



MATERIALS MATTER

A BIANNUAL E-NEWSLETTER OF IIM KALPAKKAM CHAPTER

Volume 1, Issue 1, 2009

Visionary Thoughts

Kalpakkam Chapter of IIM is one of the pioneering Chapters contributing significantly to the success of IIM in the national scenario by organizing various programs like conducting prestigious Quiz contest, publishing Transactions of IIM, and promoting new events. During my tenure as President of IIM, a lot of effort was made to infuse young blood into the Council and encourage young members in the executive committees of Chapters, promoting and nurturing younger generation for lead role in IIM. Today I am very happy to see many young members rising well in their professional careers and IIM Chapters all over the country. 'Catch them young' is the mantra for infusing such young blood in any organization. Thus initiative was taken to form several student affiliate Chapters for encouraging the college students to take part in the activities of IIM. Human resources development was another effort where all the southern regions combined to form Human Resources Development Centre (HRDC) at Chennai led by Kalpakkam-Chennai. This is mainly to

provide certification, training and knowledge resources for enhancing the human potential in the context of emerging global developments and scenario. I understand that IIM Kalpakkam Chapter has added this year about 25 new young members, and I would like to see several Chapters all over the country do the same to increase the membership of IIM. But to do this we also need to perform innovative projects and programmes of interest and use to such members. I was the founder Secretary of IIM Kalpakkam Chapter, and I have found that the Chapter has grown in different dimensions performing as a role model, Chapter contributing significantly in many capacities for the growth of IIM over the last 26 years. The 'Materials Matter' is another achievement of the Chapter to provide 'paperless' e-magazine to the IIM members with valuable information. I wish them all success in this new endeavor !!

Best wishes and seasons greetings to all members of IIM



Dr. Baldev Raj, FNAE, FASc., FNASc., HFICNDT, HFISNT, HFBINDT, FIIM, FUSI, FASI
Distinguished Scientist & Director
IGCAR

'Catch them young' is the mantra for infusing such young blood in any organization

Inside this issue:

<u>Visionary Thoughts</u>	1	<u>Brahm Prakash Memorial Materials Quiz 2008</u>	6
<u>Message from President, IIM</u>	2	<u>5th International Conference on Creep...</u>	7
<u>IIM-KC Chairman's Views</u>	2	<u>One Day Theme Meetings</u>	8-9
<u>IIM-KC EC Members</u>	2	<u>Excerpts from 26th Annual General body meeting</u>	9
<u>About the Indian Institute of Metals</u>	3	<u>Join us</u>	10-11
<u>About the IIM - Kalpakkam Chapter</u>	3	<u>Awards and Honors</u>	12
<u>HRDC-KC—A New direction</u>	4	<u>Contact IIM Kalpakkam Chapter</u>	13
<u>Technical Lectures</u>	5	<u>Editorial</u>	13

Message from President, IIM



Shri L. PUGAZHENTHY,
PRESIDENT IIM

Dear Friends:

The dawn of the computer age has literally made the world, a small global village, with instant access and connectivity between people in different continents. Distances have disappeared and even trading in commodities, home shopping etc., are being transacted successfully.

I am indeed happy to note that the IIM Kalpakkam Chapter is planning to launch a half-yearly e-newsletter highlighting the chapter's activities and services, to be mailed to the headquarters, Council Members, Chapter office bearers. This is the most-cost effective way in sharing or disseminating information and I am sure that

many other chapters of IIM will also follow suit; some chapters may already be having the e-arrangement.

Let me wish the Kalpakkam Chapter all success.

Best Regards

Shri. L. PUGAZHENTHY

Chairman's Views



Dr. U. Kamachi Mudali
FIIM, FNAE, FECSI

IIM Kalpakkam Chapter is proud to bring this e-newsletter, a half-yearly issue highlighting the activities of the Chapter during the period. The proposal to have an e-newsletter was decided by the executive committee last year and I am happy that Dr. Arup Dasgupta and Dr. R. Ramaseshan implemented the same with dedication and

excellence compiling all relevant information on the Chapter activities. The Chapter is doing well and diversifying into many activities mainly due to the guidance, support and vision of our beloved Director and mentor of the Chapter, Dr. Baldev Raj, who is driving us to achieve excellence in the Chapter and national scenario. This e-newsletter

will be distributed to all members, and to the Chairman/Secretary of all IIM Chapters and Council Members of IIM. We would solicit comments, inputs and suggestions from all the above to achieve further excellence in future.

