

Tribology Division

Mihai Arghir, Editor

Chair's Message

As the current Chair of the Tribology Division (TD), I want to thank all of the past Executive Committee (EC) members over the years for their service. The TD is in a strong position with active membership and good financials in spite of the recent global economic downturn. Without the great stewardship of all the dedicated past EC members, we would not be in the good position we are today. Having said this, I want to thank the EC members who finished their terms of service last summer, Itzhak Green (past EC Chair) and Michel Fillon (past Research Committee on Tribology Chair). Your current EC members besides myself are: Ali Erdemir (Secretary / Treasurer), Daniel Nelias (Expositions Committee Chair), Mihai Arghir (Publications Committee Chair), Robert Jackson (Education Committee Chair), Michael Lovell (Research Committee on Tribology Chair), and Joseph Levert (Member at Large). I know your current EC will work just as hard as those previous to maintain our strong position long into the future.



For those who attended the 2008 International Joint Tribology Conference (IJTC), you know it was a great opportunity to see the latest research and to meet your fellow Tribologists. The downtown Miami location was close to many restaurants, shopping and of course the South Florida beaches. However, the real excitement came from our guest speaker at the awards luncheon, Professor John Tichy. Professor Tichy is currently of Rensselaer Polytechnic Institute and was formerly of the 1960s & '70s rock and roll band Commander Cody and his Lost Planet Airmen, for which he is listed in the Who's Who in Rock & Roll and the Rolling Stone Encyclopedia of Rock & Roll. John Tichy's talk was entitled "Can Tribology and Rock 'n' Roll Peacefully Coexist?", and featured live music from his list of favorite songs. The technical sessions included special symposia on Surface Engineering – Coatings, Texturing and Beyond; Magnetic Storage Tribology; and new this year was Wind Turbine Tribology. As you can see, the Conference Planning Committee chaired by Gregory Sawyer did an excellent job of keeping up with current trends in tribology and putting together a great program.



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In addition to the regular program at IJTC 2008, Daniel Nelias, Technical Expositions Committee Chair, created a special Doctoral School seminar for graduate students attending the conference. The program was sponsored by the ASME Tribology Division and was free to student members who attended the conference. The event took place immediately following the IJTC on Wednesday night and continued all day Thursday. Please read more about this program in the following report

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Chair's Message

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on the Technical Expositions Committee. With all of the great things that happened this year at the conference, I expect the 2009 IJTC in Memphis, Tennessee, to be another great program. Please keep an eye out for announcements starting next spring for this great event.

In addition to the IJTC, the TD has several technical committees to further advance the field of Tribology in specialized areas. There are currently four active committees: Contact Mechanics; Magnetic Storage Devices; Nanotribology and Micro-/Nano-Systems (NMNS); and Rolling Element Bearings. Last October, the Machinery Diagnostics and Prognostics Technical Committee was sunset due to inactivity for several years. This was not a desirable event, but TD must move on. The good news is that a new Wind Energy Tribology Technical Committee is being formed based on the feedback from the panel session at IJTC 2008. You can read more about this in my report below. We are always looking to add more or revive sunset committees. If you have a great idea for a new technical committee, I am sure you are not the only person interested so please submit it to the EC for consideration. Through my personal involve-

ment with the Rolling Element Bearing, Contact Mechanics and the newly forming Wind Energy Tribology Technical Committees, the knowledge and networks I have gained from this leads me to believe this is one of the most under utilized benefits of TD membership.

The Publications Committee, Chaired by Mihai Arghir, continues to work on the Journal of Tribology (JoT) and the TD website. Michael Bryant, as JoT editor, continues to improve the journal's speed to publication by working extremely hard with the reviewers and the previous paper backlog. They have been able to continue to improve this without compromising the technical integrity of the journal. ASME International is also working on new publication channels for our accepted papers to allow information flow to the tribology community more quickly. All of this will help the membership obtain data, models and new theories faster to solve the difficult problems we face daily. Also, ASME is in the process of rolling out a brand new website for the division with new layouts and methods of updating the information. Hopefully this will allow us to change, update and maintain the data on the site much easier than previously.

