



Applied Mechanics Division

2013 Newsletter

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In Memory of Dr. Stephen Juhasz

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www.asme.org/divisions/amd

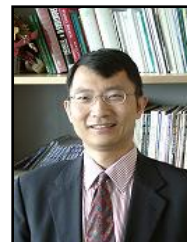
Applied Mechanics Division 2012-2013 Executive Committee



Vice-Chair
Lawrence Bergman



Chair
Kenneth M. Liechti



Program Chair
Huajian Gao



Program Vice-Chair
Peter Wriggers



Secretary
Arun Shukla

Message from the Chair

As my term as Chair of the Executive Committee of the Applied Mechanics Division of the American Society of Mechanical Engineers comes to an end, I am very pleased to be able to report on another successful year for the Division. I have been helped immensely by Larry Bergman (*Vice-Chair*) of the University of Illinois at Urbana-Champaign, Huajian Gao (*Program Chair*) at Brown University, Peter Wriggers (*Program Vice-Chair*) from the Leibniz Universität Hannover and our newest member, Arun Shukla (*Secretary*) who hails from the University of Rhode Island. The Executive Committee is responsible for representing the Division's interests and goals within ASME particularly in regard to Division finances, conference development and planning, oversight of the Journals that are linked to the Division, development and maintenance of awards, nominations for awards and working with the Technical Committees of the Division. This all requires a dedicated crew of responsive volunteers and my colleagues on the Executive Committee filled this requirement admirably.

The commitment to the Executive Committee is for five years as members move successively from Secretary to Chair over that time period. Accordingly, Larry Bergman will become Chair on July 1, 2013 and I am pleased to welcome Pradeep Sharma (University of Houston) as incoming Secretary. Pradeep is already recognized for his technical accomplishments as well as his leadership roles at the University of Houston and within the Elasticity Technical Committee; I look forward to his continued activism for the Division.

The Division is one of six that belong to the Basic Engineering Group within ASME. The other divisions are Bioengineering, Fluids Engineering, Heat Transfer, Materials and Tribology. The main purpose of the Applied Mechanics Division is to "*foster the intelligent use of mechanics by engineers and to develop this science to serve the needs of engineering.*" This focus on the fundamental aspects

of engineering naturally leads to a multidisciplinary perspective that is partially responsible for the fact that the Division is the largest one in the Group.

IMECE 2012

This high level of participation by members of the Division was again borne out by the number of papers that were presented at IMECE 2012, which was held in November 2012 in Houston, TX. Huajian Gao and Peter Wriggers were chair and vice-chair, respectively, of Track 9 for the Mechanics of Solids, Structures and Fluids and the main venue for presentations by members of the Division. Track 9 had 36 Symposia, 150 sessions, and 750 presentations. Furthermore, AMD co-sponsored 41 sessions in Tracks 2 and 4, which dealt with Biomedical and Biotechnology and Dynamic Control and Uncertainty, respectively.

Other highlights of IMECE 2012 in Houston, included the plenary session presentations by the Drucker medalist James Dally who presented a talk on “Developments in Online Education in Mathematics, Science & Engineering”. The Ted Belytschko Applied Mechanics Division awardee was David Benson who whose presentation was titled “Multipath Analysis with Large Deformation, Rotation-Free, Isogeometric Shells”. Francis Moon gave a talk “Nonlinear Dynamics of Vibro-Wind Energy Harvesting Systems” as the Caughey Dynamics Award winner. We also heard from Erik van der Giessen in the Koiter Lecture with a presentation “Multiscale Plasticity: Reductionism or Emergence” and Zhigang Suo who presented the Thurston Lecture on “Soft Materials and Soft Machines.”

The Division was well-represented at the Honors Assembly by Subra Suresh as recipient of the Timoshenko Medal, Jan Achenbach who was awarded the ASME Medal and Zdenek Bažant who received an Honorary Membership.

The Applied Mechanics Division Annual Honors and Awards Ceremony Banquet was held at IMECE 2012 in Houston. The event was well-attended and featured **Subra Suresh's** acceptance of the Timoshenko Medal. The other Society level medalists, **James Dally** (Drucker) and **Erik van der Giessen** (Koiter) were also recognized. For Division level awards, we acknowledged **David Benson** (Ted Belytschko Applied Mechanics Division Award), **Francis Moon** (Thomas J. Caughey Dynamics Award) and **Yuri Bazilevs**, **Xi Chen** and **Kenji Takizawa**, the three winners of the T. J. R. Hughes Young Investigator Award. We were honored to have Professor Jennifer Haythornthwaite make presentations to the winners of the AMD-Haythornthwaite Foundation Research Initiation Grants, **Sinan Ketten** (Northwestern University), **Nanshu Lu** (UT Austin), **Shuman Xia** (Georgia Tech), **Junliang Xiao** (University of Colorado, Boulder). Professor Haythornthwaite also announced the 15 recipients of the student travel awards funded by the Haythornthwaite Foundation and presented the best paper awards to (1st) **Ankit Srivastava** (University of North Texas) “Porosity Evolution in a Creeping Single Crystal”, (2nd) **Tejas Raparel** (George Washington University) “Multiple Grid & Multiple Time-scale (MGMT) Simulations in Continuum Mechanics” and (3rd equal) **Justin Wilkinson** (Johns Hopkins) “The role of multiscale plasticity in dynamic spall failure”, **Stavros Gaitanaros** (UT Austin) “On the Crushing Response of Open-Cell Random Metallic Foams” and **Shuze Zhu** (University of Maryland) “Hydrogenation-initiated Scrolling of Graphene into Carbon Nanoscrolls.”

2013 AMD Summer Meeting

The Division's joint summer meeting with the Society of Engineering Science will take place from July 28-31 at Brown University. We will join SES in celebrating a very special event; this will be the 50th Annual meeting of the society. Pradeep Guduru and Allan Bower are co-chairs of the conference, which will have a number of special lectures and symposia to mark the event.

IMECE 2013

We are looking forward to continued success at IMECE 2013 in San Diego with Peter Wriggers and Arun Shukla at the helm of Track 10, which again carries the title of Mechanics of Solids, Structures and Fluids. Another opportunity for participation in IMECE 2013 comes in the form of the Micro-Nano Forum, which the Division has just agreed to co-sponsor through the Applied Mechanics Division best poster award and by providing travel funds for students to participate in the Forum. We are looking for qualified members who are willing to help judge the posters and travel applications in order to make sure that the Division is well-represented. I am happy to report that the following members will be honored at the AMD Banquet on Tuesday, November 12 in San Diego. Please join me in congratulating them.

Richard Christensen (Stanford)

Yonggang Huang (Northwestern University)

Norman Fleck (Cambridge University)

Gui-Rong Liu (University of Cincinnati)

Lothar Gaul (University of Stuttgart)

Wei Cai (Stanford)

Timoshenko Medal

Drucker Medal

Koiter Medal

Ted Belytschko Applied Mechanics Award

Thomas K. Caughey Dynamics Award

TJR Hughes Young Investigator Award

Journal of Applied Mechanics

Yonggang Huang's tenure as Editor of the Journal of Applied Mechanics began on July 1, 2012. He has been actively recruiting submissions from active members of the Division and is working hard to streamline the review process and shorten the time to publication. A number of special editions are in the works and the Executive Committee approved Yonggang's request for support of the Journal of Applied Mechanics Best Paper Award. I strongly encourage members to publish their best papers in the Journal.

Applied Mechanics Reviews

Harry Dankowicz has been Editor of Applied Mechanics Reviews since January 2012. He has appointed an impressive slate of sectional and associate editors in his reorganization of the Editorial Board. With a number of imaginative initiatives in place, including a web/iTunes based AMR-specific audio channel, we can look forward to a new sense of relevance and presence for this icon of Mechanics.

Haythornthwaite Foundation Awards

I am pleased to be able report that the Haythornthwaite Foundation has agreed to continue to support the young faculty Research Initiation Grants and the Student Travel and Best Paper Awards at the same levels for the coming year. Up to four Research Initiation Grants and fifteen Student Travel Grants will be awarded at IMECE 2013. Announcements for both initiatives will have been made by the time the Newsletter is published.

Technical Committees

There are 19 Technical Committees within the Applied Mechanics Division. While some committees are very active in proposing and running symposia and nominating Fellows, others appear to be inactive. As a result, the Executive Committee will be evaluating the performance of each committee in the coming months. The Executive Committee decided to make funds available to the Technical Committees responsible for sponsoring and organizing the top three symposia at the previous IMECE for attracting keynote speaker(s) at the next IMECE. The Executive Committee will also be reviewing the manner in which Chairs and Co-Chairs are elected, as well as their terms. Technical Committees will be encouraged to develop a viable web presence.

