



Fluids Engineering Division (FED)

ASME FED PAGE

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Spring 2019 Newsletter

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Chair's Message

Khaled Hammad



I would like to start by acknowledging the dedicated service and contributions of our outgoing FED Technical Committee chairs: CFDTC, Dr. Elia Merzari, Argonne National Laboratory; FMTC, Prof. Stefan aus der Wiesche, University of Applied Sciences Muenster; MFTC, Prof. Joseph Katz, Johns Hopkins University; FASTC, Dr. George Chamoun, Eastman Chemical Company; FMITC, Prof. Martin Wosnik, University of New Hampshire; MNFDT, Prof. Jiang Zhe, The University of Akron. I would also like to acknowledge our outgoing Honors and Awards (H&A) Committee Chair, Dr. Wayne Strasser, Eastman Chemical Company, as well as our outgoing Newsletter Editor, Dr. George Chamoun, Eastman Chemical Company.

I would like to welcome our new FED Executive Committee member, Prof. Zhongquan Zheng, University of Kansas, our new H&A Chair, Prof. Ning Zhang, McNeese State University, our new Newsletter Editor, Dr. Judith Bamberger, Pacific Northwest National Laboratory. Dr. Judith Bamberger is also chairing our Graduate Students Steering Committee (GSSC). I would like to congratulate and welcome our technical committee officers that were elected during the FEDSM2018 who will serve a two-year term. Names and affiliations of the new TC officers are listed in subsequent sections of this FED newsletter.

A special thanks goes to our Journal of Fluids Engineering (JFE) Editor, Prof. Francine Battaglia, University at Buffalo, for her leadership and dedicated service to FED. I would like to acknowledge the contributions of Prof. Ashley F. Emery, University of Washington, our Journal of Verification, Validation, and Uncertainty Quantification (JVUUQ) Editor.

The support and hard work provided by dedicated ASME staff is crucial to the success of past and current FED organized conferences. In particular, our thanks and appreciation go to Ms. Kanupriya Parasher, Conference Program Manager, Ms. Lori Lee, Conference Web Tool Manager, and Ms. Nhora Cortes-Comerer, Conference Publication.

On a sad note, our colleague and dear friend, Dr. Malcom Andrews, a National Security Fellow at LANL, passed away on January 27, 2019. He served as the ASME Journal of Fluids Engineering (JFE) editor and was an active Fluids Engineering Division member. To commemorate him, Prof. Francine Battaglia, ASME JFE editor, is leading an effort to organize a session that will be held at AJK2019 and a special JFE issue. Also, Professor Hugh Coleman passed away on May 15, 2018 in Huntsville, Alabama. He and Dr. W. Glenn Steel co-authored *Experimentation, Validation, and Uncertainty Analysis for Engineers* (4th Edition 2018). Their absence will be felt dearly.

The Fluids Engineering Division (FED) organized the ASME 5th Joint US-European Fluids Engineering Summer Conference (FEDSM2018) at the Le Centre Sheraton Hotel, Montreal, Canada, July 15-19, 2018. FED also sponsored and organized Track 9, entitled "Fluids Engineering", during the 2017 International Mechanical Engineering Congress and Exposition, November 3-9, 2017, at the Tampa Convention Center in Tampa, FL

Regarding our upcoming conferences, preparations are being finalized for the ASME, JSME, and KSME Joint Fluids Engineering Conference (AJK2019) which will be held July 28 - August 1st, 2019, in Hyatt Regency, San Francisco, California, USA. Please check the AJK2019 web site for more details,

<https://event.asme.org/AJKFluids> . Any inquiries regarding the AJK2019 conference can be addressed to Dr. Mark R. Duignan, ASME Lead Organizer and Conference Chair, and Dr. Judith Bamberger, ASME Co-Organizer and Conference Co-Chair. The 2019 International Mechanical Engineering Congress and Exposition (IMECE2019) will be held November 8-14, 2019 at the Calvin L. Rampton Salt Palace Convention Center, Salt Lake City, Utah, USA. The Fluids Engineering Division is sponsoring and organizing Track 8, entitled "Fluids Engineering". The Fluids Engineering organizers are Dr. Judith Bamberger, Track Organizer, and Prof. Zhongquan Zheng, Track Co-Organizer. Please check the IMECE2019 web site for more details, <https://event.asme.org/IMECE> .

ASME FED is currently focused on increasing the synergy with other ASME divisions. In addition to the ongoing collaboration with the Heat Transfer Division, Dr. Judith Bamberger has been leading our effort to expand our cooperation with the ASME Petroleum Division. As part of that effort, the Petroleum Division Fluids Engineering Award was established, and a special jointly organized topic, Multiphase Flows in Petroleum Engineering, will take place during AJK2019.

The ASME FED focused on identifying and pursuing avenues of collaboration with other than ASME entities. We collaborated with the European Research Community on Flow, Turbulence, and Combustion (ERCOFTAC) during FEDSM2018. That effort was led by Prof. Khaled J. Hammad of the ASME FED and Chairman of the ERCOFTAC Executive Committee, Prof Ananias Tomboulides.

An expanded collaboration with our counterparts from China in future AJK conferences is currently being pursued by Dr. Mark R. Duignan and Dr. Yu-Tai Lee of the ASME FED.

Finally, I look forward to seeing you in San Francisco and strongly urge you to get involved in the ongoing and future activities of FED by identifying and attending the technical committee meetings of interest that will be held during AJK2019 and IMECE2019.

Khaled J. Hammad, Ph.D.
Executive Committee Chair
Fluids Engineering Division



Engineering Science Segment (ESS) Liaison Report

Yu-Tai Lee and Javid Bayandor



ASME has been in its organization restructuring for more than five years. Not until recently its organizational chart has become more stable.

Under the Board of Governors (BOG) and the Sector Management Committee (SME), it is the Technical Event & Content (TEC) which oversees the operation of FED. TEC covers five segments including Engineering Science Segment (ESS), Energy Sources and Processing Segment (ESP), Energy Conversion and Storage Segment (ECS), Design, Materials and Manufacturing Segment (DMM) and Gas Turbine Segment (GTS). All technical divisions belong to one of the Segments. FED is one of the divisions under ESS, which has eight other divisions including Applied Mechanics, Bioengineering, Heat Transfer, Materials, Tribology, Management, Noise Control & Acoustics and Safety Engineering & Risk Analysis. FED Executive Committee (EC) members in the final year of their five-year term automatically become the liaison to ESS for one year. Liaison is required to attend four annual ESS meetings, but without voting right.

The purpose of the ESS is to support the divisions and groups in developing technical content and event activities within the ESS topical disciplines. The ESS provides oversight, coordination, and guidance to the divisions over these activities. The ESS serves as a resource for the divisions to help them initiate, organize, and execute conferences and other technically focused events. The ESS is one of the points-of-contact between the divisions and their volunteer leaderships. It serves in both an advisory role and an advocacy role within the Society.

In 2018 ESS Leadership Team (ESSLT) started to fund its divisions for new initiatives to expand and enhance the impact of ASME. FED has two programs which meet the requirements of this new initiative. The first program, Graduate Student Scholarship Program (GSSP), has been operating since 2010 and we were seeking to expand the program in FY19. The second program, Flow Visualization Competition and Prize (FVCP), started as a pilot program in FY18 and became a formal program in FY19 as a summer conference-wide competition for all attendees. The requested funding for each program was \$3K. The total fund requested and received by FED for 2018 was \$6K. FED is grateful to the ESSLT for putting together this funding opportunity to enhance FED's GSSP and FVCP's ability in attracting young engineers' participation in our Division's activities and being able to learn about the Division during our premier summer conferences.

In their recent meetings, ESS has been developing Key Performance Indicators (KPIs) for gaging the viability of proposals and plans for technical events in a standard format across ASME divisions. KPIs are proposed to cover the general objectives and outlooks of future events, including technical contents and professional experiences offered during such events, as well as built opportunities and sound financial strategies planned. It is anticipated for the divisions to receive guidelines pertaining to these indicators in 2019 so that they can actively incorporate the KPIs in the planning of their future events and within any relevant organizational efforts.

Yu-Tai Lee **FED**
ESS Liaison

Javid Bayandor
ESS Member at Large

Report on ASME Journal of Fluids Engineering

Francine Battaglia



The new fiscal year for the ASME Journal of Fluids Engineering (JFE) was met with mixed emotions for the departure of great colleagues and for the journal successes. To begin, Dr. Malcolm Andrews stepped down as Technical Editor, having faithfully served JFE since his appointment in 2010. We were saddened months later by the news that he passed away on January 27, 2019. The loss of Dr. Andrews rippled through the fluids engineering community. In collaboration with Professor Joseph Katz (JFE Editor 2000-2010), we published an in-memoriam (<https://doi.org/10.1115/1.4042911>), highlighting his accomplishments and indelible impact on our community. To celebrate the contributions of Dr. Andrews, the Journal of Fluids Engineering will be publishing a special issue slated for July 2020. I am pleased that JFE Associate Editors (AEs), Prof. Arindam Banerjee, Dr. Daniel Livescu, Prof. Praveen Ramaprabhu, Prof. Devesh Ranjan and Dr. Oleg Schilling have agreed to organize the special issue. A symposium will be held this summer at the 2019 AJK Fluids Engineering Conference to recognize Dr. Andrews with presentations directly related to his research contributions as well as contemporary research that honors his legacy. Although he will be missed, his memory will live on.

As the Journal moves forward, it is clear that the reputation of JFE continues to elevate, with the impact factor increasing from 1.44 to 1.92 (+33%). During 2018, JFE received 866 manuscript submissions (up 22% from 2013), which is approximately 70 submissions per month. After a preliminary review of each submission by the Editor, 385 were assigned to AEs, of which 19% were accepted, 23% rejected and 22 papers are still in progress. The average time that papers are in review is 100 days. These statistics compare well with 2017, but with a marked improvement in the review time for submissions, by an average of 30 days. A new preliminary review procedure was implemented in 2019 to improve the quality of the papers that are placed in peer-review. Statistics are being collected and more will be shared next year.

