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# TSI NEWS LETTER

A Quarterly Newsletter from Tribology Society of India OCTOBER 2003

## SHRI N.R. RAJE JOINS THE BOARD OF INDIAN OIL CORPORATION LTD.



Shri N.R. Raju, Vice President, Tribology Society of India and till now Executive Director (Lube Technology), IndianOil R&D Centre has joined the Board of Directors of Indian Oil Corporation as Director(R&D).

Shri Raju graduated in Mechanical Engineering from the University of Bombay, did his Post Graduation in Mechanical Engineering from the University of Leeds, UK in the year 1969. He worked with British Petroleum in their research and development centre at Sunburry-on-Thames, UK for three years and joined Indian Oil Corporation's, Research & Development Centre in November 1972.

He has over three decades of rich and varied research experience in the field of tribology, lubricants, fuel quality and emissions. At present, Shri Raju is considered one of the best-known technocrats in India in the field of automotive fuels, lubricants, emissions and tribology. Shri Raju possesses unique expertise in the field of vehicular emissions, evolution of standards and the adoption of new environment friendly and cost effective formulations for fuels and lubricants.

He has published over 50 research papers in journals of international repute and has 14 patents to his credit. Shri Raju is a member of Society of Automotive Engineers (SAE), USA and has served in a number of committees setup by Ministry of Petroleum and Natural Gas, Bureau of Indian Standards, Central Pollution Control Board etc. He had also been a Board Member on the Board of Indian Oil Blending Ltd., a wholly owned subsidiary of Indian Oil Corporation Ltd. He has several recognitions and national awards to his credit.

Shri Raju is very actively involved in many technical societies and is Vice President of Tribology Society of India. He is also President of CIMAC-India Chapter and President of NLGI India Chapter. He had the honour of being the Organizing Secretary, ISFL-2002.

## PRESIDENT'S MESSAGE

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Over the years the Tribology Society of India (TSI) has grown in size. It has provided a common platform to the practising engineers, academicians and research scientists from a large area of activity. The scientific deliberations organized by TSI have helped the industries like steel, oil, cement, automobile, engineering, manufacturing and power etc. in reducing cost substantially through robust Tribology practices. Today Tribology has become one of the most talked subjects as is evident from the increased number of workshops and courses in the area of Tribology that are organized by various societies and organizations.

I am happy that the new issue of TSI Newsletter is being released. For some time now the TSI Newsletter could not be brought out due to some operational problems. The Newsletter features Dr. Asutosh Sharma of IIT Kanpur as an Eminent Tribologist, who is the recipient of this year's Dr. Shanti Swaroop Bhatnagar Award in engineering sciences. The Tribology community of India congratulates him for this outstanding recognition, which will go a long way in propagating the importance of Tribology for our fraternity. The issue also features an article by Dr. S.Sundararajan of ARCI Hyderabad on the new technique of micro arc coating for wear prevention under the feature "Technical Update".

As you are aware the first issue of "Indian Journal of Tribology" was released in Jamshedpur Conference. I understand the second issue is ready and being dispatched to all members of TSI. I solicit the help of each and every member in making publication of this journal ontime by contributing quality technical articles, technical features and items related to Tribology. Also, I appeal to all the manufacturers of Tribology related equipment and products to help finance the journal by advertisements and sponsorship, etc. The advertisements rates are given in the Newsletter.

We have planned to put the profile of each member of our society on our website in a searchable mode. Also, we will make an effort to create a discussion board soon on our website for the mutual benefit of the members having common interest.

We are now in the process of preparation for organization of the ICIT 2004, which would be held this time in the

Western Region. I would request all members to participate in this conference in large numbers both as delegate and by contributing technical papers in the areas of their research.

I look forward to meeting you all in person during ICIT-2004.

With best wishes and warm personal regards,

C. Mishra

## EMINENT TRIBOLOGISTS

### Dr. Ashutosh Sharma



Dr. Ashutosh Sharma, Professor and Head of Chemical Engineering at Indian Institute of Technology, Kanpur, received the prestigious Shanti Swarup Bhatnagar Award in Engineering Sciences for the year 2002.

Prof. Sharma completed his B.Tech. (1982) at IIT Kanpur, M.S. at the Pennsylvania State University (1984) and obtained his Ph.D. from State University of New York at Buffalo in 1987 with Prof. Eli Ruckenstein—a recipient of the US Medal of Science. After a brief stint (1988-90) at the SUNY School of Medicine and Biomedical Sciences as a research faculty, he joined IIT, Kanpur in 1990. Prof. Sharma was elected a Fellow of the Indian Academy of Sciences, Bangalore in 1999, and has served on the Editorial Board of *Journal of Colloid and Interface Science* during 2000-02. He has also received research awards from the Indian Institute of Chemical Engineers and from the Indian Society for Technical Education.

Prof. Sharma has authored over 100 publications in international journals of repute such as *Physical Review Letters*, *Journal of Chemical Physics*, *Langmuir* and *Journal of Colloid and Interface Science*. His 10 most significant papers have received over 500 citations in the international scientific journal publications. He has been an invited or keynote speaker at 20 international and national conferences and have supervised research of 35 Ph.D. and M.Tech. students. He has been invited to give presentations in seminars and conference in the US, UK, France, Germany, Israel, Bermuda, Netherlands, Belgium and Japan.

In recent years, Prof. Sharma's group has worked on several fundamental aspects of the behavior and properties of soft matter on mesoscales— the twilight zone between the molecular and the bulk where properties depend on the system size. Prof. Sharma and his

students have made significant contributions to the self-organization in thin films and its exploits in creating small-scale patterns for nanotechnology; wetting and dewetting of surfaces; adhesion, friction and peeling of soft interfaces; corneal surface properties and genesis of dry eye syndromes; and nano-scale interactions in membrane separations.

