



Manufacturing Engineering Division

NEWSLETTER FALL 2018

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- ❖ Message from the Chair..... 1
- ❖ 13th ASME International Manufacturing Science and Engineering Conference (MSEC)..... 3
- ❖ Student Manufacturing Design Competition..... 5
- ❖ Early Career Forum at MSES2018..... 5
- ❖ ASME Journal of Manufacturing Science and Engineering (JMSE) 6
- ❖ ASME Journal of Micro and Nano-manufacturing..... 7 (JMNM)
- ❖ Blackall Machine Tool and Gage Award 8
- ❖ William T. Ennor Manufacturing Technology Award..... 8
- ❖ Chao and Trigger Young Manufacturing Engineer Award... 8
- ❖ M. Eugene Merchant Manufacturing Medal of ASME/SME 8
- ❖ Milton C. Shaw Manufacturing Research Medal 9
- ❖ Manufacturing Engineering Division (MED) 100 Years Celebration..... 9
- ❖ Design, Materials and Manufacturing (DMM) Segment Update..... 10
- ❖ 14th ASME International Manufacturing Science 11 and Engineering Conference
- ❖ Advanced Manufacturing Track, ASME 2018 IMECE..... 12

EDITOR – Gracious Ngaile, North Carolina State University

Message from the Chair

Dear Manufacturing Engineering Division (MED) Members,



Greetings from the Division! It is my privilege to serve as the MED Chair for 2018-2019. On behalf of the MED Executive Committee (EC), I am writing to provide you with an update on the Division and to share this MED Fall 2018 newsletter, collaboratively contributed by many volunteers and put together by the MED Newsletter Editor, Professor Gracious Ngaile.

The state of the MED is strong; the membership number is steady, the finance remains stable, the leadership continues to grow, MED’s flagship conference made another splash in June, our journals continue striving for high-quality publications, several of our colleagues are recognized with their great achievements, and so forth. This is due, in no small parts, to the commitment of our many selfless volunteers and the organization of the Division. The Division currently has a total of 13,900

members (about 3,800 primary members), of which 1,450 are students, roughly 20% is international members, and the industry accounts for 54% of the MED membership. Financially, the Division’s segregated fund has been at a level of about \$215,000. With no further revenue from conferences and journals, the EC has been prudent in spending, still capable of supporting many activities such as the Student Manufacturing Designs Competition, the Symposium Invited Speaker program, and awards, etc.

The core of the ASME MED lies on our very strong Technical Committees (TC’s). Currently, the Division has eight TC’s (listed at the end of the newsletter) and most of them are very active and continue to grow, thanks for the diligent work and leadership from the past and current TC Chairs and Vice-Chairs. With manufacturing technologies evolving so fast, the EC has been in review and discussion of MED’s TC structures: how to better respond to the quick changing manufacturing world, and how to better fulfill the MED’s mission and not only serve our members, but also actively engage with the global dynamic manufacturing community? We encourage all of our members to get more involved with MED’s Technical Committees; please contact the TC leadership team listed at the end of the newsletter.

This year, our flagship conference, International Manufacturing Science and Engineering Conference (MSEC), held jointly with the North American Manufacturing Research Conference (NAMRC) since 2011, was hosted by Texas A&M University (TAMU). It was a pleasure to meet and talk with so many of you at College Station, TX, in June. The EC would like to congratulate and thank Professor Jyhwen Wang and the entire TAMU team for a well-run conference; their hard work, true dedication and hospitality made our stay a great conference experience. If you were unable to attend the conference, a summary provided by the Technical Program Chairs, Professors Arif Malik and ZJ Pei, is included in this newsletter. We can’t thank both of them enough for organizing such a large-scale, and yet impeccable, technical program for MSEC. Moreover, we were very honored that ASME President, Dr. Said Jahanmir, joined us in MSEC2018 and gave an opening remark during the MED

Award Ceremony. Besides, NSF's Advanced Manufacturing Program provided a very generous grant for students to participate in this Conference. This grant supported 80 students out of a total about 280 student attendees. The Division is extremely grateful to the respective NSF Program Directors for their strong and continued support (since 2009) in engaging next-generation manufacturing engineers in conference activities.

After a successful MSEC2018, we now look forward to our next conference in 2019, which will be hosted by Penn State – Erie, The Behrend College (Erie, PA), organized by Professor Ihab Ragai. The call-for-papers from over 30 symposia has been widely distributed; more details can be found in this newsletter, provided by Professors ZJ Pei and Barbara Linke. We encourage you to submit manuscripts and plan to join us in another largest ever premier international manufacturing conference. Further, working with the MSEC/NAMRC Conference Coordinating Committee, the ASME/MED and the NAMRI/SME have approved University of Cincinnati as the host of the 2020 Conference. Professor Sam Anand's team and Professor Barbara Linke (MSEC2020 Technical Program Chair) have already started dialogue for planning the conference. The entire MED leadership team looks forward to working with them for another high-caliber MSEC.

Technical publication is an area that not only our membership benefits from, but also elevates the status of the MED. The Division sponsors two well-respected journals: Journal of Manufacturing Science and Engineering (JMSE) and Journal of Micro- and Nano-Manufacturing (JMNM). We would like to thank Professors Y. Lawrence Yao and Nicholas Fang for their leadership serving as the Technical Editor (JMSE and JMNM, respectively) and for their sturdiest support. Prof. Fang started the Editor post in January 2018 and we very much look forward working with his team to further excel the JMNM. We are also in debt to Professor Jian Cao, the Founding Editor of the JMNM, for her diligent stewardship in successfully launching the JMNM and in keeping it with a tremendous growth.

One of the most exciting objectives of the MED is to recognize our members with honors and awards for their outstanding achievements in the field of manufacturing engineering. The Division currently administers several achievement awards, both the Society and Division levels, as well as conference related and service awards. Many thanks to the Award Committees, and in particular, to the respective Committee Chairs: Professors John Sutherland, Yuebin Guo and Yong Huang, for their unwearied services and outstanding leadership. Their reports detailing the 2018 awardees are included in the sections below. We strongly encourage everyone to consider nominating

deserving individuals for those awards. In addition, Professors Arif Malik and ZJ Pei directed the awards of the MSEC2018 technical program.

Established in 1920 as the Machine Shop Division, with the subsequent name change to the Production Engineering Division in 1940 and later to the Manufacturing Engineering Division in 1995, the MED will celebrate its centennial in 2020. What an incredible milestone and I am sure that you are as excited as myself to be part of the celebration! The MED EC and the past Division Chairs have been in discussion to develop a plan for this centennial celebration. In a section below, you will find that Dr. Radu Pavel, the incoming MED Chair for 2019-2020, provides us with a background and a summary of the plan still in work. As you are aware, volunteers are essential to make such a celebration successful. So, I encourage all of us to get involved in MED's centennial celebration. Please contact Dr. Pavel with any help you may be able to offer.

