



APPLIED MECHANICS DIVISION

Report of the Chair



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SUMMER NEWS 2006

KENNETH M. LIECHTI, EDITOR

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News from the Technical Committees

Wing Kam Liu

I have had the honor to serve on the Executive Committee (EC) of the Applied Mechanics Division (AMD) for the past five years. It is indeed my pleasure to work with Tom Farris, K. Ravi-Chandar, Dan Inman, and Zhigang Suo, who are the four other AMD EC members working on the various AMD exciting activities. In the past year, we had a wonderful summer meeting and strong participation at the IMECE meeting. The Journal of Applied Mechanics and our technical committees, as reported in this newsletter, had another successful year that we are extremely proud of and we really appreciate their very valuable services. I am delighted to announce that Tayfun Tezduyar of Rice University will be my replacement who will bring in an extra dimension that this committee currently does not have fluid mechanics.

The AMD participation in the 2005 IMECE in Orlando was once again very strong with a total of 64 sessions. For the first time, the Division experimented with organizing a poster session to accommodate overflow of papers. The success of this effort is still to be determined as we pursue this in the following years; discussions are underway to develop poster sessions more formally with dedicated time-slots and awards. Our thanks go to our 2004 Program Chair Krishnaswamy Ravi-Chandar as well as the Chairs of our Technical Committees who coordinated sessions within each area. Each year, our program chair has worked closely with the rest of ASME to garner as many sessions as possible; this task of obtaining and distributing sessions is not always pleasant or optimal. AMD's demand for sessions has always been significantly larger than the supply and this is a strong indication of the vitality of our field! Discussions are ongoing both within AMD and in ASME regarding the best strategy to satisfy our needs for sessions at the annual meetings and ASME's ability to accommodate this within the larger context of the IMECE. In the meantime, Technical Committees are encouraged to take advantage of organizing more sessions in the Summer conferences since typically these are within the control of local organizers and AMD has much greater access.

In January 2006, with the encouragement of the Executive Committee, a group of AMD members initiated Applied Mechanics News (AMN), a blog of news and views of interest to the international community of Applied Mechanics, accompanied by sister blogs covering research and researchers, conferences, and jobs, all hosted by a free service blogger.com. Within weeks, AMN topped the list on Google, Yahoo and MSN for the query of applied mechanics news. By late May 2006, the four sister blogs had a total of over 38,000 page loads, and on average over hundred unique visitors every day, from all over the world. The Internet has enabled AMN to be international and inter-organizational. The news can be updated continuously by large teams of volunteers. Please visit AMN at <http://amdnews.blogspot.com>. If you would like to post an entry or be a team member, please contact one of the team leaders of the four sister blogs:

Applied Mechanics News: Zhigang Suo (suo@deas.harvard.edu)

Applied Mechanics Research and Researchers: Shaofan Li (shaofan@berkeley.edu)

Applied Mechanics Conferences: Ashkan Vaziri (avaziri@deas.harvard.edu)

Applied Mechanics Jobs: Wei Hong (whong@deas.harvard.edu)

Over the past few years, ASME has been undergoing a dramatic reorganization. In February 2005, a Congress Strategic Planning Committee was formed and below is their recommendation: The Committee recommends an integrated, three-part solution to the problem it was assigned:

- A revision to the current Congress event to build on its perceived strength as a high-quality research and innovation conference for the research and academic community. This requires separating from the technical conference those components that do not serve this end well, that create resource and planning problems and that distract resources and attention from making this conference the premier research/innovation event.
- The creation of an “annual general meeting” for the Society’s membership – something that ASME does not currently have. This is envisioned as a “signature event” serving the Society’s broader purposes with program content planned to appeal to the technical, career and personal growth needs of the Society’s members; an event that will provide them with valued information and connections, that will reach out to better engage the various communities ASME serves, and that will attract, over time, a respectable portion of the membership to the event. The Committee recommends that the current Summer Annual Meeting evolve from a purely governance meeting to this annual meeting for members.
- A series of small, tightly-focused events that address specific challenges and problems faced by industrial companies by taking advantage of ASME’s position as a neutral, third-party convener. These symposia would be application and solution oriented, based on real and current problems uncovered through market research and input from sources like the Industry Advisor Board and would convene acknowledged experts to share information and advice on addressing the specific problems that are the topics of each event.”

One of the Highlights of the AMD Chair is presiding at the Banquet to reward our distinguished members for their outstanding contributions to the field of applied mechanics. Grigory I. Barenblatt of University of California at Berkeley received the Timoshenko Medal for seminal contributions to almost every area of solid and fluid mechanics, including fracture mechanics, turbulence, stratified flows, flames, flow in

porous media, and the theory and application of intermediate asymptotics. Raymond Ogden of the University of Glasgow in Scotland, UK was awarded the Warner T. Koiter Medal for his seminal contributions to nonlinear elasticity, its mathematical foundations and its applications. The Daniel C. Drucker Medal went to Robert L. Taylor of University of California, Berkeley for pioneering contributions to computational solid mechanics and, in particular, for the development of methods and software used worldwide for the calculation of inelastic response of structures. The AMD recognized Carl T. Herakovich with the Applied Mechanics Division Award for his distinguished contributions to mechanics of fibrous composite materials, and his distinguished service to the mechanics and engineering science community. The AMD recognized George Haller and L. Mahadevan who received the Young Investigator Awards. George Haller of MIT was honored for his seminal contributions to nonlinear dynamics, including the development of analytic theories for chaos near resonance and for unsteady separation in fluid flows; and L. Mahadevan of Harvard was honored for his significant research contributions in elasticity and hydrodynamics, especially for low dimensional systems like crumbling sheets and buckling fluid filaments, and in the physics of granular materials.

