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# TSI NEWS LETTER

## ICIT-06 SPECIAL ISSUE

#38

A Quarterly Newsletter from Tribology Society of India

April 2007

### MESSAGE FROM PRESIDENT

Dear Tribologists,

A new Executive Committee has taken over post ICIT 2006. The biennial conferences organised by TSI over the years have played a historic role in promoting education and research in tribology at certain organization level but probably had less success in promoting wide spread application of advanced tribology as problem solving science for our day to day challenges. I sincerely hope during the tenure of present EC, TSI will not only try its best to fostering of scientific temper or better say tribological temper among our members but also endeavour to start consulting services of its own with the involvement of large number of experts on its roll. Tribology to take roots must pervade our way of thinking and our way of working. We see starting of Consultancy services by TSI as a stepping stone to make Tribology take deeper roots as an enabling technology with growing industrialization in India.

But it is easier said than done? While as a country we should be prepared to fund the needed research, we should not waste resources and effort to re-invent the wheel. Where we would need focus and investment is in promoting better utilization of existing knowledge and in disseminating this knowledge as widely as possible and this is the void which we will try to fill through setting up TSI Consultancy Services.

There are many concerns about the development of tribology in our country, that I wish to share with you in the hope that some of you will light our path at TSI. If I am not misinterpreted, let me boldly say that our best minds are not turning to tribology, and those who do, do not remain in it. We must find ways of making tribology more attractive to make career with. Are we creating the required environment for innovation, for experimentation, and for creativity in our institutions? Are our research laboratories and industries exciting places for the young, encouraging creativity and experimentation, or are we scaring them away with our bureaucratic ways and our hierarchical systems? Are we creating synergy between research and new initiatives in tribology, our teaching system and adaptation in Industry? Are we promoting public private partnerships, to increase funding for frontier areas of research in tribology? If we are not doing all this and more, chances are that we are not creating exciting career opportunities for tribologists.

The industry expects a lot from those among us who have had the privilege of good education in tribology. We must apply our knowledge to deal with the challenges of our times. Equally, we must encourage a new wave of creativity and experimentation among youth. Tribology needs a new boost, a new lease of life, a push into the future. In the final analysis, it is up to us, the scientists, the educationists, and administrators of research and educational institutions to take the lead and show the way forward. If TSI is able to kindle the fire of passion, called Tribology, among its large membership, we know for sure that Almighty has set us on right path.

Dr. G. K. Sharma

### 5<sup>th</sup> International Conference on Industrial Tribology 30<sup>th</sup> November to 2<sup>nd</sup> December 2006- A Round Up

The 5<sup>th</sup> International Conference on Industrial Tribology ICIT-06 was organized at Bangalore from 30<sup>th</sup> November to 2<sup>nd</sup> December 2006 at JN Tata Memorial Hall at Indian Institute of Science. This conference is held biennially under the aegis of Tribology Society of India. It is for the first time that the conference was organized by an Educational Institution.



Chief Guest Dr Balaveera Reddy flanked by Mr V.N Sharma President TSI and Prof N. Balakrishnan Inaugurates ICIT-06 by ceremonial lamp

The conference was inaugurated by Dr Balaveera Reddy, Vice Chancellor, Vishveswarayya Technical University, Belgaum., in a glittering ceremony held in the JN Tata Memorial Auditorium, IISc Bangalore. The highlight of this conference was presence of an ensemble of world leading Tribologists from the leading educational institutions from UK, USA, Japan, Singapore and Korea. A large number of dignitaries from major industrial organizations as well as



Prof SV Kailas Welcomes the delegates at ICIT 06



Heads of Academic and Research Institutions along with a large number of delegates who came from far and near places in India were in attendance during the Inauguration. Dr Reddy, the Chief Guest, briefly touched upon the progress of Tribology globally and in particular in the Indian scenario. He underlined the need for adoption of good tribological practices and reaping its benefits as envisaged in the Jost report of 1961.

During the Inaugural Function a theme lecture was delivered by Prof Hugh Spikes of Imperial College London. The topic of his talk was "Boundary Lubrication its History and Recent Developments." He traced the path from the days when fatty acids in form of animal and vegetable fats were in use to the present day use of Zinc, Phosphorous, sulfur and Soluble Molybdenum additives. The talk was liked by each and every delegate present at the venue. During the Inaugural Session Prof SK Biswas also delivered a talk on the subject of new class of Boundary Lubrication additives -Silane.