The ASME's Design, Materials, and Manufacturing (DMM) Segment, to which the MED belongs, is responsible for ASME's technical events and content in the area of manufacturing. With advanced manufacturing identified as one of the key technologies by ASME, DMM is looking to grow the portfolio with new initiatives in manufacturing and to engage the MED in developing a plan for ASME to become the "go-to" organization in Manufacturing. Hence, we invited Professor Gloria Wiens, who serves in the DMM Segment Leadership Team, to provide an update on DMM.

As some of our members may recall, the Division successfully launched the first MSEC twelve years ago (in 2006) with the purpose to better serve MED members and, by and large, the manufacturing community. The Division has since then devoted its primary focus onto the MSEC. As advanced manufacturing rises to the Nation's spotlight, other ASME conferences have also placed a strategic emphasis in subjects tied to manufacturing; e.g., the International Mechanical Engineering Congress and Exposition (IMECE) has a track specialized in Advanced Manufacturing. The Division has been asked to better engage with the IMECE so to serve MED members with a broader interest. We, thus, invited Professor Junghoon Yeom, the lead organizer of the Advanced Manufacturing Track of IMECE2018, to provide an update.

Several of MED members including myself serve on the ASME's Manufacturing Public Policy Task Force (MPPTF), co-chaired by Professors Tom Kurfess and Steven Schmid and chartered in January 2016. The group meets regularly (via teleconferences) to discuss Federal Manufacturing Policies and related subjects and to share up-to-date information, e.g., Congressional Briefings and

Appropriations pertinent to manufacturing, etc. Major information from the meetings has also been disseminated through ASME's Capitol Updates (<https://www.asme.org/about-asme/advocacy-government-relations/policy-publications/capitol-update>). If you find this interesting, please sign up to receive the updates.

Before closing, I want to recognize the MED EC members (listed at the end of the newsletter) who each play an important role in the MED operations ranging from conference programs and organizations, awards, budgets, leadership updates and annual plans, etc. I am very grateful to working with this fine and dedicated group and for the outstanding job they have done, and for sure, will continue through the coming years. In addition, Professor Wenchao Zhou continues to serve as MED's Web and Communications administrator and provides timely updates through emails or at the MED website on matters of interests to our membership. Also noted earlier, Professor Gracious Ngaile serves as the MED's Newsletter Editor. In addition, the Division is supported by a dedicated ASME staff, Mr. Edmond Valpoort, with whom we pretty much exchange emails/calls on a regular basis.

To conclude, let me encourage every MED member to actively participate, and contribute whatever you may, in our programs and activities. We thank you again for your membership and continued support to our Division. Please do not hesitate to contact me or reach out to any of EC members, if you have any questions and/or suggestions.

I wish you another productive year and look forward to seeing you in MSEC2019, if not earlier. Go MED!

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13th ASME International Manufacturing Science and Engineering Conference (Hosted by Texas A&M University, June 18-22, 2018): Technical Program Report

Submitted by Arif S. Malik and Zhijian (ZJ) Pei - Program Chairs

The 13th ASME International Manufacturing Science and Engineering Conference (MSEC 2018), sponsored by the Manufacturing Engineering Division (MED) of ASME, was jointly held with the 46th North American Manufacturing Research Conference (NAMRC46), sponsored by the North American Manufacturing Research Institute of SME

(NAMRI/SME). The collocated conference was hosted by Texas A&M University (TAMU), from June 18 to June 22, 2018, in College Station, Texas. As leading world-class societies in the Mechanical Engineering and Manufacturing fields, ASME and SME serve as important "bridges" for industries, government and academic institutions.

MSEC 2018 received 274 draft papers and 60 poster submissions. After the peer review process, 233 technical papers and 12 industry-sponsored talks were accepted for presentation in 88 MSEC technical sessions that included 4 MSEC-NAMRC joint sessions. The conference featured 40 Technical Symposia in 6 Technical Tracks: Additive Manufacturing, Manufacturing Equipment & Systems, Processes, Materials, Bio & Sustainable Manufacturing, and Manufacturing USA (joint MSEC-NAMRC). In addition, the conference included the workshop "What's New at NSF" and the special panel "Federal Agencies' Perspectives on Advanced Manufacturing," together with the popular NSF Proposal Writing Workshop—all sponsored by the National Science Foundation. Another workshop, "Advanced Robotics for Manufacturing," was also featured. The conference included three student-centered events: Early Career Forum, Student Manufacturing Design Competition, and the Reusable Abstractions of Manufacturing Processes (RAMP) competition and workshop. Together with the RAMP competition, a total of 82 posters were presented.

MSEC 2018 (co-located with NAMRC46) brought together 711 participants from 28 countries. This number includes 282 students. The Civil, Mechanical and Manufacturing Innovation (CMMI) Division of the National Science Foundation (NSF) supported student conference participation. Students studying in U.S. institutions who were planning to attend the MSEC2018/NAMRC46 applied for this opportunity: 80 of them received the NSF Travel Grant that helped defray their cost of attending the conference. The students receiving NSF support included PhD, MS, and BS students, as well as veterans, women, and students from historically underrepresented groups, including disabilities. Approximately 88% of the total registered conference attendees came from academic institutions, 8% from industry, and 4% from government.

MSEC 2018 also featured the Symposium-Invited Speakers Program in three important manufacturing areas: metallurgical issues in additive manufacturing, impulse joining, and biomedical 3D printing. This program featured a 60-minute talk on each topic, followed by 30 minutes of questions and answers. Prof. Xinhua Wu (Director, Monash Centre for Additive Manufacturing at Monash University, Australia) gave the talk "*Metallurgical Issues and Quality Control in Selective Laser Melting of Aerospace Materials*," which provided fascinating insights into materials research

for the additive fabrication of metals. Professor Dong-Woo Cho, from the Center for Rapid Prototyping Based 3D Tissue/Organ Printing, POSTECH, Korea, gave the talk "3D Printing Technology and Its Biomedical Applications." Prof. Cho's talk included many high-profile research implementation examples of Bio 3D printing technological advances in medicine. Professor Glenn Daehn, from The Ohio State University, delivered the talk "Impulse Joining and Manufacturing: Methods and Opportunities," which highlighted exciting new developments in advanced joining technologies in manufacturing, particularly for dissimilar metals.

The joint conferences hosted three daily opening keynote speakers: Mr. Ahmed Mahmoud, Chief Information Officer, General Motors IT; Prof. Ajay Malshe, a member of the National Academy of Engineering and Professor at the University of Arkansas; and Takeshi Ebisu, President & CEO, Goodman Global Group, Inc., a member of the Daikin Group.