A small fund-raising committee chaired by Paul C. Jennings, Provost of Caltech, has been recently established to raise the \$45,000 required by ASME to establish a permanent award in memory of the late Professor Thomas K Caughey, Richard L. and Dorothy M. Hayman Professor of Mechanical Engineering, Emeritus, at the California Institute of Technology, who passed away on 7 December 2004, at the age of 77. This society-wide award would be given annually to a deserving individual in the broad field of dynamics, and would be called the "Thomas K. Caughey Medal." Professor Caughey was, for many years, heavily involved in ASME activities. He was a former editor of the Journal of Applied Mechanics. In recognition of his major contributions to the Applied Mechanics field, he was honored with the ASME Den Hartog Award in 1995. Professor Thomas K. Caughey was without a doubt one of the most influential members of the vibration community. His contributions are without equal, and have touched every engineer currently working in the field. Even before the formal launching of the activities of this committee, more than \$20,000 of the needed funds have already been donated. Individuals wishing to contribute to this endeavor can send their contribution to:

ASME Foundation

Attn: "Thomas Caughey Award Endowment"

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In closing, I wish to thank Kenneth Liechti of the University of Texas who has edited the AMD newsletter for the past five years, and Vicky Nguyen who served as our recording secretary for the past year. Although my term with the AMD EC is up, I will continue to serve on the Honors and Awards committee for the next five years. I look forward to seeing you at the summer and IMECE meetings! I am confident that Tom Farris, the incoming chair will lead AMD to the next level.

Wing Kam Liu, Chair

TIMOSHENKO MEDAL



GRIGORY ISAAKOVICH BARENBLATT



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. This year the medal was awarded to GRIGORY ISAAKOVICH BARENBLATT, Ph.D., professor in residence, department of mathematics, University of California at Berkeley; and mathematician, Lawrence Berkeley National Laboratory, California, *for seminal contributions to nearly every area of solid and fluid mechanics, including fracture mechanics, turbulence, stratified flows, flames, flow in porous media, and the theory and application of intermediate asymptotics.*

Applied Mechanics: an age old science perpetually in rebirth

By Grigory I. Barenblatt

Mr. Chairman, Colleagues, Ladies and Gentlemen

I want to express my gratitude to the Executive Committee of the Applied Mechanics Division of the American Society of Mechanical Engineers for nominating me for the Timoshenko Medal, and to the Board of Governors for awarding me the Medal on behalf of ASME.

The personality and name of Stepan Prokofievich Timoshenko (Stephen P. Timoshenko as he is called in this country) is very special for me. When I was a beginning student at Moscow High Technical School, where I studied before entering the Mathematics Department at Moscow State University, I purchased his book “The theory of elasticity”. In fact, this was the first technical book in my personal library. The clarity and depth of the presentation of this difficult subject was then and remains now for me an unsurpassed standard. Something in this book astonished me, and I addressed a question to my maternal grandfather, an eminent Professor of Differential Geometry at Moscow State University. (I was raised by his family after my mother, one of the first virologists, perished preparing a vaccine against encephalitis.) The question was: the author is definitely a Russian (at that time in our circles nobody noticed the difference between Russians, Byelorussians, and Ukrainians). Why did his book appear in translation from English? Grandfather explained - Timoshenko emigrated after the Revolution (such people were unpopular in the Soviet Union in the late forties) - however, with a kind smile he took from his library and presented me with Timoshenko’s course on elasticity in two volumes, published in Russian in 1914 and 1916 by the Saint Petersburg Institute of Railways Transportation, and presented to him by the author. SP got the chair at this Institute after some period of unemployment: before that he was Dean at Kiev Polytechnic Institute and was fired by the Minister of Education for substantially exceeding the number of admitted Jewish students allowed by explicitly formulated (this was important) norms. Visiting my family in Moscow last summer after learning about the award, I wanted to bring these volumes to this country, but I was warned that strict rules concerning old books would not allow it. When I already was a young scientist, I was

introduced to SP during his visit to Moscow. Also, I was proud when I had seen that SP and James P. Goodier mentioned my work concerning fracture in their book.

Much later when, by the initiative of Joseph B. Keller and Milton D. Van Dyke, Dean Thomas Hughes nominated me for the Timoshenko Professorship at Stanford University I spent many happy hours working in the Timoshenko Room at the Durand Applied Mechanics Building where there is exhibited a remarkable portrait of Stepan Prokofievich. I am deeply grateful to all of them for granting me this unique experience. My collaboration with my eminent colleague and now close friend Alexandre J. Chorin started shortly before that at Berkeley and continues to this day. Alexandre visited me for working together at Stanford; therefore in one of our joint works my affiliation is Stanford University.

Mechanical Engineering and Applied Mechanics, as its part, are among the first and greatest intellectual achievements of mankind. The names of Archimedes and Galileo are known to everybody. I am sad to say that nowadays these disciplines are not popular among bright young people choosing their career. And this tendency is not a new one: it started rather long ago, apparently in the twenties. As you know, G.I. Taylor, one of the first winners of the Timoshenko Medal, worked all his life at Cavendish Physical Laboratory in Cambridge. J. J. Thompson, Lord Ernest Rutherford, Sir Lawrence Bragg, great men of science, all of them Nobel Prize winners, were the Directors of the Cavendish Laboratory during G.I.'s time. According to E.N. da C. Andrade, brilliant physicists at Cavendish who created at these times pioneering works, such as 'smashing' the atom, discovering X-ray radiation coming from stars, researching the structure of hemoglobine and mioglobine and, finally founding the double spiral, expressed their astonishment at how such a brilliant person as G.I. Taylor could spend his life dealing with such dull and old stuff as applied mechanics. I want to give a definitive answer. Yes, mechanical engineering and applied mechanics are old art and science. But they are also young because they are eternal art and science. It is very sad that the attitude towards mechanical engineering and applied mechanics as something of secondary interest entered the consciousness of a large and influential part of society, and this attitude cannot leave their children - future students - unaffected.

Allow me another instructive example. Years ago when I had to renew my American visa, I visited the American Consulate in Rome. Strong letters in support of my application preceded my visit to the Consulate, and I was told that the American Consul decided to process my application personally - a rare distinction. So, I was escorted to the Consul immediately and I was shocked: the Consul happened to be a rare beauty in her flourishing age: blue eyes, luxurious black hair, a truly unforgettable impression ... She understood that I was impressed, and she waited a little in asking ordinary questions, and did her job. When only a small, purely technical part of the job remained, she asked her secretary to do it, and said: "Professor, now we have 5-10 minutes. Could you tell me what you have done in your science to deserve such letters of support?" At that time our group (Professor A.J. Chorin, Dr. V.M. Prostokishin and myself) were working intensively on investigating the scaling laws for turbulent flows in pipes and other shear flows. We came to the conclusion that the fundamental universal logarithmic law which was in use for several decades is not quite correct, and should be abandoned and replaced by a different Reynolds- number-dependent scaling law. I have to admit that many people at that time, and some of them up to now, consider our results as controversial. However, the formulae and all available experiments definitely speak in our favor. I remind you that many similar situations have occurred in the history of science, and not only in

science. For instance, when an essay of Maurice Maeterlinck, who won the Nobel Prize for his 'Blue Bird', was included in the Index Prohibitorum by the Catholic Church, Maeterlinck wrote "At every crossing the road that leads to the future, each progressive spirit is opposed by a thousand men appointed to guard the past." In our case, these men can also be understood: if we are right, text-books and lecture courses should be changed and you have to bear in mind that the universal logarithmic law is taught every year in a thousand universities and polytechnic institutes. We continued to defend the truth in our seminars, lectures and publications. I had no choice: my great mentor Andrey Nikolaevich Kolmogorov, whose name is known to everybody in this audience, said: "I have lived being guided by a principle that the truth is a blessing, and our duty is to find it and to guard it."

