



MRSI Newsletter

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for circulation amongst its members*

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From the Editors' Desk



The nineteenth Annual General Meeting of MRSI was held at Sree Chitra Tirunal Institute of Medical Sciences, Thiruvananthapuram, during February 14-16, 2008. It was an excellent meeting both in terms of scientific deliberations and social contents. The Thiruvananthapuram Chapter, under whose aegis this meeting was held deserves our special appreciation for the meticulous arrangements and great hospitality. A brief report of the 19th AGM is included in this issue. It was also decided at this meeting that the twentieth AGM will be held at Kolkata in February, 2009.

A new council under the presidentship of Dr. T Ramasami, Secretary, DST, Govt of India has been constituted to oversee the activities of the Society for the next three years. We are sure that under his stewardship the Society will perform with renewed dynamism to scale even greater heights. A message from Dr Ramasami is appearing in this issue of the Newsletter.



H L Bhat
R V 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

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President's Message



I thank the Materials Research Community of India for calling me to serve the Society as its President. I am aware that this is a tall assignment. The Society is a vibrant professional body with more than two thousand active minds! Several of our members are leaders in their respective areas by virtue of their outstanding calibre and contributions. Research and Development on Materials Science have attained global recognition and importance. Materials research, is an exciting endeavour for many and it offers an invaluable opportunity to connect science with economy and societal benefits. Hence, Materials Research Society of India (MRSI) can dream of becoming the most dynamic engine to bring about this transformation. Realization of any dream would demand several ground level actions. One such action needed is an effective communication among members of the society and of the society with the members of the community.

MRSI Newsletter provides us an effective medium for multi-way communication. I compliment Professor H.L. Bhat, Dr. R.V. Krishnan and Dr. T.G. Ramesh the Editors of this Newsletter and Prof. S.B. Krupanidhi, Vice President-General Secretary, MRSI for their untiring efforts. MRSI hopes to be able to enroll new memberships from both academia and industry.

Dr. T Ramasami
President, MRSI

MRSI COUNCIL (2008-2011)

Founder President	C N R Rao
President	T Ramasami
Past Presidents	R A Mashelkar D Chakravorty R Chidambaram S K Joshi P Rama Rao
Vice Presidents	Baldev Raj G Sundararajan A K Sood A K Raychaudhuri R P Singh
Vice President-General Secretary	S B Krupanidhi
Joint Secretaries	H L Bhat M K Surappa
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Editor of Publications	S B Krupanidhi
Members:	
D Bahadur	D Pandey
G U Kulkarni	Ashutosh Sharma
Ex-Officio Members	
Chairmen of Chapters	Chairmen of Subject Groups

Chapters

Bangalore	Bhopal	Chennai	Gujarat	Hyderabad
Jamshedpur	Kalpakkam	Kharagpur	Kolkata	Mumbai
New Delhi	Roorkee	Thiruvananthapuram	Varanasi/Kanpur	Pune
Lucknow				

Subject Groups

Building Materials	Biomaterials	Ceramics & Glasses	Composites	Computational Materials Science
Electronic Materials	Fracture	Magnetic Materials	Materials Characterization	Metals
Polymers	Processing Technologies	Surfaces & Interfaces	Thin Films	Materials under High Pressure
Materials for Rural Technology	Nanomaterials			

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.

CNR Rao Distinguished Professor of Materials, University of Cambridge, UK

S Ranganathan Distinguished Alumnus Award of IISc (2006)

Baldev Raj (i) Distinguished Alumnus Award of IISc (2007)
(ii) Member, German National Academy of Sciences

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

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 and Technology under the supervision of a MRSI member. Proposals are to be submitted to MRSI on or before October 30th 2008.

Opto School 2008

International School on Optoelectronic Materials and Devices

July 27th - August 2nd 2008, Mumbai, India

www.tifr.res.in/optoschool

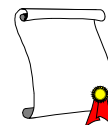
The semiconductors group at TIFR is organizing a focused pedagogical school on optoelectronics materials and devices from **July 27 to August 2, 2008**. The school will cover synthesis of novel III-V semiconductor materials, in particular engineered quantum structures, study of their physical properties and their use in optoelectronic device structures spanning wavelength ranges from the UV into the far IR. Details of topics to be covered are available online. Prospective participants (researchers in the field of semiconductors, optoelectronic materials and devices or a related field of study, including Ph.D. students, postdoctoral fellows and young researchers) can apply online at www.tifr.res.in/optoschool **Application Deadline: April 15th 2008**. For further information on Optoschool 2008, please email: optoschool@tifr.res.in, or check the website: www.tifr.res.in/optoschool