Prof Hugh Spikes Imperial College London,  
Delivers the Theme Lecture



Prof N Balakrishnan releases the  
proceedings of the conference as  
Prof B Reddy and Prof SK Biswas,  
Chairman Organising Committee extend their help.



Prof D.V. Singh delivering the  
Valedictory Address



Mr N.M.Dube, Organising Secretary (Organisational)  
ICIT-06 proposes Vote of Thanks



Mr V.N.Sharma, President TSI greets the Chief Guest.



Dr. Har Prashad delivering the  
Valedictory Address

## Technical Sessions :

The technical sessions were divided in three categories namely; Plenary Sessions, Oral Sessions and Interactive Sessions.. In all about 200 papers were presented in the technical sessions. Eighteen Key Note papers were presented by the eminent Tribologists both from India and abroad in the six Plenary Sessions. About one hundred technical papers were presented in the nine Oral Sessions and about 75 papers were presented in the Interactive Sessions which was held in the evening at Hotel Ashoka during the Banquet Dinner.

## Key Note Speakers :

There were Six Plenary Sessions and in each session three Key Note Papers were presented by world renowned eminent Tribologists. The highlight of the Plenary Sessions was that they were packed with some of the most impressive lectures in the area of Tribology which touched upon some of the latest research areas perused by various research institutions. The sessions were very much appreciated by the delegates and they were witness to presentations on some of the recent research work being conducted world over. Following are the Keynote speakers with topics on which they spoke.



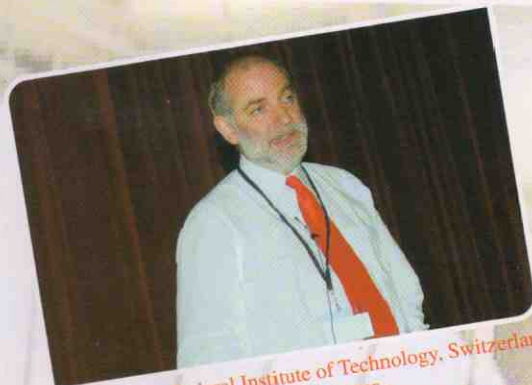
S.K. Biswas, Indian Institute of Science, India  
delivering his key note paper - Frictional Response of Silane Monolayers  
Self- Assembled On Silicon Wafer.



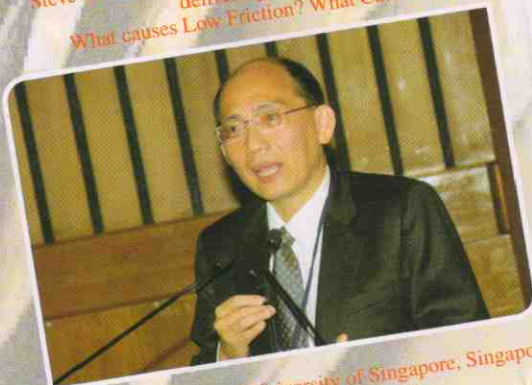
## Key Note Speakers :



Steve Granick, University of Illinois at Urbana Champaign, USA,  
delivering his key note paper -  
What causes Low Friction? What Causes High Friction?.



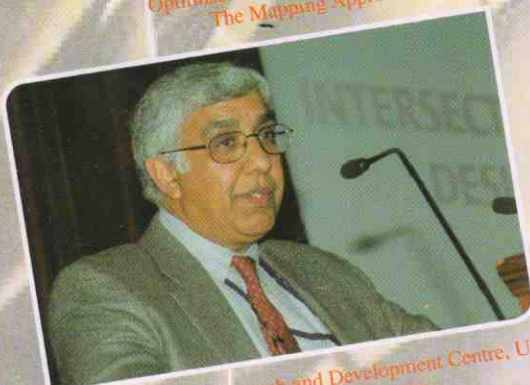
Nicholas Spencer, Swiss Federal Institute of Technology, Switzerland,  
delivering his key note paper -  
The Chemical Structure of Phosphate-Based Tribofilms:  
A Combinatorial XPS Study.



Shee Chun Lim, National University of Singapore, Singapore,  
delivering his key note paper -  
Optimisation of Tribological Systems  
The Mapping Approach.