I return to the unforgettably charming lady Consul. I decided: obviously the elegant lady who starts and finishes her days by using the flow in pipes should be interested in such work. And I did my best to present our results in the short time given to me. The Beauty - Consul - looked at me (with her wonderful dark blue eyes!) and said: "Professor, of course, what you said is interesting, even exciting. However, frankly speaking, I am astonished. When we have some problems with pipes, we address a plumber, not a professor with a world-wide reputation!" I was ashamed, and up to now I have a feeling of personal guilt. Indeed, now we know the structure of remote stars better than the strength of a shuttle or a dam and contrary to astronomers and astrophysicists how little we do to explain in particular to younger generations the fundamental depth and beauty of our profession and to popularize it.

Money is not yet wealth. And the leading nations of the XXI century will not necessarily be the countries having more money than others. These will be the nations where great national and global problems will be understood and appreciated by the majority of their populations. The heroes of these nations will be engineers and scientists of great vision and ability to select and explain the problems of primary importance, and to achieve the support, governmental and private, necessary to solve these problems, leading to engineering achievements that bless society.

Such engineers and scientists of great vision and organizing abilities do exist; they are among us. In due time and favorable circumstances they appear and make steps of historic importance. It is enough to remember here John Rockefeller, Thomas Aha Edison, Henry Ford, Robert Oppenheimer, Howard Hughes, and more recently W.R. Hewlett, D. Packard, and William Gates.

A remarkable example, less known, is Leo Szillard, an American physicist of Hungarian origin. It was he who recognized the practical necessity of designing the atomic bomb. He prepared the text of the letter to President Franklin D. Roosevelt, where the crucial importance of immediately starting work on the construction of the atomic bomb was emphasized in strong terms. This text was signed (not very enthusiastically) by Albert Einstein. Roosevelt decided to decline Einstein's proposal (it is difficult to believe now, but it is possible to understand FDR: the country at that time had to carry the tremendous burden related to supplying the American Army and Allies by ordinary weapons and ammunition). When Szillard learned about the negative decision in preparation, he found a personal friend of FDR, explained to him the problem, its importance and urgency, and persuaded him to interfere. The friend visited FDR, and after dinner asked him only one question: "Frank, do you think, if in 1812 Napoleon had not turned down Fulton, the inventor of the steamer, the world map would be nowadays

the same?" And FDR gave the order to start the work. The scale and value of this work - the Manhattan Project - is well known.

However, the common opinion of the layman, even scientific and engineering laymen, is that nowadays there are no such problems of the scale of the Manhattan Project whose importance for the nation and the world is understood by everybody. This is deeply wrong! Such problems do exist, and they can be understood by everybody. First of all, among these problems are large-scale natural disasters, and energy problems. I will present several examples: tropical hurricanes. The scales of these disasters are huge, and the morale and material losses are formidable. I want to emphasize here that in fact hurricanes present a fascinating problem of applied mechanics. And, in general, Sir James Lighthill, one of the first winners of the Timoshenko Medal, considered natural disasters, in particular, hurricanes, as problems of first importance for applied mathematics and mechanics.

As far as hurricanes are concerned, the situation is as follows. As a preliminary note, I want to mention a simple calculation, by which A.N. Kolmogorov started his course on turbulence at Moscow State. He asked the listeners: What will the velocity be at the surface of the river Volga in Russia (close by its parameters to the Mississippi in this country) if by some miracle it becomes laminar? The answer was striking: hundreds of thousands of miles per hour! Why then is it kept so slow? The reason is that the flow is turbulent: it is stuffed with turbulent vortices, and these vortices play the role of brakes, slowing the flows. An analogy: moving along mountain slopes, drivers use chains to cover the wheels - the vortices play the role of such chains.

Sir James Lighthill proposed, on the basis of many observations, a "sandwich model" of hurricanes. According to this model in the ocean during a hurricane there exist three layers: air, sea, and "ocean spray" between them, where "the third fluid" is contained; in fact, air suspension of droplets, sometimes sufficiently large, tens of microns in diameter.

Our group (Professor A.J. Chorin, Dr. V.M. Prostokishin and myself) considered, under some natural assumptions, turbulent flow of ocean spray. The general theory of turbulent flows carrying heavy particles, developed earlier by A.N. Kolmogorov and myself, at that time his graduate student, was used in this consideration. It happened that the droplets reduce turbulence intensity, because turbulent vortices spend a significant part of their energy for suspension of droplets. Returning to the analogy with wheel chains - the chains that are worn out or become weaker. The flow accelerates under the same pressure drop. Our calculations showed that this acceleration can be very large, reaching velocities of large tropical hurricanes.

I note that the same mechanism of acceleration of turbulent flows by heavy particles was noticed earlier in the great Chinese rivers Yangtze and the Yellow River, carrying a large amount of sediment, and in dust storms, both terrestrial and Martian. And the basic question arises: is it possible to prevent, or at least reduce the strength of tropical hurricanes? Our answer is affirmative, but it requires the serious large scale work of the mechanical community. The technical problem is to suppress the formation of droplets. In principle it can be done by pouring oil on the surface of the sea. By the way, such practice is known from ancient times when on the decks of vessels several barrels of oil were reliably strengthened, and in critical circumstances the oil was poured overboard. It was noticed that the intensity of the squall was quickly reduced. There exist several attempts to explain this phenomenon, but according to our viewpoint the basic effect is the suppressing of the formation of droplets. By the way, up to now the recommendations

for sailors on small boats to pour oil are routinely proposed in the literature. Of course, the oil (or some detergents which also are recommended for using under such circumstances) should be safe. There are several candidates for such materials. And I repeat - a group of enthusiasts headed by young, energetic leaders can solve this problem and do it in real time - the witches like the recent Katrina should never threaten New Orleans and other remarkable cities.