Dr. U. Kamachi Mudali

IIM-Kalpakkam Chapter EC Members

Dr.U. Kamachi Mudali	- Chairman	Dr. Vaidehi Ganesan	-Member
Dr.B.P.C. Rao	- Vice-Chairman	Dr. Arup Dasgupta	-Member
Dr.R. Sandhya	- Secretary	Shri.V. Karthik	-Member
Smt.C. Sudha	-Joint Secretary	Shri. Hemant Kumar	-Member
Dr. Rani P.George	-Treasurer	Shri. Utpal Borah	-Co-opted Member
Dr. P. Parameswaran	-Member	Dr.R. Ramaseshan	-Co-opted Member
Dr.C. Mallika	-Member	Shri. A. Ravishankar	-Co-opted Member
		Shri.G.V. Prasad Reddy	-Co-opted Member

About the Indian Institute of Metals

(www.iim-india.net)

The Indian Institute of Metals (IIM), the body representing the family of professional metallurgists in India, was founded in 1947 with the objective of promoting and advancing the study and practice of science and technology of metals and alloys and protecting the interests of metallurgists and metallurgical engineers. The Institute has more than 9,000 members today and it carries out its activities through three Divisions and 52 Chapters fanning across the country. The main ac-

tivities are organizing national and international technical conferences, carrying out special research programs, bringing out technical and informative publications. Coordinating the visits of scientists under collaborative programs and conducting qualifying examinations for practicing non-metallurgists. The scope of the Institute activities includes mineral beneficiation, extraction, fabrication, heat treatment, finishing as well as practical and theoretical aspects of metallurgy of

all ferrous and non-ferrous metals and alloys. Ceramics and other disciplines and technologies allied to metallurgical problems also come under the scope of the Institute. Most of the activities are carried out through honorary services by the constitutionally elected office-bearers. Although there is a small permanent staff of the Institute, almost all the activities are carried out through the Honorary services of the Office-bearers, Council Members, Chapter Chairmen, Secretaries

and Treasurers as well as a large number of Institute members. The Institute is recognized and supported by the Government of India through the Ministry of Steel and is regarded today as one of the premier metallurgical organizations in the world. The Ministry of Steel and the Institute have also instituted several awards and honors for conferring on metallurgists for their distinctions each year.

About the Indian Institute of Metals - Kalpakkam Chapter

The Kalpakkam Chapter of the Indian Institute of Metals was founded in February 1982 with Dr. Placid Rodriguez as its founder Chairman, and was inaugurated by Mr. C.V. Sundaram, the then Director of the Indira Gandhi Centre for Atomic Research. Under the guidance and able leadership of Dr. Baldev Raj, Distinguished Scientist &

Director of IGCAR the Chapter has continued to be very active over the last many years and has grown in stature and strength. Today it has a total strength of about 150 members that include 10 Life Fellow Members. Major Achievements of the Chapter includes: Two Presidents of IIM from this Chapter, Three Chief Editors of Transactions

of IIM from this Chapter, Four Editors of Transactions of IIM from this Chapter, Five members of Kalpakkam Chapter in IIM National Council, Eleven National Metallurgist and Two Young Metallurgist from this Chapter, Five G. D. Birla Gold Medalists from this Chapter. Major Activities & Programmes of the Chapter are : Metallurgy col-

loquia with speakers from India and abroad, Series of courses and one day meetings in various subjects, Prof. Brahm Prakash Memorial National Level Materials Quiz, Prof. Brahm Prakash Memorial Lecture, Symposia, conferences, workshops and discussion meetings.

HRDC-KC — A new direction

“HRDC-KC was started in 2007 with the objective to act as a bridge between IIM and industry to serve the human resources development..”

The IIM Human Resources Development Centre Kalpakkam-Chennai (HRDC-KC) was started in 2007 with the objective to act as a bridge between IIM and industry to serve the human resources development through training courses/consultancy/web portals/books etc., to act as a centre of learning for career advancement in Metallurgical and Materials Engineering for students, to publish books/monographs, and

to promote greater interaction between different chapters of IIM in southern region. The activities of the Centre will be pursued in association with the respective Chapter in the region, or in association with other professional organizations in the region. Dr. Baldev Raj, Director, IGCAR is the Chairman of the management committee, Prof. P. Kesavan Nair, Chairman of IIM Chennai is the Co-Chairman with members representing all

14 Chapters in the southern region. Two courses on 'Metallurgy for Non-metallurgists' and 'Science and Technology of Heat Treatment' have been conducted in association with ASM International, Chennai Chapter. A directory consisting of SMEs in the region is being prepared, and efforts are made to start Certificate Courses in Metallography, Heat Treatment, Metal Working, Mechanical Testing etc. at different levels.



