PMAI

Powder Metallurgy Association Of India

NEWS Letter

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In this Issue

Editorial

PMAI is organizing PM-12, International Conference & Exhibition on New Vistas in Particulate Materials Technology and 38th. Annual Technical Meeting, at Mumbai from 2nd to 4th Feb. 2012. This is an opportunity to experience the international trends and developments in particulate materials and also to get answers to many of your questions. Asian Powder Metallurgy Association, board meeting held at Korea is a significant step in the direction of establishing a single organization representing PM activities in Asia. The workshop on Engineering Applications of Ceramics, carbides and Diamonds was a great success. Congratulations to Hoganas India for their silver jubilee celebrations and contributions to PM. The proceedings Powder Metallurgy for Automotive and High Performance Materialsin Engineering Industries is now available and theTrans. PMAI,Vol37, Dec.2011 is being published and will be available soon. Other coverage include PMAI short course and the internship experience of Shaishav Upadhyay, a B.Tech., Metallurgy & Materials Science student. Thanks to Newmet Pvt. Ltd., the sponsor of this issue. Best wishes to all the members of PMAI a Happy & Prosperous New Year 2012.

P. Ramakrishnan

THE APMA BOARD MEETING JEJU ISLANDS, SOUTHKOREA - 3/10/11

The Asian Powder Metallurgy Association is a body whose members are PM Associations of Asian countries.

The membership at the time of the 3rd Board Meeting held on ***Oct 3rd, 2011 at Jeju Island, S.Korea*** consisted of ;

Japan Powder Metallurgy Association

Japan Society of Particulate Materials

Korean Powder Metallurgy Institute

Korean Powder Metallurgy Association

Taiwan Powder Metallurgy Association

The Powder Metallurgy Association of India

(PMAI is represented by the author of this report, N.Gopinath, MD of Fluidtherm Technology & VP, Governing Council, PMAI) The meeting was declared open by Mr. Isamu Kikuchi, President of APMA (affiliated to JPMA).

An appeal was made to all members to promote the next PM World Congress scheduled to be held at Yokohama, Japan between Oct 14 – 18, 2012. Member associations are encouraged to send as many speakers, delegates & exhibitors as possible. The last date for submission of abstracts has been extended to 31.12.2012.

China was represented by SATIPM which is said to be a federation of Chinese PM associations. They joined the meeting as observers & in the course of the meeting joined APMA as a full fledged paid up member. Other observers were the Australian PM Association & the Malaysian PM Association. The next Board meeting will be held alongside the PM 2012 World Congress at Yokohama. The following board meeting in 2013 will be held in China, venue to be decided. As APMA is not strong enough to hold its own Conferences it is proposed that they will be held in conjunction with the Conferences held by member Associations, the next one in 2014 venue to be decided during the next board meeting.

PMAI

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(CCD-11), Carbides, Diamonds: A Workshop on Engineering Applications

Ceramics, Carbides, Diamonds: A Workshop on Engineering Applications (CCD-11) was organized by ***Powder Metallurgy Association of India (PMAI)*** & BMR Chapter of ***Indian Ceramic Society (InCerS)***, during December 8-10, 2011 at ***College of Engineering, Pune (CoEP)***. This workshop was sponsored by ***Ceramet Consultants, Mumbai, Stay Sharp Diamond Tools Pvt. Ltd., Mumbai, Fluidtherm Technology P. Ltd.*** , ***Chennai*** and ***Bhise Ceramics Pvt. Ltd., Mumbai.*** Inauguration was done at the hands of Dr. Anil Sahasrabudhe, Director College Of Engineering Pune. The workshop was attended by 71 participants from all over India from industry, academia and R&D organizations. There was a large participation from undergraduate, postgraduate and research students. There were 21 invited speakers who delivered 27 lectures for 3 days.

The following lectures were represented:

1. Keynote address on Corporate R&D, Mr. Ashok Saraf, Battelle India, Pune
2. Cemented Carbides, Dr. Sanjay Basu, Sandvik, Pune,
3. Powder Production by solution techniques, Dr. V. N. Vaidya, Retired Scientist and Raja Ramanna Chair, Bhabha Atomic Research Centre (BARC), Mumbai.
4. Ceramic Powders by Pyrolysis, Dr. Tarashankar Mahata, Bhabha Atomic Research Centre (BARC), Mumbai.
5. High Energy Milling, Dr. Murli Gopal Krishnamoorty, Novoken Innovations, Mumbai.
6. Powder Characterization, Prof. P. Ramakrishnan, Professor Emeritus, IITBombay, Powai, Mumbai
7. Consolidation of Materials (CP, CIP, HP, HIP & Tooling), Mr. M. Syambabu and Dr. P. K. Sinha, Bhabha Atomic Research Centre (BARC), Mumbai.
8. Gel Casting, Prof. Parag Bhargava, IITBombay, Powai, Mumbai.
9. Powder extrusion, Mr. Mohan Gore, Ceramet Consultants Pvt. Ltd.
10. Powder Injection Moulding, Prof. Parag Bhargava, IITBombay, Powai, Mumbai.
11. Furnace Technology, N. Gopinath, Fluidtherm Technology P. Ltd., Chennai.
12. Sintering, Prof. T. R. Rama Mohan, (Retd., IITBombay, Powai, Mumbai), Consultant, Mumbai, Chairman, InCerS-BMR Chapter.
13. Fundamentals of Wear, Prof. Narendra B. Dhokey, College of Engineering, Pune (CoEP), Co-convener-CCD-11.
14. Alumina Ceramics, Silicon Carbides, Mr. Kamal Kacholia, NTB Hitech Ceramics, Pune.
15. Zirconia and Zirconia Toughened Alumina, Dr. S. C. Sharma, Naval Materials Research Laboratory (NMRL), Ambernath.
16. Boron Carbides, Mr. Niraj Bhukhanvala, Boroncarbide India Pvt. Ltd., Mumbai.
17. Ceramic Armour Materials, Dr. S. C. Sharma, Naval Materials Research Laboratory (NMRL), Ambernath.
18. Dielectrics, Ferroelectrics and Piezo-electrics, Dr. Sandeep P. Butee, College of Engineering, Pune (CoEP), Convener-CCD-11.
19. Magnetic Ferrites, Mr. S. A. Gupte, Mahindra Hinoday, Pune.
20. Polymer Derived Ceramics, Dr. Rahul Harshe, Research and Development Establishment (RandDE), Pune.
21. Solid Oxide Fuel Cells (SOFC), Dr. Deep Prakash, Bhabha Atomic Research Centre (BARC), Mumbai.
22. Bioceramics, Dr. V. N. Vaidya, Retired Scientist and Raja Ramanna Chair, Bhabha Atomic Research Centre (BARC), Mumbai.
23. Metal-Matrix Diamond Tools, Dr. Murli Gopal Krishnamoorty, Novoken Innovations, Mumbai.
24. Vitreous Matrix diamond tools, Prof. T. R. Rama Mohan, (Retd., IITBombay, Powai, Mumbai), Consultant, Mumbai, Chairman, InCerS-BMR Chapter.
25. Glass and Glass Ceramics, Prof. A. N. Tiwari, Retd. Professor, IITBombay, Powai, Mumbai.
26. Low Temperature Co-fired Ceramic (LTCC) Circuits and Structures, Dr. G. J. Phatak, Center for Materials for Electronic Technology (C-Met), Pune.
27. Nuclear Ceramics, Dr. Deep Prakash, Bhabha Atomic Research Centre (BARC), Mumbai.

The program was well received and participants were very interactive despite long hours of lectures. The organizing committee acknowledges the support of all sponsors, advertisers, organizing committee members and participants to make this program a successful event.

PMAI POWDER METALLURGY SHORT COURSE PMSC – 2011-12

IIT, Bombay Mumbai India (March 15 to 18, 2012)

The short course in powder metallurgy offered by Powder Metallurgy Association of India (PMAI) will be conducted this year by the Department of Metallurgical Engineering and Material Science, Indian Institute of Technology, Bombay, Mumbai. The course will be held for 4 days from March 15th to 18th 2012 at IIT, Mumbai. The course conducted for the past several years has been very successful, and several entrepreneurs have come up in PM with this background. The list attached gives an idea of the participation since the last few years.

The course is designed for practicing powder metallurgists and other engineers, managers, executives, academicians and entrepreneurs seeking an in-depth knowledge of the range of powder metallurgy technology. It is expected that middle level management and senior supervisory staff as also entrepreneurs in the field of PM would benefit from the course by giving them a deeper understanding of their current activities, as also their exposure to the advances in the technology that they can make use of in their work place. Anyone desirous of an insight into practical powder metallurgy would also benefit by the course. In addition, the course would include demonstration/ practical classes in powder reduction, die compaction, tool room practices, cold isostatic pressing, hot isostatic pressing, atomization, powder injection moulding etc. This is an intensive course, which calls for full involvement from morning to evening on all 4 days of the course. Lectures will be held by specialists in respective fields with years of practical experience. At the end of the course the participants would be tested for the knowledge acquired and will be issued with a certificate from PMAI. To ensure excellent interaction between the participants and the lecturers, participation will be restricted.