Of course, the Journal could not thrive without the dedication of the Associate Editors. In September 2018, Prof. Moran Wang (Tsinghua University, China) agreed to continue as AE for a second term. Professor Ricardo Mereu (Politecnico di Milano, Italy) agreed to continue for a second term in December 2018. The year ended with the addition of Prof. Stefan aus der Wiesche (University of Applied Sciences Muenster, Germany) to the Editorial Board. In January 2019, Prof. M'hamed Boutaous (INSA-Lyon, France) and Prof. Praveen Ramaprabhu (U. North Carolina, Charlotte) agreed to continue as AEs for their second terms. Most recently in March, Dr. Daniel Livescu (Los Alamos National Laboratory) began his second term and Prof. Nazmul Islam (U. Texas Rio Grande Valley) joined as an AE.

I would like to acknowledge and extend my deepest appreciation to the Associate Editors whose terms ended; it was a pleasure to work with them. Their expertise and perseverance enhanced the quality of papers that were published, as well as their oversight and vigilance with the review process. The efforts of Prof. Olivier Coutier-Delgosha (2015-2018), Prof. Matevz Dular (2015-2018), Prof. Shizhi Qian (2013-2019) and Prof. Kausik Sarkar (2016-2019) have served the Journal well, and they will be recognized at the 2019 AJK Fluids Conference. JFE would also like to recognize the 2018 reviewers

of the year: Dr. Gerard Bois (Arts et Métiers ParisTech Lille, France) and Dr. Bhanesh Akula (Intel Corporation, USA).

In an effort to engage with the AEs beyond an occasional message, quarterly conference calls were initiated in 2019. With an Editorial Board spread across the globe, the AEs had a choice of two meetings (each quarter) to join the call in an effort to accommodate all of the time zones. The first two quarterly conference calls were well-attended and the AEs participated with questions and shared their experiences. The first quarterly meeting covered issues and concerns with the review process, including poor quality papers, processing time and finding reviewers. The second meeting presented the Journal's responsibilities with ethics and best practices, as part of ASME's membership on the Committee on Publication Ethics (COPE). The next quarterly meeting will take place at the 2019 AJK Fluids Conference in July.

The Journal is committed to publishing high-quality manuscripts, especially with the increasing submissions. The Journal will be considering papers presented at the 2019 AJK Fluids Conference that were designated as "journal quality". It has been the ASME policy that conference papers are submitted after being presented at the associated conference. ASME has been updating their policies and procedures, and interested authors should visit www.asme.org/publications-submissions/journals/information-for-authors for the latest information. ASME is one of the few journals that will publish conference papers as journal papers without requiring a specific percentage of changed text. Of course, it is expected that the work represents a contribution of archival value. Typically, conference papers require additional details such as an updated introduction, expanded methodology, clearly quantified experimental uncertainty and/or numerical accuracy, and results that clearly describe important physics. Finally, upon request, I will waive the excess page charges for manuscripts (the ASME limit is nine journal pages) but authors should be careful of writing excessively long papers.

In closing, I would like to thank the Editorial Board of Associate Editors, the JFE Assistant to the Editor Ms. Amber Grady-Fuller, and the ASME publishing staff for all their hard work. Please feel free to contact the editorial office at jfe.editorialoffice@gmail.com if you have questions or concerns.

Francine Battaglia
Technical Editor



Report on ASME Journal of Verification, Validation and Uncertainty Quantification

Ashley Emery



The Journal is sponsored by the Heat Transfer and Fluid Mechanics Divisions.

Status:	1/1/2019-5/29/2019	Total (2014-present)
Papers submitted	17	195
Papers currently in review	9	
Papers published		79
Papers rejected		61
Rejection rate		32%

The rate of submission dropped a little during the last half of 2018. The Editors and ASME Publications Staff have been discussing ways to increase the popularity of the journal. ASME generated a publicity campaign, video and email, but the response by members of the Fluids Division has not been as much as anticipated. In addition, it appears that many authors do not recognize that the validation efforts that they employed in their studies are of interest to our readers.

The journal shows a low rate of rejection. This is partly due to the efforts of the Associate Editors to help authors improve their papers so that they communicate important ideas to the readers. While this effort is salutary, it also means that the review process is substantially longer than desired. This effect will diminish as the number of papers submitted grows and more Associate Editors are used.

Current Aims: These have been revised to include the statement

We encourage authors of papers that describe discipline specific models and experiments to consider formulating their papers in two parts, the discipline specific part to be published in their home journals and the part describing the validation and uncertainty aspects of their work that would be published in the VV&UQ Journal.

We believe that this approach would be especially relevant to members of the Heat Transfer Division whose papers frequently involve validation and uncertainty quantification.

I also encourage any division members who know of conferences that are likely to involve presentations/papers that involve validation or uncertainty to email me (emery@uw.edu) with the conference information. I can then identify and contact prospective authors.

Ashley Emery
Technical Editor

The 2018 Fluids Engineering Division Summer Meeting Chair Report

Khaled Hammad



The ASME 5th Joint US-European Fluids Engineering Summer Conference (FEDSM2018) was held at the Le Centre Sheraton Hotel, Montreal, Canada, July 15-19, 2018. FEDSM2018 program included technical paper sessions, plenary lectures, keynote talks, committee meetings, and social events. FEDSM2018 covered all areas of fluid mechanics, encompassing both fundamental as well as applications, to all types of devices, processes and machines involving fluid flows.

The FEDSM2018 program was the outcome of collaboration between the ASME Fluids Engineering Division (FED) and our colleagues from Europe. The technical topics and sessions focused on advances in the field of Fluids Engineering in the areas represented by the FED technical committees. It consisted of six technical tracks, each corresponding to one of the FED technical committees. The Computational Fluid Dynamics (CFDTC), Fluid Mechanics (FMTC), Multiphase Flow (FMTC), Fluid Applications & Systems (FASTC), Fluid Measurements & Instrumentation (FMITC), and Micro & Nano Fluid Dynamics (MNFDT) tracks covered a wide range of topics that are compatible with the scope, mission, and expertise of the corresponding FED technical committee. The FEDMS2018 technical program included 21 topics, 64 sessions, 231 papers, and 31 presentations.

The program started on Sunday, July 15, with a workshop on “Axial and Radial Fan Design,” by Prof. Dr.-Ing. Philipp Epple of the Coburg University of applied sciences in Germany”. The technical program part of FEDSM2018 included five plenary lectures. The ASME Freeman Scholar Lecture, “Fluid Mechanics of Geological Sequestration of Carbon Dioxide,” was given by Professor Ramesh K. Agarwal of Washington University in St. Louis. The ASME Fluids Engineering Award Lecture, “Scaling Analyses for Complex Systems,” was given by Dr. Upendra Singh Rohatgi of the Brookhaven National Laboratory. A plenary lecture on “Liquid/liquid slug flow and mass transport in a micro-capillary reactor - simulation and experiment,” was given by Prof. Dr.-Ing. habil. Peter Ehrhard of Dortmund University of Technology. Professor Stavros Tavoularis of the University of Ottawa gave a plenary lecture on the “Flow Instability and Coherent Structures in Complex Channels.” Professor Martin Brouillette of Université de Sherbrooke gave a plenary lecture on “Using guidewire-mediated shock waves to revascularize chronic total occlusions.”

The FEDSM2018 included an awards dinner banquet that recognized winners of the Freeman Scholar, Fluids Engineering, Fluids Machinery Design, Lewis F. Moody, Robert T. Knapp, Flow Visualization Competition, and Graduate Student awards.

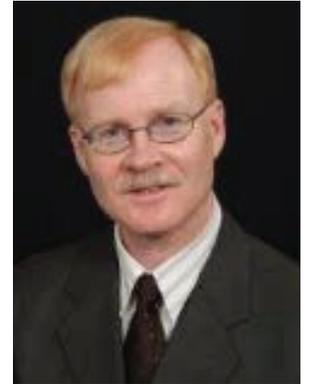
The FEDSM2018 was the outcome of hard work and dedication from the FED executive committee members, our European track co-organizers, TC chairs and vice chairs, topic and symposium organizers, session chairs, reviewers, judges, and the ASME staff.

Khaled H. Hammad, PhD, FASME
Conference Chair

The 2018 International Mechanical Engineering Conference and Exposition Report

Mark Duignan

The 2018 International Mechanical Engineering Congress and Exposition was held November 9-15 at the David L. Lawrence Convention Center, Pittsburgh, PA. The congress included technical sessions and special events covering all aspects of mechanical engineering. A total of 13 technical tracks were included in the program, and the Fluids Engineering Division sponsored and organized Track 9, entitled "Fluids Engineering." Track 9 included 12 different topics divided into 25 sessions which had 140 presentations, 90 of which were full papers. Track 9 sponsored two excellent, and well attended, plenaries: Dr. Sung Kwon Cho, Professor, Dept. Mech. Eng., University of Pittsburgh, PA, USA, presented, "Interface Actuations of Micro/Nano Fluidics," and Dr. Gareth H. McKinley, Professor, Dept. Mech Eng., Massachusetts Institute of Technology, Cambridge, MA, USA, presented, "Microfluidic Rheometry of Complex Fluids."