Special Mention

I would like to acknowledge the dedicated support provided to the Division by volunteers and ASME staff. First, many thanks go to **Yuri Bazilevs** who has been the recording secretary for the Executive Committee for four years. His attention to detail and accurate recording of discussions has helped us focus on the issues at hand. We look forward to more service from Yuri as he takes over from **Ioannis Chasiotis** who did a very thorough job as the Newsletter Editor. **Dennis Kochmann** has kindly agreed to take over as recording secretary. We have three ASME staff members **Jacinta McComie, Melissa Torres and Stacey Cooper** who support the functions of the Division in day to day operations, the AMD Banquet and the event planning tool. They are all responsive, helpful, courteous and a pleasure to work with.

Closing Remarks

As I have moved through the five-year succession of positions that we take on the Executive Committee, we reach far beyond the confines of our departments and areas of specialty. In doing so I am continually reminded of the strength and diversity of Mechanics. We have certainly seen this as we honored our most junior and senior colleagues at the AMD Banquet. Nonetheless, as a community, we tend to sell ourselves short, so it's particularly fitting that we were able to honor Subra Suresh as the Timoshenko medalist. We tend to bemoan the state of Mechanics and point to the diminishing number of Mechanics departments around the country. I would argue that, in spite of this, Mechanics is even stronger and more relevant today. We have become "Stealth Mechanicians" sometimes spread out across different departments in the same University. Nonetheless we should unite in promoting Mechanics wherever we can. We only need to look to the increasingly diverse areas in which we engage with others. To my mind, if we do this with rigor and an appreciation of the new insights such diversity can bring to Mechanics, we are automatically true ambassadors of Mechanics in the world at large.

Bringing this idea closer to home, I encourage you to continue to be active in the Technical Committees as we look for new ways to promote Mechanics within ASME. Above all, let's nurture our younger colleagues, as they are the ones who will carry Mechanics forward.

Kenneth M. Liechti, 2012- 2013
Chair, Applied Mechanics Division

TRACK ON MECHANICS OF SOLIDS, STRUCTURES AND FLUIDS AT IMECE 2012

Track 9 Mechanics of Solids, Structures and Fluids at ASME IMECE 2012 in Houston, TX continued to serve as the principal forum of Mechanics-related topics. The AMD Executive Committee extends its thanks to the AMD Technical Committees, affiliated ASME groups, invited Topic organizers as well as the Topic Chairs and Co-Chairs for their great effort to make this event successful. This year we had an unusually large number of presentations (>600) spread over 35 Topics. The program began with a plenary session featuring the Drucker Medal recipient, Jim Dally of University of Maryland, the Ted Belytschko Applied Mechanics Award recipients, David Benson of University of California at San Diego and the Thomas K. Caughey Medal recipient, Francis Moon of Cornell University. Dally's presentation was entitled "Developments in Online Education in Mathematics, Science and Engineering;" Benson's was "Multi-Patch Analysis with Large Deformation, Rotation-Free, Isogeometric Shells;" and Moon's was "Nonlinear Dynamics of Vibrowind Energy Harvesting Systems." Additional highlights of the Track included a symposium honoring the Drucker Medalist, the Koiter Lecture, delivered by the Koiter Medalist, Erik Van der Giessen of University of Groningen, entitled "Multiscale Plasticity: Reductionism or Emergence?",

and a symposium where the 2012 Thomas J.R. Hughes Young Investigator Awardees Yuri Bazilevs (UC, San Diego), Kenji Takizawa (Waseda University), and Xi Chen (Columbia University) delivered invited lectures. We look forward to another successful IMECE, in November 2013, under the guidance of our new program chair, Peter Wriggers.

Huajian Gao, Chair

*Track 9: Mechanics of Solids, Structures and Fluids
IMECE 2012*

THE 2012 AMD AND ASME SOCIETY AWARDS

TIMOSHENKO MEDAL

Subra Suresh



The Timoshenko Medal was established in 1957 and is conferred annually in recognition of distinguished contributions to the field of applied mechanics. Instituted by the Applied Mechanics Division, it honors Stephen P. Timoshenko, world renowned authority in the field, and it commemorates his contributions as author and teacher.



The 2012 Timoshenko Medal was awarded to Subra Suresh, Director of the National Science Foundation *“for pioneering contributions and visionary leadership in the field of mechanics of biological materials, and the development of novel experimental techniques and multi-scale models for living systems and infectious diseases, and global leadership in mechanics of medicine.”* The acceptance speech that follows was delivered at the Applied Mechanics Honors and Award Banquet at the 2012 ASME International Mechanical Engineering Congress in Houston, TX, on Tuesday, November 13, 2012:

It is a tremendous honor to speak at the Applied Mechanics Dinner as this year’s Timoshenko medalist. I was one year old when Prof. Stephen Timoshenko delivered the inaugural lecture in this series. I was a teenager when I first heard his name, and used his textbook on elasticity for my undergraduate class.

I have been blessed with the opportunity to work with some of the most talented and creative students, post-docs, visitors and collaborators in my research group. The recognition that I am receiving here is due in large part to their contributions to mechanics, and I accept this honor on their behalf.

I am perhaps unique as a Timoshenko medalist in that, in addition to being an active scientist, I am also the head of a large federal agency. Some colleagues have asked me how I feel being away from academia in Washington. I am reminded of the story associated with Woodrow Wilson, who was president of Princeton University before running for Governor of New Jersey and subsequently for President of the United States. When asked by a reporter why he left his Ivy League school to go into Government, President Wilson is said to have replied, “So I don’t have to deal with politics anymore”.

The Timoshenko lecture traditionally involves reflecting on one's life journey and career. I honor that tradition tonight as I examine my journey, its twists and turns, and the many serendipitous events that have shaped my perspectives, values, research and career.

I grew up in South India in a lower middle-class family in which education was highly valued — although neither of my parents graduated from university. I was enrolled in first grade at age four, mainly because I was stretching my mother's patience at home. As a result, I was the youngest in my class throughout school and graduated from high school at the age of 15. After a year of pre-university studies in mathematics, physics and chemistry, I was admitted to the Indian Institute of Technology (IIT), Madras. My years at IIT were inspiring and enjoyable with rich course offerings in traditional mechanical engineering.

I set out for the US in August 1977 to pursue graduate studies because it was the expected career path for an IIT graduate at that time. This involved my maiden airplane flight with a half-full suitcase of personal possessions, a one-way air ticket purchased with a loan, and less than \$100 in my wallet. Iowa State University, in addition to being an excellent institution that offered me full scholarship, was an attractive destination for me because they waived my application fee, which I could not afford. By now you have probably figured out how I acquired my "Iowa accent".

Beginning a new life in the US involved many challenges. First, moving from a major city in South India to the quietness of a college town several hundred miles from the nearest metropolis was a difficult adjustment. Second, relocating from the hot and humid climate of Madras to the severe winters of Iowa caused "thermal shock." Third, tasty epicurean options were extremely limited in the food establishments of Iowa in the 1970s for someone who grew up as a vegetarian. Fourth, the cost of a brief telephone call to India was so prohibitively expensive in those pre-internet days that I kept in touch with my family through weekly letters penned in "aerograms". However, all these issues were more than offset by the warmth of the great people of Iowa State. I completed my Master's degree in May 1979 and immediately moved to MIT.

I was fortunate to join the Mechanical Engineering Department at MIT, where key faculty members in the "Materials" group included Ali Argon, Frank McClintock and Rob Ritchie. I became Rob's first doctoral student working on the fatigue behavior of structural materials. His own training at Cambridge University in the academic lineage of Alan Cottrell and John Knott, coupled with his earlier publications with Jim Rice from Brown University and Earl Parker and Victor Zackay at the University of California, Berkeley, positioned him as a rising star in the areas of fracture and fatigue. I had the pleasure of working closely with Rob to establish my doctoral research, as he was establishing his own academic path as a relatively new faculty member.

During the summer of 1980, soon after completing my doctoral qualifying exam at MIT, I had a consulting arrangement at the Lockheed Palo Alto Research Laboratory in the group of Richard Lewis. Dick was a wonderful mentor. He was in charge of a broad portfolio of materials research and took me under his wing. My research blossomed upon my return to MIT in the fall of 1980 and I was able to defend my doctoral thesis in May 1981, less than two years from start to finish. In fact, my doctoral work moved so fast that I had to spend the summer taking additional courses to meet my doctoral credit requirements. Rob Ritchie left MIT to join UC Berkeley in the summer of 1981, and I followed him to Berkeley as his post-doc.

