WE43,* M.B. Williams, The University of Alabama, USA	*Evaluation of friction stir processing of austenitic stainless steel cold spray coating deposited on 304L stainless steel substrate,* H. Robe, Institut de Soudure, France
	Applications	
12:15 - 12:35	*Challenges in friction stir welding of components with etch-passivated surfaces in electromobility applications,* M. Grätzel, Technical University Ilmenau, Germany	*Investigation of through-thickness microstructural evolution and mechanical properties in friction stir processed Al-Fe alloy system,* A. Sharma, Osaka University, Japan
12:35 - 13:40	**Lunch**	
13:40 - 14:00	*Benchmarking of FSW and Other Processes for Making Battery Trays of Compact Crossovers,* S. Kallee, AluStir GmbH, Germany	*Enhancing fatigue crack growth resistance on Al7075-NiTi composites manufactures by Friction Stir Processing,* A. Simar, Université Catholique de Louvain, Belgium
		Dissimilar Joints
14:00 - 14:20	*Manufacturing process optimization of friction-stir welded thick preforms for Aeronautics applications,* H. Robe, Institut de Soudure, France	*Zinc effect during aluminum-copper and aluminum-brass dissimilar friction stir welding,* M.-N. Avettand-Fenoel, University Lille, France
14:20 - 14:40	*Case study for the technology transfer of the friction stir welding process in the Colombian hydroelectric industry,* E. Hoyos, Universidad EIA, Colombia	*Optimisation of Friction Stir Welding Parameters Using the Taguchi Technique for Dissimilar AA5083 to Copper,* G. Karrar Babekr, University of Strathclyde, Scotland
14:40 - 15:00	*Design of a tailor-made friction stir welding fixture for a technology transfer case study for the Colombian railway sector,* S. Escobar Munoz, Universidad EIA, Colombia	*Influence of Welding Parameters on the Formability of Friction Stir Welded Dissimilar Al Alloys,* M. Hıdıroğlu, Coşkunöz Kalıp Makina San. ve Tic. A.Ş., Turkey
15:00 - 15:20	*Developments in steel FSW for marine applications,* J. Martin, TWI Ltd., United Kingdom	*Interface structure and mechanical properties of Al/Fe dissimilar joints fabricated by friction stir welding using an adjustable tool,* Y. Morisada, Osaka University, Japan
15:20 - 15:40	**Coffee Break**	
15:40 - 16:00		*Characterization of FSW welds between Mg/Mg and Mg/Al alloys,* K. Mroczka, Cracow University of Technology, Poland
16:00 - 16:20		*Microstructural evolutions and enhanced mechanical properties of dissimilar aluminum and carbon steel friction stir welded joints using Zn interlayer,* M. Saleh, Osaka University, Japan
16:00 - 17:30	**Sponsors Presentation**	
17:30 - 18:00	***Return to the Hotel***	
18:00 - 19:45	**Guided Tour of Lueneburg (Tour starts at the Hotel Lobby)**	
20:00 - 22:00	**Dinner at the Mälzer Brewery**	

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Friday, 30th September, 2022

TIME	Auditorium (C 40)	Room Room 7th floor (C40.704)
08:30 - 09:10	**Plenary Lecture** ***0-Emissions"-Technology FSW*** **Jean Pierre Bergmann, TU Ilmenau, Germany**	
	Automation, Process Monitoring & Control	**Dissimilar Joints II**
09:10 - 09:30	*The Influence of Machine Dynamics on Quality of RFSSWs,* Y. Hovanski, Brigham Young University, USA	*Friction melt bonding of steels to aluminum: on the importance of the welding parameters control to obtain performant joints,* S. Ryelandt, Université Catholique de Louvain, Belgium
09:30 - 09:50	*Summary of trajectory correction during robotic FSW welding,* S. Zimmer-Chrevet, Université de Lorraine, France	*Influence of Aluminium Alloy Grade on Dissimilar Friction Stir Welding of Aluminium to AZ31B,* G. Karrar Babekr, University of Strathclyde, Scotland
		Metal Polymer & Polymer Joining
09:50 – 10:10	*Analysis of Torque Data from Friction Stir Welds in Aluminum,* K. Colligan, Concurrent Technologies Corporation, USA	*Influence of the welding parameters on friction stir welding of polymers,* R. Leal, Politécnico de Leiria, Portugal
10:10 – 10:30	*Industrial feedback on automatized FSW cells for e-mobility: from a sketch to thousand parts,* L. Giraud, TRA-C Industrie, France	*Friction stir welding of pure aluminium and CFRP with silane coupling agent,* T. Nagaoka, Osaka Research Institute of Industrial Science and Technology, Japan
10:30-10:50	**Coffee Break**	
10:50 - 11:10	*The influence of FSW tool wear in relation to force control strategies,* M. Hasieber, Technical University Ilmenau, Germany	*Friction Stir Assisted Bonding of Thermoplastic Composites with Aluminum,* K. Fraser, Aluminium Technology Centre, Canada
11:10 - 11:30	*Monitoring and Control of Torque and Temperature in Friction Stir Based Technologies,* D.G. Andrade, University of Coimbra, Portugal	*Comparative study and process transferability of Refill Friction Stir Spot Welding for various carbon-fibre-reinforced thermoplastics,* L. Blaga, Helmholtz-Zentrum Hereon, Germany
11:30 - 11:50	*External guidance for robot-based FSW,* M. Krachtus, Kuka Deutschland GmbH, Germany	*Improving friction stir welding of polyethylene by externally heating the stationary shoulder tool,* M. Pereira, University of Coimbra, Portugal
11:50 – 12:10	*Friction stir welding without exit holes,* L. Dubourg, Stirweld, France	*An exploratory study of friction screw extrusion additive manufacturing of AA6060*S. T.C. Bor, University of Twente, Netherlands
12:00 - 13:00	**Light Lunch / Snacks**	
14:00	**END OF SYMPOSIUM** **Transfer to train station / Airport**	

HOST ORGANISATIONS

SPONSORS & EXHIBITORS