Our paper was published in PNAS a month before Katrina, and it attracted the attention of PR. I was interviewed by TV - after a preliminary make up - and when the lady, senior in the team, was asked by someone who was present, when this interview would be aired, the answer was instructive: "We have to wait for a good hurricane, then more people will pay attention."

The problem of forest fires, also very sensitive for the world (remember, e.g., Portugal this summer), bears some similarity to hurricanes. During a forest fire a dark layer is formed above the trees where the debris and soot are moving. They suppress turbulence in the same way as droplets in ocean spray: that is apparently the reason for strong winds and even firestorms.

Another very important matter. I think that an honest analysis, deeply based on scientific consideration of natural and technogenic disasters can be not less but very often more exciting and important than great projects like Manhattan and all these cosmology and particle acceleration enterprises. There is a difference. Money, and even Big Money, cannot prevent such analysis. But Very Big Money plus politics can do it, and in these cases a chain reaction of disasters started. An example: "Titanic". In 1913 fundamental engineering and scientific analysis of this disaster was not performed; only much later it was understood what had happened there - the temperature was lower than the temperature of the steel embrittlement, and the vessel's body became brittle. Twenty-seven years later: 24 May 1941 at 5:52 a.m. the HMS battle-cruiser "Hood", the flagship of the fleet chasing the German battleship "Bismarck" made a first volley. "Bismarck" answered by a shot of a small antiaircraft gun. And at 6:00 a.m. "Hood" sank; fifteen hundred people perished, only four were saved! (The steel was supplied by the same firm as for the "Titanic".) Thinking about this case I was astonished: 24 May, spring - it should not be cold! But read Volume I11 of Churchill's "The Second World War" - 24 May was an extremely cold day at the place. Clearly the temperature of embrittlement again was crossed. And again: no competent engineering and scientific analysis! Only later when the welded "Liberty" ships started to break in two halves in the North Sea (tens of thousands of people perished), such analysis was performed, and Fracture Mechanics was created. George Irwin, later a Timoshenko Medal winner, was the leader. I also participated in this work. Fracture Mechanics is now as a charming lady in her forties: a remarkable past and a lot in the future. A wonderful branch of mechanical engineering and applied mechanics! Each fracture surface can tell you a lot about both the material and the loading: those who are really interested in what happened can achieve it (of course, only if they will be allowed to obtain the fractographs!)

I want to tell you about one more field, fully deserving the attention of mechanical engineers, and able to create a first class large scale project. Nowadays when the price of gas reliably crossed the \$3/gallon line the problems of energy resources is of interest to every layman. The time when I got my Ph.D. degree was difficult for people of my ethnical origin, and after many attempts I got an offer from the Institute of Petroleum of the Academy of Sciences. I was very lucky to get this job, and since that time Petroleum Engineering is also my profession. It is very important practically - this is

trivial to say. But I want to emphasize that it is remarkable as an object of applied mechanics. Many ideas which reveal themselves in such fields as gas dynamics, boundary layer theory, etc., as vague models appear in petroleum engineering as exact mathematical formulations - it is an enjoyment to deal with them. What is most important - every new oil and gas deposit presents a new scientific problem, very often leading to good mathematics. The practical problem of highest importance is to enhance oil recovery. Now the legal figure is 30 percent, so it is considered as normal if we leave in the rocks 70 percent of an irrecoverable gift of nature. But take the deposits of Southern California: Lost Hills, Belridge. The oil there lies in diatomites: rocks of very high porosity, low strength and practically zero permeability. The exploitation of such deposits by ordinary methods, including ordinary hydraulic fracture, leads to huge losses. The oil recovery is low. To find the proper way of development of such deposits means a reliable way to reduce the energy crisis. It cannot be done without the active participation of mechanical engineering and applied mechanics - what I am saying is based on my old and recent experience. The same is true for huge gas deposits in so-called tight sands available in this country - recently I presented a lecture about this subject.

Ladies and gentlemen, colleagues, I come to my conclusion. Sir Winston Churchill, the greatest man of the last century said: "If the human race wishes to have a prolonged and indefinite period of material prosperity, they have only got to behave in a peaceful and helpful way towards one another, and science will do for them all that they wish and more than they can dream. "Nothing is final. Change is unceasing and it is likely that mankind has a lot more to learn before it comes to its journey's end." I want to finish my speech by saying that in this future development of mankind our field, mechanical engineering and applied mechanics will play a decisive and governing role. Many fields of science and engineering will appear, become fashionable and disappear, but our branch of activity will always shine because it is eternal and perpetually renewing.

DANIEL C. DRUCKER MEDAL

The Daniel C. Drucker Medal, established in 1997, 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. This year it was awarded to ROBERT L. TAYLOR, Ph.D., professor, University of California at Berkeley, *for pioneering contributions to computational solid mechanics; in particular, for the development of methods and software used throughout the world for the calculation of inelastic response of structures.*



ROBERT L. TAYLOR



WARNER T. KOITER MEDAL

The Warner T. Koiter Medal was established in 1996 to recognize distinguished contributions to the field of solid mechanics, and it commemorates his vast contributions as research engineer and teacher. The medal was funded by the Technical University of Delft, the Netherlands. This year, it was awarded to RAYMOND W. OGDEN, Ph.D., George Sinclair professor of mathematics, University of Glasgow, U.K., *for seminal contributions to nonlinear elasticity, including*

RAYMOND W. OGDEN



mathematical foundations and applications.