My time at UC Berkeley and the Lawrence Berkeley National Laboratory helped me broaden my knowledge of materials science. In addition to studying mechanisms of fatigue, I initiated new research into the structure-property connections in low-density materials.

After two years at Berkeley, I received an offer to join the Solid Mechanics faculty in the Division of Engineering at Brown University. This was a period of significant advances in mechanics of materials and my ten years on the faculty at Brown were wonderfully rewarding, thanks to the many talented students, post-docs, and faculty colleagues I worked with. To my pleasant surprise, the process to grant tenure to me was initiated barely a year and a half after my arrival at Brown, owing primarily to the efforts of Bob Asaro.

In 1986, I married Mary Delmar in the Manning Chapel on the Brown campus; members of my research group and all members of the Solid Mechanics and Materials faculty attended our wedding ceremony, and the reception at the Brown Faculty Club. My entire family from India made their first trip together to share the wonderful event with Mary and me. In the next several years, Ben Freund, Alan Needleman, and Rod Clifton, all of whom subsequently became Timoshenko medalists, were wonderful hosts of many dinners at their homes that cultivated my continuing warm feelings for the Brown colleagues and their families. Close research collaborations with Alan Needleman, Fong Shih, and the late Jacques Duffy were particular highlights of my activities in the late 1980s.

I took my first sabbatical in 1990, about a year and a half after the birth of our daughter Nina. This sabbatical, spent at home, provided a unique opportunity to wrap up my book on “Fatigue of Materials”, which was published by Cambridge University Press. The anticipated arrival of our second daughter Meera in August 1990 provided a natural deadline for me to complete my book.

*What I thought would be a life-long career at Brown University took a different turn in 1993 when Mert Flemings, head of the department of materials science and engineering at MIT, convinced me to return to Cambridge. This new appointment also marked a shift in my research into micro- and nano-mechanics with applications to functional and graded materials and thin films. My activities at MIT also included taking the lead editorship role of the journals *Acta Materialia* and *Scripta Materialia*, and helping to establish MIT’s first major collaboration with the universities in Singapore. During this time, my co-authorship, with Andreas Mortensen, of several review articles on graded materials culminated in a research monograph that was published by the Institute of Materials.*

In January 2000, I became head of the department of materials science and engineering at MIT, a position that taught me a number of valuable lessons in leadership and interacting with people. It also provided many life experiences that took me beyond my comfort zone of teaching and research activities. The job involved fund-raising for the creation of several new laboratories in highly visible parts of MIT and for a major curriculum revision effort in materials science and engineering. The administrative tasks, contrary to my initial fears, did not lead to any reduction in my research activity. When the National Nanotechnology Initiative was launched, I was fortunate to win a grant from the Office of Naval Research to lead a large multi-year effort in nanomaterials. In addition, I was engaged in the writing of a book on thin film materials, in partnership with Ben Freund. It was a great pleasure working with Ben, and we submitted our book to Cambridge University Press in early 2003. Around this time, I was also fortunate to work closely with Ares Rosakis to develop new technology for stress and reliability assessment of thin films and patterned lines on substrates. These ideas and joint patents led to the creation of a spin-off company in Pasadena that eventually merged with a larger entity. Many visits to Caltech between 1999 and 2005, as the Clark B. Millikan Professor and the Gordon Moore Scholar, gave me an opportunity to benefit from the warm friendship of a number of colleagues, most notably Ares and G. Ravichandran.

The completion of my book on thin films also marked the beginning of a new effort in exploring the connections between human diseases and cell biomechanics. This forced me to learn several new fields including biology, parasitology, and hematology. The risks of venturing into these new fields were

high, especially given the simultaneous demands on my time from my leadership roles. But, from the benefit of hindsight, I can say that the intellectual rewards of this expedition into a new research territory have been phenomenal. Interactions with colleagues, most notably Monica Diez Silva, Jay Han, and the late Michael Feld from MIT, C.T. Lim from the National University of Singapore, George Karniadakis from Brown University, and Geneviève Milon from Institut Pasteur in Paris, have contributed to progress in this effort. I owe a special note of gratitude to Ming Dao who has been a key collaborator for more than a decade, and who currently oversees my research group while I am on leave from MIT.

Between 1997 and 2005, I had the opportunity to spend extended sabbaticals with my family at the Royal Institute of Technology in Stockholm, Caltech in Pasadena, Ecole des Mines and Institut Pasteur in Paris, and the Max-Planck Institut for Metallforschung in Stuttgart. Peter Gudmundson, G. Ravichandran, Ares Rosakis, Andre Pineau, Genevieve Milon and Eduard Arzt were wonderful hosts during these visits, and my family and I continue to enjoy their friendship. Each visit helped develop new research collaborations and new scientific perspectives, in new disciplines.

When I decided to step down from my MIT role as department head in January 2006, I planned to return to the quiet life of a full-time researcher. However, that tranquility lasted less than a week. I was invited to serve as the lead faculty investigator in preparing a proposal to the newly created National Research Foundation of Singapore to establish MIT's first research center in Singapore, now known as the Singapore-MIT Alliance for Research and Technology (SMART) Center. The proposal received the approval of the Prime Minister and the Center was launched in early 2007.

In June 2007, I accepted the appointment as the Dean of MIT's School of Engineering, which comprises roughly 40% of MIT's faculty and about half of all MIT students and living alumni. Navigating the School through the Great Recession that was just beginning was a particular challenge. I learned that making counter-intuitive decisions with a long-term perspective can have much more significant pay-offs than relying on conventional wisdom that focuses on the short-term. After careful assessments of several conservative economic scenarios, I decided to accelerate faculty hiring in the School during the financial crisis — a decision that was unanimously backed by my leadership team of department heads. The result was a successful faculty recruitment process that led to the hiring of nearly 50 new faculty members, including a record number of women faculty members in engineering, in less than three years during the worst economic downturn of our lifetime. My career path at this point had encountered more surprises than an Indiana Jones movie. But Fate intervened once again.

In March 2010, I received an invitation from the White House to serve as the Director of the National Science Foundation (NSF). I was truly humbled by this call for national service from the President of the United States to lead an institution that has had such a wide-ranging impact on science and engineering research and education. After confirmation of my nomination by the US Senate, I took a leave from MIT and started at NSF in October 2010.

NSF is an amazing organization whose reach and impact on the national and international scene are far greater than one could imagine. With an annual budget of \$7 billion that supports the diverse scientific explorations of hundreds of thousands of researchers, leading this vast enterprise has been an extremely rewarding endeavor for me. I would like to point out that over the last six decades, NSF has supported over 200 Nobel laureates. The difference between NSF and the Nobel Prize committees is that we recognize the Nobel laureates' potential decades before they become famous — and on average we provide them more compensation. NSF has also brought me unique life experiences that included travels to the highest point in the Arctic Circle and to the geographic South Pole, launching a new research ship, meetings with heads of state, and visiting the President in the Oval Office.

Moving from the past and present to the future, how does one see the evolution of mechanics? In addition to its continuing impact on engineering and physical sciences, I see mechanics at all length scales as playing an increasingly significant role in such ostensibly distant areas as human health, disease diagnostics, and novel therapeutic discoveries. The intersections of engineering, physical sciences, life sciences, medicine and public health represent rich playing grounds in which theoretical, experimental and computational mechanics will continue to have a profound impact. I also believe that the interfacing of engineering, physical sciences and life sciences with the social, behavioral and economic sciences will be essential to address the grand challenges that humanity faces. In sum, mechanics provides a unique platform from which scientific efforts in many interdisciplinary fields can be launched with industrial applications and societal implications that we can only speculate about.

Let me note that receiving recognitions, such as the Timoshenko Medal, imply a certain level of “seniority” in the scientific community about which I do not yet feel fully accustomed to. Nevertheless, in keeping with tradition, let me offer a few suggestions to the younger people in the audience, based on my own experience.