A BOOK FROM DR. C GOURI



Trans Tech Publications Ltd., Switzerland has recently published a book titled "**Lithium Iron Phosphate: A Promising Cathode-Active Material for Lithium Secondary Batteries**", authored by **Dr. Gouri Cheruvally**, an active member of MRSI Thiruvananthapuram Chapter. The olivine structured lithium iron phosphate (LiFePO_4) has gained considerable interest in recent years as a safe, environmentally acceptable and stable positive electrode material for lithium batteries, which has the potential to replace the presently used toxic and expensive transition metal oxides. This monograph provides an overview of the various research efforts so far undertaken worldwide to develop LiFePO_4 since the first demonstration of its lithium insertion-extraction property in 1997. The book contains twelve chapters: (1) Introduction (2) Characteristics of LiFePO_4 as a cathode-active material (3) Synthesis of LiFePO_4 : Different methods (4) Synthesis of carbon-coated LiFePO_4 (LiFePO_4/C) (5) Influence of synthesis parameters on the properties of LiFePO_4 and LiFePO_4/C (6) Metal-ion doped LiFePO_4 : Synthesis and properties (7) LiFePO_4 -based cathode: Influence of different parameters on the properties (8) Lithium cells with LiFePO_4 cathode: Influence of cell components and operating temperature (9) Safety and storage of lithium batteries with LiFePO_4 cathodes (10) Theoretical and modeling studies on LiFePO_4 (11) Phosphate olivines as cathode-active materials (12) An overview. The book is written in a manner that serves the needs of the researchers in the related fields as a source of information and reference and the teachers and students of electrochemistry as a text of academic interest. This book is Volume 38 of Materials Science Foundations ISSN 1422-3597; ISBN 0-87849-477-4; ISBN -13:978-0-87849-477-4; distributed worldwide by Trans Tech Publications Ltd. Laubisrutistr.24, CH-8712 Stafa-Zuerich, Switzerland; and in the Americas by Trans Tech Publications Inc. PO Box 699, May Street Enfield, NH 03748, USA. Further details may be obtained from the Publisher's website: <http://www.ttp.net> or from the author who is a senior scientist at Vikram Sarabhai Space Centre (VSSC), Thiruvananthapuram (phone: 0471-2563911, email: gouri_c@yahoo.com or gouri_cheruvally@vssc.gov.in).

REPORT ON THE 19th AGM OF MRSI



The nineteenth annual meeting of the Materials Research Society of India was held at Sree Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram during February 14-16, 2008. This event was organised by the Thiruvanthapuram Chapter of MRSI, with help from R&D institutions of the city. This is the second time this city is playing host to the MRSI Annual General Meeting, the earlier one was held here in 1993. As is the convention the format of the meeting consisted of the award lectures, a theme symposium and poster presentations. Materials for hostile environments was the theme chosen for this meeting.

The inaugural function of the meeting was presided over by Dr AD Damodaran who in his Presidential Address stressed the importance of intertwining the basic sciences with applications and also the need for having inter-disciplinary alliance in Materials Science. He also mentioned the role of intellectual property in the current scenario. Dr Srikumar Banerjee, Director, Bhabha Atomic Research Centre, Bombay, who was selected for the Distinguished Materials Scientist of the year award, gave the inaugural address and spoke about the challenges in Materials Research at extreme conditions. He dwelt upon the phase transitions occurring in several systems at extreme conditions. He took examples from the high pressure studies in titanium base systems, omega transformations under pressure, pressure induced transitions in thorium, osmium and plutonium.

Dr J V Yakhmi, BARC Bombay gave the MRSI-ICSC Superconductivity and Materials Science Senior award lecture and spoke about the efficacy of using self-assembled mono-layers or Langmuir-Blodgett films to fabricate molecular electronic devices. There were two MRSI-ICSC annual prize lectures given by Dr KS Narayan (JNCASR, Bangalore) and Prof P Ramgopal Rao (IIT, Bombay). While Dr Narayan elaborated on the development of solar cells based on thin polymer films, Prof Ramgopal Rao gave a brief account of the new laboratory in IIT, Bombay which has been set up as part of the centre of excellence in the emerging area of nanoelectronics and gave an account of the activities being pursued in the Institute in the application of nanoelectronics. It was exciting to learn about the development of a biosensor which will help in the monitoring of the cardiac condition by determining the concentration of specific markers in blood. The sensing electronics and the associated data management software for tracking the markers with time required for creating an epidemiological database is currently under development.