Throughout this year, we will continue to build upon the great foundation laid by the ECs before. We will continue the

TD's established strengths of technical excellence in publications, conferences, education and service to our members. Our EC meetings are held at the IJTC in the fall and at the STLE Annual Meeting in the spring. These meetings are open to all ASME members, and I would like to extend an invitation to anyone interested in attending. I would also like to give a thank you to everyone involved in keeping the division going, everyone that attended the IJTC, reviewed a paper, attended a technical committee meeting or even read an email from the division. Specifically, I would like to thank Jacinta McCombie who is our division's staff support at ASME International and does all of the behind the scenes work and Lee Hawkins who is our division's program management support at ASME International. These two individuals are the ones who really keep the division's activities moving on a daily basis.

As you read the reports from the various committees enclosed in the newsletter, please share with us your thoughts on how the division might be of further service to you and others. We welcome your thoughts and most of all we welcome your involvement in committee activity, and I kindly ask that you please volunteer some time for advancing our profession.

Michael Kotzalas
Tribology Division Chair

Report on ASME JOT 2007-2008

During 2007-2008 the journal's backlog of papers has been eliminated and the time elapsed from submission of a paper to approval has consistently reduced from 10.6 months in 2004 to 4.7 months in 2008 for an acceptance rate of about 40% of submissions. The impact factor has consistently risen arriving at 0.945 for 2007. This is due to the diligence and very good work of the journal's editor and associate editors. During 2007-2008 Dr. Ray W. Snidle and Dr. Liming Chang retired and Dr. Rob Dwyer-Joyce and Dr. Shuangbiao Liu were newly appointed. Also interesting to note is the distribution of papers to area and subject of research (Table). The editorial board would acknowledge all authors who submitted papers to the Journal of Tribology.

SUBJECT	Distribution of papers to area (%)								
	2007	2006	2005	2004	2003	2002	2001	2000	1999
Contact mechanics	21	19	21	21	15	19	0	0	0
Friction & wear	15	14	15	11	16	13	30	30	26
Hydrodynamics (including gas)	30	21	23	24	21	18	22	28	27
EHL/rolling elements	14	14	14	19	21	28	17	12	12
Magnetic storage, micro- nano	8	11	20	17	16	12	18	20	17
Other (seals, coatings, manufacturing)	12	21	7	8	11	10	13	10	18
Total	100	100	100	100	100	100	100	100	100

Nanotribology and Micro/Nano-Systems Committee

The Committee on Nanotribology and Micro/Nano-Systems (NMNS) has continued to organize activities in line with its mission of promoting close cooperation and exchange of technical information among researchers, academics, developers, and so on, in both nanotribology and the closely related areas of MEMS/NEMS, under the guidance of Shao Wang (Chair), Michael T. Dugger (Vice-Chair) and George G. Adams (Secretary). Realizing the necessity of bringing the knowledge background of the general audience of tribology conferences to a level of understanding and appreciating to some extent the research activities and outcome in nanotribology and encouraging more researchers to join this field, NMNS started a completely new format of session - a Nanotribology Tutorial/Panel Session at IJTC2008. Panel members were invited from a wide range of expertise encompassing chemistry, physics, applied mechanics, materials science, etc. Each topic of the presentations included a tutorial part aimed at acquainting the audience with basic concepts and principles, immediately followed by a panel presentation on recent advancements. This new session was well received by the audience with an attendance as high as 60 at this conference with concurrent sessions. The audience feedback received shows that it did bring more understandings in an effective way to researchers in the broad field of tribology about the concepts and achievements in nanotribology. There was also active audience participation, with a panel discussion extended due to an excited, interactive atmosphere. In addition, NMNS has organized three Nanotribology Sessions with good attendance (with Robert L. Jackson, Min Zou, and Chad S. Korach among the organizers) in collaboration with Kathryn J. Wahl on the Conference Planning Committee, and has also organized a Symposium on Interfacial Phenomena in MEMS in cooperation with the Contact Mechanics Technical Committee. NMNS has recently elected Michael T. Dugger as Chair, George G. Adams as Vice-Chair and Hong Liang as Secretary for a two-year term starting just after IJTC2008.