- 1. Make every effort to focus on deep individual scholarship in whatever research you undertake. At the same time, do not ignore the importance of policy and leadership roles if you would like your work to have greater impact over a broader horizon.*
- 2. Don’t be afraid to risk venturing into distant intellectual terrains to question conventional wisdom in remote disciplines. The potential rewards far outweigh any seemingly significant pitfalls.*
- 3. While local political considerations often strongly influence the behavior of scientists, adopt a broader global view of the international scientific community. This will provide you with a balanced and “higher altitude” perspective on the importance and limitations of your own work.*

A satisfying professional journey does not result solely from individual effort. Many people play a vital role in shaping its course. I have been blessed with many colleagues whose friendship and generosity have made my journey most enjoyable, challenging and meaningful. I have already cited some key people, but let me acknowledge a few others: Dick Lewis at Lockheed Palo Alto Research Laboratory for all his help in the early part of my career; Joseph and Dotty Gurland at Brown University who made sure that I was well-treated despite being the youngest faculty member; Mert Flemings and Chuck Vest at MIT for their inspiration; Fong Shih for his close friendship over the past thirty years; and Zdenek Bazant of Northwestern University for his many kind interactions.

I am here tonight because of the intelligence, far-sightedness and courage of my late mother who made so many sacrifices to ensure that I had opportunities in life that she was never fortunate enough to encounter. My wife Mary, our daughters Nina and Meera, and my sister Chitra, have given me the inspiration and understanding to strike the delicate balance between a satisfying career and a rich family life. I am most grateful to them for all the joy they have brought to my life.

And in closing, I wish to thank the Timoshenko Medal selection committee, the Applied Mechanics Division and the American Society of Mechanical Engineers for this recognition.

Subra Suresh
Director of the National Science Foundation

DANIEL C. DRUCKER MEDAL

James W. Dally



The Daniel C. Drucker Medal was established in 1997 and is conferred in recognition of distinguished contributions to the field of applied mechanics and mechanical engineering through research, teaching and service to the community over a substantial period of time. Instituted by the Applied Mechanics Division, the medal honors Dr. Daniel Drucker and commemorates his service to the profession.



The 2012 Daniel C. Drucker Medal was awarded to Professor Emeritus James W. Dally from The University of Maryland *"for seminal contributions in the development of experimental methods for studying dynamic fracture mechanics and stress wave propagation, for academic leadership, and for developing innovative teaching materials (including textbooks) for undergraduate and graduate courses."*

WARNER T. KOITER MEDAL

Erik Van der Giessen



The Warner T. Koiter Medal, established in 1996, is bestowed in recognition of distinguished contributions to the field of solid mechanics with special emphasis on the effective blending of theoretical and applied elements of the discipline, and on a high degree of leadership in the international solid mechanics community.



The award was funded by the Technical University of Delft, The Netherlands, to honor Warner T. Koiter for his fundamental work in nonlinear stability of structures in the most general sense, for his diligence in the effective application of these theories, his international leadership in mechanics, and his effectiveness as a teacher and researcher.

The 2012 Warner T. Koiter Medal was given to Professor Erik Van der Giessen from the University of Groningen, The Netherlands, *"for his major contributions to the understanding of creep rupture and dislocation plasticity"*.

TED BELYTSCHKO APPLIED MECHANICS AWARD

David J. Benson

The Ted Belytschko Applied Mechanics Award is bestowed to an outstanding individual for significant contributions in the practice of engineering mechanics. The contributions of this individual may result from innovation, research, design, leadership or education. The award was established in 1988 and was renamed the Ted Belytschko Applied Mechanics Award in 2008.



The 2012 Ted Belytschko Applied Mechanics Award was conferred on Professor David J. Benson from the University of California, San Diego, *“for making fundamental contributions to methods in computational mechanics and applying them to problems in solid mechanics, primarily at the micromechanical level”*.

THOMAS J.R. HUGHES YOUNG INVESTIGATOR AWARD

The Thomas J.R. Hughes Young Investigator Award recognizes special achievement for young investigators in Applied Mechanics. The nominees must not have reached their 40th birthday at the time of nomination. The award was established in 1998 and renamed the Thomas J.R. Hughes Young Investigator Award in 2008.

Yuri Bazilevs



Kenji Takizawa



Xi Chen



The 2012 Thomas J.R. Hughes Young Investigator Award was given to: Yuri Bazilevs from the University of California, San Diego *“for pioneering research in isogeometric analysis, geometrically exact methods in computational mechanics, fluid-structure interaction, vascular blood flow, turbulence modeling and computation, and high-performance computing”*; Kenji Takizawa from Waseda University, Japan *“for making outstanding contributions to fluid-structure interaction modeling in the form of developing creative, accurate and diverse computational mechanics techniques, for bringing solutions to some of the most challenging fluid-structure interaction problems, and for helping with the design of the spacecraft parachutes for NASA’s next generation space program”*; Xi Chen from Columbia University *“for outstanding research achievements in new and interdisciplinary frontiers of applied mechanics, including energy conversion and harvesting mechanisms based on nanofluids, mechanics of natural and biological systems, mechanical self-assembly, and mechanics of nanomaterials and nanoindentation”*.

THOMAS K. CAUGHEY DYNAMICS AWARD

Francis C. Moon

The Thomas K. Caughey Dynamics Award was established in 2008 and is conferred in recognition of an individual who has made significant contributions to the field of nonlinear dynamics through practice, research, teaching and/or outstanding leadership.



The 2012 Thomas K. Caughey Dynamics Award was conferred on Professor Emeritus Francis C. Moon from Cornell University *“for his seminal contributions in nonlinear dynamics, including demonstrations of theoretical ideas through physical experiments, and dissemination of these ideas in a tractable way to engineers and scientists through his papers, presentations, and textbooks”*.

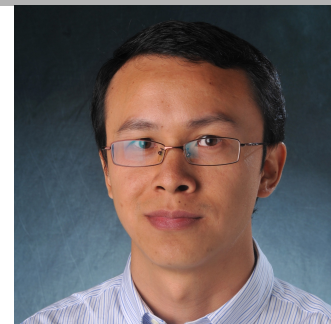
2012 HAYTHORNTHWAITE FOUNDATION AWARDS

Research Initiation Grant Awards

In 2011 the Applied Mechanics Division, through the generosity the Haythornthwaite Foundation, established a new divisional award, the **Haythornthwaite Research Initiation Grant**. This new grant targets university faculty that are at the beginning of their academic careers engaged in research in theoretical and applied mechanics. The four recipients of the 2012 grants are **Jianliang Xiao** (University of Colorado, Boulder), **Sinan Keten** (Northwestern University), **Nanshu Lu** (University of Texas, Austin), and **Shuman Xia** (Georgia Institute of Technology). The winning project titles and descriptions are provided in what follows.

Jianliang Xiao

Surface Wrinkling of 3D Shape Memory Polymer Structures. The proposed research is to study the fundamental mechanics of buckling of stiff thin films on shape memory polymers, and to develop novel strategies for fabricating ordered surface wrinkles on complex, 3D geometries. The research is directly applicable to biomedical implants, stretchable electronics, surface engineering, and 3D manufacturing.



Sinan Keten

Mechanics and self-assembly interplay in polymer conjugated protein nanotubes. The objective of the proposed research is to find a theoretical relationship between molecular building block characteristics and emergent mechanical properties of self-assembling protein nanotubes conjugated with polymers. The theoretical framework developed will help to find a way to make stable, mechanically robust peptide nanotubes that can potentially have a transformative impact on applications including thin film separation membranes, artificial ion channels inspired from biology, biomaterials and functional nanocomposites.



Nanshu Lu

In situ SEM Investigation of Graphene on Deformable Substrates. The research objective of this research project is to set up an in situ SEM testing stage to continuously monitor the sliding, cracking and wrinkling of graphene on deformable polymers. It will be able to reveal mechanical properties of graphene as well as the graphene-polymer interactions.



Shuman Xia

A Novel 3D Optical Microscope for Multiscale Deformation and Shape Measurement. The objective of this project is to develop a novel optical microscope system that is capable of measuring three-dimensional (3D) surface deformation and morphology across multiple length scales. The microscope will serve as a powerful tool for studying the deformation and failure mechanisms of complex material systems and helping to establish their structure-property relationships.





Prof. Jennifer Haythornthwaite of the Haythornthwaite Foundation presenting the Research Initiation Grant Awards at the ASME-AMD Banquet on November 13, 2012.

Student Travel Grants and Best Paper Awards

This year there were 15 recipients of the Student Travel Awards and five Best Student Paper Awards, funded by the Haythornthwaite Foundation. The best paper awards are as follows: (1st place) **Ankit Srivastava** (University of North Texas) “Porosity Evolution in a Creeping Single Crystal”; (2nd place) **Tejas Raparel** (George Washington University) “Multiple Grid & Multiple Time-scale (MGMT) Simulations in Continuum Mechanics”; (3rd place, shared) **Justin Wilkinson** (Johns Hopkins) “The role of multiscale plasticity in dynamic spall failure”, **Stavros Gaitanaros** (UT Austin) “On the Crushing Response of Open-Cell Random Metallic Foams” and **Shuze Zhu** (University of Maryland) “Hydrogenation-initiated Scrolling of Graphene into Carbon Nanoscrolls.”