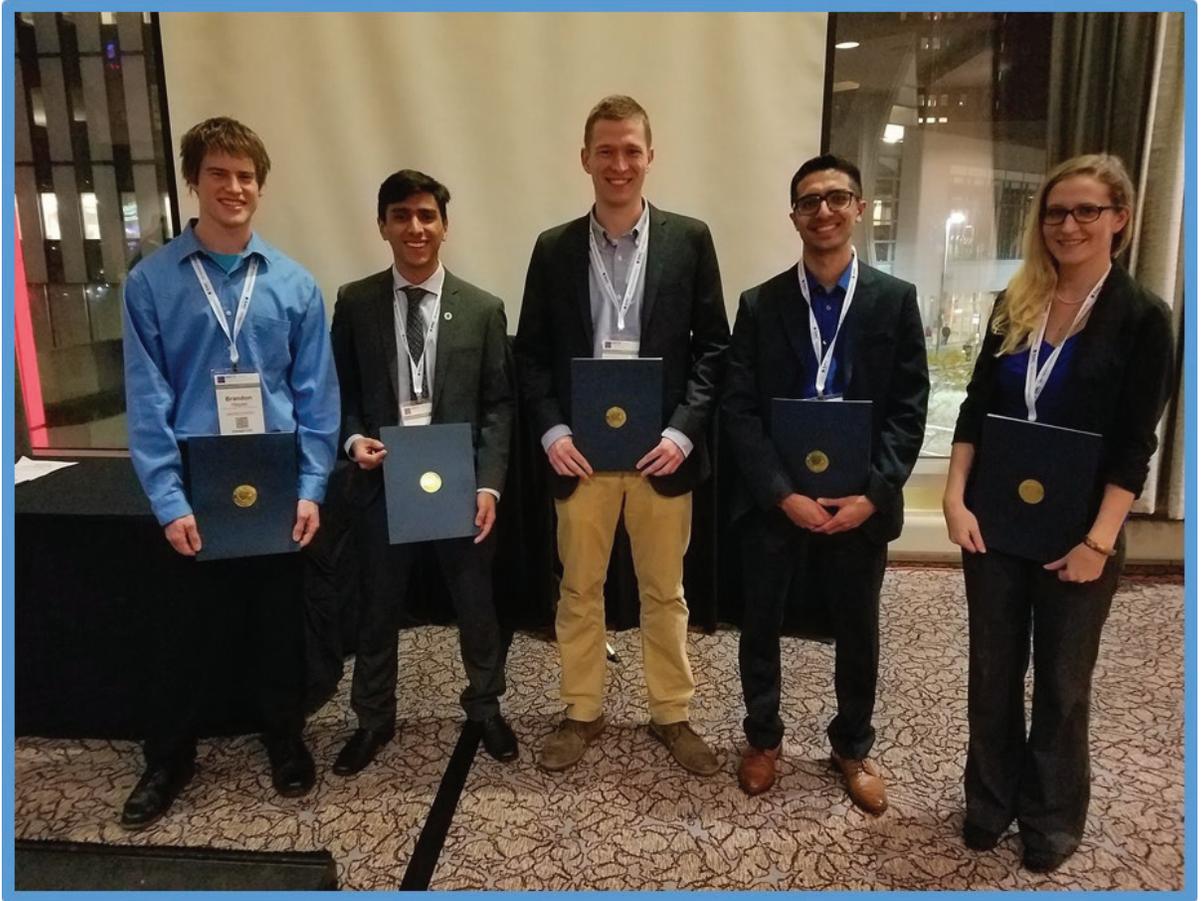


FED Young Engineer's Paper Contest at IMECE 2019

Terry Beck

Last year the ASME Fluids Engineering Division (FED) once again sponsored the Young Engineer Paper (YEP) Contest for the 2018 International Mechanical Engineering Congress & Exposition (IMECE), November 9 – November 15, 2018, in Pittsburgh, PA. There were 17 abstract submissions, and a total of 9 full papers were entered in the contest. A total of 5 finalist papers were selected for presentation in the YEP Contest Session, and to compete in the final phase of the contest. The papers and finalist presentations were subsequently judged by a review panel. The winners of the 2018 YEP Contest competition, announced at the IMECE FED evening reception, are pictured below.





The 1st Place winner was Paper# IMECE2018-86937: 1st PLACE; \$500, \$750 travel, Reg. Fee Waiver
 “PULSATORY MIXING OF LAMINAR FLOW USING BUBBLE-DRIVEN MICRO-PUMPS”
 By Brandon Hayes (Finalist Presenter), Austin Hayes, Matthew Rolleston, James Krisher, Alexander
 Ferreira, Rochester Institute of Technology, Rochester, NY, United States.

The 2nd Place Paper# IMECE2018-86610: 2nd PLACE; \$300, \$750 travel, Reg. Fee Waiver
 “THE EFFECT OF A SPANWISE BODY FORCE ON SKIN-FRICTION REDUCTION AND
 ITS CONNECTIONS TO LOW-DRAG STATES IN TURBULENT FLOW” By Thomas Hafner
 (Finalist Presenter), Jae Sung Park, University of Nebraska–Lincoln, NE, United States.

The 3rd Place winner was Paper # IMECE2018-86549: 3rd PLACE; \$200, \$750 travel, Reg. Fee
 Waiver
 “DOWNWIND TWO-BLADED WIND TURBINE AERODYNAMIC PERFORMANCE
 EVALUATION IMPLEMENTING ACTUATOR LINE MODEL” By Sebastian Henao (Finalist
 Presenter), Aldo G. Benavides, National University of Colombia, Medellín, Antioquia, Colombia,
 Omar D. López, Los Andes University, Bogota, Cundinamarca, Colombia.

There were two Honorable Mention Finalist Papers: (\$100, \$750 travel, Reg. Fee Waiver);
 Paper # IMECE2018-87089, titled "THE IMPACT OF ADDING A LABYRINTH SURFACE TO
 AN OPTIMAL HELICAL SEAL DESIGN” By Wisner Paudel (Finalist Presenter), Cori Watson,
 Houston G. Wood, University of Virginia, Charlottesville, VA, United States, and
 Paper # IMECE2018-88797, titled "COMPARING FISH-INSPIRED RAM FILTERS FOR
 COLLECTION OF HARMFUL ALGAE” By Lauren Marshall (Finalist Presenter), Adam Schroeder,
 Brian Trease, University of Toledo, Toledo, OH, United States.

The ASME Fluids Engineering Division (FED) is again sponsoring the Young Engineer Paper (YEP) Contest for the ASME 2019 International Mechanical Engineering Congress & Exposition (IMECE), November 8 – 14, at the Calvin L. Rampton Salt Palace Convention Center, Salt Lake City, Utah.

To be eligible for this contest, entries may be received by undergraduate students, recent baccalaureate engineers (i.e., graduation after April 2018), and beginning graduate students (i.e. start of graduate studies after April 2018). Joint authorship with other students or the student's faculty advisor is acceptable. The advisors, however, must provide a statement confirming that the work reported in the paper is solely that of the student (and eligible student co-authors collaborating), and that the paper is strictly drafted by the students (presenting author is first author on the paper).

Contest participants should submit an abstract (maximum of 400 words) describing their research paper, which should have its major focus on a fluids engineering topic. This paper could be the result of a project completed either at a university or in industry. Based on the abstract, contestants will be invited to submit a full-length (approximately 6,000-word) paper following ASME publication guidelines. These papers will be formally reviewed by the FED Young Engineer Paper Contest Committee, according to criteria including technical merit, paper quality, and adherence to YEP Contest entry requirements. The authors of up to five of the best papers will be selected as finalists. Based on the recommendations of the reviewing committee, selected finalists will have an opportunity to revise their papers prior to final submission; however, finalist selection will be based on the original full paper submission. The revised finalized papers, incorporating reviewers' comments and recommendations, will then be published in the conference proceedings after the papers have been presented at the conference.

Authors of papers selected as finalists will be invited to present their papers at a special session held at IMECE where final judging and selection will be made for the following awards: First Place: \$500, Second Place: \$300, Third Place: \$200, and Honorable Mentions: \$100 for being selected as a finalist and presenting their paper. In addition, conference registration will be waived for ONE presenting author for each finalist paper, and travel expenses up to \$750 will be provided to the presenting author to help defray costs of attending IMECE 2019. All finalist papers will receive certificates acknowledging the First Place, Second Place, Third Place, and Honorable Mention award winners.

Preview of AJKFluids 2019

Mark Duignan

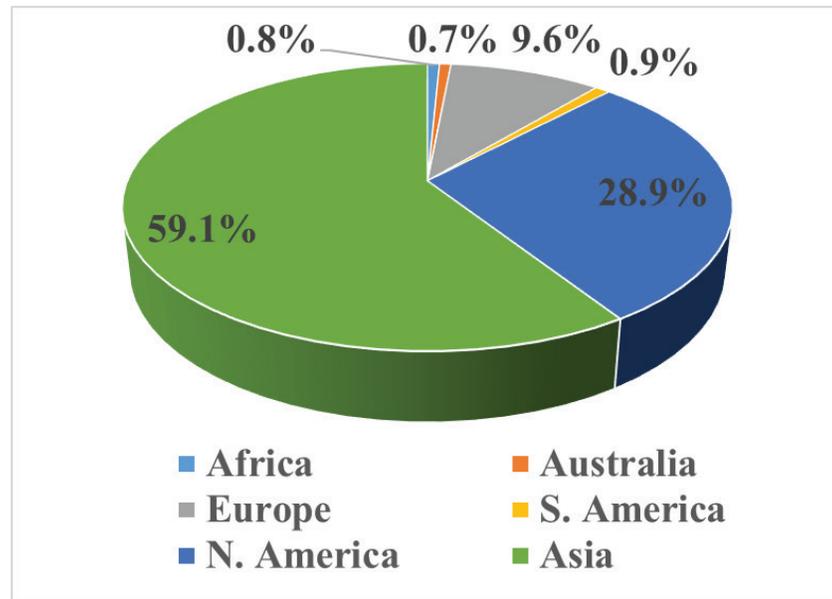
The 2019 Fluids Engineering Division's (FED) Summer Meeting will be held in San Francisco from 28 July to 1 August, where FED continues to strive to meet the challenges of disseminating timely technical information by organizing technical conferences and conducting workshops and panel discussions. Every year FED organizes the Fluids Engineering Division Summer Meeting (FEDSM) and involves international collaborations, including with FED members in Asia and Europe in a four-year recurring cycle. For the 2019 summer meeting ASME FED will continue grow its international activities with Asian engineering societies, notably the Japanese Society of Mechanical Engineers (JSME) and the Korean Society of Mechanical Engineers (KSME).

Starting in 1991, and for every 4 years, the FED has traditionally held its summer meeting on the West Coast to accommodate participants from Asia. In 1999 FEDSM99 was held in San Francisco and in 2003 FEDSM2003 was held in Honolulu. However, in honor of our strong partnerships with JSME and KSME it was decided following FEDSM2007 in San Diego to locate this jointly sponsored conference outside of the U.S. In 2011 JSME hosted the first ASME/JSME/KSME Joint Fluids Engineering Meeting (AJK2011) in Hamamatsu, Japan. Four years later KSME hosted AJK2015 in Seoul, South Korea. After those two very successful conferences AJK2019 returns to the U.S.



specifically to the city of San Francisco to mark 20 years since our last visit. This four-year cycle stimulates not only strong FED member participation but also international collaboration, bringing the global Fluids Engineering community together.

The trend is consistent with ASME's emphasis on Globalization and the OneASME mission to strengthen the Fluids Engineering community and its impact to society as a whole. The globalization can be seen just from the initial submission of almost 1000 abstracts shown below.



For AJKFLUIDS2019 the authors span 6 continents that include 4 countries from Africa, 14 countries from Asia, 9 countries from the Middle East, 3 countries from Australia, 18 countries from Europe, 3 countries from North America, and 2 countries from South America. At this writing the actual number of presentations appears to be larger than 650, which will make this an exciting and informative meeting. The State-of-the-Art in the world of Fluids Engineering will be presented from industrial, academic, and governmental sources.