ROBERT HENRY THURSTON LECTURE AWARD

The Robert Henry Thurston Lecture Award was established in 1925 in honor of ASME's first president. It provides an opportunity for a leader in pure and/or applied science or engineering to present to the Society a lecture that encourages stimulating thinking on a subject of broad interest to engineers. The Robert Henry Thurston Lecture Award was elevated to a Society award in 2000. This year it was awarded to SAVIO L-Y. WOO, Ph.D., D.Sc., W.K. Whiteford professor of bioengineering and director of the Musculoskeletal Research Center, University

SAVIO L-Y. WOO



of Pittsburgh, *for leadership in the field of biomechanics, particularly research and development of state-of-the-art technologies for the treatment of ligament and tendon injuries.*

THE APPLIED MECHANICS DIVISION AWARD

CARL T. HERAKOVICH

The Applied Mechanics Division Award was made to CARL T. HERAKOVICH, the Henry L. Kinnier Professor (emeritus) of Applied Mechanics at the University of Virginia. The Applied Mechanics Award was made *in recognition of his distinguished contributions to the mechanics of fibrous composite materials, and his distinguished service to the mechanics and engineering science community.*



YOUNG INVESTIGATOR AWARD

GEORGE HALLER

LAKSHMINARAYANAN MAHADEVAN



Two awards were made this year: One to Professor GEORGE HALLER in Mechanical Engineering at MIT for *his seminal contributions to nonlinear dynamics, including the development of analytic theories for chaos near resonance and for unsteady separation in fluid flows.* The other recipient was Professor LAKSHMINARAYANAN MAHADEVAN in Applied Mathematics and Mechanics at Harvard



for significant research contributions to the exploration of nonlinear and nonequilibrium phenomena in continuum mechanics using geometry, analysis and scaling ideas in close conjunction with experiments.

JOURNAL OF APPLIED MECHANICS

The Journal of Applied Mechanics, edited by Bob McMeeking, is once more the leading comprehensive publication in the area of applied mechanics, with articles in all relevant areas, including solid mechanics, dynamics and fluid mechanics. JAM now publishes special issues in topical areas, and it encourages researchers in applied

mechanics to come forward with proposals for such editions. Examples of special issues can be found in the January 2006 and May 2006 issues. The Journal's team of Associate Editors has worked hard to improve the handling of papers, to ensure that JAM can attract the best papers in the field. The resulting increase in the number and quality of submissions has made it necessary to expand the pages in the Journal each year, from 950 to approximately 1100. As a result, the time between submission of a high quality paper and its appearance in the Journal has continued to be approximately a year. The impact factor of the Journal has improved, and is now just above 1.0. Further improvement of this measure is expected in the coming years. Thus the Journal of Applied Mechanics is an excellent vehicle for your manuscripts, and we ask you to encourage your colleagues and students to submit their best work to the Journal

Bob McMeeking, Editor

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REPORTS FROM THE TECHNICAL COMMITTEES

The reports that follow are from 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.

Mechanics in Biology and Medicine

We have recently established a new Technical Committee on Mechanics of Biology and Medicine in the Applied Mechanics Division of ASME. With recent advances in cell and molecular biology, biotechnology, there is an increasing need to study mechanics as related to biology and medicine. The behavior of cells and tissues as complex biological systems is a result of integrated and regulated interactions among many components such as receptor-ligand binding, signal transduction pathways, the cell cytoskeleton, extracellular matrix, gene expression, and protein production. Mechanical forces and deformations may play an important role in all these aspects, and in regulating cell behavior and function including cell proliferation, differentiation, and death (apoptosis). Further, mechanical analyses can provide useful tools for modeling and quantitative prediction of these biological responses. To understand mechanics issues at the cellular level, it is necessary to analyze specific force-bearing, force-generating, and force-sensing elements in cells. Further, we need to have a better understanding of the mechanisms of mechanochemical coupling and how mechanical forces regulate cell behavior and function. Mechanical forces are also involved in many disease processes such as cardiovascular disease. This presents a unique opportunity to researchers in applied mechanics. Therefore, we formed this new TC, aiming to bring together researchers in applied mechanics who are, or are interested in, conducting research in biomechanics and bioengineering, to identify critical issues and challenges in developing the field of Mechanics of Biology and Medicine, and to exchange experiences, ideas, and approaches.

The new TC will organize symposia on the Mechanics of Biology and Medicine for the 2007 Summer Applied Mechanics Conference and the 2007 IMECE Congress. I would welcome the participation of the applied mechanics community in the activities of this new TC, and appreciate your suggestions, support and help.

Gang Bao, Chair

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Composite Materials

The Composites Committee sponsored or co-sponsored six symposia during the ASME IMECE 2005. The symposia and organizers were “Nano/Bio/Cellular Materials,” by Xin-Lin Gao, Mrinal Saha, and Emmanuel Ayorinde; “Structural Nanocomposites,” by Hassan Mahfuz, and George Kardomateas; “Structural Integrity of Sandwich Structures,” by Hassan Mahfuz and Leif Carlsson; “Symposium on Time Dependent Behaviors of Polymeric Composites and Their Matrices,” by Rick Hall; “Ballistics and Blast,” by Uday Vaidya; and “Durability and Damage Tolerance of Heterogeneous Materials,” by Iwona Jasiuk and Mike Santare. All sessions were well-attended.

The election of member Dr. Nancy Johnson to the grade of ASME Fellow was also announced to the committee at the 2005 IMECE. She joins her colleague Dr. Alan Browne, who was elected in the previous year.

Plans were completed for six symposia to be sponsored or co-sponsored for the 2006 ASME IMECE in Chicago. The titles and organizers are: “Biocomposites,” by Assimina Pelegri; “Blast and Ballistics,” by Uday Vaidya; “Interfaces in Heterogeneous Materials and Systems,” by Assimina Pelegri and John Holmes; “Novel Energetic Materials and Their Applications,” by Ann Marie Sastry, Chia-Wei Wang and Kimberly Cook; “Dynamic Behavior of Composites and Cellular Materials,” by Bazle Gama, Mrinal Saha and L. Roy Xu; and “Nano/Bio/Cellular Materials,” by Emmanuel Ayorinde, Xin-Lin Gao and Valeria La Saponara.

Ann Marie Sastry, Chair

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Computing in Applied Mechanics

Reports on Current Symposia: Pat Smolinski stated that he had been in contact with the organizers of the 2005 IMECE symposia (listed below) and they had reported that everything is on schedule. Some issues were raised regarding the difficulty of using the ASME web based system for symposium organization. It was stated that these items have been brought to the attention of ASME officials but to date no changes have been made.

The following sessions took place at the 2005 ASME IMECE: Computational Methods for Designing of Micro and Nano Scale Systems, Organized by F. Bobaru and S. Mukherjee, Symposium on Stabilized and Multi-scale Methods, Organized by A. Masud, T. Tezduyar and T.J.R. Hughes, Computational Stochastic Methods Applied to Fracture Mechanics, Organized by J.F. Molinari. One symposium Multiscale Modeling of Structural Damage has been proposed by E. Anagnostou and M. Taya for the 2006 IMECE meeting in Chicago, IL. Members are asked to note the upcoming WCCM VII Seventh World Congress on Computational Mechanics on July 16-22, 2006 Los Angeles, CA. J.S. Chen is the new Chair of the committee and S. Ghosh is the incoming Vice-Chair. As Vice-Chair, S. Ghosh will assume the Chairmanship of the Honors Committee.