Prof. Jennifer Haythornthwaite of the Haythornthwaite Foundation presenting the Best Student Paper Awards at the ASME-AMD Banquet on November 13, 2012.

NEWS FROM THE TECHNICAL COMMITTEES

The reports that follow are from some of the Chairs of the Technical Committees of the Division of Applied Mechanics. If you are interested in the activities of a particular committee, please feel free to contact the Chair.

Composite Materials Committee

Chair: Ioannis Chasiotis, University of Illinois at Urbana-Champaign (2013-2015)

Vice Chair: Valeria La Saponara, University of California, Davis (2013-2015)

This year, AMD Composite Materials Committee Meeting was held on Tuesday, November 13, 2012 at the George R. Brown Convention Center, Level Three, Room 371D, Houston, TX

27 committee members were in attendance at the meeting.

The symposia sponsored and co-sponsored by the AMD Composites Committee in IMECE 2012 were a great success. A total of 10 symposia [9-10, 9-12, 9-14, 9-20, 9-21, 9-22, 9-25, 9-26, 9-29, 9-56] were organized with an estimated total of 134 papers. Many of these symposia were co-sponsored with the Materials Division. Several papers solicited by members of this committee were eventually consolidated in sessions other than the above.

An important function of the committee this year was to elect the new vice-chair. Valeria La Saponara from the University of California at Davis received several nominations. She has been a member of this committee for many years and a very active and productive member of the composites community. Professor La Saponara was elected unanimously as the next vice-chair of the committee. Ioannis Chasiotis from the University of Illinois at Urbana-Champaign will be the new chair of the committee.

A topic that was extensively discussed was that of an undergraduate student paper competition. Several routes were proposed to obtain travel funds (NSF) and guarantee attendance (encourage faculty in Institutions in the vicinity of the IMECE site to bring their students.) Professor La Saponara will gather more information about the logistics.

The Chair opened the floor for discussion of future topics and symposia under the AMD-Composites Committee. The following symposia were proposed for IMECE in 2013:

1. Nanoscale Mechanics of Polymer Nanocomposites and Nanostructured Materials, organized by Hassan Mahfuz and Ashfaq Adban, and sponsored by AMD
2. Fatigue of Composites, organized by Xinran Xiao and David Miller and sponsored by AMD & MD
3. Materials & Meta-Materials at Varying Length Scales and Frequency Ranges, organized by Emmanuel Ayorinde, Joon Sang Lee, and Gary Witus, and sponsored by AMD
4. Composite Materials for Renewable Energy Systems, organized by Hassan Mahfuz, David Miller, and Govinda Saha and sponsored by AMD & Aerospace
5. Mechanics and Design of Cellular Materials, organized by Jaehyung Ju and Sanjeev Khanna, and sponsored by AMD & MD
6. Effects of Environmental Aging on Properties of Advanced Materials, organized by Mohammad Kamal Hossain and Shaik Zainuddin and sponsored by AMD & MD
7. Green and Biocompatible Nanocomposites, organized by Mohammad Kamal Hossain and Nazmul Islam and sponsored by AMD & MD
8. Multifunctional and Nanostructured Materials – Modeling and Characterization, organized by Jaehyung Ju and Xin-Lin Gao and sponsored by AMD & MD
9. Novel Approaches in Heterogeneous Materials Analysis and Characterization, organized by Assimina Pelegri, Valeria La Saponara and Yu Su, and sponsored by AMD & MD
10. Multi-field Studies of Composites, organized by Anastasia Muliana, Valeria La Saponara, and Rani El-Hajjar, and sponsored by AMD & MD
11. Hierarchical Nanocomposites, organized by Mohammad Naraghi and Davood Askari and sponsored by AMD & Aerospace
12. Nanocomposites, Synthesis and Performance, organized by Davood Askari, Kyriaki Kalaitzidou and Hassan Mahfuz, and sponsored by AMD & MD
13. Nano-engineered Materials for Energy Applications, organized by Gobinda Saha, and sponsored by AMD & MD
14. Effects of Defects, Damage Tolerance and Repair of Composites, organized Naveen Rastogi, Rani El-Hajjar, and Gobinda Saha, and sponsored by AMD & Experimental Mechanics
15. Materials Genome Initiative, organized by Shaik Jeelani and Vijay Rangari, and sponsored by AMD & MD

A special issue of the ASME Journal of Engineering Materials and Technology (JEMT) (Editor: Hussein Zbib) was proposed to be co-sponsored by AMD and MD that will include select papers from sponsored symposia in IMECE 2012. Valeria La Saponara would represent AMD. The special issue of JEMT was approved by Editor Hussein Zbib.

Professor Ochoa from Texas A&M University announced a student paper competition that will take place in ICCM 19. The conference will be in Montreal, Canada in July 2013. December 15, 2012 was the deadline for abstract submission.

Recent announcements by our committee members:

The 1st International Conference on Mechanics of Composites will be hosted by Stony Brook University, Long Island, New York, USA, on 8-12 of June 2014. The conference is chaired by Antonio Ferreira and Fu-Pen Chiang from Stony Brook University.

The conference website is: <https://sites.google.com/site/mechcomp2014>.

A full-length paper for review and possible publication in Composite Structures (an international journal by Elsevier) can be submitted after the conference.

Important dates:

1st September 2013 - Deadline for submission of abstracts

1st January 2014 - Deadline for discount fee

1st May 2014 - Deadline for payment

The 9th International Conference on the Mechanics of Time Dependent Materials will be held in Montréal, Canada, on May 27-30, 2014. The conference aims to foster an exchange of ideas between researchers working on solid mechanics, fluid mechanics, rheology, etc. and time-dependent aspects of different materials in order to generate new ideas and solutions for current problems. The conference features 4 keynote presentations by world-class experts on polymers, composites, metals and living tissues. The deadline for abstract submission is November 1, 2013. Further information can be obtained at: www.polymtl.ca/mtdm. Questions should be addressed to Professor Martin Lévesque, École Polytechnique de Montréal: www.polymtl.ca/lm2

Ioannis Chasiotis, Chair

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Mechanics of Soft Materials Committee

Chair: Hanqing Jiang, Arizona State University

Vice Chair: Xuanhe Zhao, Duke University

Members: (listed alphabetically) Haichao Han, Wei Hong, David Henann, Sinan Keten, Zishun Liu, Oscar Lopez-Pamies, Nanshu Lu, Toshio Nakamura, Jongmin Shim, Jeffrey Sokoloff, Konstantin Volokh, Christopher Yakacki.

The Technical Committee on Mechanics of Soft Materials in the Applied Mechanics Division of ASME has been continuing to dynamically work as a group to promote this field through organizing sessions and symposia at national and international conferences. The Committee discussed nominations for ASME awards and proposed symposia for the 2013 IMECE meeting in San Diego as a continuous effort on a successful symposium on Mechanics of Soft Materials at 2011 and 2012 IMECE. Please contact the Chair, Hanqing Jiang, for any symposium topics and award nomination.

The outgoing Chair of the Committee, Wei Hong, has done an impressive job of organizing symposium. Hong summarized the symposium organized by this Committee at 2012 IMECE conference. There were over 50 abstracts submitted to the symposium, and 49 abstracts were accepted for technical presentation. In terms of abstract number, it was the second largest symposium of the 2012 IMECE conference. Congratulations to all session organizers and participants!

It was decided that the committee would sponsor the following topics for the same symposium “Mechanics of Soft Materials” for the 2013 ASME IMECE at San Diego:

- a. Interfaces and failure of soft materials (by Sinan Keten and Nanshu Lu)
- b. Fracture of soft matter (by Wei Hong)
- c. Soft active materials (by Xuanhe Zhao, Oscar Lopez, David Henann)
- d. Mechanics of gels (by Hanqing Jiang, Zishun Liu)
- e. Shape-memory and shape-changing polymers (by Christopher Yakacki)
- f. Soft metamaterials (by Jongmin Shim)
- g. Soft nanomaterials (by Xuanhe Zhao, Sinan Keten)
- h. Tribological properties of soft materials (by Jeffrey Sokoloff)

Noticing the overlap with other symposia at IMECE conference, this Committee has discussed the opportunity to co-organize sessions with other Technical Committees, such as with Instability TC (contact point: Haichao Han) and fracture mechanics TC (contact point: Wei Hong).