For most participants, this week-long conference will start with our welcome reception, planned for Sunday evening. There you will meet many of your colleagues, make new contacts, and get settled into our wonderful venue of the Hyatt Regency, which is next to the Embarcadero waterfront in the heart of downtown San Francisco. The rest of the week from Monday through Thursday will be full of the many presentations just mentioned, committee meetings, tours, and a dinner banquet to recognize several winners of Life-Time awards, Best-Paper awards, Flow-Visualization awards, and Graduate-Student Scholar awards. Also during the week several of the award winners and other well-known researchers will honor us with series of nine plenary presentations, three each from ASME, JSME, and KSME with topics that run the gamut of fluids engineering.. They will start Monday morning with our Keynote Plenary speaker, Dr. Juan Alonso, who is the Vance D. and Arlene C. Coffman Professor of the Department of Aeronautics & Astronautics of Stanford University.

We also remember a long-time FED member and past editor of the Journal of Fluids Engineering, Dr. Malcolm J. Andrews, who recently passed away. His presence and energy will be sorely missed, but to honor his contributions and life, friends and colleagues can join the two sessions that will contain both technical discussions and presentations of Dr. Andrews' contributions to the FED community.



AJKFLUIDS2019 Conference Chairs



Fluid Applications and Systems Technical Committee

Alexandrina Untaroiu, Chair
Kevin Anderson, Vice-Chair
George Chamoun, Past-Chair



The Fluid Applications and Systems Technical Committee (FASTC) of the ASME Fluids Engineering Division focuses on applications and industrial fluid mechanics. Currently the Chair of FASTC is Dr. Alexandrina Untaroiu, Assistant Professor in the Department of Biomedical Engineering and Mechanics at Virginia Tech, and the Vice-chair is Dr. Kevin R. Anderson Professor of Mechanical Engineering at California State Polytechnic University at Pomona. The most recent activity for FASTC has involved the 25th Symposium on Industrial and Environmental Applications of Fluid Mechanics, and the 30th Symposium on Fluid Machinery, both held at the ASME FEDSM2018 5th Joint US-European Fluids Engineering Summer Meeting in July, 2019 at Le Centre Sheraton Montreal, Quebec, Canada. This was followed by the 27th Symposium on Industrial Flows, with Industrial Flow Track I, II, and III held at ASME IMECE 2018 Pittsburgh, November 2018. Upcoming, in June 2019 at ASME-JSME-KSME Joint Fluids Engineering Conference 2019, San Francisco, August, 2019. At ASME AJK 2019, There will be the following tracks: Fluid Machinery Symposium, Pumping Machinery Symposium, Automotive flows, Combustion, Environmental Flows, Industrial Fluid Mechanics, Fluid Power Systems, Multiphase Flow Applications, Propulsion, Rotating machinery / Turbomachinery and Graduate Students Scholarship with over 550 papers to be presented. In planning, is the 28th Symposium on Industrial Flows to be held at IMECE 2019, Salt Lake City, UT, November, 2019.

If you are interested in volunteering with the committee, have a suggestion for an award recipient, or if you would like additional information, please don't hesitate to contact the Chair, Alexandrina Untaroiu (alexu@vt.edu) or the Vice-Chair Kevin Anderson (KRAnderson1@cpp.edu).

Micro- and Nano-Scale Fluid Dynamics Technical Committee

Nazmul Islam, Chair

Mohammad Hossan, Vice-Chair

Jiang Zhe, Past-Chair



It was another good year for micro- and nano-scale fluid dynamics at the IMECE. This year the micro/nano fluid dynamics sessions had a total of 23 papers/presentations. The sessions were well attended and there was excellent discussion following the talks. This year the symposium was also able to attract a number of papers and talks from outside the United States. The 2018 Microfluidics forum was organized by Mohammad Robi Hossan from University of Central Oklahoma, with helps from Hongwei Sun from Univ. of Massachusetts at Lowell and Jack Wrobel from Poltech Research & Engineering. Mike Schertzer from RIT is taking the lead for 2019, with helps from Jae Sung Park and Sangjin Ryu (University of Nebraska Lincoln)..

MNFDTC also participated in the 2018 Fluids Engineering Summer Meeting held in Montreal, Canada. We have 5 sessions with a total of 22 papers/presentations. The FEDSM Microfluidics and Nanofluidics symposium was organized by Nazmul Islam (from The University of Texas, Rio Grande Valley) and Mohammad Hossan (from University of Central Oklahoma)

The Invited Talk is an important part of the MNFDTC. In the IMECE 2018 meeting, an outstanding researcher, Prof. Gareth McKinley from MIT; gave an exciting talk on Microfluidic Rheometry of Complex Fluids, as well as entrepreneur experiences. The talk received high praise from the audience. The second invited speaker, Sung Kwon Cho, from University of Pittsburgh, also brought high attendance for Fluid Engineering keynote speaker. Dr. Cho's title was, "Interface actuations for micro/nano fluidics". Both the speaker got support from FED to present keynote plenary presentations. The speakers were brought in by the keynote committee of Mohammad Robi Hossan, and Jae Sung Park (University of Nebraska Lincoln).

The Microfluidics forum also has made two recommendations for FED's Knapp and Moody awards, selected from outstanding papers from IMECE 2018 and FEDSM 2018. The 2018 award committee consisted of Nazmul Islam (Univ. Texas, Rio Grande Valley) and Mohammad Robi Hossan (Central Oklahoma University). They will make recommendations for Year 2019 too.

The Microfluidics forum also has two awards: a Best Paper Award and a Best Student Presentation Award. Matthew Trapuzzano (Presenter); Rasim Guldiken; Andres Tejada-Martinez; Nathan Crane (University of South Florida, FL) were awarded the Best Oral Presentation Award for their work on the "Degradation of Hydrophobic Surface Coatings Under Water Exposure". Pooyan Tirandazi (Presenter); Julian D. Arroyo; Dac Duc Ho; Carlos H. Hidrovo (Northeastern University) were awarded the Best paper in Moody Awards (Experiemental) category for their paper titled "Study of gas-liquid droplet microfluidics in confined flow focusing geometries for enhanced droplet generation". To select the best presentations and papers, the feedback from session chairs was collected and compiled by our technical committee.

In 2019 the IMECE will be held in Salt Lake City, UT and the organizers are currently processing the papers and sessions for this event. The Micro and Nano Fluid Dynamics Technical Committee is looking forward to the meeting and broadening the impact of the division.

The 2019 Fluids Engineering Summer Meeting, AJKFluids will be held in July 28-August 1, 2019, at San Francisco, CA, USA. Nazmul Islam will organize our sessions, with the helps from co-organizer Mohammad Robi Hossan.

Respectfully submitted by Nazmul Islam (MNFDTC chair, Associate Professor, The University of Texas, Rio Grande Valley), and Mohammad Hossan (MNFDTC vice-Chair, Associate Professor, University of Central Oklahoma, OK).

Multiphase Flow Technical Committee

*Marianne Francois, Chair
Robert Kunz, Vice-Chair
Joseph Katz, Past Chair*



Multiphase flows are common in a variety of engineering, environmental, and biological systems. Typical examples include gas flows transporting liquid or solid aerosols, liquid flows containing bubbles, solid particles, or living cells. This field of study also includes flows involving phase changes such as cavitation, boiling, and condensation. The objective of the Multiphase Flow Technical Committee (MFTC) is to advance our knowledge in all aspects of these fields. Over the years, the broad interests of the multiphase research community have ranged from detailed understanding and modeling of specific phenomena to the characterization of multi-component complex systems to the development of theoretical, computational, and experimental methods for investigating them. The sessions sponsored by MFTC are aimed at bringing the members of the multiphase flow community together to present and discuss recent advances in this field in two meetings. While MFTC contributes to IMECE, which will take place in Salt Lake City, UT in November 2019, our primary venue is FEDSM. This year, the 2019 Fluids Engineering Division Summer Meeting (named AJK2019) is jointly held with the Japanese and Korean Societies and will take place in San Francisco. For AJK2019, MFTC accepted 92 papers and 46 abstracts. During the summer meeting, MFTC will hence have a total of 138 presentations organized in 12 topics and 28 sessions as follow:

- Numerical Methods for Multiphase Flows (10 presentations, 2 sessions)
- Experimental Methods for Multiphase Flows (10 presentations, 2 sessions)
- Cavitation (10 presentations, 2 sessions)
- Gas-Liquid Flows including Sprays and Bubbly flows (20 presentations, 4 sessions)
- Liquid-Solid Flows including Separation, Particles and Rheology (14 presentations, 3 sessions)
- Gas-Solid Flows (10 presentations, 2 sessions)
- Bubble, Droplet and Aerosol dynamics (15 presentations, 3 sessions)
- Interfacial Phenomena including waves and free surface flows (10 presentations, 2 sessions)
- Erosion, Slurry and Sedimentation (10 presentations, 2 sessions)
- Multiphase Flows in Petroleum Engineering (15 presentations, 3 sessions)
- Multiphase Flows in Nuclear Engineering (4 presentations, 1 session)
- Compressible Multiphase Flows, shock-driven turbulent mixing and particles (10 presentations, 2 sessions)

At IMECE 2019, MFTC will sponsor the following meeting:

- 15th Forum on Recent Developments in Multiphase Flow.

For IMECE 2019, MFTC has invited Prof. Phil Smith as a plenary speaker. Prof. Phil Smith is the director of the Institute for Clean and Secure Energy at the University of Utah and does research in the area of particle-laden flows, uncertainty quantification and Large-Eddy Simulations.

The MFTC is deeply saddened by the passing of Professor Malcolm J. Andrews in January 2019.



MALCOLM J. ANDREWS Oct. 4, 1958 – Jan. 27, 2019

Malcolm J. Andrews was born October 4, 1958 in Coventry, England and died January 27th, 2019 in Albuquerque, New Mexico. Dr. Andrews was an engineer-scientist at Los Alamos National Laboratory (LANL) where he had been a senior member of the technical staff since 2005. In 2006, Dr. Andrews' accomplishments were recognized by the Department of Energy with an E.O. Lawrence Award. From 2015-2016, Dr. Andrews served as an Executive Advisor from LANL at the NNSA in Washington D.C. Dr. Andrews served as Chief Editor of the ASME Journal of Fluids Engineering from 2010-2018. He was previously a full professor at Texas A&M University from 1991 until 2005. Prior to joining Texas A&M, he was a researcher at Princeton University, following his PhD studies at Imperial College, London England (1986).