Representatives from IIM-Kalpakkam Chapter and IIM-Chennai get together to form the HRDC-KC.

Technical Lectures

S.N	Title of the talk	Name of the Speaker	Organisation/ Institution	Date
1.	Steel – A versatile material	Dr. V. Ramaswamy	PSG College of Technology, Coimbatore	12.05.08
2.	Investigations on mechanical and tribological properties of carbon fabric reinforced poly-etherimide composites	Dr. Rekha Rattan Singh	IIT, Delhi	16.05.08
3.	Resistance spot weldability of coated steel sheets	Ms. Gopa Chakraborty	Research Scholar Jadavpur University	18.06.08
4.	Nano crystals of metal atoms passivated by self assembled monolayers	Dr. Srihari Murthy	PSG Inst. Advanced Studies, Coimbatore	23.06.08
5.	Electroforming of seamless nickel crucible	Dr. P. Veeramani	Industrial Metal finishing Div., CECRI, Karaikudi	17.07.08
6.	Hydrogen Embrittlement and SIMS Analysis of Electro-plated Steels	Dr. Noam Eliaz	Tel Aviv University, ISRAEL	10.09.08
7.	Characterization of metallic materials through elastic properties at macro and nano-scale	Dr. Anish Kumar	Nondestructive Evaluation Division IGCAR, Kalpakkam	07.11.08
8.	Introduction to polymers – for radiation environment	Mr. Felix Lawrence	Reprocessing Group IGCAR, Kalpakkam	11.11.08
9.	Multifunctionalities of ceramics and glass nanocomposites comprising of layered ferro-electric oxide	Dr. B. Harihara Venkataraman	Dept. Mater. Sci. & Technology, Nagaoka University of Technology, Nagaoka, Japan	16.12.08
10.	Surface Engineering of Iron Based Alloys : Nitriding and Carburizing	Dr. Santosh S. Hosmani	Dept. Materials Science & Engineering, Case Western Reserve University, Cleveland, Ohio, USA	19.12.08
11.	Friction and oxidative wear of 440C ball bearing steels under high load and extreme bulk temperatures	Dr. Dilip K. Chaudhuri	Adjunct Professor, Warren National University, Tennessee, USA	12.01.09
12.	Chirality controlled growth of carbon nanotubes	Prof. Saion Sinha	University of New Haven, Connecticut, USA	13.01.09
13.	Atomic Force Microscope - An Indispensable Tool for Nanotechnology & Materials Science	Prof. Saion Sinha	University of New Haven, Connecticut, USA	13.01.09
14.	Creep-Fatigue and Thermo-Mechanical Fatigue of Friction-Welded IN 718/MarM247 Dissimilar Joint	Prof. Masakazu Okazaki	Nagaoka University of Technology, Japan	19.01.09

Brahm Prakash Memorial Materials Quiz and Elocution

The Prof. Brahm Prakash Memorial Materials Quiz, Lecture and Elocution Contest 2008 was held at the Convention Centre, Anupuram on 20th September 2008. 33 teams from 17 chapters of Indian Institute of Metals and Sri Lanka participated in the programme.

Quiz master Dr. S. Venkadesan, performed a lively final session which included several live experiments and some fascinating audio-visual rounds. In a closely competed final, the Team B from Trichy comprising of Mr. S. Gowthan, Maxwell Matric HS School, Trichy and Mr. P.G. Aravind, Arokiamatha Matric HS School, Trichy won the finals and the team A also from Trichy comprising of Mr. Balaji Srinivasan & Mr. S. Subramanian both from Sri Jayendra Swamigal Matric HS School, Trichy emerged as the runners up. Both the winners and runners were presented trophy and certificates of Merit by Dr Baldev Raj, Director, IGCAR. The winners and runners of the quiz event also received awards sponsored by IOMMS during the NMD-2008 event at India Expo Centre, Greater Noida, on 14 November 2008. O.P.Jindal Award for the quiz, carrying a total cash prize of Rs.20,000/- was presented by Dr Baldev Raj to the winners and runners up.

Dr. U. Kamachi Mudali, Chairman welcomed the gathering in the afternoon programme for the Prof. Brahm Prakash Memorial Lecture. Dr. Baldev Raj, Director, IGCAR, in his presidential address, impressed upon the students,

the importance of education in understanding the environment and the need to work in harmony towards achieving laurels for our country. The Prof. Brahm Prakash Memorial Lecture was delivered by Shri L. Pugazhenthly, President, The Indian Institute of Metals. He spoke on "India's Growth Story & Emerging Career Opportunities in Mining and Metals Sectors". In his scintillating lecture, Shri L. Pugazhenthly excited the students by narrating India's rich heritage in metals and how India is now a growth story that is noted all around the world. A Souvenir was brought out to mark this event which was released by Shri Prabhat Kumar, Project Director, BHAVINI. Shri Prabhat Kumar expressed his concern over environmental pollution and called upon the children to be aware and take initiatives in protecting the environment.