Zishun Liu, as the editor of International Journal of Applied Mechanics (IJAM), expressed the interest of IJAM in publishing papers in the field of mechanics of soft materials. It is appreciated to broadcast this news.

Xuanhe Zhao proposed to invite the outgoing chair of the TC to give a keynote talk at next year’s ASME conference to express our appreciation of his/her hard work over the past year. This proposal has been unanimously passed. Wei Hong will give a keynote talk at ASME IMECE 2013.

The Committee has elected Oscar Lopez-Pamies as the secretary, and Christopher Yakacki as the editor of the Committee. Oscar will be the Vice-Chair and Christopher will be the secretary at the next committee meeting in 2013 ASME IMECE conference. The Committee editor is responsible for sending out email reminders on various awards and opportunities such as the ASME AMD student travel award and best paper award.

We welcome dynamic members of the applied mechanics community to participate in the activities of the Mechanics of Soft Materials Technical Committee.

Hanqing Jiang, Chair

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Xuanhe Zhao, Vice-Chair

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Elasticity Committee

The Elasticity Committee organized several symposia at international conferences this year. However, the committee has been mostly focused on identifying and nominating deserving

members of the mechanics community for the ASME honors and awards. These efforts proved to be quite fruitful. The recipients of the 2013 Drucker and the 2013 T.J.R. Hughes Young Investigator medals, Yonggang Huang and Wei Cai, respectively, were nominated by the elasticity committee. In addition, the committee produced one successful 2013 ASME Fellow nomination for Jon Zimmerman. The committee congratulates the awardees on their impressive accomplishments.

Pradeep Sharma, Chair

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Materials Processing and Manufacturing Committee

From the committee, Prof. Xin Wu co-chaired two symposia at IMECE 2012:

1. Hassan Mahfuz, Leif Carlsson, Jie Shen, Chi Chow, and Xin Wu, "Multi-scale modeling in Nanostructured Materials," IMECE 2012 AMD Track.
2. Xin Wu, Rama Koganti, ASME IMECE'2012-AMD Track 3 Symp. 3-11-2, "Advances in Material Forming, Applications, Tooling, and Rapid Prototyping" (chaired one section)

Xin Wu, Chair

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Harish Cherukuri, Co-Chair

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Committee on Fluid Mechanics

This year we report activities abroad, which will certainly strength our international links with the emerging countries, particularly Brazil.

1. Workshop on Verification and Validation of CFD For Offshore Flows. This was held during the 2012 OMAE in Rio de Janeiro, Brazil, the new hub for Offshore Industry, particularly after the huge discoveries in the pre-salt area, 300 km offshore. Three test cases were proposed: (i) Code Verification for a 3-D manufactured solution of an unsteady turbulent flow; (ii) Solution Verification and Validation for the flow around a smooth fixed cylinder.; (iii) Solution Verification and Validation for the flow around a straked-riser. The link for the workshop results can be found in: http://maretec.ist.utl.pt/WEB_omae2012/VV_OMAE2012.htm
2. A continuation effort is planned for the OMAE 2013 conference, to be held in Nantes, France.
3. Another exciting event was the 10th WORLD CONGRESS ON COMPUTATIONAL MECHANICS (WCCM 2012) that took place in the vibrant city of São Paulo, Brazil, 8 -13 July 2012. This tenth edition was an opportunity to meet distinguished colleagues, have a fruitful exchange of ideas and also feel the Brazilians' reputation as a warm and friendly people. With over 1800 quality papers from 92 different countries were presented in Mini-Symposia with topics such as Adaptive Meshing for Fluid Dynamics, Advanced numerical methods for fluid structure interaction, Computational Methods for Wind Engineering with Emphasis on Wind Energy, Free Surface, Moving Boundaries And Multi-Phase Flows, Frontier In Multi-

Physics CFD Simulation, Innovative Methods for Fluid-Structure Interaction, Stabilized and Multiscale Finite Element Methods, Wind Turbine Wakes, Computational fluid dynamic simulation of turbulence and coherent structures in environmental and geophysical flows, etc. The full list of Mini-Symposia can be found at: <http://www.wccm2012.com/minisymposia.asp>

Several distinguished members of our community gave plenary and semy-plenary talks at Sao Paulo, contributing to strength our bonds with the South American community. To name a few, T. J. R. Hughes, W.K. Liu (Northwestern University), and Roger Ghanem (USC).

Alvaro Coutinho, Chair
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Committee on Fluid-Structure Interaction

Another good year for the Committee on Fluid-Structure Interaction (CFSI). We focused on the following activities:

Yuri Bazilevs, Kenji Takizawa, and Tayfun Tezduyar (Rice University, former Chair of the ASME-AMD Executive Committee and Technical Committee on CFSI) published a book with John Wiley & Sons titled "Computational Fluid-Structure Interaction: Methods and Applications". The book came out in January of 2013. More details may be found at <<http://www.amazon.com/dp/0470978775/>>

CFSI organized the following conferences, short courses, and minisymposia at international conferences:

1. Tayfun Tezduyar organized the first **T.J.R. Hughes Young Investigator Awardee Symposium** at IMECE 2012. The symposium consisted of three presentations given by Yuri Bazilevs, Kenji Takizawa, and Xi Chen, the 2012 T.J.R. Hughes Young Investigator Awardees. The symposium was chaired by David Benson.
2. Yuri Bazilevs, Kenji Takizawa, and Tayfun Tezduyar organized and served as co-chairs of ACM 2013, a conference celebrating the 70th birthday of Prof. Thomas J.R. Hughes. ACM 2013 was held in San Diego, CA on February 24-27, 2013, and attracted over 400 international participants who are leading researchers in computational mechanics. The birthday conference accommodated the International Conference on Finite Elements in Flow Problems (FEF) as a special track, and a short course on Computational Fluid-Structure Interaction taught by the conference co-chairs. The short course had nearly 40 attendees.
3. Yuri Bazilevs, Kenji Takizawa, and Tayfun Tezduyar organized three minisymposia at the International Conference on Coupled Problems in Science and Engineering (Coupled Problems 2013) held in Ibiza, Spain in June 2013: Symposium on Fluid-Structure Interaction, Symposium on Biomedical Fluid Mechanics and Fluid-Structure Interaction, and Symposium on Flows with Moving Boundaries and Interfaces.
4. Kenji Takizawa, Tayfun Tezduyar, and Yohsuke Imai (Tohoku University) organized a minisymposium on Fluid-Structure Interaction at the International Computational Mechanics Symposium (ICMS 2012) held in Kobe, Japan on October 9-11, 2012. ICMS 2012 was organized by the Computational Mechanics Division of the Japan Society of Mechanical Engineers (CMS-JSME).

The following activities are planned for the future:

1. Baskar Ganapathysubramanian (Iowa State University) and Yuri Bazilevs are organizing a minisymposium titled Computational Methods for Wind Engineering with Emphasis on Wind Energy at the 12th US National Congress on Computational Mechanics (USNCCM) to take place on July 22-25, 2013.
2. Alessandro Reali (U of Pavia), Yuri Bazilevs, Dave Benson, Trond Kvamsdal (NTNU), Giancarlo Sangalli (U of Pavia), Rene de Borst (U of Glasgow), and Clemens Verhoosel (TU Eindhoven) are organizing a minisymposium titled Isogeometric Methods: A Symposium Celebrating the 70th Birthday of Prof. T.J.R. Hughes at the 12th US National Congress on Computational Mechanics (USNCCM) to take place on July 22-25, 2013.
3. A US Association for Computational Mechanics (USACM) Thematic Conference on Isogeometric Methods (IGA 2014) will take place in Austin, TX on January 8-10, 2014. The conference co-chairs are Thomas J.R. Hughes, David J. Benson, Yuri Bazilevs, Tor Dokken (SINTEF, Oslo), Trond Kvamsdal (NTNU and SINTEF, Trondheim), and Alessandro Reali.
4. Advances in Computational Fluid-Structure Interaction and Flow Simulation, a Conference Celebrating the 60th birthday of Tayfun Tezduyar will take place in Tokyo, Japan on March 19-21, 2014. The conference co-chairs are Kenji Takizawa and Yuri Bazilevs. Visit < <http://www.tafsm.org/TET60/>> for more details.
5. Yuri Bazilevs, Kenji Takizawa, and Tayfun Tezduyar will give a two-day short course on Computational Fluid-Structure Interaction on July 19-20, 2014 in Barcelona, Spain. The short course will be offered in connection with the World Congress on Computational Mechanics (WCCM 2014). For more details, visit < <http://www.tafsm.org/BarcFSI2014/>>.