Malcolm was all very familiar to us as he served on the MFTC as the chair from 2008 to 2010. Malcolm's research interests were in the area of sprays, particulate flows, fluids instabilities and turbulent mixing. His absence among us will be felt dearly. Please join us at AJK2019 as we commemorate the contributions to the fluids community of Dr. Malcolm Andrews in a special track with two sessions: (1) Panel celebrating Dr. Andrew's Life and Research Contributions and (2) Contemporary Research to Honor Malcolm J. Andrew's Legacy.

The technical content of MFTC looks amazing for AJK2019! We thank all the authors, reviewers, topic and session organizers and co-organizers for making this happened. Please join us during the presentations and the committee meeting. We welcome and continuously look for new and active members, and new ideas for future meetings. Membership in the committee is open to individuals with an interest in any and all aspects of multiphase flow research and applications. Please feel free to contact the current chair, Marianne Francois, at mmfran@lanl.gov and the current vice-chair, Robert Kunz, at rpk102@psu.edu for more information, questions, or ideas.

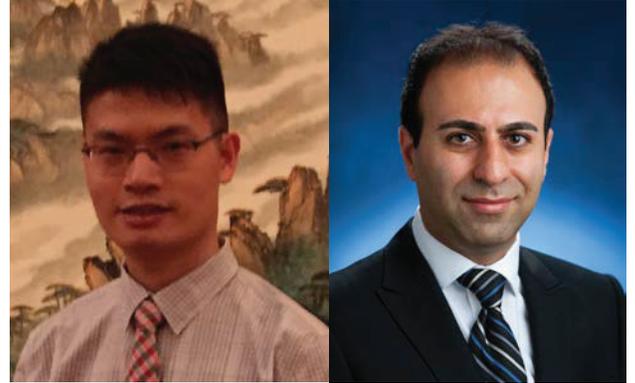
We look forward to meeting you at AJK2019!

Computational Fluid Dynamics Technical Committee

Jingsen Ma, Chair

Shawn Aram, Vice-Chair

Elia Merzari, Past Chair



The focus of the Computational Fluid Dynamics Technical Committee (CFDTC) is the field of computational fluid dynamics and related areas. Areas of interest to the CFDTC include but are not limited to the algorithm developments for the CFD applications, advanced techniques for the numerical representation of fluid flows, quantification of numerical errors, verification, validation and uncertainty of CFD, practices and procedures for the accurate application of CFD, high performance computing, turbulence modeling and simulation, and fundamental research and applications. Membership is open to anyone who is interested in participating in the activities of the CFDTC.

The CFDTC meets twice a year at the Fluids Engineering Division Summer Meeting (FEDSM) and in the winter at the International Mechanical Engineering Congress & Exposition (IMECE) meeting. At the FEDSM 2018 in Montreal, Canada, the CFDTC sponsored three symposia: Symposium on Applications and Development in CFD, Symposium on DNS/LES and Hybrid RANS/LES Methods, and Symposium on Fluid Structure Interaction. For the 2019 FED summer meeting, due to the highly enthusiastic participation from members and active contribution from organizers, we have expanded CFDTC Track into 12 topics: Applied CFD; CFD Development; LES/DNS; Hybrid LES/RANS; Fluid Structure Interaction (including IBM); Computational Marine Hydrodynamics; Computational Turbulent Combustion; Optimization, Data-based simulations and Machine Learning; Emerging CFD Topics; Open Source CFD applications; Medical Applications of CFD; Multi-physics simulation. We have received over 150 abstract submissions. Keynote presentations are also planned at the conference as well.

At the IMECE meeting the CFDTC sponsors and co-sponsors three topics: the flagship Symposium on CFD Algorithms and Applications for Flow Optimization and Controls, the multidisciplinary Forum on Multiphase Flow with Bio-Applications (co-sponsor), and a Panel on CFD/EFD Choice - A Dilemma for Industries (co-sponsor). In addition, at the IMECE 2018 CFDTC also co-sponsored a “Kirti (Karman) Ghia Celebration of Life Symposium” in recognition of Professor Kirti (Karman) Ghia’s significant contributions to ASME fluids community.

The CFDTC actively participates in the graduate student paper competition program. We encourage students to submit to this competition. In addition to receiving significant recognition, students that receive this award will benefit with close interaction with the TC leadership. We believe that the TC’s involvements with the student scholars will have very positive impacts on their future professional developments.

We remind our members that we recently launched a committee-level best paper award. While the number of CFD abstract/paper submission has been significantly increasing, another subject that emerged frequently in our discussions within the TC is the desire to improve paper quality in the sessions organized by the CFDTC. One possible mean to achieve the desired goal of increasing high quality submissions is to improve our recognition program for our authors. The 2018 winner announced at IMECE 2018 was Dr. Dillon Shaver and his co-authors from Argonne National

Laboratory, for their paper entitled “Calculation of Friction Factors and Nusselt Numbers for Twisted Elliptical Tube Heat Exchangers Using Nek5000”. Nominations for this year award are due by September 15th, 2019 to Prof. Ning Zhang (nzhang@mcneese.edu). We solicit nominations for papers submitted to CFDTC symposia at FEDSM2019 and IMECE2018, but all CFDTC papers submitted in the two years prior to the deadline are eligible. Winners will be announced at IMECE 2019. We note that the winners may also be considered as nominees by the CFDTC for the Knapp/Moody awards at the discretion of the TC’s honors and awards representative, Dr. Ning Zhang, in consulting with the TC Chair and the Vice Chair.

Fluid Measurement and Instrumentation Technical Committee

Stamatios Pothos, Chair

Ivaylo Nedyalkov, Vice-Chair

Martin Wosnik, Past-Chair



Within the ASME Fluids Engineering Division (FED), the Fluid Measurement and Instrumentation Technical Committee (FMITC) focusses on measurement and instrumentation issues relevant to fluid mechanics and fluid flows. Modern fluids engineering deals with a broad range of problems: from comparatively simpler cases, such as isothermal, incompressible, single phase flows of Newtonian fluids to non-Newtonian multiphase flows with heat and mass transfer, from the nanoscale to the macroscale. Experimental measurements and instrumentation are required in all cases to verify new theories, to certify the performance of fluid machinery, or to obtain fundamental information on processes to guide and validate analytical and numerical models.

The FMITC was originally organized under the Coordinating Group for Fluid Measurements (CGFM) to foster technical and professional development activities in the area of fluid measurements in both laboratory and field. FMITC is responsible to organize, promote, and present symposia, forums, and panel discussions on fluid measurements’ instrumentation, techniques and applications. The committee meetings of FMITC are held twice a year at the IMECE and the FED Summer Meeting. The date and time of the committee meetings are announced in the conference program.

Elections for FMITC chair and vice-chair were held at the committee meetings during the FED Summer Meeting (FEDSM) in Montreal, Quebec, July 15-20, 2018. Chairs and vice-chairs serve for two-year terms; it has been customary for the vice-chair to be elected to a term as chair after two years. If you are interested in getting involved in the FMITC and have suitable background and experience to help move the FMITC forward, please contact Stamatios Pothos or Ivaylo Nedyalkov, and attend the upcoming committee meetings in San Francisco (AJK 2019) and Salt Lake City (IMECE 2019).

Under the new format of the Fluids Engineering Division Summer Meeting the FMITC has been organizing an FMITC conference track, first at FEDSM 2017 in Waikoloa, Hawai’i, second at FEDSM 2018 in Montreal, Canada, and now at AJK 2019 in San Francisco, CA. FMITC-sponsored symposia include various Fluid Measurements and Instrumentation topics, Uncertainty Quantification as well as symposia on Wind Energy and other renewable energy topics.

FEDSM is soliciting submissions to the Flow Visualization Competition and Prize at AJK 2019 in San Francisco, CA; both experimental and computational entries are encouraged. Further information



about the Flow Visualization Competition and Prize, and the symposia to be held at AJK 2019 is available at: <https://event.asme.org/AJKFluids>

FMITC will also be involved in IMECE2019, to be held November 8-14, 2019 in Salt Lake City, Utah, and will organize or co-sponsor the following symposiums:

- 12th Forum on Fluid Measurements and Instrumentation
- 19th International Symposium on Measurement and Modeling of Environmental Flows

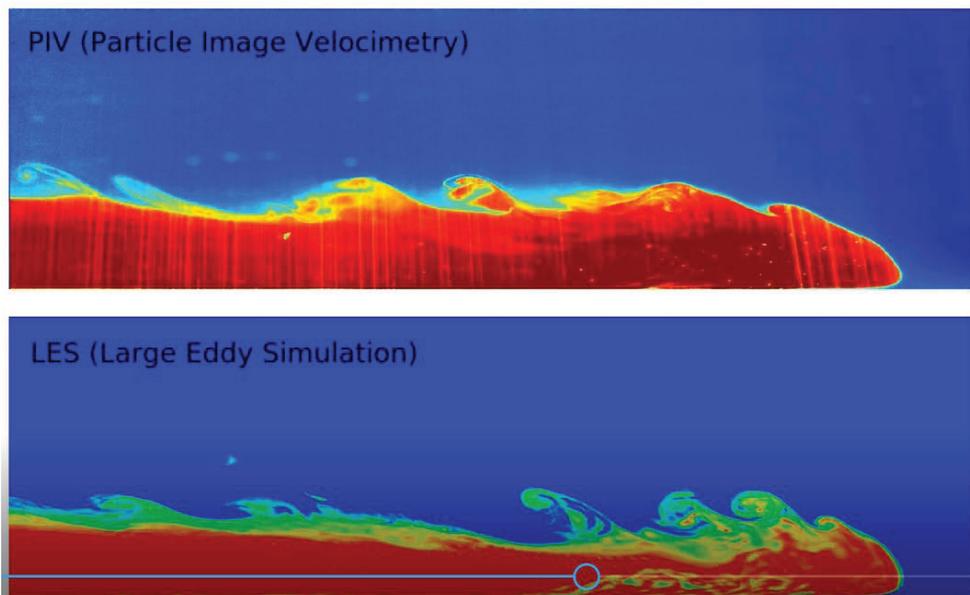
Further information about the symposiums and forums is available at: <http://www.asmeconferences.org/imece2019/>.