Shao Wang

Wind Energy Tribology Technical Committee

Wind energy is becoming more important to society as we move toward alternate and more environmentally friendly energy sources. To harness the wind, a complex powertrain is typically involved to step up the slow speed of the turbine blades to the high speed required by the generators. The mechanisms required to do this are all put on top of a large tower, so weight is very important as is reliability with minimal routine service. All of this is done in locations as diverse as the Mojavi Desert and the North Sea. Due to all of these non-traditional machine operating requirements, the current industry design practices are being stretched beyond its current knowledge base. All of this is going on while the installed base of turbines has grown exponentially, a pace which is not expected to slow down anytime soon.

In all of this design activity, Tribology has been one of the limiting factors, which lead me to create a panel session at the 2008 IJTC in Miami. The panel session was full for the entire morning session and almost everyone stayed for another 45 minutes after the schedule asking questions of the panelists. (The panelist's presentations are available on our committee's webpage for those who may be interested.) The turnout and interest in this topic was more than I had imagined.

After the panel, several of us had lunch and discussed more of the issues, such as bearing micropitting, the need for longer life lubricants that operate in the diverse conditions, condition monitoring of the gears and bearings, electrical arcing damage of the bearings in the generators, filtration of water and debris...etc. All of this led the discussion toward the need for a forum to discuss tribological issues as all of the other societies focus on the other aspects, such as regulations, grid requirements and tower designs. The proposal was made to the Tribology Division Executive Committee, which was approved unanimously.

The committee is currently in the process of recruiting members to the technical committee and finding topics for the committee to address. We currently are set to participate in a meeting on micropitting that will be held by the National Renewable Energy Laboratory in Golden Colorado in April, and we will have our first face-to-face meeting will be at the STLE Annual Meeting in Orlando in May. If you are interested in joining us, please email me (michael.kotzalas@timken.com).

Michael Kotzalas, Interim Chair

Technical Expositions Committee – Doctoral School October 2008

An international doctoral school was held in Miami during the last IJTC conference (October 20-22, 2008). It was organized by the ASME Tribology Division (TD) Executive Committee and supported both by the ASME TD and by STLE, with no fee for participants.

The course started the last evening of the conference (Wednesday 22/10) and ended Thursday (23/10) afternoon. Three instructors (Rob Dwyer-Joyce, Ashlie Martini, Daniel Nelias) were volunteers to give a short lecture and to animate part of the discussion with PhD students. A total of 14 ASME and STLE student members registered prior to the conference through the IJTC web site or on site. In fine the course gathered 9 participants.

Rob Dwyer-Joyce from the University of Sheffield gave a first lecture on "Measuring Tribological contacts", Ashlie Martini from Purdue University a second one on "Molecular Simulation of Sliding Con-

tacts", and Daniel Nelias a third one on "Plasticity in Contact Mechanics". Part of the time was dedicated to open discussions with PhD students about the research they are performing and the difficulties they are encountering.

The long term objective of such an event is to attract more student members to IJTC – in comparison to other ASME conferences – and also to have more young members. The format of the course (lectures/presentation by the students/discussions), the location in the week (before or after the conference) and the advertisement should be revisited in order to attract more students in a next edition.

