



# MRSI Newsletter

*A quarterly publication of the Materials Research Society of India  
for circulation amongst its members*

**Volume B 06, Number 2**

**April 2006**

## From the Editors' Desk

The seventh Annual General Meeting of the MRSI organized by Lucknow Chapter was special in the sense that it was held in the World Unity Convention Centre located in a school ambience. Also, it was the most densely packed scientific programme in an annual meeting. The organizers of the conference deserve our praise for the excellent conduct of the programme in terms of academic content, accommodation and hospitality. It is particularly a significant achievement for the reason that MRSI Lucknow Chapter formed under the Chairmanship of Dr. R P Singh, Vice Chancellor, University of Lucknow, is just about six months old.

At the meeting, it was decided that the next AGM would be organized by the New Delhi Chapter of MRSI.

It is heartening to note that many major Science and Technology programmes have been initiated in the country in recent years and this trend is bound to continue in future also. This would require involvement of large trained manpower having adequate scientific/technical expertise. However, we find a mismatch in the human resources required and that available for carrying out these tasks. The only solution to this is to increase the talent pool available in the country by improving the standards of education at all levels starting from primary education. It is hoped that both short and long term measures will be taken to address this important issue.

H L Bhat  
R Y Krishnan  
T G Ramesh  
Editors

*For more details about the activities of MRSI,  
members are advised to visit the  
society's website at*

**[www.igcar.ernet.in/mrsi](http://www.igcar.ernet.in/mrsi)**

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## **MRSI NEWSLETTER**

**Volume B 06, Number 2**

**April 2006**

The MRSI Newsletter is a quarterly update published by the Materials Research Society of India. Members are requested to contribute information of interest to Materials Science community. Members can inform through the Newsletter, recognitions/awards received by them, changes in address, forthcoming events, and any interesting scientific/technological developments in the area of materials. The relevant information should be sent to the following address:

*Editors*

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## Awards & Distinctions Conferred on Members



We are happy to report that the following members of Materials Research Society of India have received awards and distinctions shown against their names. MRSI congratulates them.

<b>S Sivaram</b>	Padma Shri, Govt. of India
<b>Ashutosh Sharma</b>	Editorial Boards-Canadian Journal of Chemical Engineering and Indian Chemical Engineer
<b>Kamachi Mudali</b>	Metallurgist of the year Award, Ministry of Steel, Govt. of India (2005)
<b>Sanak Mishra</b>	Honorary Membership, IIM (2005)
<b>G Sundararajan</b>	GD Birla Gold Medal, IIM (2005)

P.S: Members are requested to communicate to the Editorial office about the Awards, Honours and Distinctions they have received from various agencies

### NOTIFICATION

Many members expressed the opinion during the 17<sup>th</sup> AGM of MRSI that the distribution of hard copies of Bulletin of Materials Science to MRSI members be discontinued. It has been decided to follow this suggestion. In case any member wishes to receive the hard copy, he / she should write to MRSI Office with a specific request before **June 30<sup>th</sup> 2006**.

### STUDENTS' PROJECTS

MRSI will partially support upto 10 projects of students (B.Tech, M.Sc, M.Tech, ME, Ph.D) in the area of Materials Science & Technology under the supervision of a MRSI member. Proposals are invited **before September 30<sup>th</sup> 2006**.

## IUMRS-ICAM 2007

### “International Conference on Advanced Materials” Bangalore, India during October 8-13, 2007

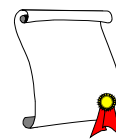
MRSI will be organizing the IUMRS-ICAM 2007 in Bangalore, India during October 8-13, 2007. The following symposia are tentatively proposed.

**Symposia (Partial & Tentative):**

(A) Intelligent Materials	(B) MEMS	(C) Functional Materials	(D) Self Assembly & Nanomaterials
(E) Magnetic & Spintronics Materials	(F) Semiconductors for Opto-electronics	(G) Biomaterials including Materials for Biomedical Applications	(H) Soft Matter
(I) Polymer Materials	(J) Sensor Materials	(K) Photonic Materials / Active Materials/ Electronic Packaging	(L) Multilayered Materials
(M) Hybrid Materials	(N) Energy Materials	(O) Composite Materials	(P) High Strength Materials
(Q) High Performance Structural Materials	(R) Computational Materials Science	(S) Materials for Catalysis	(T) Characterization of Materials
(U) Microscopy of Materials	(V) Materials Synthesis- Novel Approaches	(W) Nanodevices	<b>Forums (Tentative):</b> (X) Materials Education (Y) Green Materials