Mr. Ahmed Mahmoud discussed his vision for transforming organizations into a highly insourced teams with major organizational focus on innovation to drive corporate value. Based on his experiences at GM, Hewlett-Packard, Dell, AMD, and Eastman Kodak, Mr. Mahmoud discussed some compelling industry case studies as justifications to continually innovate. Prof. Ajay Malshe discussed the possibilities for extreme levels of customization and adaptation in the way products are created and delivered to fulfill global demand by taking inspiration from Mother Nature. Mr. Takeshi Ebisu described Daikin's new 4.1 million-square-foot, state-of-the-art manufacturing facility. Located midway between Houston and College Station is the Daikin Texas Technology Park, which allows Daikin to consolidate manufacturing, engineering, logistics, marketing and sales for Goodman®, Amana® and Daikin brand heating and air conditioning products in a single location. Mr. Ebisu also discussed how the industrial internet of things (IIoT) can be harnessed and integrated with advances in data science to significantly improve decision making in industrial settings.

In addition to the three daily opening keynotes, Mr. Mike Molnar, founding director of the Advanced Manufacturing National Program Office at the National Institute of Standards and Technology, gave a luncheon keynote on technical and business barriers for translating a new material, process, or technology into robust production, and implications for maintaining U.S. leadership in advanced manufacturing. Mr. Molnar provided an overview of The Manufacturing USA program and its 14 innovation institutes.

The MSEC symposium organizers nominated 17 papers for the Best Paper Award. These 17 papers were reviewed and ranked by symposium organizers. The Technical Program Chair compiled the results and then handed off final decision making to the MED executive committee. The final awards were as follows:

- *1st place:* MSEC2018-6507 "Sensor Fusion and On-Line Monitoring of Friction Stir Blind Riveting for Lightweight Materials Manufacturing"
Authors: Zhe Gao and Weihong (Grace) Guo from Rutgers, and Jingjing Li from Penn State.
- *2nd place:* MSEC2018-6452 "Effects of Process Parameters on Crack Inhibition and Mechanical Interlocking in Friction Self-piercing Riveting Aluminum Alloy and Magnesium Alloy"
Authors: YunWu Ma, GuanZhong He, Ming Lou, Yongbing Li, ZhongQin Lin from Shanghai Jiao Tong University.
- *3rd place:* MSEC2018-6624 "Robotic Finishing of Interior Regions of Geometrically Complex Parts"
Authors: Ariyan Kabir, Aniruddha Shembekar, Rishi Malhan, Rohil Aggarwal, Joshua Langsfeld, Brual Shah, and Satyandra K. Gupta from USC.

The Technical Program Chair selected the recipient of the Best Organizer of a Symposium and Session (BOSS) Award in consultation with the MED Executive Committee. The recipients of this award were Dr. Wayne Cai (GM Global R&D) and Dr. Yongbing Li (Shanghai Jiao Tong University) for their symposium "Novel Joining Technologies for Dissimilar Materials." This symposium was very well represented, with 15 very high quality papers, including the 2nd place Best Paper. Drs. Cai and Li were also instrumental in arranging for a Symposium Invited Speaker.

The conference program is the result of the outstanding efforts of many people. We would like to thank all the authors for their technical paper and poster submissions. We also express our gratitude to all the organizers for their dedicated management of the tracks and symposia, as well as for guarding the quality of the papers and posters to be presented, which has contributed a great deal to the success of the conference technical program. We would also like to thank the host Organizing Committee, the Conference Coordinating Committee, the NAMRI/SME Scientific Committee, and the ASME MED Executive and Technical Committees. Our thanks also go to the ASME staff for their outstanding contributions in presenting conference information on the Internet, managing the submitted technical papers and posters, and ensuring high-quality publication of the conference proceedings for MSEC 2018.

Student Manufacturing Design Competition at MSEC 2018

Submitted by Laine Mears- Student Competition Coordinator

The 2018 Student Manufacturing Design Competition, jointly sponsored by ASME MED and NAMRI/SME took place during the 2018 MSEC/NAMRC which was held at Texas A&M University in College Station, TX. The competition comprised eight finalist teams. Each team was represented by at least one team member who attended the conference. Teams received travel assistance from MED and/or the National Science Foundation. The top three awardees were:

- *1st place:* “Wire Chopper for Ultra High Performance Fiber Reinforced Concrete” by University of Texas - Dallas, represented by Joshua Chari, Joshua Torres, Collin Godfrey, Colin Wyatt, Rami Masoud and Abdul Awad.
- *2nd place:* “Automated Ultrasonic Soldering Design Project using Ceramic Substrates” by Clemson University, represented by Jennifer Shaffer, Kenneth Maassen, Cameron Blevins, Cole Crawford, Maxwell Ames, Kristen Meyers and Christopher Tigges.
- *3rd place:* “Automated Defect Inspection” by the University of New Hampshire, represented by Hyenjin Jeong, Michael Locke, Colten Tenney and Graeme Bignell.

Awardees were granted cash prizes of \$1000, \$750, and \$500, respectively. All participants were well-prepared and presented projects of high quality demonstrating results with a high potential for impact in industry. The evaluation of presentations was supported by three additional judges: Dr. Moneer Helu of NIST, Ms. Jessica Sampson of Orthofix, Inc., and Prof. Patrick Kwon of Michigan State University. The event went extremely well and the MED is looking forward to another great year in 2019!

Early Career Forum at MSEC 2018

Submitted by Johnson Samuel - Organizing Committee Chair

The Early Career Forum was held during the joint conference of the 13th ASME International Manufacturing Science and Engineering Conference (MSEC 2018), and the 46th NAMRI/SME North American Manufacturing Research Conference (NAMRC 46), at the Texas A&M University, College Station, TX. The event attracted over 100 participants who discussed career opportunities, paths, and planning with a diverse and talented panel

representing industry, academia, and government career paths. The event was sponsored by the National Science Foundation and the Department of Engineering Professional Development at the University of Wisconsin-Madison.