The essay cum elocution contest being organised as part of the programme drew enthusiastic participation this year. Students were given a choice to write their essay from one of the three topics: Materials to Combat Global Warming, Biomimetics and Nanomaterials in Nature. Fifteen entries were received of which the best four (Mr. Mihir Anand, Ranchi - Materials to Combat Global Warming; Mr. Varun Banka, Ranchi - Biomimetics; Mr. Suraj Shankar, Mumbai - Biomimetics; Miss Tharika Nadeemali Senavirathne, Sri Lanka - Nanomaterials in Nature) were selected to make oral presentations for 10 minutes. It was un-

doubtedly a wonderful exhibition of their oratorical skills. An expert panel of judges (Dr. S. Saroja, Shri B Saha and Dr. A.K. Tyagi) adjudged Mr. Suraj Shankar, Mumbai (Biomimetics) as the winner and Mr. Varun Banka, Ranchi (Biomimetics) was declared the runner up. The winner and runner of the essay cum elocution contest received the Nerolac award (Rs. 10,000/- for winners and Rs. 5000/- for runner up) along with their trophy and certificate from Shri Prabhat Kumar.

Another interesting feature of this years programme was a Materials Camp including a visit to Madras Atomic Power Station at Kalpakkam, Indira Gandhi Centre for Atomic Research and BHAVINI on 19th September 2008 and a visit to the Periyar Science and Technology Centre at Chennai was also organized on 21st September 2008.

This Quiz and Elocution event was sponsored by several well wishers from the academia and industries across the board without whose active support it would not be possible to conduct these events.

"It is important to have education in understanding the environment and there is need to work in harmony towards achieving laurels for our country"
Dr. Baldev Raj



Dr. Baldev Raj presenting the OP Jindal award and certificate of merit to the winners of the quiz competition



Shri L. Pugazhenthly, President, IIM with some of the students and their escorts

5th International Conference on Creep, Fatigue & Creep-Fatigue Interaction (CF-5)

The Fifth International Conference on Creep, Fatigue and Creep-Fatigue Interaction (CF-5) was held at IGCAR, during September 24-26, 2008. The conference was organized jointly by IGCAR, The Indian Institute of Metals (IIM), Kalpakkam Chapter and the Metal Sciences Division of IIM. CF-5 was sponsored by the Board of Research in Nuclear Sciences, DAE, and was co-sponsored by The Japan Society of Mechanical Engineers (JSME) & the Society of Materials Science, Japan (JSMS).

Dr. Farhad Tavassoli, Head, Fusion Materials Project, CEA, France inaugurated the conference. The inaugural function was presided over by

Dr. Baldev Raj, Director, IGCAR and Chairman of the National Organising Committee. Dr. Yukio Takahashi, Central Research Institute of Electric Power Industry, Tokyo, Japan represented JSME and JSMS at the inaugural function.

Fifty two invited papers and nearly 100 contributed papers were presented in the three-day conference. More than 250 delegates including 38 delegates from eight foreign countries attended the conference.

About thirty master and doctoral students were invited as delegates to CF-5. The technical sessions consisted of one plenary session and eighteen parallel sessions. The sessions were

structured such that there were many presentations dealing with Creep and Fatigue Issues in High Temperature Materials Development and Design, Low Cycle Fatigue and Thermomechanical Fatigue, Creep Mechanisms and Creep Resistant Alloys, Creep-Fatigue Interaction, Remaining Life Assessment, Ferritic, Martensitic Steels, Materials Design and Development, Creep-Fatigue and Design, Fretting fatigue and High Cycle Fatigue, Structural Integrity Analysis, Creep and Fatigue of Welds and Innovative Testing Methods for Creep & Fatigue, Creep and Fatigue Life Prediction, Superalloys, Fracture Toughness & Crack Growth, Zr Alloys & Ti Alloys, Coatings and

Composites, Failure Analysis and Remaining Life Assessment and Fatigue Behaviour.