Dr. Sharma's research has direct applications in a variety of settings such as thin coatings, detergency, foams, emulsions, meso-scale patterning of soft materials including polymers for opto-electronic and in micro-electro mechanical systems. His research has also enhanced our fundamental understanding of important phenomena such as adhesion, friction, debonding, wetting/dewetting, heterogeneous nucleation, multilayer adsorption and phase separation.

The focus of Dr. Sharma's group currently is in tailoring of thin coatings by electric fields and other innovative means, nano-scale patterning of soft materials including polymers for opto-electronic applications, and in detergency or the science of cleaning of surfaces. The work in detergency is being funded by the Unilever/Hindustan Lever Research Institute, Bangalore, thus creating a happy synthesis of the fundamental and the practical. These above activities involve theory, complex computer simulations and the experimental support of a laboratory established by Dr. Sharma that houses the state-of-the-art characterization and preparation equipment such as an Atomic Force and Scanning Tunneling Microscope, imaging ellipsometer, contact angle goniometer, optical microscopes, high speed camera, Langmuir-Blodgett deposition system, spin-coater, etc.

A native of Jaipur, Ashutosh is married to Neeti, his wife of 17 years, and they have a daughter, Richa. Prof. Sharma's other hobbies include writing poetry, sketching and computer art, and ancient history and philosophy.

## LOOK BACK TO MOVE FORWARD IN TSI

Now Tribology Society of India (TSI) is 14 years old. While it is always possible to list out achievements and contribution of individuals and as groups to build TSI what it is today; but it is also pertinent to pause over whether the organization has met the vision of its founders and whether in its long journey it has met the objectives for which it was setup.

In early formative years, the financial stability is as important as its structure and organization to carry forward the mission. Some remarkable progress was made in early days both on financial front and also by establishing a network of local chapters. In addition to a biennial national/international conference, a News Letter, a TSI Journal, a TSI website([www.tribologyindia.org](http://www.tribologyindia.org)), but what beyond this?

In industry what we call as "Competitive advantage" is equally well perceived in the context of scientific bodies and organizations like this. A TSI member is also generally affiliated with other scientific bodies and prioritizes his/her activities, contributions and learnings among various scientific bodies depending upon their competitive advantage which depends, inter-alia, on his perceptions

about how vibrant a scientific body is and what opportunity/networking it provides him/her. A biennial International conference in absence of other activities can hardly drive a competitive advantage. We need to adopt a complete new set of strategy to make TSI more throbbing and vibrant to drive competitive advantage for our members.

Through this TSI newsletter, your suggestions are solicited on the type of activities you would like to see enchanted under the aegis of TSI so that Executive Committee of TSI may draw the charter of activities, which meets member's expectations.

As you will read in this newsletter, three of our local chapters, Bhopal, Mumbai and Bangalore are working diligently as flame runners and we expect other local chapters also to get rejuvenated. This issue also carries the listing of salient decisions taken in the EC to apprise our members. We hope that members will be prompt to point out if they notice something amiss. Of course, a little of appreciation is also welcome. If neither happens at larger base of our membership, we will get the hint: Miles to go before (you wake up from) the sleep.

### *Conference Review*

#### WEAR OF MATERIAL -2003

The 14<sup>th</sup> International Conference on Wear of Materials was organised by Elsevier Publishers at Renaissance Hotel, Washington DC, USA from March 30<sup>th</sup> to April 3, 2003.

The Steering Committee comprised of Dr.Hsu, NIST, Gaithersberg, MD as Conference Chair, Dr.A.Wang of Howomedica Osteonics, NJ, as Program Chair, J.Hawk, Albay Research Centre, Oregon as Secretary and Poster session Chairman, Prof.Peter Blau, Oakridge National Laboratory as Editor, Full papers, Prof.D.A.Rigney, Ohio State Univ., as Associate Editor for Full Papers.R.G.Bayer, Vestel, New York, as Editor, Communication and Case Studies, Prof. K.G.Budinski, Buds Labs, New York as Commercial Exhibit Chair and Prof.K.C.Ludema as Editor Emeritus.

There were Three Plenary Lectures, around 200 Oral Presentations and 50 Poster presentations. Around 250 delegates participated in this conference. Only two were from India. Plenary Lectures were delivered by Prof.Ian Hutchings, Cambridge Univ., UK, Mark Robbins of John Hopkinson Univ., and John H.Dumbleton, Stryker Howamedica, Osteonics, NJ.

Prof.Hutchings discussed Wear as manufacturing process. Highlighting all the beneficial effects of wear Prof. Robbins emphasised the urgent need for computer simulation in tribology. Prof. Dumbleton enlightened all the participants with his vast and rich experiences in human joint replacements and their tribological behaviour.

The oral and poster sessions included topics on Biotribology, Wear of Metals, Wear of Ceramics, Nanotribology, Lubricated wear, Wear of Coatings, Erosion, Wear of polymers and Composites, Fretting, wear monitoring. All the presented papers will be published in Wear Journal and some of them have already been published.

Dr.C.S.Ramesh, Professor & Director, R&D, Mech Engg., Ghousia College of Engineering, Ramanagaram, Karnataka presented a Paper "Tribological Characteristics of Nickel Composite Coatings". The other delegate from India, Prof. Pal Tapan Kumar, Metallurgy Department, Jadavpur Univ., India presented the paper "Wear behaviour of Hard Facing Deposits on Cast Iron."

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