The goal of the Early Career Forum was to provide current students at all levels of graduate and undergraduate programs, as well as recent graduates, with better information/knowledge of various research positions in industry, academia, and national laboratories. This was achieved by a small-scale networking event where students were introduced to a panel of 13 professionals with wide-ranging experience in industry, academia, and government. The panelists were:



Dr. Robin Bright,	Saint-Gobain Abrasives
Dr. Michael Brundage,	National Institute of Standards
Dr. Bryan Chu,	Sandia National Laboratories
Dr. Michael D. Johnson,	Texas A&M University
Dr. Parikshit Mehta,	Arconic Technology Center
KC Morris,	National Institute of Standards
Dr. Brigid Mullany,	National Science Foundation
Dr. Yayue Pan,	University of Illinois at Chicago
Dr. Frank Pfefferkorn,	University of Wisconsin-Madison
Dr. Ala Qattawi,	University of California, Merced
Jessica Sampson,	Orthofix Inc.
Dr. Mike Vogler,	Caterpillar Inc.
Dr. Sarah Wolff,	Northwestern University

This was the ninth Early Career Forum at these co-located conferences. The forum consisted of a brief introduction from each panelist, followed by small group discussions where one panelist sat at a table with eight to 10 students. The students were given the opportunity to freely move between tables suiting their specific interests. The informal nature of the forum facilitated meaningful discussions, where questions could be answered from all the students. The students came away feeling empowered and more confident about their futures in manufacturing engineering. The organizing committee would like to thank all who participated. The committee would also like to extend its gratitude to the National Science Foundation for covering the conference registration costs and lodging for 80 students and to the Department of Engineering Professional Development at the University of Wisconsin-

Madison for paying for dinner that was served to all forum participants. Our gratitude also goes to the staff at Texas A&M University for their invaluable help and cooperation in making this such a successful Early Career Forum.

Journal Reports

ASME Journal of Manufacturing Science and Engineering (JMSE)

Submitted by Y. Lawrence Yao - Editor

The Journal is progressing healthily, and each year we see steadily increasing submission rates and reduced time that papers spend in review. As was the case last year, each of our twelve monthly issues is allotted 200 pages to accommodate the growing numbers of submitted papers, and our impact factor remains steady at 2.578 (thanks in part to reduced review times and Special Issues that have contributed to this increase from previous years).

With confidence in this strong showing, we still continue to focus on streamlining our review process without sacrificing quality. The time papers spent in review and the number of submissions are shown below. *Please note that the data in the following charts is as of 9/10/2018.*

We also plan to draw readers to JMSE through the publication of robust and timely special issues. We completed one this year—an issue on *Enhanced process-machine interaction through design, tooling, automation, and modeling* (February 2018)—and have one in progress on *Sustainable Life Cycle Engineering* (February 2019). We are also hard at work on a Special Issue to celebrate JMSE’s Centennial in 2021.

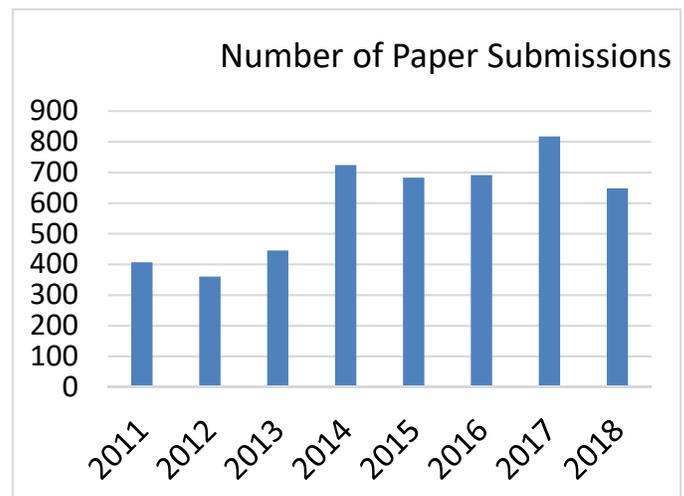
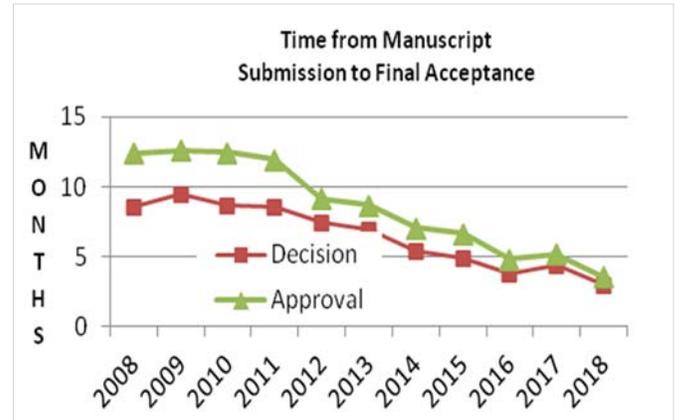
We wish to thank our Guest Editors, Burak Sencer, Oregon State University, USA; Tony Schmitz, UNC Charlotte, USA; Jaydeep Karandikar, GE Global Research Center, USA; and Chris Tyler, Boeing Co., USA for their expert and prompt handling of submissions to the issue on Enhanced process-machine interaction. Likewise, we thank Guest Editors Sara Behdad of University at Buffalo, William Z. Bernstein of National Institute of Standards and Technology, and Karl R. Haapala of Oregon State University for their exemplary handling of submissions for the issue on Sustainable Life Cycle Engineering. Finally, we thank Guest Editors Laine Mears of Clemson University, Warren DeVries of University of Maryland, Baltimore County, and Albert Shih of University of Michigan, who are hard at work on planning JMSE’s Centennial issue.

With strong support from the MED Executive Committee – particularly Shawn Moylan, the EC Chair and Arif Malik, the MSEC 2018 Program Chair – we’ve established a fast-tracking system between well-reviewed MSEC papers and subsequent publication in JMSE. MSEC 2018 papers that

received a “journal quality” rating from at least one reviewer were considered for JMSE publication without further review. Among the 271 final papers accepted by MSEC 2018, 44 were considered by JMSE and 7 were fast tracked. We plan to continue this process for MSEC 2019 to provide a streamlined way for quality papers to appear in the Journal sooner.

Our current Editorial Board consists of 21 members, including the TE. We are excited to welcome three new AE’s since last fall: Kevin Chou, University of Louisville; Martine Dubé, École de technologie supérieure; and Tugrul Ozel, Rutgers State University. Additionally, three AE’s – Yannis Korkolis, University of New Hampshire; Laine Mears, Clemson University; and Tony Schmitz, University of North Carolina at Charlotte- have kindly agreed to serve another term of three years, and their terms have been extended accordingly.

On behalf of the Editorial Board, I would like to thank the authors and reviewers for their continued support of JMSE, and thank the MED Executive Committee for its guidance and support. I also invite and strongly encourage you to participate in the process of strengthening the Journal by sending me your thoughts and ideas for improving JMSE and our service to the community: vy1@columbia.edu, 212-854-2887.