Daniel Nelias



Honors and Awards Committee

The Mayo D. Hersey Award is the Tribology Division's greatest honor. It was established in 1965 by the joint bequest of the ASME Lubrication Division (now Tribology Division) and the ASME Research Committee on Lubrication (now Research Committee on Tribology) to recognize the splendid leadership in lubrication science and engineering of Mayo D. Hersey. Professor Hersey was the first recipient of the award in 1965. The Mayo D. Hersey Award is bestowed annually on an individual in recognition of distinguished and continued contributions over a substantial period of time to the advancement of the science and engineering of tribology. Distinguished contributions may result from significant original research in one or more of the many scientific disciplines related to lubrication, from excellence and creativity in lubrication engineering practice, or from sustained and forthright efforts and dissemination of information on the theory and practice of lubrication.

The 2008 recipient of the Mayo D. Hersey Award was **Professor Leon M. Keer** of the Department of Civil Engineering at Northwestern University. Professor Keer is a well-known expert in contact mechanics with special emphases on the modeling of surface interaction, friction, adhesion, wear and fracture of bodies under concentrated contacts, as well as crack initiation and rolling-contact fatigue. He effectively blends tribological models and surface engineering, and provides a high degree of leadership in the international contact mechanics community.

The Burt L. Newkirk Award is given annually to an individual who has not passed his/her fortieth birthday on July 1 of the year in which the award is conferred and who is an ASME member at the time of nomination. It is given to one who has made a notable contribution to



the field of tribology in research or development as evidenced by important tribology publications. The award was initiated in 1975 and was named after Burt L. Newkirk who made notable achievements in the theory and application of tribology during his industrial career and was an outstanding teacher following his retirement from industry.

The recipient of the 2008 Burt L. Newkirk Award was **Dr. Michael Nosonovsky**, a Research Scientist at Stevens Institute of Technology in Hoboken, NJ. Dr. Nosonovsky received the award for outstanding theoretical research in nanotribology, adhesion, and tribology of functional bio-inspired surfaces, including the scale effect on friction



and patterned non-adhesive surfaces using the Lotus-effect.

The Marshall P. Peterson Award is given biennially in recognition of early-career achievement and promise for pursuit of research in tribology. At the time the award is given (October of even-numbered years), the nominee's age shall be less than 30 years. Selection is made based on early achievement in research as demonstrated by papers published in scientific journals of ASME (e.g. Journal of Tribology or Journal of Manufacturing Science and Engineering), potential for excellence in pursuit of research, and relevance of the research to the subject of this award, i.e., materials aspects of tribology. The Research Committee on Tribology and the Tribology Division established this award in 1997 to encourage young engineers to pursue research related to materials tribology. The 2008 recipient of the Marshall B. Peterson Award was **Dr. David L. Burris**, currently at the Mechanical Engineering Department of the University of Delaware. Dr. Burris was honored for notable contributions to polymer nanocomposites, polymer tribology, and measurement uncertainties in friction and wear; and for the development of novel in situ tribometers.



Francis E. Kennedy, Chair



Obituary

In 1956 **Dr. Virgiliu N. Constantinescu** defended in Bucharest, Romania, a PhD with a challenging and surprising topic, "Contributions to the Theory Gas Lubrication". The "Gas Lubrication" textbook rapidly followed and in 1965 he published "The Theory of Turbulent Lubrication", a milestone in the field. Both books synthesized Dr Constantinescu's original papers and were also embedding the basis of the theory of inertia dominated thin film flows being essential contributions to the foundation of modern Lubrication theory. Dr. Constantinescu published 19 books on Fluid Mechanics and Lubrication, three of them being translated in English and authored more than 200 papers. Dr. Constantinescu was Professor and Rector (1990-1992) at the Polytechnic University of Bucharest, member of the Romanian Academy (President 1994-1998). He was a recipient of the Tribology Gold Medal (1996), UK. From 1997 to 2003 he represented his country as ambassador. Dr. Constantinescu deceased on January 31 this year in Bucharest, Romania, at the age of 77.