Two theme Workshops were also organized in conjunction with CF-5. The pre-conference Workshop on "Materials and Design Issues for Fusion and Fission Reactors" was held on 23.10.2008 between delegates from CEA, France and engineers and scientists from BHAVINI, and Reactor Engineering and Metallurgy and Materials Group of IGCAR. The post-conference workshop was held on 29.10.08 between IGCAR and Korea Atomic Energy Research Institute (KAERI) on "High Temperature Materials, Design and Assessment".



Dr. Farhad Tavassoli inaugurates CF-5. Seated from left to right are Dr. Baldev Raj, Dr. Yukio Takahashi and Dr. M.D. Mathew

One Day Theme Meeting on “Metallurgy for Reprocessing Plant Engineers”

One Day Theme Meeting on “Metallurgy for Reprocessing Plant Engineers” was organized on September 04, 2008 at DFRP Auditorium, IG-CAR. Shri R. Natarajan, Director, Reprocessing Group gave the opening remarks in which he highlighted the challenges related to materials issues in the aqueous reprocessing of FBTR spent fuel starting with materials selection, fabrication procedures, corrosion and failures. Subsequently, in his lead presentation on ‘Materials Requirements, Codes, Standards and

Design’ he gave a brief introduction to reprocessing and closing of fuel cycle with emphasis on the development of advanced steels and alloys for boiling nitric acid conditions, process modification and design philosophy with respect to Indian context and global scenario of FBR reprocessing plants.

Followed by this, Dr. U. Kamachi Mudali, Corrosion Science and Technology Division, gave a lucid presentation on “Stainless Steels: Classification, Corrosion and its Prevention”.

The welding processes with special emphasis to the weldability of SS and Ti, microstructure and transformation, welding defects, requirements for similar welding and dissimilar metal welding processes were explained by Dr. A.K. Bhaduri, Materials Technology Division (MTD). Dr. P.V. Sivaprasad, MTD, delivered a talk on “Manufacturing Processes”.

In the lecture on “Advanced Materials and Coatings for Reprocessing Plants” Dr. Kamachi Mudali explained how

titanium is protected from corrosion by the formation of Ti^{4+} and by the addition of Ta and Nb as minor alloying elements. In the last talk on “Non Destructive Testing and Evaluation for Reprocessing Plants” Dr. B.P.C. Rao, Non-destructive Evaluation Division, described the steps involved in NDE and testing. About 50 participants from Reprocessing and Chemical Groups attended the meeting. Concluding remarks were made by Dr. C. Mallika, Reprocessing Group, the Convener of the theme meeting.

One Day Theme Meeting on “Nano-Materials and Coatings”

One day Theme Meeting on “Nano Materials and Coatings” was organized by IIM-KC on November 10th, 2008 at CDO Seminar Hall, IGCAR. Dr. U. Kamachi Mudali, Chairman, IIM Kalpakkam Chapter welcomed the gathering and introduced the invited speakers. The technical program started with opening remarks by Dr.C.S. Sundar, Head, Materials Science Division. He highlighted the challenges related to materials issues in the nanotechnology. Eight invited lectures were delivered by specialists in the area of nano-

materials. The first keynote lecture of the meeting was given by Dr.TS. Sudarshan, MMI, USA, an eminent technologist in the field. He delivered an excellent lecture on alternative energy for the future. Dr.BVR. Tata of MSD gave a comprehensive lecture on thermo-responsive nanogels. Followed by this, Dr.S. Dhara of MSD discussed the mechanical properties of 2D nitride semiconductors analyzed by nano-indentation and Raman mapping. Dr.T. Gnanasekaran of Chemistry Group delivered a talk on nano-

materials used as thin film sensors.

Dr.TS. Sudarshan delivered another lecture on characterization of nanomaterials by various techniques. In the afternoon, Dr. S. Dash, MSD discussed the plasma assisted reactive processing technique for nanostructured coating synthesis. Dr. John Phillip of Non Destructive Evaluation Division has shared his experience in the area of nanofluids. He discussed the challenges involved and how finally a nanometric ferrofluid was prepared for use as a dynamic seal that can provide a hermetic seal

against gas and vapor. Dr. M. Kamaraj of IITM delivered a lecture on the sliding wear behavior of nanometric metal matrix composites. He also mentioned that how successfully the MMC bushes were prepared and their application in the motors of two wheelers. The final special lecture was given by Dr.T.S. Sudarshan, on “Nanomaterials for Nuclear Applications”. About 50 participants from IG-CAR and other units of Kalpakkam attended the meeting. Concluding remarks were made by Dr.R. Ramaseshan, MSD the convener of the theme meeting.

