



Experimentally Speaking...

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Message From the President



John Lambros, SEM President, 2019-2020

AS I PREPARE this message we are currently in the midst of the COVID-19 virus upheaval. Even though only a few short weeks have passed, it seems so long ago that we were at our most recent IMAC meeting. During those days of unrestricted travel, we had a record crowd attending the IMAC meeting, making it one of the more memorable IMAC events. Although this year IMAC moved away from what by default has become its “traditional home” in Orlando, the meeting in Houston still managed to become the largest ever in terms of number of papers presented and overall attendance (over 550)! (For those that have missed “home”, the 2021 and 2022 IMACs will return to Orlando.) Great credit goes to Mike Mains, the IMAC Conference Director in only his second year now, and to the entire IMAC Program Planning Committee for organizing such a wonderful meeting. Ultimately it is the technical content that makes all the difference, and is what attendees come to see, so I want to thank all those responsible for putting together the technical program. Last but not least, we should acknowledge the tireless efforts of the SEM staff for all the support they provide before, during, and after the conference.

Some of the highlights of this year’s IMAC were the informative and inspiring plenary lectures. Unfortunately, John P. McManamen, the Human Exploration and Operations Mission Directorate Chief Engineer at NASA, was unable to present the keynote on “The Artemis Challenge: Another Revolution in Structural Dynamics”. Fortunately, he was very skillfully substituted by his close colleague Joel Sills who delivered an outstanding overview of the Artemis program. It was definitely the right stuff! This was followed the next morning by a very insightful and entertaining talk by Joe

“It is the technical content that makes all the difference, and is what attendees come to see”

Schoneman of ATA Engineering speaking as the SAGE Publishing Young Engineer Lecturer. Although again a small misfortune occurred as the original topic that he was meant to be presenting was not cleared nonetheless gave an excellent presentation on “Developing Multi-Disciplinary Skillsets for a High-Speed Future” making a great case for strengthening our multi-disciplinary workforce.

On the Wednesday of the IMAC conference we held our traditional awards luncheon, which was packed with the largest number of attendees in recent memory. My congratulations to all the award winners! I would like to particularly point out the recipient of this year’s D.J. DeMichele Award, Scott Cogan, in recognition of the quality and breadth of his technical contributions, his outstanding commitment to education and his continuous support to the IMAC community. I would also like to acknowledge

IN THIS ISSUE

- 1 Message From the President
- 2 From The Directors
- 2 TD Best Paper Announcement
- 4 2020 SEMEF Student Symposium
- 4 SEM Award Nominations
- 5 Four SEM Members Become NAE Members
- 6 2020 IMAC Recap
- 8 Events Calendar

Message From the President continued from pg.1

the special recognition award to a well-known presence at IMAC, Raj Singhal, who served as conference co-director, along with Al Wicks, for roughly two decades before deciding to retire. His contributions to IMAC in particular, and to SEM in general, are greatly appreciated and we all hope to keep seeing him at future meetings.

At this point it is usual to look forward to our next gathering in June, which as of right now is scheduled for June 8–11, 2020 in Orlando, Florida, at the IMAC home-venue of Rosen Plaza. Judging from abstracts received, the annual conference has again attracted a large number of submissions and promises to have a very fulfilling technical program. Of

course, as the COVID-19 situation is evolving, there is a level of uncertainty surrounding the continuation of conference events. We are continuously monitoring the situation and we are hopeful that the issue will be resolved soon, so in this sense of optimism let me say:

I look forward to seeing you at the SEM Annual Conference in June! ■



John Lambros, SEM President

From the Directors

IN RECENT DAYS, significant developments have emerged regarding the rapid spread of the Coronavirus Disease (COVID-19). The Executive board of SEM, along with staff and the directors, have been monitoring recommendations by the World Health Organization (WHO), the Centers for Disease Control and Prevention (CDC), and local health organizations.

International travel bans and new travel restrictions imposed by universities and employers around the country will have an impact on participants, presenters and attendees. SEM's priority is the safety and well-being of all those involved, and we will continue to monitor WHO and CDC recommendations.

As we gather more data points, we want to ensure that we are socially responsible while honoring the hard work, effort and time of the organizers and participants. The Executive board will make a decision by May 8, 2020 with all possible available data.

We will have regular updates on our website as we monitor this evolving situation. If you

have a concern that is not addressed here, please email director@sem.org.

As we have recently wrapped up our IMAC-XXXVIII conference, we would like to highlight the outcomes.