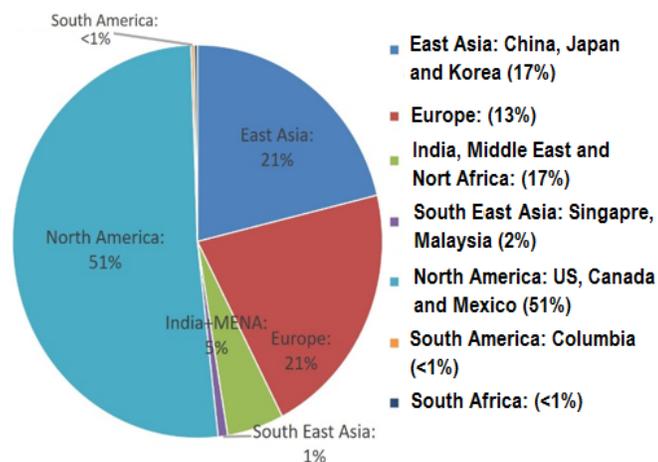


ASME Journal of Micro and Nano-manufacturing (JMNM)

Submitted by Nicholas Fang - Editor

The *ASME Journal of Micro- and Nano-Manufacturing* (JMNM) has reached out to a broad research community in academia, national laboratories, as well as researchers and developers in industry by offering high-quality publications within the ASME journal series.

The mission of JMNM is to disseminate original theoretical and applied research in the areas of micro- and nanomanufacturing, with emphasis on the latest advancement in research and development, such as design, computational methods, mechatronics, materials, and basic sciences to the manufacturing community. Meanwhile, as today's technical challenges arise in energy, health, environment, and society, we also welcome submissions and technical themes addressing special needs in emerging areas, such as optics and photonics, biomedical devices such as microfluidic platforms and tissue engineering, advanced manufacturing for smart fabrics and textiles, to broader societal challenges such as water and renewable energy. As of year 2018, we received paper submission from research institutions over 30 countries worldwide.



JMNM paper submissions by country

On average we receive 80 papers annually. We have continued to shorten our Submission-to-Acceptance time to 2 months so far this year. We attribute this gained efficiency to well-maintained and managed review progression that allows for the same rigorous and quality review process, in the shortest time frame possible. This year we continue to welcome high-quality papers from MSEC and I2M2 conference sessions to submit extended versions of their top-rated work to our Journal. MSEC papers that were rated as "journal quality" have been invited for a fast track to publication.

On behalf of the Editorial Board, I would like to thank all the authors and reviewers for their continued support of JMNM. The past year has seen the departure of Editorial Board members, Professor Jian Cao and Professor Don Lucca of Oklahoma State University. We here at JMNM are grateful for their support, in particular, Professor Jian Cao for all of her excellent leadership and outstanding achievement during her term. We also welcomed two new Editorial Board members, Marriner Merrill from Naval Research Laboratory and Professor Shih Chi Chen from the Chinese University of Hong Kong. I am proud to work with a team of international experts on the JMNM Editorial Board who provide expertise and conduct the peer-review process for our full-length research papers and technical briefs.

Additionally, we have enlisted the help of Guest Editor Dr. Irene Fassi, from the Institute of Industrial Technologies and Automation (ITIA), Italy, to assist us in editing submissions from our Special Section from International Conference on Micro Manufacturing this December. Dr. Fassi and Professor Martin Byung-Guk Jun served as the organizers of this conference and we are therefore grateful for her support as the Guest Editor of this Special Section. We also invited Professor Michael Cullinan from the University of Texas at Austin to serve as a guest editor for the March 2019 issue, with focus on the *Micro-Nano Technologies and Metrology*.

We look forward to continuing our work within and beyond the ASME community in creating a platform for scholars and experts from across the globe to educate and discover. Please submit your manuscripts to JMNM at <http://journaltool.asme.org>.

Honors Committee Reports

Every year ASME bestows a number of awards on our most outstanding colleagues for their efforts to move various aspects of the manufacturing field forward. It is important that these individuals be recognized for their tremendous contributions. Please consider nominating a deserving colleague for one for the ASME administered by MED including the Blackall Machine Tool and Gage Award, the William T. Ennor Manufacturing Technology Award, the Chao and Trigger Young Manufacturing Engineer Award, the Milton C. Shaw Manufacturing Medal, the M. Eugene Merchant Manufacturing Medal of ASME/SME and the Ehmann Medal. See <https://www.asme.org/about-asme/get-involved/honors-awards> for further information on these awards and their nomination process.

Blackall Machine Tool and Gage Award

Submitted by Yuebin Guo - Committee Chair

The Blackall Machine Tool and Gage Award is presented for the best original paper or papers (not published elsewhere) which has/have been presented before ASME and/or published by ASME during the two calendar years immediately preceding the year of the award. The paper(s) should clearly demonstrate that the science and engineering technologies outlined in the paper, resulted in a significant contribution to the manufacturing processes and systems for the design or application of machine tools, gauges, dimensional measuring instruments, or new manufacturing technologies and metrology approaches. Papers by multiple authors are eligible. The award shall be made annually if warranted. The award was established in 1954 by Frederick S. Blackall, Jr., Fellow and Seventy-second President of the Society.

The recipients of 2018 Blackall Machine Tool and Gage Award are Sripati Sah, Numpon Mahayotsanun, Michael Peshkin, Jian Cao, and Robert X. Gao for the paper "Pressure and Draw-In Maps for Stamping Process Monitoring", ASME Transactions Journal of Manufacturing Science and Engineering, SEPTEMBER 2016, Vol. 138 / 091005.

On behalf of the ASME award committee, I would like to ask your help to nominate qualified colleagues for the award. Your nominations will help the ASME award committee to make convincing decisions. Please pay attention to the nomination deadlines and the conflict-of-interests. The nomination details can be found at <https://www.asme.org/about-asme/get-involved/honors-awards>. The due date for nomination is December 15, 2018. Please send your nomination to Professor Yuebin Guo (yguo@ua.edu).

William T. Ennor Manufacturing Technology Award

Submitted by Yuebin Guo - Committee Chair

The William T. Ennor Manufacturing Technology Award is presented to an individual or team of individuals for developing or contributing significantly to an innovative manufacturing technology, the implementation of which has resulted in substantial economic and/or societal benefits. The award was established by the Production Engineering Division (now the Manufacturing Engineering Division) in conjunction with the Alcoa Company in 1990.

The recipient of 2018 William T. Ennor Manufacturing Technology Award is Dr. Kevin Scott Smith at University of North Carolina at Charlotte for his innovation in machining dynamics which has been commercially implemented,

leading to significant improvement in machine tool performance, and enabling the creation of thin monolithic machined structures in a variety of industries.

The nomination details for 2019 William T. Ennor Manufacturing Technology Award can be found at <https://www.asme.org/about-asme/get-involved/honors-awards>. The due date for nomination is February 1st. Please send your nomination to Professor Yuebin Guo (yguo@ua.edu).