Announcement: As of July 1, 2013 Yuri Bazilevs will step down as the chair of the CFSI technical committee, and will be replaced in this role by Kenji Takizawa. Prof. Ming-Chen Hsu (Iowa State University) will assume the responsibilities of the CFSI vice chair. We welcome Ming-Chen to the CFSI leadership.

Yuri Bazilevs, Chair

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Kenji Takizawa, Vice Chair

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Committee on Integrated Structures

Chair: Nanshu Lu (University of Texas at Austin)

Co-chair from industry: Nathan Wicks (Schlumberger)

Committee members: Teng Li (University of Maryland), Rui Huang (University of Texas at Austin), Kejie Zhao (MIT), Xiaohu Liu (IBM), Yucun Lou (Schlumberger), Zhen Zhang (Microsoft).

The Technical Committee (TC) on Integrated Structures in the Applied Mechanics Division of ASME has been continuing to work together to build a stronger and diversified community by integrating scholars and researchers from both academia and industry. We would like to take the chance to

thank Dr. Teng Li (University of Maryland) for his consistent service to our committee since 2006 and for his leadership as the TC chair since 2008. At the upcoming 2013 IMECE in San Diego, we will welcome Dr. Nanshu Lu (University of Texas at Austin) to serve as the new chair of our committee.

Our TC continues to work hard and build momentum through organizing sessions at national and international conferences. For example, we have organized a topic area in Mechanics of Integrated Structures and Materials in Advanced Technologies with eight sessions at the 2012 IMECE in the Track of Mechanics of Solids, Structures and Fluids. For upcoming conferences, our TC is organizing the same topic area at the 2013 IMECE. The committee members who have participated in the session organization are: Nanshu Lu, Nathan Wicks, Teng Li, Rui Huang, Kejie Zhao, Xiaohu Liu, Yucun Lou, and Zhen Zhang. Topics of interests include, but not limited to the following areas: mechanics and materials in energy systems, low-dimensional carbon materials, flexible and stretchable electronics and photonics, microelectronics, electronic and photonic packaging, MEMS/NEMS, and mechanics and materials in oil field. Except for ASME, our committee members are also active in organizing symposiums for other national and international congresses. For example, Nanshu Lu is one of the organizers for the Symposium of Compliant Energy Sources at the 2012 Materials Research Society (2012) Fall Meeting. Rui Huang is one of the organizers for the Symposium of Mechanics and Physics of Soft Matter and Nanshu Lu is one of the organizers for the Symposium of Mechanics of Membranes and Biomembranes at the Thirteenth Pan-American Congress of Applied Mechanics (PACAM XIII) in Houston. Kejie Zhao is one of the organizers for the Symposium of Lithium Ion Batteries at the 50th Society of Engineering Science (SES) meeting at Brown University.

We would like to thank our colleagues and friends who have contributed to our TC in the past years and we would like to encourage more members of the Applied Mechanics community to participate in the activities of the Integrated Structures Technical Committee as well as providing suggestions and help. Thank you.

Nanshu Lu, Secretary

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Nathan Wicks, Co-chair

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Experimental Mechanics Committee

The Experimental Mechanics Technical Committee met on Nov. 12, 2012 at George R. Brown Convention Center, Houston, TX. The meeting was attended by Frank Delrio (National Institute of Standard and Technology), Rani El-Hajjar (University of Wisconsin-Milwaukee), Soma Kandula (Intel Corporation), Brian Bush (NIST), Shuman Xia (Georgia Tech), Ryan Berke (Ohio State University), Philippe Geubelle (University of Illinois at Urbana-Champaign), John Lambros (University of Illinois at Urbana-Champaign), and Sanjeev Khanna (University of Missouri). The committee discussed the symposia held at 2012 IMECE and proposed symposia for 2013 IMECE. The committee also elected Rani El-Hajjar to be the incoming secretary whose term will start on July 1, 2013.

The next committee meeting will be held in San Diego, CA in November 2013. We look forward to seeing everyone at the conference, and welcome everyone to attend our symposia:

- **Modeling and Experiments in Nanomechanics and Nanomaterials**
Yozo Mikata (Bechtel) and Jeff Kysar (Columbia University)
- **Mechanics of adhesion and friction**
Jianliang Xiao (University of Colorado at Boulder), Frank DelRio (NIST), Yong Zhu (North Carolina State University)
- **Mechanics of Electrochemical Energy Storage Materials**
Shuman Xia (Georgia Tech), Ting Zhu (Georgia Tech)
- **Applications and Challenges in Full-Field Experimental Methods**
Rani El-Hajjar (University of Wisconsin-Milwaukee), Michael Mellow (Georgia Tech)

Junlan Wang, Chair

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Frank DelRio, Vice Chair

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Dynamics and Control of Systems and Structures Committee

At the upcoming ASME IMECE 2013, Albert Luo, Dumitru Caruntu, and Liming Dai are the organizers of Track 4 Dynamics, Vibration and Control, and Ahmed Al-Jumaily the Organizer of Track 3 Biomedical and Biotechnology. DCSS committee members organized 16 symposia totaling a number of 208 papers and 43 sessions at the upcoming ASME IMECE 2013 as follows.

Dumitru I. Caruntu, Marco Amabili, and Bogdan Epureanu, organized 3 symposia spread over 2 tracks and 9 sessions and totaling 53 papers: (a) Symposium on Dynamics and Control of Biomechanical Systems, Track 3 Biomedical and Biotechnology Engineering, Organizers: Dumitru I. Caruntu, Bogdan Epureanu, (b) Symposium on Nonlinear Dynamics, Control, and Stochastic Mechanics, Track 4 Dynamics, Vibration and Control, Organizers: Dumitru I. Caruntu, Bogdan Epureanu, and Marco Amabili, (c) and Symposium on Dynamics and Control in Micro/Nano Engineering, Track 4 Dynamics, Vibration and Control, Organizers: Dumitru I. Caruntu, Bogdan Epureanu, Marco Amabili, and Andrew Dick.

Ahmed Al-Jumaily, Albert Luo, Hamid Hamidzadeh, Liming Dai, Matthew Brake, Andrew Dick, Ioannis Georgiou, Annie Tangpong, Weidong Zhu, Hornsen Tzou, Chin An Tan, and Reza Jazar organized 13 symposia, in Track 3 and Track 4, spread over 34 sessions and totaling a number of 155 papers: (a) Biomedical and Biotechnology Plenary Presentation, Track 3 Biomedical and Biotechnology Engineering, Organizer: Ahmed Al-Jumaily, (b) Symposium on Vibration and Acoustics in Biomedical Applications, Track 3 Biomedical and Biotechnology Engineering, Organizer: Ahmed Al-Jumaily, (c) Symposium on Vibration and Control of Mechanical Systems, Track 4 Dynamics, Vibration and Control, Organizers: Albert Luo, Hamid Hamidzadeh, (d) Symposium on Controls Theory and Application, Track 4 Dynamics, Vibration and Control, Organizers: Majura Selekwa, Mathew Brake, Andrew Dick, Mark Bedillion, (e) Symposium on Multi-field Coupling of Smart Structures and Structronic Systems, Track 4 Dynamics, Vibration and Control, Organizers: Hornsen Tzou, Hua Li, Shundi Hu, (f) Symposium on Vibration & Noise Control and Damping Technologies, Track 4 Dynamics, Vibration and Control, Organizers: Huancai Lu, Bongsu Kang, Chin An Tan, (g) Symposium on Novel Control of Dynamic System and Design, Track 4 Dynamics, Vibration and Control, Organizers: Steve Suh, Weidong Zhu, Meng-Kun Liu, (h) Symposium on Nonlinear Dynamics and Diagnostics-Control of Multi-physics Structures and Materials, Track 4 Dynamics, Vibration and Control, Organizers: Ioannis Georgiou, (i) Symposium on Renewable Energy, Structural Health Monitoring, and Distributed Structural Systems, Track 4

Dynamics, Vibration and Control, Organizers: Weidong Zhu, Steve Suh, (j) Symposium on Optimal Approaches in Nonlinear Dynamics and Acoustics, Track 4 Dynamics, Vibration and Control, Organizers: Liming Dai, Reza N. Jazar, Lin Sun, (k) Symposium on Impact Dynamics, Track 4 Dynamics, Vibration and Control, Organizers: Matthew Brake, (l) Symposium on Dynamics of Structures with Frictional Interfaces/Joints, Track 4 Dynamics, Vibration and Control, Organizers: Ioannis Georgiou.

