

JOINING NEWS

NEWSLETTER OF THE SOCIETY OF PLASTICS ENGINEERS JOINING OF PLASTICS AND COMPOSITES SPECIAL INTEREST GROUP

Message from the Editor

Dear Members,

Hope 2018 has been a great year for you so far! I would like to take this opportunity to thank all of you for being involved in the Joining of Plastics and Composites Special Interest Group. We are currently the third largest SIG in the Society of Plastics Engineers with 1,020 members! Kindly encourage more SPE patrons to join and contribute to our SIG. Our webpage under the new SPE site can be accessed at the following link under chapters: [SPE Joining of Plastics and Composites SIG](#)

For more connecting and interacting with our group members, current, past and new members of the Joining of Plastics and Composites SIG, you are encouraged to join the LinkedIn group for our SIG which is 73 members and growing. You are welcome to use the LinkedIn group as a platform to post jobs, host discussions, share news, and communicate about joining events and issues. **For joining the group please sign up here:** [SPE Joining of Plastics and Composites Special Interest Group on LinkedIn](#)

This year ANTEC 2018 was co-located with National Plastics Expo (NPE 2018) which was held in Orlando, FL this May 7th - 11th, we had a great line up of sessions with good participation from our academic and industry members. We extend our sincere thanks and appreciation for those who helped organize the sessions, who volunteered to review papers, and including the writers and contributing speakers for making ANTEC 2018 a success. Additionally, many thanks to all the attendees, without whom we could not have had a great conference.

At ANTEC we had three sessions this year, two technical sessions by our academic members and 1 session by our industry members which included presentations on new technologies for laser, vibration, and ultrasonic welding and heat staking. The paper of the year award was selected by the panel of paper reviewers and this year the honor went to Martin Facklam and co-authors (Philipp Schäfer, Christian Hopmann, and Thorsten Hickmann) for their paper titled, "Infrared Welding of Highly Filled Graphite Composites."



Martin was presented his award by Global Director, Applications Engineering at Branson Ultrasonics, Sophie Morneau

We hope to see you at [ANTEC 2019](#), which will be held in Detroit, Michigan, March 18th – 21st, 2019. As always, please mark your calendars -Papers are due for submission on **October 19 2018!** Go here for details and to make a submission: [ANTEC 2019](#)

Wish you all an enjoyable summer!

Shankar Srinivasan,
Newsletter Editor, Joining of Plastics and Composites SIG

JOINING NEWS

NEWSLETTER OF THE SOCIETY OF PLASTICS ENGINEERS JOINING OF PLASTICS AND COMPOSITES SPECIAL INTEREST GROUP

ANTEC 2018 WRAPUP

For everyone who missed this year's ANTEC conference, below are the papers that were presented. If you are interested in obtaining a copy of these papers, please contact SPE.

Session M5-Joining of Plastics and Composites- Technical Sessions (Moderator: Sergio Amancio)

PAPER TITLE	SPEAKER
METHODS OF POLYMER WELD QUALITY EVALUATION	Miranda Marcus, Edison Welding Institute
DEVELOPMENT OF MOLECULAR DIFFUSION MODELS FOR ULTRASONIC WELDING OF PLA	Karla Lebron, Graduate Student, Iowa State University
EFFECTS OF BUILD ORIENTATION AND FILL-LEVEL ON MECHANICAL PROPERTIES OF FUSED DEPOSITION MODELING PLA	Avraham Benatar, Associate Professor, The Ohio State University
CORRELATING ULTRASONIC WELD QUALITY WITH MELT LAYER THICKNESS	Alex Savitski, Dukane IAS
UNDERSTANDING MELTDOWN DURING QUASI-SIMULTANEOUS LASER TRANSMISSION WELDING	Philip Bates, Royal Military College of Canada
RESEARCH ON TEMPERATURE FIELD OF LASER TRANSMISSION WELDING POLYCARBONATE BASED ON 3D REAL SURFACE TOPOGRAPHY	Zhong Hongqiang, Soochow university
TEMPERATURE FIELD AND FLUID FIELD SIMULATION OF LASER TRANSMISSION WELDING POLYCARBONATE	Yan Tingpei, Soochow University

Session T5-Joining of Plastics and Composites- Technical Sessions (Moderator: Phil Bates)