IMAC was held in Houston, Texas this year (February 10-13) as part of our every third-

“We want to ensure that we are socially responsible while honoring the hard work, effort and time of the organizers and participants.”

year rotation outside of Orlando, Florida. The conference was a success in attendance, revenues and energy. Attendance was over 540 with 205 individuals attending for the first time.


The technical program was stronger than ever providing a very secure foundation

Best Paper Award in Optical Techniques & Computer Vision

Work was presented at IMAC-XXXVIII, February 2020 in Houston, Texas

Visio-Acoustic Data Fusion for Structural Health Monitoring Applications #7904

C. R. Samuelson—Brigham Young University; **C. A. Duffy-Deno**—University of California San Diego; **C. B. Whitworth**—The University of Texas at Dallas; **D. DL Mascarenas**—Los Alamos National Laboratory; **J. D. Tippmann**—Los Alamos National Laboratory; **A. Cattaneo**—Los Alamos National Laboratory

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the requirement for a paper presentation. This is a very good sign and one that we will watch closely going forward. It is a sign that suggests that SEM/IMAC is staying very true to its mission.

We will be publishing, with Springer/Nature, eight volumes, representing conference sessions and tracks, of IMAC Conference Proceedings, which will be available in mid-May. We are clearly doing some things right in terms of our conferences and we want to continue to enable emerging Technical Divisions (TDs) to blossom and grow, while pruning back those emergent TDs that are no longer as relevant as they used to be. To this point, there are four focus groups that are being nurtured into our tracks and programs. They are Dynamic Environments Testing, Laser Vibrometry Methods and Applications, Optical Methods and Computer Vision for Structural Dynamics and Data Science/ Machine Learning. The new focus groups represent emerging growth areas for IMAC and have been recruiting and programming a lot of papers over the past two IMACs.

The work done by our Technical Program organizers, TD Chairs, Track Chairs, and Session Chairs, coordinated by the tireless work by our SEM staff, is responsible for creating outstanding programs that continue to bring in large numbers of conference attendees. We, however, need to stay agile and very aware of the emerging areas that we should include in our programs. Our Conference success rests in large part on the success of the Technical Program.

Our three Journals also met either face to face or by phone at IMAC. We take the opportunity at both IMAC and Annual to engage in discussions with Springer, our publisher. We were able to talk through some action items for both SEM and Springer, which should support our Editors-in-Chief in enabling their five-year plans.

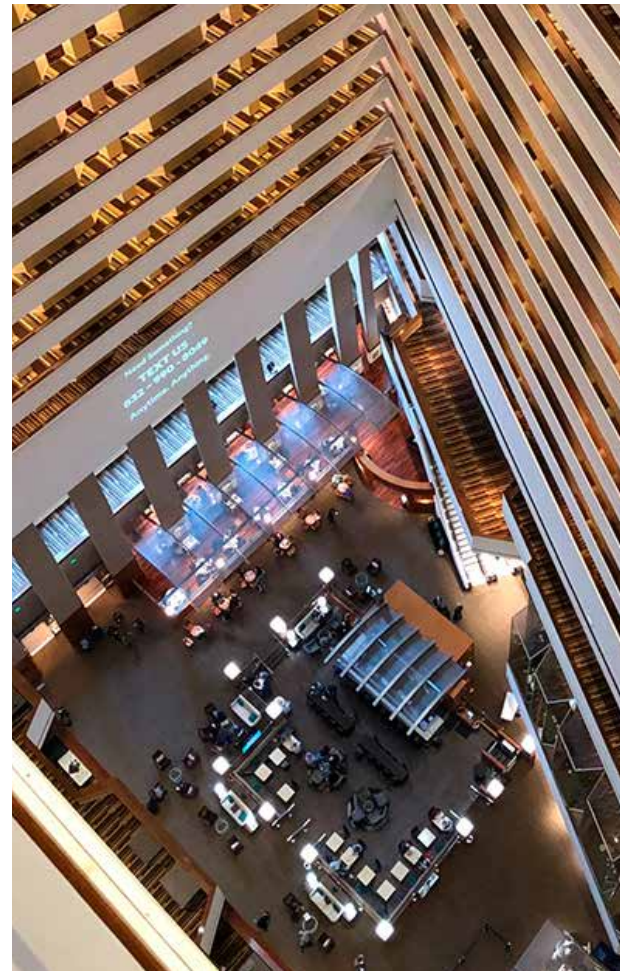
We continued to discuss the lack of interest in IMAC attendees publishing in SEM's journals. The journal that looks to be the best fit for the IMAC community is Experimental

Techniques. Therefore, we updated the aims and scope in order to recruit IMAC papers including an IMAC issue. Paul Reynolds, Editor-in-Chief (EIC) of Experimental Techniques, and incoming EIC Bonnie Antoun, spoke at the TD luncheon to alert attendees of the changes and invited papers being given at the conference to be submitted to the journal. Please visit the website to learn more. We need to provide our SEM/IMAC members a journal to publish their work. We think we have made significant progress in enabling our IMAC community to publish with SEM.