The programme will consist of (i) Plenary Lectures (ii) Invited Lectures (iii) Oral Presentations (iv) Poster Presentations and (v) Public Lectures. It will be a five day conference with more than ten parallel sessions. For further details refer to website [www.icam2007.com](http://www.icam2007.com)

## Report on the 17<sup>th</sup> AGM of MRSI



The Materials Research Society of India (MRSI)-Lucknow Chapter and University of Lucknow organized the 17<sup>th</sup> Annual General Meeting of the MRSI and a theme symposium on “Bio, Biomedical and Natural Materials” during February 12-16, 2006. Nearly 300 participants including 12 from abroad (France, Austria, Netherlands, Germany, Slovakia, Korea and Japan) attended the meeting. There were 37 invited lectures and 175 poster presentations. These include 17 award lectures, 13 theme lectures, 3 invited lectures and 2 plenary lectures.

Before MRSI-AGM 2006, India Chapter meeting of the Asia Pacific Academy of Materials (APAM) was held on February 12, 2006. Prof. Ramachandra Rao, President, APAM India Chapter delivered the introductory remarks and Prof. S. V. Subramanyam, Secretary-General, APAM discussed the activities of APAM. This was followed by two technical lectures. The first lecture was delivered by Prof. Rajiv Raman, BHU on “From Mendelian Factors to Nanotubes” and the second by Prof. H.L. Bhat, IISc, Bangalore on “Crystal Growth, Structural, Transport and Magnetic Properties of Hole Doped Rare Earth Manganites”. The MRSI-Council meeting followed this meeting.

As a part of the 85<sup>th</sup> Anniversary of University of Lucknow, two public lectures were delivered by eminent scientists, namely Prof. C.N.R. Rao, F.R.S., Founder President, JNCASR, Bangalore and Dr. R. A. Mashelkar, F.R.S., President, MRSI & Director General, CSIR. Prof. Rao spoke on “Science for our Future” whereas Dr. Mashelkar’s lecture theme was “Making High Technology work for the Poor”. According to Prof. C.N.R. Rao, science must aim not only at the economical development of a country but also at training manpower in the areas of cutting edge technologies. He emphasized that globalization has made science and technology very competitive and in order to survive, we must get into frontiers of science and technology. “In 1947 India and China were more or less at par with each other but in the last 25-30 years China has marched far ahead of us. We must not only catch up with them but also go ahead of them. For this to happen a very important ingredient is the driving force of nationalism and commitment to the cause of the country. We must develop this commitment fully” he stated. Dr. Mashelkar spoke about simple technologies when designed and adopted by villagers/ farmers can completely transform the quality of life in this social sector. “Technological innovations and social policies must go hand in hand” he said. He further emphasized that literacy is an important component for the social development of any society. “Today we have 200 million people who are illiterate- 70 million men and 130 million women. It is a Herculean task to make them literate but it must be done for our country’s strength and welfare.” Dr. Mashelkar also emphasized the importance of intellectual property rights. “India is now a signatory to IPR treaty and WTO and hence bound by international commitment under these regimes. Therefore, we have to strengthen our research and educational institutions. We must become intellectually self-reliant” he added.

The 17<sup>th</sup> AGM of MRSI was formally inaugurated on February 13, 2006 morning with an inaugural address by Prof. C.N.R. Rao and keynote address by Dr. R. A. Mashelkar. Both the scientists emphasized the importance of emerging new materials that are finding wide applications in almost all activities of human being, in particular in the field of medicine, micro-electronics and life sciences.

The first session of the symposium was on “Bio, Biomedical and Natural Materials” under the chairmanship of Prof. V.D. Gupta, Integral University. Five lectures were delivered in this session. They dealt with subjects varying from blood compatible materials to biological activity of paclitaxel polymer conjugate with polyethylene glycol. Paclitaxel is the powerful tool in anticancer therapy. In blood compatibility of materials the current status was discussed relating to the endothelialisation of surfaces and surface modifications to enhance the efficiency of cardiovascular devices. The use of biomaterials in the population stabilization was mainly based on drugs such as hormone analogs and polymeric implants such as RISUG. The biomedical sector in India is estimated to be growing at the rate of 7% per annum. The materials are finding wide applications in catheters, vascular grafts, mammary implants, sutures etc. These materials are clinically compatible.

After the lunch break, four medal lectures were delivered with Prof O. N. Srivastava, BHU chairing the session. The four lectures were based on the synthesis and applications of nano-particles and nano-rods. The applications were based mainly as photonic devices and nonlinear optical materials. These are of current interest because of their potential applications in opto-electronics and multiphoton processes.