The membership of FMITC is open to all professionals from Academia, Government, Industry and Private Sector interested in fluid measurement and instrumentation. If you are interested in joining FMITC or receiving announcements and/or notification of FMITC sponsored meetings and symposiums, please write to the FMITC chair Dr. Stamatios Pothos at spothos@tsi.com; or the vice chair Dr. Ivo Nedyalkov at Ivo.Nedyalkov@unh.edu.

FED Flow Visualization Competition and Prize

FMITC recently initiated the new *FED Flow Visualization Competition and Prize*. Flow visualization has a long tradition in fluids engineering, from Leonardo da Vinci's sketches of flowing water, through well-publicized images of canonical flows in many facilities over the past century, to the modern-day quantitative flow visualization techniques in experimental and computational fluid dynamics. While the capabilities of the technology and techniques at our disposal have drastically increased, the challenge remains to process and represent data in most meaningful way, to help better describe physical insight that can ultimately lead to progress in the field.

The second Flow Visualization Competition and Prize was held at FEDSM 2018. The winner is: "Flow Visualization of Cold Leg Mixing Benchmark with Nek5000" by Jonathan K. Lai¹, Elia Merzari², Yassin A. Hassan¹, Paul Fischer², ¹Texas A&M University, ²Argonne National Laboratory.



Upper panel: PIV (Particle Image Velocimetry)
Lower Panel: LES (Large Eddy Simulation)

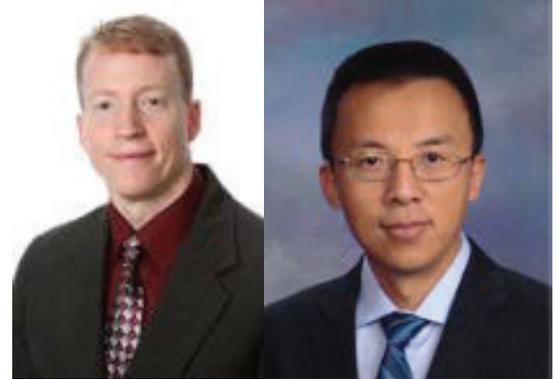
Great News: We received funding for the Flow Visualization Competition from ASME TEC ESS Development Fund! AJK 2019 in San Francisco, CA: Flow Visualization Competition. FEDSM is soliciting submissions to the Flow Visualization Competition and Prize at AJKFluids2019 – both experimental and computational entries are encouraged.

Fluid Mechanics Technical Committee

Wayne Strasser, Chair

Jun Chen, Vice Chair

Stefan aus der Wiesche, Past Chair



The mission of the Fluid Mechanics Technical Committee (FMTC) is to promote fundamental and applied fluid mechanics related professional activities within the Fluids Engineering Division (FED) and the Society. Modern Fluid engineering embraces a broad spectrum of challenges. The aim of the FMTC is to foster professional activities that can contribute to the advancement of scientific knowledge in the field of fluid mechanics.

The FMTC has a membership of over 40 persons involved in various activities related to the fluids engineering profession. The committee organizes symposia at the annual FEDSM and at IMECE. These symposia cover several fundamental and applied aspects of fluid mechanics that are important to the fluids engineering community.

Under the new track format, the FMTC organized its own technical track at ASME 2019 AJK Fluids Conference, which will be held in San Francisco, California, in collaborations with colleagues from JSME and KSME. This track includes topics on fluids engineering education, aerospace, fluid power, bio-inspired and biomedical fluid mechanics, turbulent flows, flow manipulation, active flow control, transport phenomena in energy conversion, transport phenomena in mixing, CFD verification and validation, boundary layer flows, high-speed flows, and vortex dynamics. At the 2018 IMECE meeting in Pittsburgh, PA, the FMTC organized symposia on fundamental issues and perspectives in fluid mechanics, fluid mechanics and rheology of nonlinear materials and complex fluids, and on electric, magnetic and thermal phenomena in micro- and nano-scale.

We were pleased to welcome new members at the FMTC meetings at FEDSM and IMECE in 2018, and we invite those interested in our focus to join us in 2019.

The FMTC welcomes memberships and participation from professionals, academics, and students with an interest in fluids engineering. Such involvement is key to achieving our mission. We invite you to join us at either (or both) of our bi-annual committee meetings at FEDSM or IMECE. Please contact us with your questions or comments concerning FMTC: wstrasser@liberty.edu (Wayne Strasser, FMTC Chair) or junchen@purdue.edu (Jun Chen, FMTC vice-Chair).

Honors and Awards

Ning Zhang, Chair

The Honors and Awards Committee consists of six members, typically past chairs of the Fluids Engineering Division technical committees. The 2018 Committee members include Professor Kamran Siddiqui (FMITC) of University of Western Ontario, Dr. David Davis (FMTC) of NASA, Professor Prashanta Dutta (MNFDTC) of Washington State University, Dr. John Furlan of GIW Industries, Dr. George Chamoun of Eastman Chemical Company, and the Committee Chair Professor Ning (Michael) Zhang of McNeese State University. More details can be found at



https://community.asme.org/fluids_engineering_division/w/wiki/3750.honors-awards.aspx .

The following is a brief description of the awards offered and the 2018 recipients.

Fluids Engineering Award

The Fluids Engineering Award, established in 1968, is the highest award presented by the FED. It is conferred annually upon an individual for outstanding contributions over a period of years to the engineering profession and in particular to the field of fluids engineering through research, practice or teaching. The deadline for future nominations is October 30th, 2019. More details can be found at <https://www.asme.org/about-asme/get-involved/honors-awards/achievement-awards/fluidsengineering-award>. The recipient of the 2018 Fluids Engineering Award is Dr. Upendra Singh Rohatgi



Upendra Singh Rohatgi
Senior Scientist, Brookhaven National Laboratory
Upton, New York, USA

Dr. Upendra Rohatgi is on the scientific staff of Brookhaven National laboratory since 1975 and is currently a senior scientist. He received his bachelor of technology degree from Indian Institute of Technology, Kanpur in 1970 and his Ph.D. from Case Western Reserve University, Cleveland, both in Mechanical Engineering. He has contributed to Fluids Engineering in the areas of pumps for aircraft fuel system and nuclear reactors, nuclear reactor system, enhanced heat transfer for Li-ion batteries for automobile application, and development of fluidized bed furnaces. He served as chair of Fluids Engineering Division and has also served as technical associate editor for the Journal of Fluids Engineering for three years. He taught graduate level courses in Fluid Mechanics and Heat transfer at State University of New York in Stony Brook. He has been contributing to US Nuclear Regulatory Commission programs for thermal-hydraulic code development, validation, scaling methods and uncertainty analyses for different scenarios for PWR and BWR since 1975. He has consulted with

AECL and OPG Canada for uncertainty methods for CANDU transient analyses. In addition, he is leading a task force for developing guidelines for multi-physics code validation and uncertainty methods for NEA-OECD expert group. He is currently a thermal-hydraulic consultant to Advisory Committee for Reactor Safeguards of USNRC. He has authored over 100 papers. He has chaired two NASA Scientific Review Panels for Microgravity Experiments in shuttle, 1997 and in Space Station-Mir 2013.

Robert T. Knapp Award

The Robert T. Knapp Award, established in 1958, is given annually for the best paper presented at the Fluids Engineering Division sponsored sessions dealing with analytical, numerical and laboratory research. The deadline for future nominations is December 31st, 2019. More details can be found at <https://www.asme.org/about-asme/get-involved/honors-awards/unit-awards/robert-t-knapp-award>. The 2018 Knapp Award was presented to Hyunjin Yang, Surya P. Vanka, and Brian G. Thomas for their paper titled, “Hybrid Eulerian Eulerian Discrete Phase Model of Turbulent Bubbly Flow” (IMECE2017-70337).

Hyunjin Yang is currently a research engineer of Swerim, which is a Swedish metal research institution. He received his Ph. D degree in Mechanical Engineering from University of Illinois at Urbana Champaign in 2018 under the supervision of Prof. Brian G. Thomas and Prof. Surya P. Vanka. He received his M.S. degree from Carnegie Mellon University in 2013. His research interests are mathematical and numerical modeling of thermal-fluid problems and application to material processing. Dr. Yang’s current research is focusing on the solidification of liquid metal-gas multiphase turbulent flow and interaction of the three phases. He has been published his work to ASME as a student member since 2012.

Dr. Brian G. Thomas is Professor of Mechanical Engineering at the Colorado School of Mines, Golden, Colorado and Director of the Continuous Casting Center. He is also Gauthier Professor Emeritus at the University of Illinois, Urbana. He conducts research on the continuous casting of steel and related processes, especially using computational models.



Hyunjin Yang



Brian G. Thomas

Lewis F. Moody Award

The Lewis F. Moody Award, established in 1958, is given annually for the best paper presented at the Fluids Engineering Division sponsored sessions dealing with a topic useful in mechanical engineering practice. The deadline for future nominations is December 31st, 2019. More details can be found at

<https://www.asme.org/about-asme/get-involved/honors-awards/unit-awards/lewis-f-moody-award>. The 2018 Moody Award was presented to Chinmoy Mohapatra, Gabriel Jacobsohn, Eli Baldwin, and David Schmidt for their paper titled, “Modeling Sealing in Transient Injector Simulations” (FEDSM2017-69309).

David Schmidt attended North Carolina State University as an undergraduate and received a Masters of Mechanical Engineering at Stanford University. In 1997, he earned his PhD. in Mechanical Engineering at the University of Wisconsin, Madison. That same year, he helped to found Convergent Science, a CFD software and consulting firm that is currently thriving. Concurrently, Dr. Schmidt was a Visiting Scientist at MIT. He has served on the faculty of the University of Massachusetts since 2000, where he is currently a Professor. Prof. Schmidt's research is in the fluid mechanics of two-phase flow. For his PhD., he studied cavitation in diesel fuel injector nozzles. Since then, he has focused more on sprays and flash-boiling. He is studying primary atomization, droplet collision, non-Newtonian atomization, and new numerical methods for sprays. His research will help diesel, gasoline, and aircraft engines operate efficiently while producing less pollution. He is the winner of the Office of Naval Research Young Investigator Award for his research on direct numerical simulation of atomization and the Ralph R. Teetor Award for his contributions to teaching, research, and student development. He currently serves on the editorial board of Atomization and Sprays. More recently, he has won the ASME Moody award and is an SAE Fellow.