J. S. Chen, Chair

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Applied Mechanics Division-Materials Division Joint Committee on Constitutive Equations

The Technical Joint Committee (TJC) on Constitutive Equations (CE) of the Applied Mechanics Division (AMD) and Materials Division (MD) of the American Society of Mechanical Engineers (ASME) exists to promote, support, and advance the

state of the art and science of Applied Mechanics and Materials in the area of modeling the mechanical and physical behavior of materials and structures. The committee's interests pertain to the understanding and the prediction of physical phenomena and material behavior through modeling and experiments that span scales from the nano to the macro levels. The committee held its annual meeting during IMECE 2005 in Orlando, Florida.

In that meeting, which was chaired by Mohammed Zikry, The committee discussed proposed symposia for the forthcoming IMECE2006 and approved the three proposals: 1) Modeling and Experiments in Nanomechanics and Nanomaterials, Organizer: Dr. Yozo Mikata, Lockheed Martin, aquarius_ym@hotmail.com, 2) A Symposium on Deformation Process, Mechanics and Failure Characterization, Organizers: Chi L. Chow, University of Michigan-Dearborn, clchow@umich.edu, Xin Wu, Wayne State University, xwu@eng.wayne.edu, Cedric Xia, Ford Motor Company, zxia@ford.com, Ming Li, Alcoa Technical Center, , Ming.Li@alcoa.com, 3) Bridging the Length Scales, Organizers: George Voyiadjis, voyiadjis@eng.lsu.edu, Cemal Basran, University of Buffalo, cjb@eng.buffalo.edu, Zhen Chen, University of Missouri, ChenZh@missouri.edu.

Committee meetings will be held at all ASME conferences, current members are encouraged to bring new ideas and symposia proposals, and new members are always welcome.

Mohammed A. Zikry, Chair,
zikry@ncsu.edu

Dynamics and Control of Systems and Structures

The Dynamics and Control of Structures and Systems Committee organized three well received symposia spread over six sessions at ASME IMECE 2005. The following sessions took place Nonlinear Dynamics, Control and Stochastic Mechanics Symposium, organized by B.I. Epureanu, G. Flowers, M. Amabili; Multi-Field Coupling in Dynamics and Control Symposium, organized by E. Mockensturm, I. Georgiou, and B.I. Epureanu, Nonlinear Dynamics and Instability of MEMS/NEMS Symposium organized by B. Mann, B. I. Epureanu, and X. He

The committee welcomes the following new members, who were elected at IMECE 2005: Dr. Mohammad Younis, Assistant Professor of Mechanical Engineering, SUNY Binghamton, NY and Dr. Yozo Mikata, Structural Mechanics Engineer, Lockheed Martin, Schenectady, NY

The different committee members have been quite active in organizing future conferences and symposia at IMECE 2006 and other meetings. Details follow:

Eight sessions on topics covering nonlinear dynamics, control, and stochastic mechanics, multi-field coupling in dynamics and control, and MEMS/NEMS have been arranged for **IMECE 2006**. The different sessions include AMD-1D, AMD-1A, AMD-2A, AMD-3D, AMD-4D, AMD-5D, AMD-6D, and AMD-7D, which are spread over November 8th and November 9th

Professor H.-S. Tzou of the University of Kentucky will serve as the Program Chair for the ASME 2007 International Design Engineering Technical Conferences to be held during the period of September 4-7, 2007 at Las Vegas, Nevada

Professor Marco Amabili of Universita' di Parma, Italy will serve as the Co-chairman of the EUROMECH Colloquium 483 entitled "Geometrically non-linear

vibrations of structures,” to be held during the period of 9-11 July 2007 at Porto, Portugal.

Professor Yannis Georgiou of National Technical University of Athens is a co-organizer of the mini-symposium entitled “Nonlinear Dynamics of Structures and Coupled Systems: Computations, Model Reduction, and Data Processing” being organized as a part of the 7th World Congress on Computational Mechanics at Los Angeles, CA during the period of July 16-22, 2006.

B. Balachandran, Chair

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Dynamic Response of Materials

The Dynamic Response of Materials (DRM) Technical Committee organized well-attended sessions for the 2005 IMECE. For the 2006 Chicago IMECE, DRM organized four mini-symposia with 8 sessions and 39 presentations. The symposia are: Shock and Impact Response of Materials honoring Dr. Datta Dandeka; Dynamic Response of Biological Tissues and Cellular Solids; Dynamic Properties of MEMS, Interfaces and Multilayer Structures; and Dynamic Behavior of Composite Materials and Structures. At the committee meeting at the 2006 IMECE, DRM will elect a new officer according to the Committee Bylaw.

Wayne Chen, Chair

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Mechanics Education

The Applied Mechanics Education Committee is organizing a technical session “Recent Developments in Applied Mechanics Education” at the ASME Winter Annual Meeting (WAM) in November 2006, Chicago. The committee met at the WAM in November 2005, Orlando, and had requested for additional sessions on “Innovations in Mechanics of Materials” and “Research Experience of Undergraduates in Nanotechnology”, which however could not be accommodated in the Chicago meeting.

Sanjeev Khanna, Chair

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Elasticity

The Committee met on November 8th, 2005 during the Orlando IMECE meeting. Present at the meeting were Emmanuel Ayorinde, Xin-Lin Gao, Chad Korach, Valeria Vlasaponara, Wei Cai, Dimitri Lagoudas, Robert Kukta, and Demitris Kouris. The Committee Members reviewed the two symposia sponsored at the 2005 IMECE. They were:

(a) Mechanical Properties and Microstructural Evolution of Surface and Interfaces organized by Robert Kukta, Wei Cai, and Pradeep Sharma; (b) Nano, Bio and Cellular Materials, organized by Emmanuel Ayorinde, Xin-Lin Gao, and Mrinal Saha. Both symposia were very well attended and could have utilized additional sessions.

The Committee discussed nominations for ASME awards and the proposed symposia for the **2006 IMECE** meeting in Chicago. The Committee requested six sessions for two symposia. The AMD allocated only three sessions. The two symposia are described below.