In the evening session, Prof. N. Kumar, RRI, Bangalore, delivered the Distinguished Materials Scientist of the year award lecture on Super-Solids.

On February 14, 2006 Dr. G. Sundararajan from ARCI, Hyderabad and Dr. A. K. Shukla from CECRI, Karaikudi delivered the MRSI-ICSC Superconductivity and Materials Science Annual Prize Lectures. The first lecture was entitled "The Detonation Spray Coating" and the second was on "Lightweight Lead-acid Batteries: Yoking Materials Science to electrochemistry". They dealt with technological innovations, which are greatly needed. Prof. E.S.Rajagopal chaired this session.

This plenary session was followed by five theme lectures which were based on a variety of subjects such as "Phase Transitions in Biomaterials", "Nature's Nanomachines", "Ceramides: a special class of Lipids, their importance for the properties of mammalian stratum corneum", "Solid state characterization of pharmaceutical compounds using vibrational spectroscopy" and "Biomedical applications of plastics and safety concerns".

The three medal lectures and two plenary lectures delivered in the afternoon were based on widely different topics such as "Heteroepitaxial Growth of Low Dimensional Phases and Nanostructures", "Phases and Faces of bronzes: Archaeometallurgical Insights" and "Recrystallization behaviour and Mechanical Properties of Some Aluminium Packaging Alloys". Prof. S.B. Krupanidhi, IISc Bangalore chaired the plenary session. The last two lectures of the day emphasized the importance of polarized small angle light scattering from natural and synthetic polymer gels and electrical and magnetic properties of modified DNA.

On February 15, 2006 the session opened with four medal lectures under the chairmanship of Prof S.V. Bhat.. The first one was on "Superconductivity and Magnetism in Oxides-based Epitaxial Heterostructures". The other three discussed the "Application of low Energy Accelerators in materials research", "Vibrational Dynamics of Polymers" and "Computational Physical Chemistry and Molecular Simulations of Polymers at various levels". This session was followed by theme lectures on novel materials and ecofriendly approaches for biomaterials. The invited lectures following this session discussed the hydrogen-bonded polymers in water, liquid chromatography of macromolecules and molecular modeling of nanoporous aluminosilicates. Aluminum silicates are an important class of chemical compounds due to their abundance in nature and wide applicability in many industries. Special mention may be made of zeolitic systems.

In the afternoon, there were three medal lectures and three G.C. Jain Memorial Prize Lectures. The medal lectures were based on three different subjects. The first one was on interfacial studies using exfoliated graphite and exfoliated graphite oxide and the second one was on deviation from ideal microstructure and its correlation with flow-property during superplastic deformation. The last one discussed the effect of mechanical activation of some minerals and metals on their physical properties and phase transformations. For the G. C. Jain Memorial Prize Lectures there were three competitors. The topics of their lectures were "High Performance Li<sup>+</sup> Conducting Gel Polymeric Electrolytes for Electrochromic Smart Windows", "Bulk and Thin Film Growth of Pure and Substituted Indium Antimonide for Infrared Detector Applications" and "Synthesis and Characterization of Organic-Inorganic Conducting Polymer based Nanocomposite Materials for Electrochemical Power Sources". Ms. M. Deepa, NPL, who presented the first lecture was selected for the award.

The poster session is an inevitable activity of any conference because not all contributors can be accommodated for oral presentations. Two hours of the post-lunch sessions were allotted to posters presentations on 14<sup>th</sup> and 15<sup>th</sup>

February. In the present material science symposium 175 posters presentations were made. A large number of posters attracted as much interest as oral papers. There were serious discussions from expert participants. The posters were classified as Bio and Biomedical Materials and Nature materials (A), Ceramics and Glasses (B), Composites (C), Electronic & Electrical Materials (D), Magnetic Materials (E), Material characterization (F), Metal & Alloys (G), Nanomaterials (H), Polymers and Miscellaneous (I). Since it is very difficult in the short space to highlight the main points of all posters, only thematic mention would be made. The papers on crystal structure and dynamics of important biomacromolecules were of special interest. The papers, which attracted the maximum attention, dealt with the application of nanoscale particles to subjects as diverse as manufacture of aluminium foils to applications of nanoscale engines for drug delivery. A good number of posters dealt with the synthesis and characterization of dielectric, superconducting and magnetic behavior of emerging materials. Computer simulations to model materials with desired properties generated a lot of interest among the participants. Of the 175 posters presented, the following six posters were selected for receiving the Best Poster Awards.