PAPER TITLE	SPEAKER
IMPROVEMENT ON FATIGUE PERFORMANCE OF METAL-COMPOSITE FRICTION SPOT JOINTS BASED ON THE WELD-BONDING CONCEPT	Natalia Manente Andre, Helmholtz-Zentrum Geesthacht
DIRECT-FRICTION RIVETING OF METAL-CFRP OVERLAP JOINTS	Natascha Zocoller Borba, HZG
ADHESIVE FREE BONDING OF PINE BY VIBRATIONAL WELDING	Curtis Covelli, Iowa State University
EXPERIMENTAL INVESTIGATION OF AMPLITUDE TRANSMISSION IN ULTRASONIC WELDING OF THERMOPLASTIC COMPOSITES	Genevieve Palardy, Louisiana State University
TIME-DEPENDENT VIBRATION WELDING BEHAVIOR OF FOAM INJECTION MOLDED PARTS IN CONSIDERATION OF VARIOUS FIBER REINFORCEMENTS AND JOINT TYPES	Dario Heidrich, Chemnitz University of Technology
INFRARED WELDING OF HIGHLY FILLED GRAPHITE COMPOSITES	Martin Facklam, Institute for Plastic Processing
INFRARED WELDING OF CONTINUOUS GLASS FIBER-REINFORCED THERMOPLASTICS - APPROACHES TO USE THE FIBERS IN THE JOINT	Marios Constantinou, Chemnitz University of Technology

Session T19-Joining of Plastics and Composites- Technical Marketing Sessions (Moderator: Miranda Marcus)

PAPER TITLE	SPEAKER
LASER WELDING PLASTICS: RAPID PROTOTYPING TO MASS PRODUCTION USING QUASI-SIMULTANEOUS AND 2D/3D MASK WELDING	Andrew Geiger, Manager, Laser Plastic Welding Division, Leister Technologies
BENEFITS OF VIBRATION WELDING WITH IR PREHEAT	John Paul Kurpiewski, Director of Global Products and Programs, Emerson - Branson
DUKANE'S RECENT ADVANCEMENTS IN PLASTIC WELDING TECHNOLOGY	Alex Savitski, Dukane IAS
NEW PLASTICS JOINING TECHNOLOGIES	Jason Dornbos, Marketing Communications Manager, Extol, Inc.
ULTRASONIC WELDING 20 KHZ VS. 15 KHZ - CHALLENGES POSED BY HIGHLY CRYSTALLINE MATERIAL	Dave Krysiak, Sonics & Materials

JOINING NEWS

NEWSLETTER OF THE SOCIETY OF PLASTICS ENGINEERS JOINING OF PLASTICS AND COMPOSITES SPECIAL INTEREST GROUP

Here are some highlights summarizing various developments and findings presented by our industry members during the technical marketing session

Leister: New laser welding technology expands manufacturing capabilities for the rapid prototyping of plastic component assemblies. Quasi-simultaneous welding technology enables rapid part change and design modifications. Leister's patented Mask Welding method or new Three-Dimensional Mask Welding method allow for easy and effective product advancement from infancy through maturation and finally market release.

Branson: Branson's Clean Vibration Technology, or CVT, combines vibration welding with an infrared pre-heat step to achieve the benefits from both vibration and IR plastic welding. Through laboratory testing, it was demonstrated that shorter changeover times with faster IR plate and lift table speeds yielded improved weld appearance and quality.

Dukane: Experimental data shows a strong correlation between the thickness of the melt layer resultant from ultrasonic welding process and the weld strength. This melt layer thickness can serve as a reliable predictor of weld quality, and modern servo-driven welders enable users to establish and set parameters for generating an optimum melt layer thickness.

Extol: Three new innovations. (1) IS32 InfraStake module and intelligent integration software delivers low lifetime cost and full quality assurance. (2) NanoSTAKE, revolutionary new staking technology that is small, fast, and stick-free due to rapid and controlled heating and cooling. (3) IoT process control system delivers Industry 4.0 features including predictive maintenance and remotely viewable process data.

Sonics & Materials: Introduced its' 15 kHz X-Press integrated ultrasonic bench top welder, combining power, versatility and microprocessor control in one convenient unit. This new welding system offers the inherently greater amplitude and longer wavelength afforded by a 15 kHz machine in a package no larger than a typical 20 kHz welder for those smaller, yet demanding applications.

SIG EXECUTIVES

Phil Bates

Chair, Joining SIG
Royal Military College of Canada
Tel: +1 (613) 541-6000 x3571
bates-p@rmc.ca

Shankar Srinivasan

Newsletter Editor
Iowa State University
Tel: +1 (515) 450-4333
srigishan@iastate.edu

Miranda Marcus

Technical Program Committee Chair
EWI
Tel: +1 (614) 688-5213
mmarcus.ewi.org

David Kurikesu

Secretary
Branson Ultrasonics Tel:
Tel: +1 (203)-796-0317
David.Kurikesu@Emerson.com