Chao and Trigger Young Manufacturing Engineer Award

Submitted by Yong Huang - Committee Chair

The Chao and Trigger Young Manufacturing Engineering Award recognizes a young manufacturing researcher under 40 with potential for significant fundamental contributions to the science and technology of manufacturing processes.

On behalf of the members of the award selection committee, it is our pleasure to announce that the Chao and Trigger awardee for 2018 is Professor Chris Yuan of Case Western Reserve University. Prof. Yuan is recognized for his significant contributions to sustainable manufacturing of lithium ion batteries for electric vehicles through advancing the fundamental scientific understanding of the electrochemical performance, developing scalable manufacturing techniques for high performance battery materials, and life cycle assessment models for improving sustainability performance.

M. Eugene Merchant Manufacturing Medal of ASME/SME

Submitted by John Sutherland - Committee Chair

The M. Eugene Merchant Manufacturing Medal of ASME/SME was established in 1986 in recognition of the numerous contributions of Gene Merchant to manufacturing research. The medal is awarded annually to an individual who has had significant influence and responsibility for improving the productivity and efficiency (either by research or by implementation of research) of manufacturing operation(s). The selection committee consists of notable manufacturing experts from ASME and/or SME. Past recipients of the Merchant Medal are leaders from industry, e.g., Edson Gaylord, George Fisher, Laurence Seifert, and Richard Dauch, and academia/government, e.g., Gunter Spur, Yoram Koren, and Michael Molnar.

The M. Eugene Merchant Medal selection committee is pleased to announce that Dr. Kamlakar P. Rajurkar is the recipient of the 2018 Merchant Medal. Dr. Rajurkar is

being recognized for his pioneering contributions to enhance the productivity of nontraditional machining processes used in automobile, aerospace, and medical device manufacturing. This year's medal presentation will occur at the ASME Honors Assembly as part of the IMECE to be held in Pittsburgh (the site for the medal presentation alternates between ASME and SME venues from year to year).

Congratulations to Dr. Rajurkar for this well-deserved honor!

Nominations are now being sought for the 2019 M. Eugene Merchant Manufacturing Medal of ASME/SME. The due date for nominations is 1 February 2019. Please send all nominations to Professor John W. Sutherland (jwsuther@purdue.edu).

Milton C. Shaw Manufacturing Research Medal

Submitted by Yong Huang - Committee Chair

The Milton C. Shaw Research Medal established in 2009, recognizes significant fundamental contributions to the science and technology of manufacturing processes.

On behalf of the Milton C. Shaw Manufacturing Research Medal Committee, we are pleased to announce that the 2018 Milton C. Shaw Manufacturing Research Medal is awarded to Professor Ming C. Leu of Missouri University of Science and Technology. Chosen from a set of nine outstanding nominees, Prof. Leu is recognized for his significant fundamental contributions to the science, engineering and technology of additive manufacturing, including the invention and understanding of Rapid Freeze Prototyping, Freeze-form Extrusion Fabrication, and Ceramic On-Demand Extrusion processes, and the optimization and innovative applications of these and other additive manufacturing processes.

Nomination Deadline for All Awards above:

Due February 1 annually, except December 15 for the Blackall Machine Tool and Gage Award (one and a half months earlier).

Please visit the ASME MED awards website for details:

https://community.asme.org/manufacturing_engineering_division/w/wiki/3659.honors-awards.aspx

Manufacturing Engineering Division 100 Years Celebration

Submitted by Radu Pavel – MED Executive Committee Vice-Chair

The Technical Divisions of ASME are groups formed around specified technical interests, which contribute to ASME

conferences, journals and other technical content. The Manufacturing Engineering Division (MED) is concerned with the knowledge base of manufacturing sciences and technology and its applications for improved production performance. It also promotes the science and practice of mechanical engineering through manufacturing engineering and its entire scope where "product" is the desired end result. The MED members collaborate, aggregate and disseminate manufacturing focused technical information and expertise through contributions to conferences (e.g. MSEC, IMECE), journals (e.g. JMSE, JMNMM) and other venues.

The MED was formed in 1920 and in 2020 will observe 100 years from its creation. In view of this milestone year, the MED leadership is planning to organize activities that will celebrate the division's 100 years of existence and contributions to industry and society.

Following a series of preliminary meetings organized by Professor Jian Cao, Dr. Radu Pavel and Professor Kevin Chou, the MED Executive Committee organized a first formal meeting for the 100 years celebrations at MSEC 2018. Former chairs of MED and key members of ASME and other illustrious societies have been invited, including: ASME leadership, ASME's Design, Materials and Manufacturing (DMM) Segment, National Institute of Standards and Technology (NIST), National Science Foundation (NSF), and Society of Manufacturing Engineering (SME). The scope of the meeting was to conduct a brief overview of the significance of the MED centennial, and to brainstorm and consolidate ideas for celebrations. The ideas selected as a result of the meeting have been further refined in subsequent meetings/phone conferences of the MED leadership with representatives of ASME staff and DMM Segment.

MED leadership would like to recognize the strong advocacy and support they received and are continuing to receive from Mike Molnar, ASME Governor, whose passion for manufacturing has always made him a great promoter of MED's mission. From the very beginning, the ASME has expressed strong interest in supporting MED's efforts to celebrate their 100 years of existence. Dr. Said Jahanmir, the President of ASME, who was present at MSEC 2018, provided key considerations and ideas for celebration activities. Additional meetings and conversations with Timothy Graves - Managing Director TEC, Raj Manchanda - Director Business Development/Manufacturing & Robotics, and Edmond Valpoort - Conferences & Events Manager supporting the DMM Segment, have helped refine the initial considerations.

In addition to planning meetings, the MED leadership has reached out to other divisions to learn about their approach and preparations for celebrating milestone years. In this regard, the information and samples received from Dr. Sam Y. Zamrik of the Pressure Vessels & Pipe Division have been particularly useful. MED Executive Committee would like to acknowledge here ASME's support in identifying appropriate divisions and sharing own experience relative to similar past events. Erin Dolan - Program Manager ERTD, Ty Booker - Program Manager Global Communications, Vanesa Valencia - Group Services Coordinator, and Fran McKivior - Administrator Honors & Fellows have been particularly supportive for these efforts.

Based on the meetings and communications conducted to date, the following activities and items are being considered for the 2020 celebrations:

- New MED logo design (open competition)
- Anniversary announcements
- Recognition at Conferences (Plaque presentation by ASME Leadership)
- Photography for recognition event
- Booklet of MED history
- Mechanical Engineering magazine, special section
- Smithsonian display
- Recognizing young manufacturing talent
- Student activities
- Manufacturing Day
- JMSE/JMNM special issues

Manufacturing catalyzes innovation, knowledge and economic value creation. In 2020, in addition to celebrating its 100 years of existence, the MED will have the chance to promote the value and opportunities that Manufacturing creates. Therefore, the Executive Committee of MED looks forward to collaborating with the entire MED community and related organizations to make the centennial celebrations both memorable and instructive.