- i. *Nanotechnology via Solution Chemistry* by Shobhit C and Khanna P K, C-MET, Pune
- ii. *Superhydrophilic and Photocatalytic properties of Sol-Gel TiO<sub>2</sub> Thin Films on Glass* by Mahata S and Kundu Debtoosh, CGCRI, Kolkata
- iii. *Observation of TO<sub>1</sub> soft mode in SrTiO<sub>3</sub> thin films by THZ-time domain spectroscopy* by Misra M, University of Lucknow, Lucknow, Kotani K, Kawayama I, Murakami H and Tonouchi M, Osaka University, Japan
- iv. *Stabilization of high temperature form of Orthorhombic CaCO<sub>3</sub> using reserve Micelles: source of Calcium Oxide Nanoparticles* by Ahmed J, Vaidya S, Ahmad T and Ganguli A K, Dept. of Chemistry, IIT- Delhi, New Delhi
- v. *Studies on the performance of Cardanal based adhesives on different Substrates* by V Lity Allen, and Thachil Eby Thomas, Cochin University of Science and Technology, Kochi
- vi. *A new phase boundary in the phase diagram of (1-x)[Pb(Mg<sub>1/3</sub>Nb<sub>2/3</sub>)O<sub>3</sub>]-xPbTiO<sub>3</sub>* by Singh AK, Singh SP and Pandey D, BHU, Varanasi

The conference ended with the prize distribution ceremony and Valedictory comments by Dr. V.P. Kamboj, CDRI and Dr. P.K. Seth, Bio-Technology Park. The delegates unanimously complimented the organizers for the excellent conduct of the Annual General Meeting.

**Dr. Poonam Tandon**  
**Convenor, 17<sup>th</sup> AGM of MRSI**

## NEW MEMBERS

**Enrolled between October 1 and December 31, 2005**

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## CALENDAR OF EVENTS (JUNE-SEP 2006)

**June 16-17, 2006**, Crystal Growth for Electro-Optic Applications. (CGfEOA - 2006), Karunya Institute of Technology and Sciences, Coimbatore - 641 114, Convener : Mr. K. Nagarajan, Tel: 0422 261 43 00, Fax : 0422 261 56 15, Email : pd\_cgrc@yahoo.co.in; nagu\_ketchaman@yahoo.com.

**June 18-22, 2006**, ELECTROCERAMICS X, Sociedad Espanola de Ceramics y Vidrio, Instituto de Ceramicay Vidrio, Kelsen 5, 28049 Cantoblanco, Madrid, Spain, Tel: +34 91 735 58 40, Fax: +34 91 735 58 43, Email: electroceramics-x@icv.csic.es

**July 3-6, 2006**, V International Conference on Mechanochemistry and Mechanical Alloying, INCOME 2006, Prof. N Lyakhov, Institute of Solid State Chemistry and Mechanochemistry, Kutateladze 18, Novosibirsk 630 128, Russia, Tel: 7 (383) 332 86 83, Fax: 7 (383) 332 28 47, Email: conf@solid.nsc.ru

**August 16-19, 2006**, International Symposium on Frontiers in Nanoscale Science, Technology and Education, Cochin, India, for more details refer website: <http://www.phy.mtu.edu/cochin2006/index.html>

**August 20-25, 2006**, Eighth International Conference on Nanostructured Materials, NANO-2006, Conference Secretariat, Department of Metallurgy, Indian Institute of Science, Bangalore 560 012, Tel: 080-22932262 / 22932558/22932684, Fax: 080-23601991/23600472, Email: nano2006@met.iisc.ernet.in, URL: <http://met.iisc.ernet.in/~nano2006>

**September 4-6, 2006**, Third International Conference on "Spray Deposition & Melt Atomisation"(SDMA2006) and "Sixth International Conference on Spray Forming "(ICSF VI), Professor Dr.-Ing. Klaus Bauckhage and Dr.-Ing. V. Uhlenwinkel, University of Bremen, Germany, Email: sdma2006@iwt.uni-bremen.de

**Members are requested to give information about the conferences/symposia/workshops they are organizing well in advance so that the same can be inserted in the "calendar of events"**

## **Patron Membership**

Professional Societies, Research bodies, Laboratories and Companies willing to support activities of MRSI (through a one-time contribution of Rs. 50,000/- are enrolled as Patron members by the Council of the MRSI.

### ***Privileges of Patron Members***

Publication of their names in MRSI Newsletter

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*We appeal to all organizations /laboratories/ companies involved in the R&D/Educational activities of Materials Science and Technology to become Patron members. **Request for Patron membership may be made to:***

**Prof. S B Krupanidhi**  
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