One Day Theme Meeting on “Materials for Marine Structures”

A one Day Theme Meeting on “Materials for Marine Structures” was organized by the Indian Institute of Metals, Kalpakkam Chapter on November 25th, 2008 at MDL Seminar Hall. Dr. P. Chellapandi, Director, Safety Group, and Associate Director, Nuclear Engineering Group, made the opening remarks stressing the importance of the choice of advanced materials both for nuclear steam supply systems and balance of plant. This was followed by an excellent talk by Dr. Venkatesan, Head, Ocean Science and Technology for Islands, NIOT, Chennai, on Materials for Marine

Applications. He took the audience on a virtual tour of ocean and stressed the importance of building marine structures to last.

Followed by this Dr. P. Muraleedharan, IGCAR shared his experience with new condenser material of Prototype fast Breeder Reactor and associated problems in his lecture on “Titanium as condenser material for PFBR and related issues”. Prof. Mukesh Doble of IIT Madras, Chennai gave an interesting lecture on Biodegradation of Polymers in Marine Environment. He explained that life without polymers is impossible and this leads to accumu-

lation of about 4.5 million tones of plastic waste in marine environments. Dr. V.P. Venugopalan, Water and Steam Chemistry Division, BARC (F) delivered a comprehensive lecture on “New Directions in Control of Marine Biofouling on Materials”. He detailed on biofilm architecture involving cell-cell interactions; cementing technology and byssus thread mechanism involved in the adhesion of barnacles and mussels.

In the lecture on “Biofouling in Kalpakkam coastal waters and its control strategy for PFBR cooling water” Dr. K.K. Satpathy, IGCAR, explained that

species number, succession pattern and diversity indices of biofoulants can vary with time even in the same site and hence biofouling characterization need to be a continuous process. In the last talk on “Bioadhesives from Marine organisms” by Dr. N.V. Ravikumar, IIT Madras, Chennai the basics of adhesion was dealt with in the material science way. About 40 participants from IGCAR and BARC Facilities attended the meeting. Concluding remarks were made by Dr. Rani P. George, Corrosion Science and Technology Division, the convener of the Theme Meeting.

Excerpts from 26th Annual General Body Meeting

The Annual General Body Meeting (AGM) of The Indian Institute of Metals, Kalpakkam Chapter (IIM-KC) was held on April 27th 2008 at Adyar Ananda Bhavan, Mamallapuram. A total of 67 Members attended the meeting, and many of their family members joined for a get together after the GB meeting. The meeting was chaired by Dr. Baldev Raj, Director, IGCAR and Past President, Indian Institute of Metals. The meeting began with Dr. U. Kamachi Mudali, Chairman, IIM-KC, welcoming the members to AGM. He briefed the major achievements of the committee during the year and highlighted about the *theme meetings* started by the

committee during the year. The secretary's report was ably presented by Dr. R. Sandhya, Hon. Secretary of IIM-KC. She outlined the various activities of the Chapter during the year 2007-08. After brief discussion the report was accepted unanimously. A suggestion was made to include the names of the members from the Chapter who had successfully cleared the AMIIM examinations in the report. The report was then passed, Dr. P. Shankar proposed that the report be passed and Dr. Sitaram Dash seconded the motion. The auditor's report for the year 2007-08 was presented by Dr. Rani P. George, Treasurer, IIM-

KC.

After a brief discussion and clarification Shri. P. Swaminathan proposed that the report be passed and Dr. P. V. Sivaprasad seconded the motion. The following resolution was put up by Chairman, IIM KC for acceptance and ratification in the general body: (i) the closing of fixed deposit worth of Rs. 50,000/- with low interest and restarting the same with higher interest rate, (ii) from the share of ISAS 2007, opening of two fixed deposit accounts. Members, both young and general were given awards for best papers. In addition, young members (< 35 years), were given special awards

for best technical presentations. These awards were presented by Dr. Baldev Raj. Followed by this, Dr. Baldev Raj addressed all members requesting them to set targets for them to achieve excellence. He stressed the need for generating leadership of the metallurgical community by motivating and inspiring second and third rung young leaders who can work hard for the benefit of all. He has suggested that the annual report of the past 25 years should be collected and put up in the website of the Chapter.

The new executive committee for the year 2008-09 was then installed by Dr. Baldev Raj.