Design, Materials and Manufacturing (DMM) Segment

Submitted by Gloria Wiens – DMM SLT TEC Council Representative, Liaison to MED

The Design, Materials, and Manufacturing (DMM) Segment is part of the Technical Events and Content (TEC) sector of ASME. The DMM Segment Leadership Team (SLT) serves as a liaison between the TEC sector and ASME divisions that have ties to engineering design, materials science, and manufacturing. Formed in FY16, the SLT's purpose is to foster collaboration between the TEC sector and the divisions and to promote growth of the divisions'

events and conferences. The Segment supports technical research and event content development that is often multi-disciplinary in nature and that can be applied in fields such as additive manufacturing, computer engineering, medical devices, aerospace, automotive, robotics and general manufacturing.

<p><u>FY2018/2019 DMM SLT Members:</u> Academe (4), Industry (3), National Lab (1), ASME Staff*(3-2018, TBD-2019)</p>
<p>Steve Reese, Larry Dickinson, John Grimes*, Abhijit Dasgupta, Raj Manchanda*, K (Subbu) Subramanian, Tim Simpson (Chair), Israr Kabir*, Andrew Alleyne, Gloria Wiens (TEC Rep & MED Liaison), Ying-Feng Pang and Dean Bartles (new)</p>

Within ASME, the DMM SLT engages experts from academe, industry, national laboratories and ASME through its membership and strategic recruitment of Subject Matter Experts in support of new initiatives and providing ASME market insight. DMM SLT appreciates MED's openness to collaborate on strategic initiatives (additive manufacturing and robotics).

DMM SLT continues to align its event portfolio and improve events based on "lessons learned". DMM SLT has aligned with two of ASME's core technology areas (1- Additive & Emerging Manufacturing Technologies and 4- Robotics & Control) and three enabling technologies (2- Integrated Design & Manufacturing, 3-Next-Generation Electronics and 5-Advanced Materials). In addition, DMM supports the newly formed Manufacturing Technology Advisory Panel (TAP) which focusses on Additive Manufacturing. DMM is working with ASME in piloting new delivery methods and channeling partnerships. The Robotics TAP has under development a Robotics for Manufacturing (RfM) eCourse, established a new standards committee for Unmanned Aerial Systems (drones) – used for inspection, and ASME is a member of Manufacturing USA Institute – ARM.

Current events in the DMM Segment include IDETC/CIE, DSCC, INTERPAK, ISPS, MSEC/NAMRC and other technical conferences, events, workshops and training. Two NEW events are the Industry Forums in 'Robotics for Inspection and Maintenance' and 'Additive Manufacturing Leadership' held in June 2018. An upcoming ASME cross-segment activity, that is considered to be a spin-off of DMM's 2014 additive manufacturing and design event (AM3D), is the Advanced Manufacturing and Repair for Gas Turbines event to occur in Berlin, Germany in early 2019.

At this year's ASME Annual Meeting – Members Assembly held in Vancouver, B.C., DMM and ASME's manufacturing and robotics business development lead presented a

market overview of manufacturing, a summary of ASME manufacturing initiatives and briefing on the segment's role in supporting these initiatives. Another new DMM initiative is the identification of best practices on Maintaining Quality Standards – Paper review process (survey of division leadership and conference organizers, in progress).

DMM strives for more proactive partnerships and engagements with its divisions and their Technical Committees. For Division engagement, DMM holds quarterly telecons, SLT members serve as liaisons to ASME Divisions, and provides TEC Development Funds for new division initiatives. In this inaugural year of the TEC Development Fund initiative, DMM received 8 proposals and awarded funds to 4. MED was one of the awardees, with development funds being provided in support of their new initiative aimed to address the gender gap in the field of manufacturing engineering. Funds will be used for a forum on Women in Advanced Manufacturing (WIAM) to be co-located and held during ASME's 2019 Manufacturing Science and Engineering Conference (MSEC) from June 4 – 7, 2019, at Erie, PA.

Upcoming Events

14th ASME International Manufacturing Science and Engineering Conference

Submitted by Ihab Ragai, ZJ Pei, and Barbara Linke - Conference and Program Chairs

Our next conference, MSEC 2019, will be hosted June 10 – 14, 2019 by Penn State Behrend in Erie, PA. It will be co-located with the 47th North American Manufacturing Research Conference (NAMRC - sponsored by the Society of Manufacturing Engineers).

For details visit Conference Host Website:

<https://namrc47-msec2019.behrend.psu.edu/>;

ASME website:

<https://www.asme.org/events/msec>; and

ASME submission webtool:

<https://www.asmeconferences.org/MSEC2019/login.cfm>

Publication Schedule

This is the overall publication schedule for MSEC2019. (Note: For specific details and questions regarding these dates, please contact the appropriate volunteer organizer).

Submission of Abstract/Full-Length Draft Paper and Poster Abstract for Review: November 2, 2018

Notes: You must submit your abstract and full-length paper at the same time. ONLY engineers/researchers from industry may submit an abstract for "Presentation Only". Poster abstracts must be submitted by this deadline.

Paper Reviews Completed/Acceptance Notification: January 15, 2019

Electronic Copyright Form Submission Process Opens: January 15, 2019

Electronic Copyright transfer forms are requested upon acceptance of the draft or revised draft and prior to the submittal of the final paper.

Submission of Revised Paper for Review (if required): February 15, 2019

Submission of Posters for Review: February 28, 2019

Author Notification of Acceptance of Revised Paper: March 5, 2019

Deadline for Submission of Copyright Form: March 8, 2019

Electronic Copyright transfer forms are requested upon acceptance of the draft or revised draft and prior to the submittal of the final paper.

Submission of Final Paper: March 15, 2019

In accordance with ASME final paper requirements publication in the conference proceedings is not guaranteed if materials (including final paper and copyright transfer form) are received after March 15, 2019.

Author Registration Deadline: April 5, 2019

A presenter must be identified for each presentation. The presenter of each paper, poster, or presentation only will be required to pay the author registration by this deadline.