The course would cover the following fields:

1. Powder production
2. Characterization of powders
3. Compaction of powders
4. Design and fabrication of dies
5. Sintering
6. Characterization of sintered component
7. Sintering furnaces and atmospheres
8. Processing of ceramics
9. Surface engineering with powders
10. Statistical Quality Control
11. Technology Management
12. Specialty areas in powder metallurgy
    - (a) Powder Injection Moulding
    - (b) Mechanical alloying
    - (c) Nanomaterials
    - (d) Hot isostatic pressing
    - (e) Microwave sintering

The charges for the course will be Rs. 10000/- per participant. The fees include course material, practical classes and lunches and accommodation.

If you need further information on the course, Please visit PMAI website for updates Please contact

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Internship at AMES

Inspired by recent PMAI events, The Powder Metallurgy Short Course (2009) and the International conference, PM-11, one young undergraduate student from College of Engineering Pune (CoEP) could impress up on Dr. Cesar Molins, CEO, Ames, Spain for an internship cum scholarship in their prestigious R&D facility. He spent two months of his vacation at Ames at their various facilities. He could see all the modern PM production facilities. He worked on tribology PM Chrome steel (SAE52100)- Effect of sintering and post sintering heat treatment suitable for high speed production of such parts vis-a-vis microstructural characteristics. He also had opportunities to enjoy our Diwali like spanish festival 'Nit de Sant Joan" and also practiced with the Spanish 'Govindas' called the Çastells, who make human pyramids. Prof. N. B. Dhokey of Department of Metallurgy & Materials Science and the Institution supported him in all his efforts. PMAi Congratulate the young budding engineer and wish him luck in his future endeavors.

Shaishav Upadhyay

Experience of the Student

During the PM11 conference I got fairly motivated by the opportunities in the field of PM and hence I applied to the company (AMES) of Dr. Cesar Mollins for an internship. Within a few weeks of that, I was sent the documentation requirements and with great support from Dr. N.B. Dhokey and my college authorities, I was all set to go to Spain as my first international trip. In Spain I was to work with the R&D department at the Sant Vicenc facility which is one of their oldest setups. Sant Vicenc is a small town outside Barcelona. The company had arranged for my stay in Barcelona with a very friendly English speaking person. Initially I was worried about the language problem, but fortunately most of the people in my department were comfortable with some English and I never faced any problem. The staff was very helpful and friendly throughout my stay. I learned a lot from them. At the plant they had many facilities for making PM products. They bought the powder from external suppliers and blended them with the lubricants and alloying elements using the conventional mixing technologies or either by their patented mixing process. The prepared mix was then pressed using presses which were designed at AMES. The designing of presses started at AMES during the time of General Franco (A spanish dictator in the 1930's), who imposed a ban on import of spares from other countries. These presses provide more freedom to the AMES engineers to reduce cost and improve accuracy. The green parts were then sintered, heat treated and then machined in the same plant. I also got exposed to some of latest research projects AMES was working on. They had all the essential research equipments like SEM, Spectrometer, LECO Carbon-Sulphur analysers, CIP, Tribometer etc. I was given a project related to tribology. In the study a wear resistant alloy (SAE 52100) was prepared by the conventional Powder Metallurgy route. It was then Spheroidize annealed in 3 different furnaces to get a good distribution of cementite in a ferrite matrix and keeping in mind the production level requirements of speed. The spheroidize annealed material was then hardened. A study of the wear properties and microstructure of the material at different stages of the process was made. While working at AMES I got sufficient free time at the weekends and I got an opportunity to travel. I got a flavour of a couple of Spanish festivals. One of them 'Nit de Sant Joan' was very similar to Diwali in terms of celebration with fireworks. The people of Barcelona also have a tradition similar to that of the Govindas during Janmashtami, they are called the Castells. I even attended one of their practices. There are plenty of Indians there to help you with whatever you need . The time spent there gave me some of the most enriching experiences of my life. Apart from the vast amounts of technical knowledge I gained, I also learnt a lot about myself. I realised my strengths and weaknesses. I gained hands-on experience in Powder Metallurgy and got a flavour of what research means for the industry and how the results are to be generated quickly, efficiently and with minimum usage of expensive resources.

Höganäs India Silver Jubilee

Höganäs India Pvt Ltd is celebrating its Silver Jubilee by promoting Powder Metallurgy in India through a series of two day PM schools in Chennai, Pune and Delhi, the three automobile part production hubs in India. Alrik Danielson, CEO Höganäs AB, Sweden, and V. Srinivasan, MD Höganäs India Pvt. Ltd, celebrated the Silver Jubilee function at Pune Marriott and Convention Centre on 12th Nov 2011. Leading figures from corporate, academic and R&D organisations participated in the function. Powder Metallurgy Association of India was honoured with a souvenir and President Mr.Sivan thanked them for their support and cooperation for the various activities of PMAI.