Surface and Interfacial Phenomena in the Micro- and Nanomechanical Behavior of Materials A number of new and emerging technologies require the development of

material systems with highly heterogeneous microstructures and devices with very small dimensions. These materials and devices will inevitably have a large ratio of interfacial and surface area to volume, which necessitates a clear understanding of interface effects. More importantly, interfaces and surfaces can be exploited to engineer new materials and assemble nanoscale devices with exceptional mechanical and tribological properties. Effective engineering at micron and sub-micron levels requires a quantitative understanding of the role of interfaces and their relationship to mechanical behavior.

The purpose of this symposium is to present recent advances in the modeling, simulation, and characterization of surfaces and interfaces. Our goal is to provide a forum to discuss similar challenges and techniques in understanding deformation and tribological properties of heterogeneous materials through fundamental mechanisms of defect microstructures. Contributions will be accepted on topics related but not limited to the following: relaxation of crystalline-amorphous interfaces; mechanical behavior of nanostructured materials; internal stress and mechanical properties of thin films and multilayers; mechanical properties of polycrystals, ultra-fine grain crystals, nano-crystals; grain boundary sliding, migration, interaction with dislocations; plasticity in small volumes; tribological properties of nanostructured materials and thin films; friction-property relationships across multiple length scales; adhesion mechanics of surfaces; solid lubricants in nanostructured materials; elastodynamics related to friction; novel experimental methods, in-situ techniques. The symposium is organized by Prof. Wei Cai, Department of Mechanical Engineering, Stanford University caiwei@stanford.edu, Profs. Robert V. Kukta, and Chad S. Korach, Department of Mechanical Engineering, State University of New York at Stony Brook, robert.kukta@sunysb.edu chad.korach@stonybrook.edu

Mechanics of Nano-, Biological and Cellular Materials. The objective of this mini-symposium is to discuss recent advances in multiscale modeling of nano-, biological and cellular materials and to identify future research opportunities in the subject area. Various aspects of development of modeling strategies and their applications in describing the behaviors of nano- biological materials will be addressed. Innovative theoretical, computational and experimental approaches will be discussed. The contributions will include, but are not limited to, the following topics:

Atomistic and continuum computations, and computational schemes to couple various scale in both time and space; material modeling, non-local and higher-order strain gradient continuum theories; failure criteria, plasticity and deformation in materials, including fracture, diffusion, size effects and dislocation dynamics; nanocomposites reinforced by carbon nanotubes or other nanoparticles; modeling of biomaterials such as proteins and dna, tissue and cellular mechanics; artificial bio-materials; simulation and design of new bio-sensing materials, and computer aided protein engineering; structure-property relationships: cellular materials and structures, including honeycombs, auxetic foams, truss core and frame structures, and sandwich composites with foam cores; multifunctional behavior and failure of foamed materials; mechanics of nonlinear materials ; experimental techniques; loading responses: static and dynamic. The symposium is organized by Dr. Emmanuel Ayorinde, Department of Mechanical Engineering, Wayne State University Detroit, MI 48202, (313) 577-5548, ayorinde@eng.wayne.edu, Dr. Xin-Lin Gao, Department of Mechanical Engi A&M University, College Station, Texas 77843, (979)-845-4835, xlgao@tamu.edu, Dr. Valeria La Saponara, University of California, Davis, ulasaponara@ucdavis.edu.

Please plan to attend the symposia and the meeting of the Elasticity Committee. The symposia are scheduled for Thursday, November 9th, 2006. The meeting has not been scheduled at the time of this writing, but it is reasonable to expect that it will be held on the same day.

We hope to see all of you in Chicago at the IMECE 2006!

Demitris Kouris, Chair

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Fluid Mechanics

At the 2006 ASME International Mechanical Engineering Congress, in Chicago, Illinois, November 5-10, 2006, the Fluid Mechanics Committee, together with the Committee on Computing in Applied Mechanics, is sponsoring a four-session mini-symposium titled "Stabilized, Multiscale and Multiphysics Methods". Two of the sessions are focusing on fluid-structure interactions and the other two on fundamental technologies. The mini-symposium is organized by Arif Masud (University of Illinois, Urbana-Champaign) Keith Stein (Bethel University), Tayfun Tezduyar (Rice University) and Thomas Hughes (University of Texas, Austin). Three of the sessions were allocated through the Fluid Mechanics Committee and the fourth one through the Committee on Computing in Applied Mechanics. A good number of leading researchers in fluid mechanics, computational mechanics, and fluid-structure interactions will give presentations at the mini-symposium. Many of the speakers will be from the United States and European Union, but we will also have speakers from Japan and South America.

Tayfun E. Tezduyar, Chair

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Fracture and Failure

The Committee held its regularly scheduled meeting on Monday November 7, 2005 during the IMECE 2005 in Orlando FL. The new Committee officials, who took over on July 1, 2005, are John Lambros (University of Illinois, Urbana-Champaign), Chair; Mark Walter (The Ohio State University), vice-Chair; and Jean-Francois Molinari (LMT Cachan, France), Secretary. The entire committee wishes to express its greatest appreciation to the outgoing Chair, Jack Beuth, for all his efforts during the past six years that he has been involved in the committee administration.

The Committee continues to be very active in organizing IMECE sessions. Many of these sessions are co-sponsored with the Dynamic Response of Materials and the Experimental Mechanics Technical Committees. This cross-committee cooperation has allowed sessions of broad relevance to be organized, which consequently have been very well attended. IMECE 2005 symposia that were (co)sponsored by the Committee included three sessions on the "Failure phenomena of inhomogeneous materials" (organized by Toshio Nakamura and Raman Singh), and one session on "Dynamic Fragmentation of Brittle Materials" (organized by Jean-Francois Molinari and Philippe Geubelle). The Committee is currently (co)sponsoring seven sessions for the IMECE 2006 to be held in Chicago, IL.

Within ASME's AMD community there has been a significant push to develop dynamic web (Web 2.0) sites that facilitate on-line information-sharing and collaboration through blogs. The Committee was one of the first ASME technical committees to develop a blog. The AMD-FFMTC blog is located here: <http://amd-ffmtc.blogspot.com>.

It can also be reached through the technical committee links from the (very) active AMD-NEWS blog at <http://amdnews.blogspot.com>.