G.K. Sharma, CIRT India,  
delivering his key note paper -  
Growing Indian Automotive Industry  
Challenges in Tribology Research.



Anil Sachdev, GM Research and Development Centre, USA,  
delivering his key note paper -  
The Intersection Between Materials And Design To Address  
Tribology Requirements In Internal Combustion Engines.



Uzi Landman, Georgia Institute of Technology, USA,  
delivering his key note paper -  
Hard and Soft Nano-Junctions.



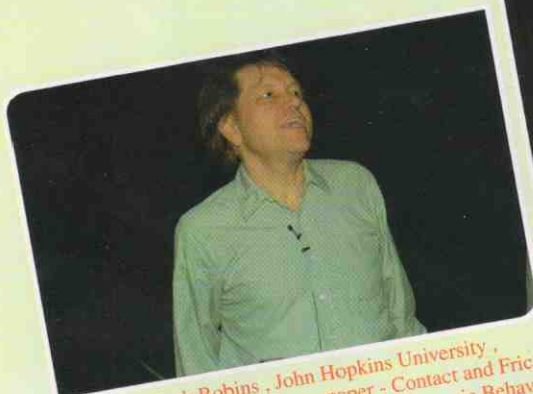
Hong Liang, Texas A & M University, USA,  
delivering her key note paper -  
Surface Roughness In Chemical  
Mechanical Planarization.



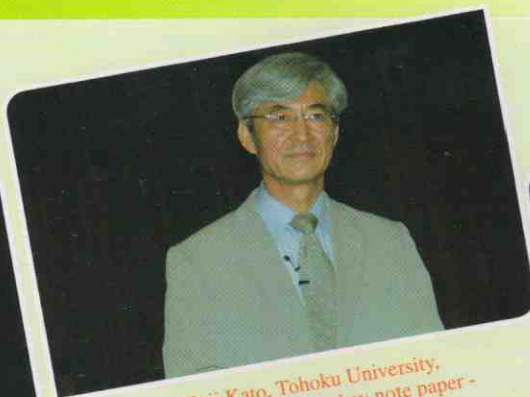
Ando Yasuhisa, National Institute of Advanced Industrial Science  
and Technology, Japan, delivering his key note paper -  
Micro Friction Tests in High Vacuum.



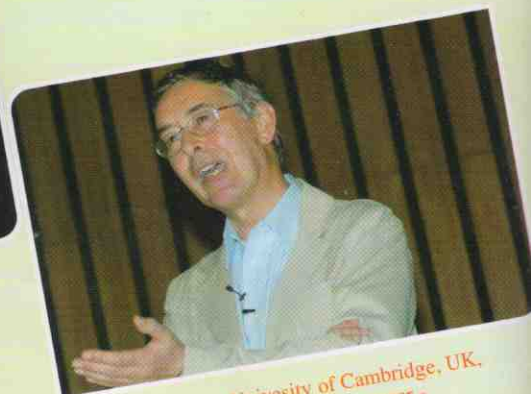
## Key Note Speakers :



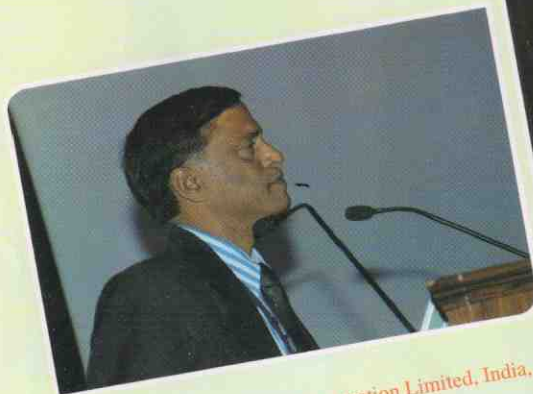
Mark Robins, John Hopkins University, USA, delivering his key note paper - Contact and Friction : Connecting Atomic dynamics to Macroscopic Behaviour.