There were twelve lectures given by researchers who had been selected to receive the MRSI Medals for the year. Dr Amalnerkar, CMET, Pune spoke on the different routes for the synthesis of nanomaterials such as the transferred arc thermal plasma technique, liquid-liquid interface reaction/recrystallization technique and microwave induced solvothermal technique. Dr Arun Chattopadhyay, IIT, Guwahati described the efforts in preparing polymer base composites with metallic nanoparticles. There was an interesting reference to the production of gold nanoparticles through the use of enzymes. Dr Ashok Kumar Ray, MNL, Jamshedpur gave a detailed presentation on the development and characterisation of thermal barrier coatings on Superni C263 alloys and the analytical models generated for predicting bond coat properties. Dr Akhtar, DMRL, Hyderabad spoke on the rapid solidification processing of magnetic materials and indicated the beneficial effects of incorporation of nanocrystalline precipitates in an amorphous matrix by partial crystallisation of the amorphous phase. Dr Kotnala, NPL, New Delhi spoke on the role of oxide materials in magneto-optics and sensor applications. He also detailed the efforts taken in setting up an apex level magnetic standards laboratory at the National Physical Laboratory. Effects of particle size, dimensionality and quenched disorder in the magnetic properties of a wide class of magnetic materials such as perovskites was presented by Dr SM Yusuf, BARC, Mumbai and a correlation was drawn between the observed magnetic ordering and other physical properties. The effect of presence of different states of order and disorder on the optical and electronic properties of polymeric semiconductor materials was described by Prof YN Mohapatra, IIT, Kanpur. Structure-property correlations in oxide-ion conducting materials was presented by Dr Sujatha Devi, CGCRI, Kolkata from a perspective of energy cell applications. Dr Tyagi, IGCAR, Kalpakkam described the efforts under way in synthesizing nanocrystalline oxide, nitride and carbide ceramic materials and their characterisation. Dr Suresh Das, NIIST, Thiruvananthapuram spoke about the photoinduced isothermal phase transitions in soft materials such as liquid crystals and gels and the related applications. Dr Samit Ray, IIT, Kharagpur described the efforts undertaken to grow silicon-germanium nanostructures by molecular beam epitaxy for flash memory applications. Dr Mukhopadhyay, BHU, Varanasi touched upon the 'study of the evolution of stability of nanostructured phases during non-equilibrium processing of aluminium based complex metallic alloys. Under the theme symposium there were special lectures on ferroelectrics (Prof SB Krupanidhi, IISc, Bangalore) and hybrid nanomaterials (K.George Thomas, NIIST, Thiruvananthapuram). Dr Rajeev Basargekar of Reliance Industries, Mumbai spoke about 'Commodity plastic materials for rural technology'. Dr Bhardwaj gave a bird's eye-view of the planetary exploration programmes of the solar system and summarized Indian efforts in the area of planetary missions. Dr K Sreenivasan of SCTIMIT, Thiruvananthapuram spoke on Materials for sustained drug delivery.

There were excellent poster presentations on all the three days of the meeting covering a host of subject categories. In a brief ceremony Dr RA Mashelkar, President, MRSI distributed the awards to the various recipients. It was nice to see a mix of basic and applied aspects of Materials science research being pursued at various levels across the country. The conference ended with a concluding session, which included the presentation of 4 Best Poster prizes and G.C. Jain Memorial Prize. These prizes were awarded to the following:

G C Jain Memorial Prize : Dr. R K Goyal, DIT, Pune

Best Poster Prizes

1. 'Ultra High Purity Gallium (99.99999 % / 7N) for Opto and Micro Electronics Device Applications – An Indigenous Effort' by U Rambabu and T L Prakash, C-MET, Hyderabad
2. 'TG-DT Analysis for Carbon Assisted Synthesis of C:MgB₂' by BB Sinha, S C Chougale and S H Pawar, Shivaji University, Kolhapur
3. 'Optical and Switching Studies on Near-Stoichiometric Nd:Zn:LiNbO₃ Crystals' by J N Babu Reddy, K Ganesh Kamath, H L Bhat and Suja Elizabeth, IISc, Bangalore
4. 'Role Head Group Structure in Regulating the Packing Density of Lipid Monolayers-Nerve Conduit Applications' by K Kaladhar and C P Sharma, SCTIMST, Thiruvananthapuram

Dr. G.S. Bhuvaneshwar, Dr. C.P. Sharma, Mr. D.S. Nagesh and their team had made excellent organizational arrangements for the smooth conduct of this AGM.

New Members

Enrolled between January 1 and March 31, 2008

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CALENDAR OF EVENTS (MAY-DEC 2008)

May 28-30, 2008, International Conference on BioMedical Engineering and Informatics 2008 (BMEI 2008), Sanya, Hainan, China, Email: bmei2008@hainu.edu.cn, Website : <http://www.hainu.edu.cn/BMEI2008>

May 26-30, 2008, E-MRS Spring Meeting, Congress Centre, Strasbourg, France. Details awaited

June 26-28, 2008, International Conference on Aerospace Science and Technology, Dr. M N Sathyanarayana, Convenor. For details refer to the website www.nal.res.in/nal50/incast

July 28-1 August, 2008, IUMRS-ICEM 2008, Sydney, Australia, For details refer to the website <http://www.aumrs.com/ICEM-08/>

December 4-5, 2008, Seventh ISAMPE National Conference on Composite Materials. For details refer to the website www.nal.res.in/nal50/inccom7

December 9-13, 2008, IUMRS-ICA 2008, Nogoya Congress Center, 1-1 Astuta-nishimachi, Astuta-ku, Nagoya 456-0036, Tel: 81-52-683-7711, Fax: 81-52-683-7777, Website: <http://www.iumrs-ica2008.jp/index.html>

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
 - Bulletin of Materials Science
 - MRSI Newsletter / MRSI Update
- Free supply of all periodicals published by MRSI such as:
 - Symposium proceedings at Prices applicable to members
 - Display of Company Literature free of charge at MRSI meetings
 - Discounts on advertisements in Newsletter
 - Advance notification of programmes and events
 - Free employment Advertisements in the MRSI Newsletter
 - Registration of 2 company representatives in each society meeting at member registration rates.

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:

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