Executive Committee – 2008-2009

Chair

Michael N. Kotzalas
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Technical Committees

The Technical Committees of the Tribology Division are of two types, the Research Committee on Tribology and ad-hoc technical committees. All technical committees report to the Executive Committee through the Member at Large, Joe Levert. These technical committees are listed below.

Magnetic Storage Devices

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Wind Energy Tribology

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Administrative Committees

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Education Committee

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Technical Expositions Committee

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Research Committee on Tribology

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Avoid Dangerous Accidents Due To Failing Seals

Recent batches of o-rings that go between the space shuttle booster rockets are alarming NASA engineers with a higher-than-usual amount of unmixed rubber.

Are your seals at risk? Avoid potential injuries due to improper engineering and manufacturing of mechanical seals. Learn the essential complex factors involved in fluid sealing through Georgia Tech's upcoming Fluid Sealing Technology course scheduled for **April 13-14, 2009**.

This two-day course, sponsored by the George W. Woodruff School of Mechanical Engineering at the Georgia Institute of Technology, covers an extensive introduction to fluid sealing and is designed to meet the needs of equipment designers, plant and maintenance engineers and managers, and technical sales engineers and managers. O-rings, gaskets and other static seals will be covered theoretically and through practical case studies as well as dynamic seals including rotary and mechanical.

Sign up today and help your company avoid preventable mishaps. Learn to improve mean time between maintenance that can lead to substantial savings for a plant. Call 404-385-3500 to register, or visit www.dlpe.gatech.edu/seals.

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FOR MORE INFORMATION

Greg Stenzoski
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404-385-3543
www.dlpe.gatech.edu

ASME TRIBOLOGY DIVISION YOUNG TRIBOLOGIST POSTER/PAPER CONTEST

The ASME Tribology Division announces a Young Tribologist Poster/Paper Contest for the 2009 International Joint Tribology Conference, October 19-21, 2009, Memphis, TN.

Eligibility

The contest may be entered by undergraduate students, recent baccalaureate engineers (graduation after April 2009), and current graduate students. Graduate students must not have completed their thesis defense prior to October, 2009. The papers are expected to be predominantly the work of the student. Student must submit a letter signed by their principal advisor or principal supervisor describing the type and amount of all assistance received from others.

Entries

Contestants should submit a maximum 1000 word paper describing a tribology engineering study they have undertaken. Any topic within the broad area of tribology is acceptable with numerous examples below. Address any questions regarding the acceptability of paper topics to Dr. Joseph Levert (contact information below). Examples of appropriate topics include, but are not limited to:

Friction, Wear, Materials, Lubricants, Lubrication, Rheology, Tribochemistry, Surface Engineering, Contact Mechanics, Biotribology, Nanotribology, Metal Forming, Bearings, Seals, Brakes, Clutches, Gears, Magnetic Storage Devices, and Condition Monitoring.

Send only electronic entries in PDF format to Dr. Joseph Levert · E-mail: jlevert@sunymaritime.edu · When submitting the paper, include the paper title, author name(s), address, phone, and e-mail on the title page. Deadline for paper submission is August 1, 2009. Note: The subject line of the email MUST BE: IJTC Young Tribologist

Judging and Awards

The Young Engineer Paper Contest Committee will judge the papers based on originality, technical significance, logic of approach, and clarity. The authors of the 5 best papers will be invited to present their posters and/or papers at the 2009 IJTC in Memphis. Each finalist or finalist team who presents will be awarded a \$300 prize to partially defray the cost of travel to the conference. Based on judging of the presentations and the papers, the top two finalists or finalist teams will be awarded an additional \$300 prize. The presentation will count 25% of the judges' scoring, and the written paper will count for 75%. Awards will be presented in the conference room approximately 30 minutes after the last presentation.

Schedule

Paper Submittal	August 1, 2009
Author Notification	September 1, 2009
Conference Presentation	October 19-21, 2009, Memphis, TN

For additional information, please contact:

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