David Schmidt

Sankaraiyer Gopalakrishnan-Flowserve Pump Technology Award

This award was established in July 2006, with funding provided by the Flowserve Corporation, in honor of the late Dr. Sankaraiyer Gopalakrishnan, “Gopal”. The award is presented biennially, in odd-numbered years, in recognition of outstanding achievement in pump technology, documented through publications and testimonials of peers and coworkers and in keeping with Gopal’s dedication to the education of the next generation of expert pump engineers. It recognizes an individual with the potential of being the next generation's expert pump engineer biennially in odd-numbered years. The deadline for future nominations is December 31st, 2020. More details can be found at <https://www.asme.org/about-asme/getinvolved/honors-awards/unit-awards/sankaraiyer-gopalakrishnanflowserve-pump>.

Fluids Machinery Design Award

The award, established in 1980 and presented biennially in even-numbered years, honors excellence in the design of fluid machinery involving significant fluid mechanics principles, which benefits mankind as exemplified by product use within the past decade. The deadline for nominations is December 31st, 2019 or earlier perhaps as early as October 31st, 2019. More details can be found at <https://www.asme.org/about-asme/get-involved/honors-awards/unit-awards/fluids-machinery-design-award>.

Freeman Scholar

Steven L. Ceccio

Committee Chair

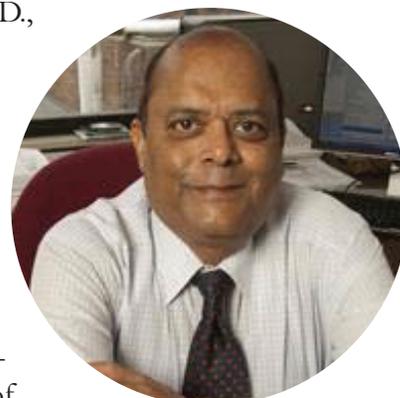
The Freeman Scholar Award Program is awarded annually. A person of significant expertise in fluids engineering is selected as the Freeman Scholar by the Freeman Scholar Award Committee and the Committee on Honors. Freeman Scholars are expected to review a coherent topic in their specialty, write a review article for the Journal of Fluids Engineering and present a plenary lecture during the Fluids Engineering Division Summer Meeting.



The Freeman Scholar Program is supported by the ASME Freeman Fund and was established in 1970 by John R. Freeman, noted hydraulic engineer and scholar, Honorary Member and Twenty-fourth President of ASME.

2018 Freeman Scholar

We are pleased to announce that Ramesh K. Agarwal, Ph.D., the William Palm professor of engineering in the department of mechanical engineering and materials science at Washington University in St. Louis, has been awarded the 2018 A.S.M.E. Freeman Scholar award. This honor is awarded to a person with significant expertise in fluids engineering. Freeman Scholars are expected to review a coherent topic in their specialty, write a review article for the Journal of Fluids Engineering, and present a plenary lecture during the 2018 FED Summer Meeting in Montreal. The title of Dr. Agarwal's review is "Fluid Mechanics of Geological Sequestration of Carbon Dioxide".



Ramesh K. Agarwal
William Palm Professor of Engineering
Department of Mechanical Engineering
and Materials Science
Washington University, St. Louis, Missouri

Dr. Agarwal is the William Palm professor of engineering in the department of mechanical engineering and materials science at Washington University in St. Louis. Prior to this appointment he was the Sam Bloomfield distinguished professor and executive director of the National Institute for Aviation Research at Wichita State University from 1994 to 2001. Earlier, he was with McDonnell Douglas Research Laboratories in St. Louis, where he served as program director and McDonnell Douglas Fellow.

Over a period of 40 years, Dr. Agarwal has worked in the areas of computational fluid dynamics, computational acoustics and electromagnetics, computational materials science and nanotechnology, and multidisciplinary design and optimization. He has authored or co-authored more than 600 publications, and has given many plenary, keynote and invited lectures in over 60 countries.

An ASME Fellow, Dr. Agarwal has been serving on the Fluid Engineering Division's Fluid Dynamics and Computational Fluids Dynamics technical committees since 1988 and 1996, respectively. He also received these ASME awards: the Fluids Engineering Award in 2001, the Charles Russ Richards Memorial Award in 2006, the Edwin F. Church Medal in 2011, and a 90th Anniversary Medal from the Division in 2016. He is a Fellow of numerous other societies, the recipient of major national and international awards, and an honorary guest professor at universities in China and India.

Dr. Agarwal earned his bachelor's degree in mechanical engineering from the Indian Institute of Technology, Kharagpur. He earned his master's degree in aeronautical engineering from the University of Minnesota and his Ph.D. in aeronautical sciences from Stanford University.

2019 Freeman Scholar

We are pleased to announce that the Singh Rohatgi Ph.D., Senior Scientist, Brookhaven National Laboratory, has been awarded the 2019 A.S.M.E. Freeman Scholar award. This honor is awarded to a person with significant expertise in fluids engineering. Freeman Scholars are expected to review a coherent topic in their specialty, write a review article for the Journal of Fluids Engineering, and present a plenary lecture during the 2019 ASME - JSME - KSME Joint Fluids Engineering Conference in San Francisco. The title of Dr. Rohatgi's review will be "Validation, Verification, Scaling and Uncertainty Quantification for Thermal-Hydraulics Predictive Tools".



Upendra Singh Rohatgi
Senior Scientist, Brookhaven National Laboratory
Upton, New York, USA

Dr. Rohatgi is an accomplished researcher who has made significant contributions in both fundamental and applied aspects of thermo-hydraulic flows. He has provided path breaking insights in the physics and modeling of complex fluid flow and forced convection behavior, and his work on the hydrodynamic instabilities and the associated transients that affect the departure from nucleate boiling and onset of critical heat flux in highly complex two-phase flows has been a significant advancement in the thermal-hydraulics design and optimization of reactors.

Dr. Rohatgi is an A.S.M.E. Fellow, and is a previous winner of the A.S.M.E Fluids Engineering Award in 2018.

Henry R. Worthington Medal

Judith Ann Bamberger

Committee Chair

The Henry R. Worthington Medal, established in 1980 by Worthington Pump, Inc., is bestowed for eminent achievement in the field of pumping machinery to Jaikrishnan R. Kadambi.



Jaikrishnan R. Kadambi



Jaikrishnan R. Kadambi receiving award from ASME President Said Jahanmir

Dr. Jaikrishnan Kadambi is a Fellow of the ASME and has been very active in ASME since 1987. He is a member of ASME's Fluid Engineering Division's Multiphase Flow Technical Committee and Fluids Application & Systems Technical Committee. He has been the Chair of the Liquid-Solid Sub-Committee of the Multiphase Flow Technical Committee (2008-2013). He has been the organizer and co-organizer of more than 19 ASME symposia since 1995 including being a topic, as well as panel discussion organizer, these include Solid-liquid Slurry flows, Erosion, Bio fluid Engineering forum, Wind Turbines: Aerodynamics and Control, Engineering Education Requirements for the Pump Industry: A Panel

Discussion, etc. He has chaired more than 20 sessions during ASME meetings. He has been a reviewer for papers for Journal of Fluids Engineering, other ASME journals and ASME's Fluids Engineering Division's symposia. He has been on the scientific Advisory Committee of ICMF, International Symposium of Flow Visualization, reviewer of Powder Technology Journal. He is a member of Sigma Xi. He was the recipient of ASME Fluids Engineering Division's Sankaraiyer Gopalakrishnan-Flowserve Pump Technology Award in 2015.

The Henry R. Worthington Medal is sponsored by the ASME Petroleum, Process Industries, Design Engineering, Fluids Engineering, Management, and Power Divisions.

Graduate Student Scholar Committee (GSSC) 2018-2019 Report

***Judith Bamberger, Chair
Kevin R Anderson, Vice-Chair***



The FED Graduate Students Steering Committee (GSSC) constitutes one of the recognition and honor arms of the Division. Every year, the Committee announces the FED Graduate Scholarship Program and receives many applications from growing pools of international applicants. In 2018 the high quality applicants listed in Table 1 were selected to receive the ASME FED Graduate Student Scholar Award. This award certificate recognizes each student's technical accomplishments in the field of fluids engineering, provides a travel scholarship of \$1500 bestowed to the scholarship winners, allowing them to actively participate in FEDSM 2018 to present their papers. The students were further assigned to one of the six FED Technical Committees for one year to benefit from the young professional program that the Division has created for the graduate student scholars and young engineers, including professional mentorship, help with preparing their award winning papers for submission to JFE, engagement in a variety of responsibilities within the Division such as reviewer roles, chairing sessions, and organizing symposia, and student ambassador duties to be carried out at their home institution. The diverse and strong group of 2018 Scholar of the Year Award winners were from a number of states from US, Europe, and Asia. GSSC is committed to improve the participation from all continents. The 2018 and 2019 membership of the Committee included Professors J. Bayandor and K. Walters, Tim O'Hern, Paul Cooper, Yechun Wang, John Foss and other reviewers.

William Foltz	FEDSM2018-83155	Numerical Analysis of the Turbulent Flow Characteristics Around Submerged Permeable Breakwaters	CFDTC
Jakin Jagani	FEDSM2018-83210	Effect of Stent design parameters on Hemodynamics and Blood Damage in a Percutaneous Cavopulmonary assist device	FMTC
Peyman Zahedi	FEDSM2018-83238	Experimental Investigation of Flow Behavior in a Bend and Sand Erosion Pattern under Single-Phase and Multiphase Flow Conditions	MFTC

Saroor Karimi	FEDSM2018-83251	Effects of Fluid Viscosity and Impingement Angle on Submerged Jet Flowfields	FMITC
Annette Volk	FEDSM2018-83263	Theoretical Analysis Of Cfd-Dem Mathematical Model Solution Change With Varying Computational Cell Size	CFDTC
Hassan A Hassan Saeed	FEDSM2018-83284	Numerical Study of Improving Savonius Turbine Power Coefficient by Varioius Blade Shapes	FASTC
Kadeem Dennis	FEDSM2018-83507	Multi-Plane Characterization of the Turbulent Boundary Layer	FMTC

Table 1. Graduate Student Scholars selected for 2018.

To further encourage participate in the FED, GSSC sponsored returning scholarships for the scholars selected in 2017 and listed in Table2. These returning scholarships from GSSC enable them to attend FEDSM 2018, as an opportunity to present the progress made as part of their graduate degree programs since their participations at the 2017 event and continue with their TC commitments.

2018 Graduate Returning Scholar	Technical Committee
Erik S. Proano	Computational Fluid Dynamics

Table 2. GSSC 2017 Scholars returning in 2018.