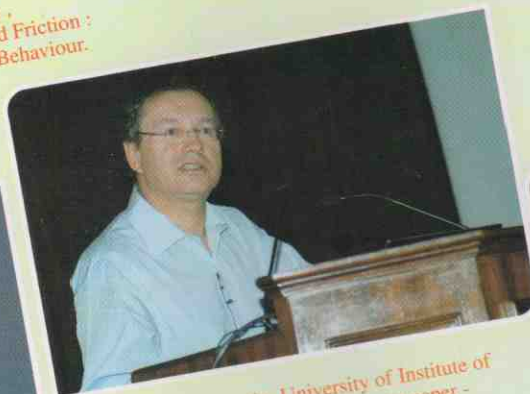
Koji Kato, Tohoku University, Japan, delivering his key note paper - Tribolayers for Low Friction and Low Wear.



Ian Hutchings, University of Cambridge, UK, delivering his key note paper - Wear As A Manufacturing Process.



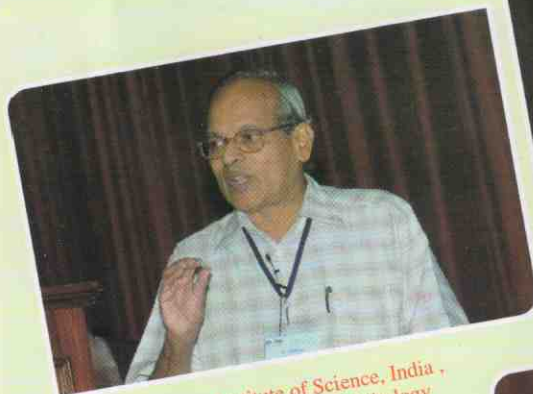
G Vasudev, Bharat Petroleum Corporation Limited, India, delivering his key note paper - An Overview On Importance of Improving The Reliability Of Equipment And The Challenge.



Jean Michel Martin, University of Institute of France, delivering his key note paper - Boundary Lubrication By Glycerol.



M Radhakrishnan, Central Manufacturing Technology of Institute, India, delivering his key note paper - Lubricants, Human, And The Environment.



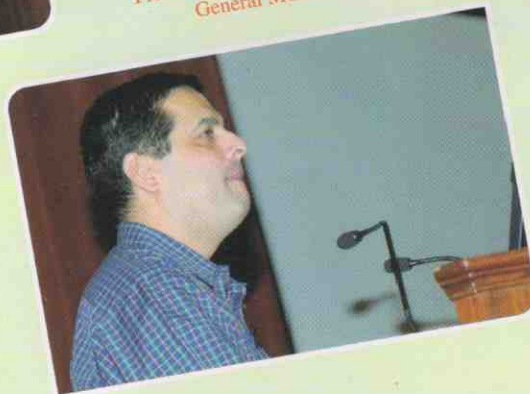
N Raman, Indian Institute of Science, India, delivering his key note paper - Tribology of Piston Ring And Cylinder Liner Of I.C. Engines: Importance Of Metallurgical And Geometrical Characteristics of Surface.



Dr. R. K. Malhotra ED(LT) IOCL R&D, Presents a memento to Dr. Anil Sachdev, General Motors R&D USA



Dr. R. K. Malhotra ED(LT) IOCL R&D, Presents a memento to Dr. G. K. Sharma, Director, CIRT India



S. Joshi, International Advanced Research Centre For Powder Metallurgy and New Materials, India, delivering his key note paper - The Tribological Behaviour Of We-Co Based Thermal Spray Coatings: The Influence Of Phase Content & Micro Structure.



## Technical Papers :

A total of one hundred seventy five papers were presented in the conference during three days of the proceedings. Of these one hundred papers were presented in the nine parallel oral sessions, whereas another seventy five were presented in the Interactive session. The interactive session was organized at Hotel Ashok during the Banquet Dinner. This session attracted great interest from the audience and the delegates particularly liked the ambience in which the interactive session was organized. Out of the papers presented in the conference, three papers were selected by a technical jury of three eminent Tribologists for Best Paper Award in three categories namely : Basic Research, Applied Research and in Interactive Session.



