



ASM International, Pune Chapter Chapter News Letter

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August 2013

EDITORIAL...✍



ASM International, Pune Chapter Welcomes you to the August 2013 issue of Newsletter.

Pune Chapter received the Chapter Award Winner recognition for outstanding achievement in the Area of Sustaining Membership.

The man who brought ASM International to India, Dr.H.Mehta has been awarded honorary membership from ASM International for his life time contribution to ASM.

Dr. Satyam S Sahay, a member of the chapter has been elected as a 2013 Class of Fellow of ASM International, USA (FASM).

Materials Camp for students was successfully held in May 2013.

Technical paper on Adhesive Joints in Automotive by Mr. Debabrata Ghosh and Mr. Lokesh Pancholi is incorporated in this newsletter.

Training Programme on "Modern Heat Treatment including Vacuum Heat Treatment was conducted in July 2013.

Happy Reading.

Louis Vaz
Editor

Outstanding Chapter Award



ASM Honorary Membership conferred on Dr. H. M. Mehta



Dr. H. Mehta

Dr. Harsukh Mehta was born on 4th March 1928 in Karachi (Undivided India), His early education was in Karachi during the pre-partition days and later for four years in U.S.A. in engineering. In July 1989, he received the

Honorary DOCTORATE IN SCIENCE (MECHANICAL ENGINEERING) from THE INTERNATIONAL UNIVERSITY FOUNDATION.

To Dr. H.M.Mehta goes the credit of the making India metals – and - materials conscious, Founder- Chairman of the Indian Chapter of the erstwhile American Society of Metal, now renamed as ASM International based in Material Park, U.S.A. He was the FOUNDER Chairman of INDIA COUNCIL OF ASM INTERNATIONAL.

He has to his credit many innovations in the steel ball manufacturing, and is

the first in India today to have the channel system of ball manufacturing. Has also been instrumental in starting up many small and medium industries in various areas of materials innovation, like coolants, for lapping industry.

He had the vision and mission to bring ASM Intl, to India way back in 1979, and has been a part of the dissemination of materials science knowledge in the part of the world by bringing in new ideas and programs for the benefit of industry.

He has been promoting materials science through his philanthropy of reaching out to the villages in Gujarat India and propagation the importance of science and technology to students of primary and High School.

He has to his credit the chairmanship of all major professional bodies in India like Metal Finisher Association of India and National Center for Quality Management. He has started many colleges in some part of Gujarat.

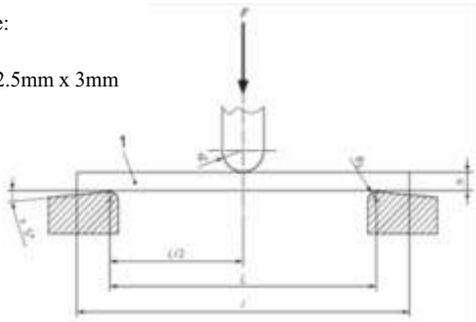


Flexural Test

Three-point bending	Flexural strength (MPa)	ASTM D790 ^[7]
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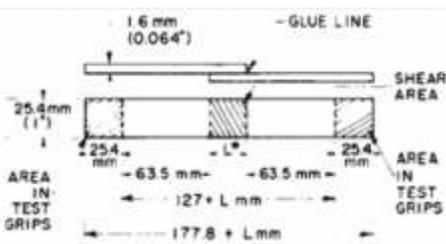
Sample Size:

125mm x 12.5mm x 3mm



Fatigue Test

Fatigue test	Fatigue life	ASTM D 3166 ^[8]
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6.2 Environmental Testing: In order to determine the effectiveness of different adhesive systems, processing variables and surface pretreatments, it is necessary to expose adhesively bonded joints to various environmental and loading conditions that simulate actual service conditions. The two predominant factors in climatic exposure are solvent, moisture and temperature. Lists of service environmental conditions are listed below:

Test	Properties	Sample
Environmental Test	Adhesion after thermal and humidity cycle	According to ASTM D1002
Water immersion Test	Adhesion After 7 days in water	According to ASTM D1002
Chemical Test	Adhesion after immersion in Diesel / petrol / engine oil / gear oil / axle oil / coolant etc. for specific period at specific temp	According to ASTM D1002
Heat ageing Test	Adhesion after subjecting the specimen at a particular temp. for a particular period	According to ASTM D1002