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APPLICATION FORM FOR MEMBERSHIP

MEMBER ☐ / ASSOCIATE MEMBER ☐ / STUDENT MEMBER ☐ / LIFE MEMBER ☐
/ SUSTAINING MEMBER ☐ / SUSTAINING MEMBER(SS) ☐ / PATRON MEMBER ☐
/ DONOR MEMBER ☐ / AFFILIATE MEMBER ☐ / OVERSEAS MEMBER ☐
/ LIFE ASSOCIATE MEMBER ☐ / STUDENT AFFILIATE MEMBER ☐
(Please tick whichever is applicable)

(For Office Use)

Membership No.				Date of Enrolment														
Receipt No.				Date	Amount													
Name of the Applicant : (In Block Letters)																		
Father's Name : (In Block Letters)																		
Permanent Address : (Please indicate PIN Code)																		
Address for Correspondence : (In Block Letters) (Please indicate PIN Code)																		
Qualifications :																		
Date of Birth :																		
Experience (in years) :																		
Name & Designation : Head of the Organisation (applicable for Sustaining /Patron/Donor Membership only)																		
Tel./Fax/E-mail/Website :																		
Present Occupation :																		
Endorsement (by 3 IIM Members (not Student) or the Employer who know the applicant well)	<table border="1"><thead><tr><th>Name</th><th>Membership No.</th></tr></thead><tbody><tr><td>1. _____</td><td>_____</td></tr><tr><td>2. _____</td><td>_____</td></tr><tr><td>3. _____</td><td>_____</td></tr></tbody></table>						Name	Membership No.	1. _____	_____	2. _____	_____	3. _____	_____				
Name	Membership No.																	
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Primary field of interest : (Please mark 1, 2, 3 in order of preference)	<table border="1"><tbody><tr><td>Ferrous Production</td><td>()</td><td>Non-Ferrous Production</td><td>()</td></tr><tr><td>Mining Beneficiation</td><td>()</td><td>Designing & Engineering</td><td>()</td></tr><tr><td>Govt./Education</td><td>()</td><td>Research</td><td>()</td></tr></tbody></table>						Ferrous Production	()	Non-Ferrous Production	()	Mining Beneficiation	()	Designing & Engineering	()	Govt./Education	()	Research	()
Ferrous Production	()	Non-Ferrous Production	()															
Mining Beneficiation	()	Designing & Engineering	()															
Govt./Education	()	Research	()															
Name of the Chapter you intend to be attached :																		

I agree, if elected, to accept election, pay the prescribed fees, to abide by the Articles of Association of the Institute and to promote its aims and objects.

Signature of the Applicant

I undertake to appear at the Associate Membership Examination of the Institute after 3 (three) Months of election and to appear at the AMIIM Examination within 18 (eighteen) months from the date of enrolment as Student Member subject to fulfilling all the eligibility rules. (To be signed only by applicant for Student Membership aspiring for appearing at the AMIIM Examination).

Signature of the Applicant

MEMBER	Rs. 300/- as Admission Fees & Rs. 450/- as an annual subscription.
ASSOCIATE MEMBER	Rs. 250/- as Admission Fees & Rs. 350/- as an annual subscription.
STUDENT MEMBER	Rs. 75/- as Admission Fees & Rs. 600/- towards 3 (three) years subscriptions, and Rs. 150/- towards registration fees, viz. A total of Rs. 825/-
STUDENT MEMBER (College Students studying Metallurgy)	Rs. 75/- as Admission Fees & Rs. 200/- as an annual subscriptions.
LIFE MEMBER	Rs. 300/- as Admission Fees & Rs. 6000/- as Membership Fees Or Rs. 300/- as Admission Fees & Rs. 3200/- each in two instalments as Membership Fees, within the same Financial year.
LIFE ASSOCIATE MEMBER	Rs. 3000/- in a single instalment or Rs. 3200/- in four instalments of Rs. 800/- each, within the same Financial Year.
SUSTAINING MEMBER	Rs. 10,000/- per annum.
SUSTAINING MEMBER (SS)	Rs. 6,000/- per annum.
PATRON MEMBER	Rs. 2,50,000/- in one instalment or 6 (six) annual instalments of Rs. 45,000/- each.
DONOR MEMBER	Rs. 1,25,000/- in one instalment or 6 (six) annual instalments of Rs. 22,500/- each.
AFFILIATE MEMBER	Rs. 400/- as Admission Fees & Rs. 650/- as an annual subscription.
STUDENT AFFILIATE MEMBER	A Student Affiliate Member shall not pay any admission fees and subscription.

- Notes:
1. Please attach attested copies of Mark Sheets/Certificates wherever necessary.
 2. Payment should be made by DD favouring 'The Indian Institute of Metals, Kolkata'.
 3. For further details, please contact the IIM Head Office at Kolkata.