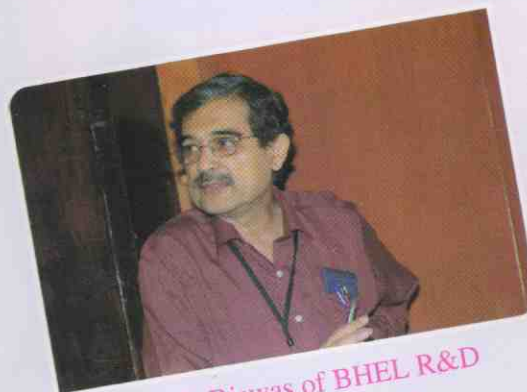
An author explains his paper in Interactive Session



Prof Bijwe, ITMMEC, presents her paper



Dr. S. K. Mazumdar, IOCL R&D, presents his paper



Dr. S. Biswas of BHEL R&D presents his paper



Question Answer

### Thanksgiving

Tribology Society of India profusely thank the following sponsors for supporting the cause of the society as well as sponsoring the ICIT- 06 in Bangalore

Bharat Petroleum Corporation Limited  
Hindustan Petroleum Corporation Limited  
Indian Oil Corporation Limited  
Balmer lawrie & company, Calcutta  
Council of Scientific and Industrial Research, New Delhi  
Department of Space, ISRO, Trivandrum  
Larsen & Toubro Mumbai  
Standard Oil Services, Bangalore  
General Electric, Bangalore  
TVS Motor Company, Bangalore  
CSIC, New Delhi

### Proceedings ICIT 06

A limited number of proceedings of the 5<sup>th</sup> International conference on Industrial Tribology is available on sale. Those interested to buy these may contact Prof Satish V Kailas at IISc Bangalore. Each CD with Abstract in hard copy will cost Rs 500/-

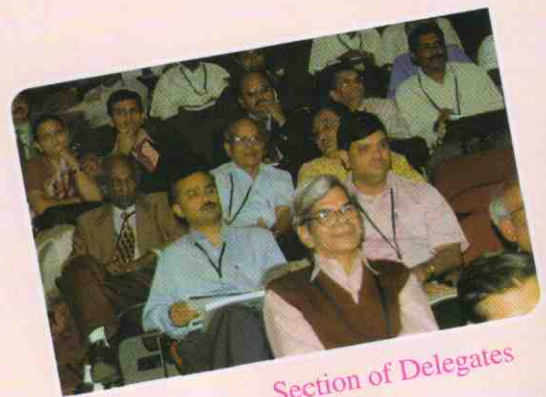
### Thanksgiving

The Executive Committee of TSI would like to place on record special appreciation to the Organising Committee of ICIT-06, specially to Prof S.K. Biswas Chairman Organizing Committee and Prof SV Kailas and MR NM Dube, Organizing Secretaries for organizing the ICIT-06 very successfully in Bangalore.



## Valedictory Function :

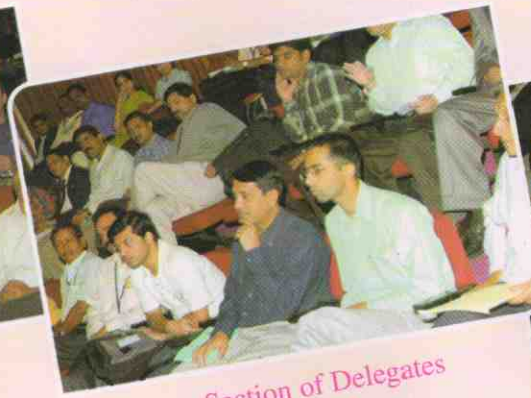
The valedictory function was held on 30<sup>th</sup> November 2007 , the last day of the conference. Two eminent Tribologists of India, Prof D.V. Singh and Dr Har Prasad delivered the valedictory addresses. Dr DV Singh spoke eloquently about the evolution of Tribology as a subject in India informing that with the 1<sup>st</sup> World Tribology Conference in India way back in the year 1972 at IIT Delhi, the foundation of Tribology as a subject was laid in the country. Dr Har Prashad spoke on the subject of effect of electric current leakage on rolling bearing performance .



Section of Delegates



Section of Delegates



Section of Delegates



Section of Delegates

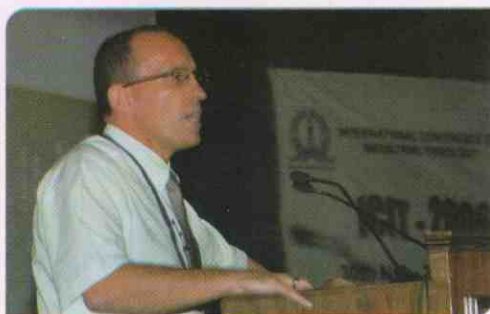
## Business Meet :

One of the important features of this conference was organizing a Business Meet for Tribological Equipment Suppliers/Service providers. The meet gave a unique opportunity to interact with the delegates in specially moderated sessions. Delegates as well as the Equipment suppliers have appreciated these Business Meet Sessions, which were organized for the second time in the ICITs. Following companies participated in the Business Meet.