Blog-based web pages have several advantages over static web pages and in particular, our Committee's site offers the following:

- Streamlined content management (i.e., announcements, membership listing, meeting minutes, etc...),
- Dynamic discussion of fracture mechanics teaching through on-line discussion of syllabi and relevant books/articles,
- Posting/commenting about useful fracture and failure mechanics resources, and
- Access to a community of peers for discussion of issues relating to fracture and failure mechanics. The quality of our blog is directly proportional to member participation. Please consider becoming an active contributor. E-mail "walter.80@osu.edu" to request to be a contributor. In addition, since the content is dynamic, you should consider using a new aggregator (http://en.wikipedia.org/wiki/News_aggregator) that will alert you when there are new postings.

Last but not least, I would like to thank the many individuals (committee members, symposia organizers, chairs and co-chairs, symposia participants etc.) who have volunteered their time and work to bring the Committee efforts to fruition. Membership in the Committee is open and I encourage anyone interested to participate in the IMECE 2006 Committee meeting or to contact the Committee officials with any comments.

John Lambros, Chair

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Geomechanics

The last annual Geomechanics Committee meeting was held during the Joint Mechanics Summer at Baton Rouge on May 31-June 3, 2005. The Committee will co-sponsor the "International Workshop on Constitutive Modelling-Development, Implementation, Evaluation, and Application" which is to be held on January 12-13, 2007 at Hong Kong, China. The next committee meeting will be held on June 29, 2006 at the 15th U.S. National Congress of Theoretical and Applied Mechanics (USNCTAM) at University of Colorado, Boulder. At that conference, the committee will also co-sponsor a 2-session symposium on "Constitutive Modeling of Frictional Materials".

K.T. Chau, Chair

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Instabilities in Solids and Structures

In the last year, the committee participated in the 2005 IMECE with three sessions that included presentations in a variety of stability problems. In the period of December through June, the committee was busy organizing what turned out to be a relatively large mini-symposium in "Instabilities in Solids, Structures and Materials," held at the 15th US National Congress on Theoretical and Applied Mechanics in Boulder. Participants included colleagues from academia and laboratories, and hailed from Asia, Europe and North America. Twenty-seven presentations in a variety of stability problems were organized. The next mini-symposium to be organized by the committee will take place at the 2007 ASME Summer Mechanics and Materials Conference, which will take place in Austin, Texas. Those interested in presenting their research work or organizing sessions on stability should contact the committee Chair for more information.

Edmundo Corona, Chair
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Integrated Structures:

At the 2005 IMECE Congress, the Executive Committee of the ASME Applied Mechanics Division established a new Technical Committee on Integrated Structures.

Devices in advanced technologies often have complex architectures, hybrid materials, and small features. Examples include integrated circuits and biomedical devices. The mechanical behavior of such integrated structures often affects their fabrication and durability. By the very nature of integrated structures, the field is cross-disciplinary, involving many materials (metals, ceramics, polymers, semiconductors, etc.), and many modes of response (fracture, deformation, instability, and mass transport). The field is extremely active, both in terms of industrial applications and academic research.

Many people with advanced degrees in applied mechanics and mechanical behavior of materials are now finding jobs in the microelectronic and biomedical industry. Many of them have yet found a home society. While they interact with researchers in technical societies traditionally identified with these industries, they also interact with researchers in applied mechanics. The new Technical Committee will create a home for this group of people, and a link between applied mechanics and new, exciting applications. It will also possibly provide a way for the AMD to interact with some of the Industrial Tracks.

To forge the link between academia and industries, the committee will have co-chairs. The first-year co-chairs are: Dr. Jun He (jun.he@intel.com), of Intel Corporation, and Dr. Rui Huang (ruihuang@mail.utexas.edu), of the University of Texas at Austin. The new TC is organizing three sessions at the 2006 IMECE, featuring 15 speakers (6 industrial and 9 academic) under the theme of Mechanics and Materials of Integrated Structures in Advanced Technologies. We welcome your participation in the activities of this new TC, and appreciate your suggestions and support.

Rui Huang, co-chair
ruihuang@mail.utexas.edu

Materials Processing and Manufacturing

The Committee held its regularly scheduled meeting on Thursday, November 10, 2005 during the IMECE 2005 in Orlando, FL. Antoinette Maniatty (Rensselaer Polytechnic Institute) conducted the meeting. We welcomed the new Vice-Chair (2005-2006), Somnath Ghosh (Ohio State University) and future Vice-Chair (2007-2008), Xin Wu (Wayne State University). In 2005, Jian Cao successfully nominated Antoinette Maniatty to Fellow Grade of the ASME. The Committee has been very active in organizing sessions during the 2005 IMECE. There were sessions on Processing of Advanced Composite Materials, co-sponsored by MD (organized by H. Bruck and M. Hosur), sessions on Advances in Material Forming, jointly sponsored by MED (organized by B. Kinsey, M. Li, and A. Bagchi), and sessions on Formability of Lightweight Materials (organized by X. Wu and C. Chow). In 2006, we will have sessions on Manufacturing Processes for Advanced Polymer Structures and Composites (organized by H. Bruck and M. Hosur), Deformation Process, Mechanics and Failure Characterization (organized by C. Chow, X. Wu, C. Xia and M. Li) and Multi-scale Simulations and Experiments in Materials Processing (organized by S. Ghosh, A. Maniatty and M. Li). I would like to thank all the members of the Committee who have

volunteered their time. Membership in the Committee is open, and I encourage anyone interested to participate in the IMECE 2006 Committee meeting.

Antoinette Maniatty, Chair

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Uncertainty and Probabilistics

The Committee on Uncertainty and Probabilistics is continuing to grow and develop as the newest technical committee of the Applied Mechanics Division. The committee coordinated 2 sessions at the 2005 IMECE: “Panel discussion on future development of uncertainty-based codes” and “Uncertainty and Probabilistics in Aerospace and Mechanical Engineering”. These activities were followed by a mini-symposium organized at the 15th U.S. National Congress on Theoretical and Applied Mechanics in Boulder, entitled “Probabilistic Mechanics and Uncertainty”, which consisted of 2 technical sessions. The sessions at both conferences were very well attended with lively discussions following them. The committee plans to coordinate sessions at the upcoming IMECE, at the NDA conference in Waikiki in April 2007, and at the ASME Mechanics and Materials conference in Austin in June 2007.

Lori Graham-Brady, Chair

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