Likewise, the 2018 scholars are offered returning scholarships to participate in AJKFluids2019.

For AJKFluids2019 Prof. Urmilla Ghia established the Ghia Scholar (GS) to recognize her husband Kirti Ghia who was very active in the Fluids Engineering Division. The GS scholarship awardee is listed in Table 3 with the Graduate Student Scholars (GSS) selected for 2019; the 2019 Graduate Returning Scholars (2018 GSS) are listed in Table 4.

Award	Scholar	Paper Number	Title
2019 Ghia GSS	Reza Ziazi	AJKFLUIDS2019-5094	Turbulent Transition Characteristics in Flow through Porous Media.
2019 CFDTC GSS	Arun Yadav	AJKFLUIDS2019-4675	Hydraulic Simulation for Calcasieu Lake Area with Small Rivers using an Immersed Boundary Method
2019 FASTC GSS	Hanxiang Jin	AJKFLUIDS2019-5429	Leakage Rate Performance Mapping of Smooth Stator/Grooved Rotor Labyrinth Seals using Statistical Tools
2019 FMITC GSS	Maximilian Passmann	AJKFLUIDS2019-4706	Numerical Calibration of 3D Printed Five-hole Probes for the Transonic Flow Regime
2019 FMTC GSS	Nicholas Noviasky	AJKFLUIDS2019-5557	Locomotive Capabilities of a Free-Swimming Robotic Tuna
2019 MFTC GSS	Amir A. Mofakham	AJKFLUIDS2019-4856	Accuracy of the CRW Models for Prediction of the Deposition and Dispersion of Particles in Inhomogeneous Turbulent Channel Flows
2019 MNFDT C GSS	Haipeng Zhang	AJKFLUIDS2019-5502	Flow Characterization of Microfluidic Paper-based Analytical Devices with Hollow Channels

Table 3. 2019 Graduate Student Scholars for AJKFluids2019

Award	Scholar
2019 CFDTC GRS	William Foltz
2019 FASTC GRS	Bo Qian
2019 FMITC GRS	Soroor Karimi
2019 FMTC GRS	Jakin Jagani
2019 FMTC GRS	Kadeem Dennis
2019 MFTC GRS	Peyman Zahedi

Table 4. 2019 Graduate Returning Scholars from 2019 for AJKFluids 2019

The Executive Committee (EC) of the Fluids Engineering Division

The Fluids Engineering Division was originally founded as the Hydraulics Division in 1926 and the name was changed to the Fluids Engineering Division in 1963.

				
Past Chair & Treasurer	Chair	Vice-Chair	Secretary	Member
Javid Bayandor	Khaled Hammad	Mark Duignan	Judith Bamberger	Zhongqin (Charlie) Zheng

The Executive Committee is responsible for managing the affairs of FED and provides an interface with ASME at large. The FED EC consists of five officers: Member, Secretary, Vice Chair, Chair and Senior Member.

Chair, Khaled Hammad, Central Connecticut State University, joined the EC in 2015. As Chair, Dr. Hammad serves as the chief operating officer for the Division, chairing all meetings of the Executive Committee and serving as the primary contact with the ASME Staff. He is also responsible for the expenditure of the Division Custodial Fund. The Chair and EC approve appointment forms of the Editor and Associate Editors for the Journal of Fluids Engineering (JFE) and the Journal of Verification, Validation and Uncertainty Quantification.

Vice Chair, Mark Duignan, Savannah River National Laboratory, joined the EC in 2016. In the absence of the Chair, the Vice Chair serves as the Chair of regularly scheduled meetings of the Executive Committee and shall become Chair if the Chair position is vacated. In 2019 Dr. Duignan is the Conference Chair for AJKFluids2019 to be held in San Francisco, CA. .

Secretary, Judith Bamberger, Pacific Northwest National Laboratory, joined the EC as member in July 2017. This past year as Secretary she has recorded the minutes of all meetings and maintained and published the contact list of Executive Committee members, the Chairs and Vice Chairs of the Technical Committees, and other appointed officials. Dr. Bamberger is serving as the technical program representative to IMECE2019 which will be held in Salt Lake City and the Technical Program Chair and Conference Co-Chair for AJKFluids 2019 which will be held in San Francisco. As the second year member of the Committee, the Secretary serves as the junior representative to the ASME Engineering Science Segment (ESS) for one year.

Senior Member, Javid Bayandor, University of Buffalo – The State University of New York joined the EC in 2014. As Senior Member he serves as the FED immediate past Chair. Dr. bayandor functions as the parliamentarian serves as the senior representative to the ASME Engineering Sciences Segment (ESS) for one year coincident with his/her term as Senior Member of the Committee. The Senior Member also provides advice on the finances of the Division and provides a report on the Custodial Fund at regularly scheduled meetings of the Committee.

Member, Zhongqin (Charlie) Zheng, The University of Kansas, joined the EC as member in July 2018. In the first year the primary duty of the Member is to become acquainted with the operations of the Executive Committee and perform special projects as directed by the Committee. In 2020 Dr Zheng will organize the FED tracks for IMECE and in 2021 he will organize FEDSM.

FED Conference Manager

Kanupriya Parasher is an ASME Conference Manager. She has been with ASME since February 2018 and as Conference Manager she is responsible for planning, organizing, and execution of the overall conference. She manages multiple conferences and Fluids Division Summer Meeting is one of them. She was solely responsible for running the FEDSM 2018 and now passionately working towards executing AJKFluids 2019 in San Francisco with utmost focus on excellence.



Event Photographs

Celebrate our FED Activities through past year!

Awards Presentations at FEDSM2018



Javid Bayandor



Khaled Hammad and Javid Bayandor



Goodarz Ahmadi, Ramesh Agarwall Freeman
Scholar Recipient, Khaled Hammad.



Wayne Strasser. Upendra (Kumar) Singh
Rohatgi Fluids Engineering Award Recipient,
Khaled Hammad



Javid Bayandor



Khaled Hammad, Yu-Tai Lee Fluids Engineering Division Executive Committee 2013-2018, Javid Bayandor



Khaled Hammad, Javid Bayandor Fluids Engineering Division Executive Committee Chair 2017-2018, Yu-Tai Lee



Khaled Hammad, Javid Bayandor Fluids Engineering Division Executive Committee Chair 2017-2018



Khaled Hammad, Stefan aus der Wiesche Fluid Mechanics Technical Committee Chair 2016-2018, Javid Bayandor



Khaled Hammad, Elia Merzari Computational Fluid Dynamics Technical Committee Chair 2016-2018, Javid Bayandor



Khaled Hammad, George Chamoun Fluid Applications and Systems Technical Committee Chair 2016-2018, Javid Bayandor



Khaled Hammad, Martin Wosnik Fluid Measurement and Instrumentation Technical Committee Chair 2016-2018, Javid Bayandor



Khaled Hammad, Wayne Strasser Honors and Awards Chair 2016-2018 and Member 2012-2016, Javid Bayandor



Jingsen Ma Outstanding Track Organizer, Elia Merzari Outstanding Track Organizer, Khaled Hammad



Philipp Epple Workshop Organizer, Khaled Hammad



Khaled Hammad, Ramesh Agarwal Plenary Speaker



Khaled Hammad, Peter Ehrhard Plenary Speaker



Khaled Hammad, Upendra (Kumar) Singh Rohatgi Plenary Speaker



Stavros Tavoularis Plenary Speaker, Khaled Hammad



Khaled Hammad, Kanupriya Parasher ASME FEDSM2019 Program Manager



Bo Qian Graduate Student Scholar



William Foltz Graduate Student Scholar



Matt Fulton Graduate Student Scholar



Kadeem Dennis Graduate Student Scholar



2018 Graduate Student Scholars at Awards Banquet: Matt Fulton, William Foltz, Kadeem Dennis, Bo Qian, Judith Bamberger.



Khaled Hammad, Elia Merzai, Martin Wosnik



Khaled Hammad, Philipp Epple, Martin Wosnik



Khaled Hammad, Shinnosuke Obi, Mark Duignan





Chisachi Kato, Shinnosuke Obi, Mark Duignan, Kwang Yong Kim, Nahmkeon Hur, Javid Bayandor



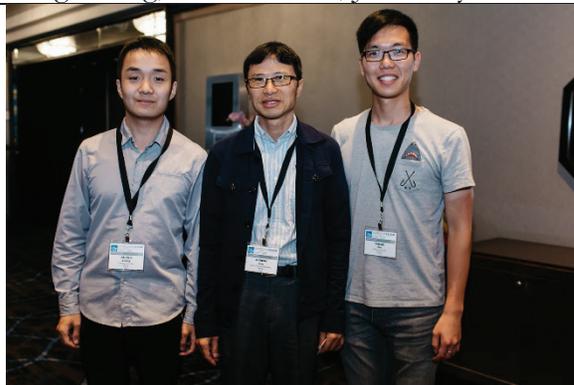
Colleagues with Evgenii P and Karsten Hasselmann



Ning Zhang, William Foltz, Javid Bayandor



TSI representative and Stamatios Pothos



Ruzhi Zhang, Xianwu Liu, Shijie Qin



Jingsen Ma and Yechun Wang



Colleague and Goodarz Ahmadi





Colleague and Karsten Hasselmann



Kwang-Yong Kim, Jinkook Lee and Wife, Wife and Yu-Tai Lee, Nahmkeon Hur



Yu-Tai Lee and wife, Judith Bamberger, Khaled Hammad, Javid Bayandor, Francine Battaglia



Yu-Tai Lee and wife, Judith Bamberger, Kanupriya Parasher, Khaled Hammad, Javid Bayandor, Francine Battaglia



Upendra (Kumar) Singh Rohatgi



Peter Ehrhard, Mahesh Argarwal, Upendra Rohatgi



Javid Bayandor, Francine Battaglia, Khaled Hammad



Kwang-Yong Kim, Nahmkeon Hur, Jinkook Lee and Wife



Wife and Yu-Tai Lee, Mark Duignan, Chisachi Kato, Shinnosuke Obi, Judith Bamberger



Stefan aus der Wiesche, George Chamoun, Rob Kunz, Philipp Epple



Shawn Aram, Daniel Garmann, Stuart Benton



Ivar Lund, Jun Chen and colleague





Colleagues with Kamram Sidiqqi, Kadeem Dennis



Siamak Shirazi and wife and colleagues



Keith Walters, George Papadopoulos, Ali Ogut