1. Hysitron
2. Tribotex Company Ltd
3. M/s. Kittiwake Development Ltd, UK



M/s TRIBOTEX Representative speaks in Business meet



M/s Kittiwake Representative speaks in Business meet

Advertisements through [www.tribologyindia.org](http://www.tribologyindia.org)

Interested parties can advertise their products related to Tribology through the website of Tribology Society of India. For further details please send your enquiries to the following persons

V Martin , Secretary or

Mr Ajay Kumar , Treasurer

Tribology Society of India

C/o Indian Oil Corporation Limited

R&D Centre , Sector – 13 Faridabad 121007

Phone ; 0129 2269853

E Mail : [martinv@iocrd.co.in](mailto:martinv@iocrd.co.in) [martinv17@yahoo.com](mailto:martinv17@yahoo.com)



## Exhibition :

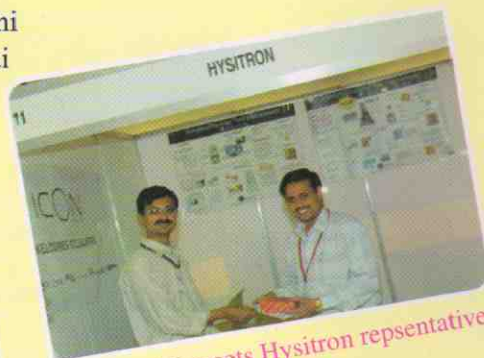
A total of 10 Exhibitors put up their stalls and displayed their Tribology related products and services, which evoked good interest among the delegates and visitors. Following is the list of exhibitors who participated in the conference.

### EXHIBITORS

Ducom Instruments Pvt Ltd , Bangalore  
 Indian Oil Corporation Ltd, Mumbai  
 Hindustan Petroleum Corporation Limited , Mumbai  
 Optimol Instruments , Germany  
 Dantech Engineers Pvt Ltd , New Delhi  
 Labindia Instruments Pvt Ltd, Mumbai  
 Magnum Engineers , Mumbai  
 Gulf Oil Corporation , Mumbai  
 Industries from Belarus,  
 RCG Instruments , Pune  
 Hysitron , India



Prof Bobji greets RCG Instruments representatives



Prof Bobji greets Hysitron representative



Prof Bobji (Second from right) visits Optimol Instruments stall



The DUCOM Stall with its representatives

## TSI Best Paper Awards During the Conference :

Following TSI Best Paper Awards were presented during the Conference

- 1 Award for Best Paper in Applied Research to P K Limaye , Garima Sharma , N L Soni and P G Agarwal of BARC Mumbai for their paper entitled , "Sliding Wear studies of Iron-Aluminide Ordered Intermetallic Alloys Under Dry and Water Lubricated Conditions".
- 2 Award for Best Paper in Basic Research was shared by Rajesh Kumar , Brahm Prakash and A Sethuramiah of BHU IT Varanasi , Lulea University of Sweden and Former Professor ITMMEC , IIT Delhi respectively for their paper entitled " A Methodology to Estimate the Wear Co-efficient of Engine Liner Under Lubricated Condition" and P Samanta and Harish Hirani of IIT, Mumbai , for their paper entitled "Optimization of Passive Magnetic Bearings".
- 3 Award for Best Paper in Interactive Session to C V Venkatesh and S R Jayaram of Malnad College of Engineering , Hassan , for their paper entitled , "Investigation of Mechanical Properties of Nylon 66 and MoS<sub>2</sub> Blends".

A cash prize of Rs. 5000/- was awarded in each category.

## Election and Annual General Body Meeting of the Society :

Election for the new Executive Committee was held on 1<sup>st</sup> December 2006 by secret ballot . Dr. AS Sarma was earlier appointed as Returning Officer for conducting the elections .