We are also working on the completion of the SEM Handbook of Structural Mechanics. We have Pete Avitabile and Randy Allemang to thank as our co-editors. They are working very hard to publish the Handbook in 2020.

Our Annual Conference in Orlando, Florida is ramping up nicely. We have over 460 papers being programmed into 11 tracks with three symposia and two panels over four days that are sure to make Orlando a success. Please go to sem.org/annual to learn more.

SEM is defined by its ability to remain agile, focused and open to all experimental mechanics who enjoy and use our conference environment as the go-to place to learn and grow as experts in their field of study. Our relatively small conference size enables our agility... allowing us to keep our finger on the pulse of what is next, create a conference track to represent an emerging area of interest, and carve out our niche in that new area. A niche that sends the message to our meeting participants that SEM's IMAC, Annual and Fall conferences are the ones to attend. This, I believe is one of the keys



A view from the top-the Hyatt Regency Houston's downtown location and easy access made for a great venue.

to what defines us and gives strength to the meaning of the "friendly society."

We look forward to your questions or comments so please don't hesitate to email or call.

To those of you that attended IMAC, we want to personally thank you for a successful conference. And we look forward to seeing you in Orlando, FL, in 2021. We guarantee another exciting conference as we celebrate IMAC-XXXIX.

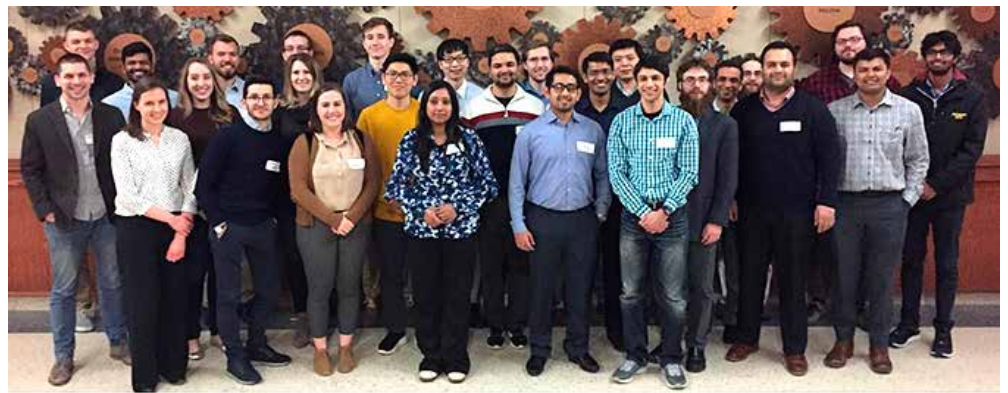
To those planning on attending the Annual Conference in Orlando, FL in June, we look forward to seeing you, engaging with you and we invite you, as you register for the conference, to either renew your membership or become a new member of SEM! ■

Kristin Zimmerman, Executive Director
Nuno Lopes, Managing Director

2020 SEMEF Student Symposia

REGIONAL GRADUATE student symposia are a growing area of focused funding by SEMEF. Regional symposia date back to the 1970s and were kicked-off by Chuck Taylor with one of the first being held in the southeast region. The goal is to promote symposia in five US regions including (NW, NE, SW, SE, MW). SEMEF is open to sponsoring regions across the globe. In 2018, SEMEF supported a symposia in the UK. Universities located near each other are encouraged to organize graduate conferences and to apply to SEMEF for sponsorship support of up to \$1,500 per symposium. These symposia emphasize graduate students, but undergraduates are also invited to participate. Going forward, each symposia host is encouraged to submit a list of symposia presenters to SEM headquarters so we can send a follow-up email to the presenters inviting them to join SEM with one year of free student membership.

Your ideas and energy are needed for SEM to continue to progress. Talk to the individual members at your symposium to learn more. As mechanics, you are ambassadors to the rest of the community. Let your colleagues know about SEM. You will be surprised to know that many may already be members. Finally, remember



Graduate Student Symposium participants

that SEM is the “Friendly Society”. Take the time to socialize, especially with students like yourselves!