Awards & Honours for IIM-KC Members

Dr. Baldev Raj has been awarded Distinguished Materials Scientist Award of the MRSI for the year 2009. Besides, he received the FICCI award for outstanding research in Materials Science for 2007-08. He has also received Professor Jai Krishna Memorial Award from the Indian National Academy of Engineering for the year 2008. The Indian Institute of Science, Bengaluru conferred him with the Distinguished Alumni Award for sustained excellence in Science & Technology. He has been elected as Vice President, Materials Research Society of India (2008-2011) as well as Vice President (Academic, Professional and International) of Indian National Academy of Engineering. Dr. Baldev Raj has been elected as Member of the German National Academy of Sciences to recognize his contributions to science based technologies and for discovering science while delivering technologies. Membership of German National Academy of Sciences, in Engineering Sciences is a rare distinction as only 15 professionals have been recognized in Theoretical Physics as on date from all over the world. He has been appointed as Adjunct Professor of PSG College of Technology, Coimbatore and University Institute of Chemical Tech-

nology, University of Mumbai. He has been nominated as a Member of the Nanotechnology Advisory Board, Department of Science and Technology of Government of South Africa, and is continuing to serve as Member, Board of Directors, International Institute of Welding. He has been invited by 'Global Energy' to be a member of the "Global Energy International Prize Committee for 2009-2013" for selecting the awardees for research and development in the area of energy in the world along with other members which include Nobel prize winners in the field of Physics and Chemistry. He is also a Member of the Advisory Board of Summer School on 'Modeling, Experimentation and validation', Idaho National Laboratory, Argonne National Laboratory and Idaho State University, USA. He has also delivered 24th Prof. Brahm Prakash Memorial Lecture organized by Indian Institute of Metals, Bangalore Chapter on August 21, 2008.

Dr.B.Venkataraman received the prestigious Homi Bhabha Science and Technology Award for the 2008 from BARC/DAE. In addition, Dr. N.V. Chandrasekar received Scientific and Technical Excellence Award; Shri Chittaranjan Das and Shri Sumantra Mandal received

Young Engineer Award; Shri K.V.Kasiviswanathan and Dr.T.Gnanasekaran received Group Achievement Award from BARC/DAE for the year 2008. Dr. A. K. Tyagi, Materials Science Division has been awarded the MRSI Medal for the year 2008 by Materials Research Society of India (MRSI). Dr. John Philip, Non Destructive Evaluation Division, MMG has been awarded Indian Nuclear Society Medal for the year 2007. Shri Sumantra Mandal, Materials Technology Division, MMG has been chosen as the recipient of the "2009 Shri Ram Arora Award" for Materials Science and Engineering Education from The Minerals, Metals and Materials Society (TMS), USA. The following were appointed as Adjunct Professors of PSG College of Technology, Coimbatore: Dr. P. Chellapandi, Dr. T. Jayakumar, Shri. S.A.V. Satya Murty, Dr. K.S. Viswanathan, Dr. B Venkataraman, Dr. U. Kamachi Mudali, Dr. G. Amarendra, Dr. P. Shankar, Dr. M. Sai Baba. Dr.Shaju K. Albert, along with coinvestigators have been awarded the ISAMPE Outstanding Design and/or Process Development Award-2008 by the Indian Society for Advancement of Materials and Process Engineering (ISAMPE), Bengaluru.

Contact us.....

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Please write to us with your valuable suggestions and enquiries about the activities of the IIM Kalpakkam Chapter. We would be most happy to reply to you.



IIM-KC

Editorial

Wish all the readers a very happy, productive and successful New Year in 2009. It was our Chairman's resolution to bring out for the first time an **e-newsletter** on behalf of the IIM Kalpakkam Chapter. From the editors desk we have tried our best to put down his ideas into text into this maiden issue. We hope that it's a beginning that appeals to all of you. Here we have compiled all the important activities of the IIM Kalpakkam Chapter during the past 6 months. As most of us in the IIM community deal with materials, we thought "Materials Matter" in our day to day life and is possibly most suited to be the title of this newsletter. Discovery of new and functional materials will possibly dominate the scientific world from here on as we strive to improve our quality of living. Be it the huge

500MWe Prototype Fast Breeder Reactor or the miniscule nm sized ceramic disperoids in iron matrix, we have addressed and resolved most of the materials challenges at the Indira Gandhi Centre for Atomic Research under the visionary guidance of our Director, Dr. Baldev Raj. The various events of the IIM Kalpakkam Chapter that are compiled here are all directed towards sharing each others experience and thus furthering our knowledge base. Afterall you will agree that those days are gone in which you could work alone and yet contribute to the development of science and technology. So let us get together to make this world a better place to live. We wish to make this newsletter a biannual one and we welcome your suggestions for all future issues.



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