The biennial General Body Meeting of the Society was also held on 1<sup>st</sup> December 2006 at 6:30 PM. The meeting was chaired by Mr V N Sharma, President TSI. Secretary Dr GK Sharma gave an overview of the activities of the society for the previous two years. He stressed the need for a greater interaction between members through the Member Zone of the website of the society ([www.tribologyindia.org](http://www.tribologyindia.org)). He also requested the members to update their respective Bio-Data in the website by logging into the Website Member Zone. He expressed the need for quality technical papers for publication in the Indian Journal of Tribology.

Mr V Martin, Treasurer , presented the Income and expenditure account of the society for the previous two years which was then passed by the General Body. During the GBM many members felt that Indian Journal of Tribology may be made available through website in the soft copy form . President TSI Ensured that efforts will be made in this direction to achieve this goal in a phased manner.

At the end of the General Body Meeting , Dr. AS Sarma, the Returning Officer appointed for conducting the elections , declared the results of the election. Following is the list of the new office bearers and member of the EC for two year period 2007 and 2008.



## New Executive Committee for the year 2006-07

1. Dr. G.K Sharma CIRT Pune	President
2. Dr S.K.Biswas, IISc Bangalore	Vice President
3. Mr. V Martin , IOCL R&D Faridabad,	Secretary
4. Dr Barun Chakrabarti L&T Mumbai,	Joint Secretary
5. Mr Ajay Kumar , IOCL R&D Faridabad,	Treasurer
6. Dr R.K. Malhotra ,IOCL R&D Faridabad,	Member
7. Prof Satsh V Kailas IISc Bangalore	Member
8. Mr. K Ravi BPCL R&D Mumbai	Member
9. Dr H Hirani , IIT Bombay	Member
10. Mr NM Dube , DUCOM, Bangalore	Member
11. Mr. A.K.Bhan HPCL Mumbai	Member
12. Dr T Singh , BPCL R&D Mumbai	Member
13. Dr Sudhir Rashingkar , RCG Instrument Pune	Member
14. Mr. T.L Nanda , IOCL ( M ) , Mumbai	Member
15. Dr Navin Chand , RRL , Bhopal	Member
16. Dr K K Chaturvedi , BHEL R&D , Bhopal	Member
17. Dr Anand Prabhakaran , TATA Steel , Jamshedpur	Member
18. Mr V N Sharma , Director , Balmer Lawrie , Kolkata	Member
19. Mr C Mishra , Ex TATA Steel , Jamshedpur	Member



**At Ashoka Hotel**

## ICIT08

It was unanimously decided in the GBM that the next ICIT will be held at New Delhi in the year 2008 and will be hosted by Indian Oil Corporation R&D Centre. Dr.R.K. Malhotra, Executive Director (Lube Technology ) will be the Chairman of the Organising Committee . We all wish Dr R.K Malhotra and his team success for organizing the next ICIT which will be organized in a wider scale with a larger participation .

## Cultural Function at ICIT06



### Indian Journal of Tribology

Those interested in publishing their technical papers in Indian Journal of Tribology published by Tribology Society of India may send the full manuscript of their paper in soft copy form to the The Chief Editor at the following address

Dr Harish Hirani  
Chief Editor  
Indian Journal of Tribology  
Department of Mechanical Engineering  
Indian Institute of Technology , Bombay  
Mumbai -400076  
Email: hirani@me.iitb.ac.in

### Enrolment as a Member of Tribology Society of India.

You can become a member of Tribology Society of India if you are interested to know the activities of Tribology in India. For this please log into the society website [www.tribology.org](http://www.tribology.org) and submit your application online. Follow the instructions as given thereafter to send your fee and membership regularization

**Tribology Society of India** wishes to thank all industry representatives who participated in the Exhibition and Business meet during the ICIT 06. They also thank the organizations who have inserted their advertisements in the ICIT-06 Souvenir

### Advertisement in Indian Journal of Tribology :

Indian Journal of Tribology is the largest circulated Indian . Industries who want to promote their products through this journal can insert advertisements in the journal . The advertisement rates are as given below

Back Cover	Rs . 15000/-	US\$1000
Front Inside	Rs.12,500/-	US\$ 800
Back Inside	Rs. 12,500/-	US\$ 800
Full Page	Rs 8000/-	US\$ 500

A 20 % discount on advertisement rates will be offered if a company agrees to book advertisements in four issues