For detailed information, including currently planned symposia and dates, please visit <https://sem.org/semef>. ■

SEM Award Nominations

DO YOU HAVE A colleague or student that deserves recognition? Is this someone who is a leader in their field and could give one of our plenary talks or Murray lecture? If so, the Society for Experimental Mechanics Honors Committee would like to hear from you.

We are currently soliciting nominations for the 2021 SEM Awards. For a full list of scholarships, awards, honors and lecture nominations, please visit <https://sem.org/awards>. Instructions to nominators are easily available under the Award Guidelines links on each award page

along with a simple form to fill out to submit the nomination.

Since its organization in 1943, SEM has relied heavily upon volunteer leadership and the professional expertise of its members. In the early 1950s the Executive Board began to explore means to formally recognize worthy individual contributions to the Society. Over the years several awards were established. Prior to 1967 the selection of award recipients was the sole responsibility of the Executive Board. In 1967 an Honors Committee was established to oversee

the selection of individuals to receive these honors.

The award process is reviewed at SEM’s Annual meeting, typically held the first week of June. Nomination packages are due by April 15, 2020 for the 2021 award year.

Full details on how to nominate and all required materials can be found on our site. Thank you, we look forward to your nominations. If you have any questions concerning the application process, please do not hesitate to contact SEM at director@sem.org. ■

Four SEM Members Become Members of the NAE

FOUR LONG-STANDING active members of SEM are among the newly elected members of the US National Academy of Engineering announced recently. The SEM members newly inducted into the Academy, and their corresponding citations, are listed below in alphabetical order:

Prof. **Igor Emri**, University of Ljubljana, Slovenia, International Member: For contributions to the testing and modeling of time-dependent materials, and to novel sound and vibration isolation materials.

Prof. **Horacio D. Espinosa**, James and Nancy Farley Professor of Mechanical Engineering, Northwestern University, Evanston, IL: For contributions bridging nanoscale experimentation and atomistic simulations.

Prof. **Nancy R. Sottos**, Swanlund Chair, Materials Science and Engineering, University of Illinois, Urbana-Champaign, IL: For contributions to the design and applications of self-healing and multifunctional materials.

Prof. **Michael A. Sutton**, Distinguished Professor, Mechanical and Biomedical Engineering, University of South Carolina, Columbia, SC: For creation of digital image correlation-based measurement technology and its dissemination through commercialization and applications in industry.

These members have been active for many years at SEM and on many occasions have presented their most recent findings at SEM conferences and have disseminated their research through the Society's Journal publications. In addition, they have all contributed in many ways to the SEM and have also been recipients of many of the Society's honors and awards: All four have been elected Fellows of SEM, all four have in the past received the Lazan award for outstanding original technical



Igor Emri



Horacio D. Espinosa



Nancy R. Sottos



Michael A. Sutton

contributions to experimental mechanics, and among them have garnered an impressive array of 11 additional SEM awards including the Frocht, Hetenyi, Nemat-Nasser, Peterson, Tatnall, Taylor and Theocaris awards. Three of the awardees are Past Presidents of the Society (Emri, Sottos, Sutton), three are former editors-in-chief of the Society's flagship journal *Experimental Mechanics* (Espinosa, Sottos, Sutton) and two have also delivered the Murray lecture which is the Society's prestige lecture (Espinosa, Sutton).

It is a great honor and privilege for our Society to have been a forum for incubating many of the contributions that led to these recognitions, so please congratulate the awardees whenever you next see them in person at a gathering of the SEM. This has been a great year for SEM member recognition by the National Academy and the newest four members join a number of SEM members who are already part of the National Academy of Engineering including J. Dally, D. Dudderer, S. Nemat-Nasser, W.G. Knauss, A.S. Kobayashi, G. Ravichandran, and A.J. Rosakis. ■



2020 IMAC Conference

February 10-13, 2020 at the Hyatt Regency in Houston, TX

Highlights and awards from our 2020 IMAC Conference

IMAC-XVIII WAS ONE OF the most successful conferences in recent years. Attendance approached 550 and we can attribute that to a strong program put on by our hardworking organizers, chairs and membership.