Technical Program

Tracks (10)

Track 1: Additive Manufacturing

Track 2: Manufacturing Equipment and Systems

Track 3: Processes

Track 4: Materials

Track 5: Bio and Sustainable Manufacturing

Track 6: Posters

Track 7: Joint MSEC-NAMRC Symposia

Track 8: Plenary Sessions

Track 9: Student Manufacturing Design Competition

Track 10: Reusable Abstractions of Manufacturing Processes (RAMP) Competition

Symposia (31)

Track 1: Additive Manufacturing

1. Additive Manufacturing of Ceramics, Concretes, and Composites
2. Advances in Metal Additive Manufacturing Processes
3. Quality Assurance in Additive Manufacturing Systems: Sensing, Analytics, and Control

Track 2: Manufacturing Equipment and Systems

1. Innovations in Equipment Design, Control and Automation
2. Advances in Competitive Manufacturing Engineering and Operational Excellence
3. State-of-the-Art Research on Smart and Inter-Connected Manufacturing
4. Advances in Data Analytics and Engineering Modeling for Intelligent & Resilient Manufacturing Systems
5. Advances in Equipment and Process Health Awareness and Intelligence within Manufacturing Operations
6. Advances in Modeling, Analysis, and Simulation of Manufacturing Systems for Optimized Throughput and Performance
7. Advances in Quality, Reliability, and Continuous Improvement in Manufacturing Development and Execution
8. Manufacturing Systems based on Cloud Technologies and Industrial Internet
9. Simulation Analysis Methodologies for Decision Making in Smart Manufacturing
10. Advances in Cyber Physical Systems, Stochastic Modeling, and Sensor Networks in Advanced Manufacturing
11. Intelligent Maintenance Decision Making of Manufacturing Systems

Track 3: Processes

1. Advanced Multi-axis and Multi-tasking Machining Technologies
2. Advances in Assisted and Augmented Manufacturing Processes
3. Advances in Modeling, Analysis, and Simulation of Manufacturing Processes
4. Advances in Nontraditional Manufacturing Processes
5. Hard Machining and Grinding
6. Laser-based Advanced Manufacturing and Material Processing

7. Novel Joining Technologies for Dissimilar Materials
8. Advances in Manufacturing Processes for Energy Applications
9. Tribology of Manufacturing Processes and Machine Elements
10. Advances in the Mechanics of Materials & Manufacturing Processes
11. Advances in Micro and Nano Manufacturing

Track 4: Materials

1. Advances in Processing of Polymers and Polymer Composites
2. Bio-/Nano-Materials and Self-Organizing Smart Structures

Track 5: Bio and Sustainable Manufacturing

1. Advances in Reusable Abstractions for Manufacturing Process and Unit Process Life Cycle Inventories
2. Design, Process, and Systems Advances for Remanufacturing and Recovery
3. Advances in Analysis, Design, and Manufacturing of Biomedical Devices and Products
4. Advances in 3D Bioprinting of Tissue Scaffolds and Organs

Track 6: Posters

1. Technical posters in various areas of advanced manufacturing research

Track 7: Joint MSEC-NAMRC Symposia

5. Sustainable Operations Management in Manufacturing Systems and Processes
6. Cloud-based Smart Manufacturing

Advanced Manufacturing Track, ASME 2018 IMECE

Submitted by Junghoon Yeom – Track Organizer

ASME's International Mechanical Engineering Congress and Exposition (IMECE) is the largest interdisciplinary mechanical engineering conference in the world. IMECE plays a significant role in stimulating innovation from basic discovery to translational application. It fosters new collaborations that engage stakeholders and partners not only from academia, but also from national laboratories, industry, research settings, and funding bodies. This year's conference, IMECE 2018, will be held in David L. Lawrence Convention Center, Pittsburgh, PA on November 11-15. Conference website:

<https://www.asme.org/events/imece>

Technical Program

The Advanced Manufacturing Track has 12 technical topics and 1 plenary session.

- 2-1 Advanced Manufacturing Plenary
- 2-2 Congress-Wide Symposium on Additive Manufacturing
- 2-4 Nanomanufacturing
- 2-5 Manufacturing of Atomically-Thin, Two-Dimensional Materials
- 2-6 Advanced Machining and Finishing
- 2-7 Third Symposium on Fastening and Joining Technology
- 2-8 Advanced Material Forming
- 2-9 Innovative Product Design
- 2-11 Computational Modeling and Simulation for Advanced Manufacturing
- 2-12 Variation Simulation and Design for Assembly
- 2-13 Robotics & Automation in Advanced Manufacturing
- 2-14 Laser-Based Advanced Manufacturing and Materials Processing

2-15 Digital Manufacturing Simulation and Validation

Track Plenary Talk

Speaker: Jian Cao (Northwestern University)

Presentation Title: Manufacturing for X

Technical Sessions

There are total 41 sessions across various topics in Advanced Manufacturing, 7 invited presentations, and over 190 technical presentations.

For the program details, please visit

<https://www.asmeconferences.org/IMECE2018/TechnicalTracks.cfm>, and select Advanced Manufacturing.

Should you have comments or suggestions, please do not hesitate to contact members of the EC and MED Technical committees listed below.

ASME MED Executive Committee Members (2018-2019)				
Chair	Vice-Chair	Program Chair	Treasurer	Secretary
Kevin Chou	Radu Pavel	Laine Mears	Moneer Helu	Frank Pfefferkorn
University of Louisville	TechSolve	Clemson University	NIST	University of Wisconsin-Madison
kevin.chou@louisville.edu	pavel@TechSolve.org	mears@clemson.edu	moneer.helu@nist.gov	frank.pfefferkorn@wisc.edu
ASME MED Technical Committees (2018-2019)				
Manufacturing Processes	Chair: Wayne Cai (General Motors, wayne.cai@gm.com) Vice-Chair: Ihab Ragai (Penn State – Erie, ifr1@psu.edu)	Life Cycle Engineering	Chair: Moneer Helu (NIST, moneer.helu@nist.gov) Vice-Chair: Terri Jia (General Electric, tjia@ge.com)	
Manufacturing Equipment	Chair: Parikshit Mehta (Arconic, Parikshit.Mehta@arconic.com) Vice-Chair: Burak Sencer (Oregon State Univ., burak.sencer@oregonstate.edu)	Nano/Micro/Meso Manufacturing	Chair: Xinyu Liu (Lamar University, xinyu.liu@lamar.edu) Vice-Chair: Rajiv Malhotra (Rutgers University, rajiv.malhotra@rutgers.edu)	
Manufacturing Systems	Chair: Qing Chang (Stony Brook Univ., qing.chang@stonybrook.edu) Vice-Chair: Michael Brundage (NIST, michael.brundage@nist.gov)	Biomanufacturing	Chair: Robert Chang (Stevens Inst. of Tech., rchang6@stevens.edu) Vice-Chair: Roland Chen (Washington State Univ., roland.chen@wsu.edu)	
Quality and Reliability	Chair: Zeyi Sun (Missouri Univ. of Sci. and Tech., sunze@mst.edu) Vice-Chair: Yong Wang (Binghamton Univ., yongwang@binghamton.edu)	Textile & Composites Engineering	Chair: currently vacant Vice-Chair: currently vacant	