Dumitru I. Caruntu, Chair

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NEWS FROM THE ASME-AMD JOURNALS

Journal of Applied Mechanics

The recently published July 2013 issue of JAM focuses on carbon nanomaterials. The issue includes contributions from Brinson (Northwestern), Buehler (MIT), Dunn (Colorado), Gao (Brown), Rui Huang and Liechti (UT Austin), Teng Li (Maryland), Bin Liu (Tsinghua), Needleman (North Texas) and Greer (Caltech), Pugno (Trento), Jizhou Song (Miami) and Yonggang Huang (Northwestern), Yakobson (Rice), Wei Yang (Zhejiang), Yongwei Zhang (IHPC, Singapore), and Quanshui Zheng (Tsinghua).

The journal, with support from ASME-AMD, established a new Journal of Applied Mechanics Award. For the award description see next section.

Yonggang Huang

Editor, Journal of Applied Mechanics

Applied Mechanics Reviews

Through a series of targeted and strategic initiatives, collaborations, and innovations in format, content, and structure, *Applied Mechanics Reviews* (AMR) is emphasizing core publishing values of relevance and accessibility to journal readers and contributors. With these changes, the journal is striking a new balance between immediate dissemination and archival repository, placing an emphasis on AMR as a venue in service of the readers and contributors of the entire panoply of ASME Technical Journals.

Applied Mechanics Reviews is served by an editorial board of *Section Editors* and *Associate Editors*. Section Editors serve as lead sources of creativity and initiative and work closely with the Editor to ensure the integrity and quality of the journal. Associate Editors handle the review process and collaborate with the Editor in soliciting invited contributions to the journal. In 2012, the following six new Section Editors joined the Applied Mechanics Reviews Editorial Board:

- Prof. Ellen Arruda of the Department of Mechanical Engineering, the Program of Macromolecular Science and Engineering, and the Department of Biomedical Engineering at University of Michigan.
- Prof. Matthew Begley of the Department of Mechanical Engineering at University of California, Santa Barbara
- Prof. Dan Henningson of the Department of Mechanics at KTH Royal Institute of Technology in Stockholm, Sweden.
- Prof. Christine Ortiz of the Department of Materials Science and Engineering at Massachusetts Institute of Technology.
- Prof. K.T. Ramesh of the Department of Mechanical Engineering at Johns Hopkins University.
- Prof. Roberto Vericco of the Department of Mechanical Engineering at Università di Roma “Tor Vergata” in Rome, Italy.

Also, in 2012, the following eleven new Associate Editors were added to the editorial board:

- Prof. Francois Barthelat of the Department of Mechanical Engineering at McGill University in Montreal, Canada.
- Prof. Herman Clercx of the Department of Applied Physics at Eindhoven University in Eindhoven, the Netherlands.
- Prof. Bettina Frohnepfel of the Institute of Fluid Mechanics at Karlsruhe Institute of Technology.
- Dr. Ardeshir Hanifi of the Swedish Defense Research Agency.
- Prof. Gianluca Iaccarino of the Department of Mechanical Engineering at Stanford University.
- Prof. Ellen Kuhl of the Department of Mechanical Engineering at Stanford University.
- Prof. Xiaodong Li of the Department of Mechanical Engineering at the University of South Carolina.
- Prof. Toshio Nakamura of the Department of Mechanical Engineering at SUNY Stony Brook.
- Prof. Bart Prorok of the Department of Materials Engineering at Auburn University.
- Prof. Prashant Purohit of the Department of Mechanical Engineering and Applied Mechanics at the University of Pennsylvania.
- Prof. Jörg Schumacher of the Department of Theoretical Fluid Mechanics at the University of Ilmenau in Ilmenau, Germany.

In addition, the following Associate Editors were renewed for a second term:

- Prof. James Riley of the Department of Mechanical Engineering at the University of Washington
- Prof. Chin An Tan of the Department of Mechanical Engineering at Wayne State University.

I am excited to be able to offer in service of the community such a high-caliber group with diverse disciplinary and professional perspectives. I look forward to sharing with you the innovations in archival publishing that they will be instrumental in realizing over the next months and years.

Among many initiatives with publication targeted for late 2013 and early 2014 are featured issues of Applied Mechanics Reviews in collaboration with ASME Journal of Pressure Vessel Technology, ASME Journal of Vibration and Acoustics, the Society of Engineering Science, the Midwest Mechanics Seminar Series, and the Nordic Institute of Theoretical Physics. In the near future, a new podcast-based publishing format will also be featured on the AMR pages on the ASME Digital

Collection (<http://asmedigitalcollection.asme.org>). For more information about the journal purpose and scope and forms of contribution, please follow the link for “Scope” on the AMR pages.

Applied Mechanics Reviews is open for business, but with a publishing model that is pro-active and intensely focused on added and long-lasting value. I welcome your contribution and look forward to working with you to realize the dissemination of your work and the Applied Mechanics Reviews vision.

Harry Dankowicz
Editor, Applied Mechanics Reviews

NEW AWARDS

The Journal of Applied Mechanics Award

The Journal of Applied Mechanics Award is provided by the Applied Mechanics Division of the American Society of Mechanical Engineers to honor the best paper, which has been published in the Journal of Applied Mechanics during the two calendar years immediately preceding the year of the award. The award will be made annually to the corresponding author of the paper who received their Ph.D. no more than 10 years prior to July 1 of the year of award. Corresponding authors who have yet to receive a Ph.D. may also be considered. The award will be presented at the AMD Banquet at the IMECE meeting. The award is selected by a committee appointed by the Technical Editor of JAM, with the Vice Chair of AMD Executive Committee as the committee chair. The 2013 Journal of Applied Mechanics Award goes to **Dr. Asha Nurse** (NIST) for her paper "A Model of Force Generation in a Three Dimensional Toroidal Cluster of Cells" The award will be presented at the AMD Banquet at the ASME International Mechanical Engineering Congress & Exposition in November 2013. For more details see <<http://imechanica.org/node/14643>>.

Eshelby Mechanics Award for Young Faculty

The Eshelby Mechanics Award for Young Faculty was established in 2012. This award is given annually to rapidly emerging junior faculty (below the age of 40) exemplifying the creative use and development of mechanics. The intent of the award is to promote the field of mechanics, especially among young researchers. While interdisciplinary work that bridges mechanics with physics, chemistry, biology and other disciplines is encouraged, the ideal awardee must demonstrate clear inspiration from mechanics in his/her research. The award, although unaffiliated with any society, is created by the members of the mechanics community and will be conferred by an independent committee consisting of distinguished mechanicians. The inaugural 2012 award is given to two faculty: **Vicky Nguyen** (Johns Hopkins University) and **Kaushik Dayal** (Carnegie Mellon University). The 2012 selection committee consisted of Professors Kaushik Bhattacharya (Caltech), Roger Fosdick (University of Minnesota), Yonggang Huang (Northwestern University), Huajian Gao (Brown University), and K. Ravichandar (UT Austin).

IN MEMORY OF DR. STEPHEN JUHASZ



Dr. Stephen Juhasz in 2010 at the Institute for Texan Cultures at UT, San Antonio.

Dr. Stephen Juhasz passed away on June 19, 2013 at the age of 99 years. Steve has had many years of involvement with the mechanics community as the editor of Applied Mechanics Reviews. He was an active figure in the ASME and IUTAM, and will be missed by the mechanics community. The highlights of Steve's life are as follows:

Juhasz received his Dip. Ing. From Budapest Technical University in 1936; Teknologie Licensiate (doctorate) from the Royal Institute of Technology, Stockholm, in 1951; and an Honorary Doctorate of Engineering from Budapest Technical University in 1989. He came to the US in 1952 and joined the research staff of MIT working in the fields of thermodynamics and heat transfer. In 1954 Juhasz moved to the Midwest Research Institute in Kansas City, MO as the Editor of Applied Mechanics Reviews (AMR), and one year later moved with the editorial office to the Southwest Research Institute in San Antonio, TX, where he became the Executive Editor of AMR in 1960. He remained in that position until his retirement in 1984. His tenure was widely recognized as a noteworthy contribution to the worldwide research activity in mechanics. From 1984 until his recent death, Juhasz remained active in professional affairs, especially working with local chapters of technical societies. He also became an authority in the field of descriptive geometry and created a wonderful laboratory for demonstrating virtual and interactive geometric principles as an Adjunct faculty in the Dept. of Mathematics of the University of Texas at San Antonio, presenting many lectures to a wide variety of audiences. Juhasz received many professional honors for his work, including the ASME Frank von Flue Medal.