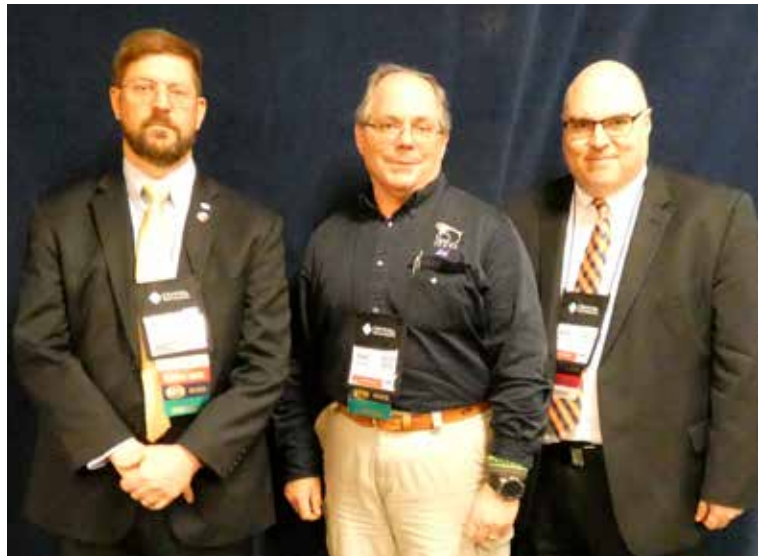
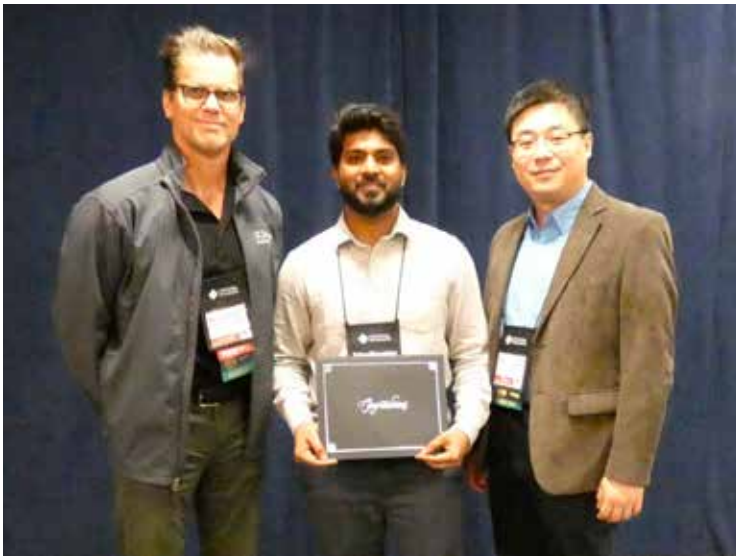
We would like to thank all the attendees and exhibitors that participated making this IMAC one of the best. We look forward to seeing you in 2021.



Top-left/middle: Joe Schoneman-SAGE
Publishing Young Engineer Lecturer

Top-right: Michael Mains-IMAC Conference
Director with Andrea Lupini-D. J. DeMichele
Scholarship Awardee and John Lambros-
SEM President

Bottom: Winners of the Exposition Passport
prizes (left to right) - Stephen Franco, Lawrence
Livermore National Laboratory; Martin Volvert,
University of Liège; Luke Jurmu, Michigan
Technological University



Left to right, top to bottom: Michael Todd with Mukesh K. Ramancha-Best Paper Awardee for MVUQ and Zhu Mao; Michael Mains-IMAC Conference Director with Joel Sils-Keynote Lecturer and John Lambros-SEM President; Michael Mains-IMAC Conference Director with Joe Schoneman-SAGE Publishing Young Engineer Lecturer and John Lambros-SEM President; Scott Cogan-D. J. DeMichele Awardee with his sister Shoshanna Cogan.

Below: Michael Mains-IMAC Conference Director with Sandro Amador, Permille Lysgaard-Best Student Paper Awardees for Dynamics of Civil Structures, Rune Brinker, Hae Young Noh and John Lambros-SEM President.

Submit a Nomination

Do you have a colleague you'd like to nominate? The Honors Committee meets each year at the SEM Annual Conference (generally held the first week in June) to determine award recipients for the following year.

The committee will consider all Nominations received by April 15 of that year. A nomination received is kept for active consideration for three years

Go to sem.org/awards to submit a nomination!



Upcoming Events

2020

2020 SEM XIV International Congress | June 8-11, 2020

Rozen Plaza Hotel
Orlando, FL USA

** Please check sem.org for updates on the conference*

iDICs Conference | October 19-22, 2020

La Cité Nantes Events Center
Nantes, France

2021

IMAC-XXXIX | February 8–11, 2021

Rozen Plaza Hotel
Orlando, FL USA

2021 SEM Annual | June 14-17, 2021

Hyatt Regency Albuquerque
Albuquerque, NM USA