7. Conclusions:

Adhesive bonding in automotive has led to a new direction of producing lightweight and energy efficient cars. Adhesive bonding is a proven substitute of conventional mechanical joining. It can also be used in combination with mechanical joining like spot welding, mechanical fastening, riveting etc wherever higher durability and impact is required. The most important aspect in designing an adhesive joint is the appropriate choice of adhesive. Surface preparation plays a vital role in achieving the optimum performance of the joint. Thickness of the joint varies from adhesive to adhesive, for example with structural adhesive like epoxies the joint thickness must not be greater than 0.25mm, whereas with polyurethanes the joint thickness must be greater than 1mm to achieve the maximum strength. However each and every types of joint has its own advantages and disadvantages, and adhesive joint is not an exception. Considering the advantages, adhesive joint is preferred for the following aspects,

1. A wide range of materials can be joined.
2. Load experienced in the joint is evenly distributed thus minimizes the stress concentration. Joint experiences improved NVH and Crash Performance.
3. Along with bonding it also seals the joint.
4. Galvanic and crevice corrosion can be avoided.
5. A good joint design will be energy-absorbing, and tend to have good noise and vibration damping properties.
6. Adhesive bonding is a convenient and cost effective technique that can be made fully automatic.

In spite of having so many advantages, there are disadvantages too that limits the application of adhesive joints. Disadvantages of adhesive bonding include the following.

1. Pre-treatment of the surface before bonding is essential for structural bonding and to obtain satisfactory quality in corrosive environments.
2. Adhesive being a polymer based material, can't withstand extreme temperature condition.
3. Curing of adhesives may take longer time thus creates problem in assembly line and alternately adhesives can't be stored for longer time as they have their own shelf life.
4. Poor peel and Cleavage strength.
5. No suitable NDT techniques are available to detect the defects in the adhesive joints.
6. Higher consumables cost and required skilled labour if application is not automatized.



8. References:

1. Handbook of Adhesive Technology; Second Edition; Taylor & Francis group, 2003.
2. Gray Savage; "Practical Aspects of Failure Prevention in Bonded Joints on Primary Load Bearing Structures"; Anales De Mechanica De La Fractura; Vol. 22, 2005, P-273-282.
3. "Durability of Adhesive joint, A Best Practice Guide"; AE Bond; September 1998.
4. ASTM International; "Standard Test Method for Tensile Properties of Adhesive Bonds"; ASTM D897-08.
5. ASTM International; "Standard Test Method for Peel Resistance of Adhesives (T-Peel Test)"; ASTM D1876-08.
6. ASTM International; "Standard Test Method for Apparent Shear Strength of Single-Lap-Joint Adhesively Bonded Metal Specimens by Tension Loading (Metal-to-Metal)"; ASTM D1002-10.
7. ASTM International; "Standard Test Method for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulation Materials"; ASTM D790-10.
8. ASTM International; "Standard Test Method for Fatigue Properties of Adhesives in Shear by Tension Loading (Metal/Metal)"; ASTM D3166-99 (Reapproved 2012).

About The Authors



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Dr Satyam Sahay elected as a Fellow of ASM International (FASM)

It is matter of great pride for the ASM Pune Chapter that Dr. Satyam S Sahay, a member of the chapter, has been elected as a 2013 class of Fellow of ASM International, USA (FASM). ASM International established the honor of Fellow of ASM (FASM) in 1969 to provide recognition to ASM members for their distinguished contributions to materials science and engineering. Recipients of one of the highest honors in the field of materials, ASM Fellows are technical and professional leaders who have been recognized by their colleagues and now serve as advisors to the society.

Dr. Sahay's citation reads:

"For successful implementations of model based optimization in heat treating industries, outstanding research in the area of process modeling and non-isothermal phase transformations and for significant contributions towards professional societies, journal boards and academic institutions."

The award would be conferred upon him at the ASM Awards Dinner on Tuesday, October 29, 2013 in Montréal, Canada during MS & T 2013. It is a great co-incidence that Dr Sahay achieved the honour in the Centenary year of ASM International.



Dr Satyam Sahay

Dr Sahay is currently a Senior General Manager at John Deere Asia Technology Centre, Pune. He actively participates in various activities of ASM International and other professional societies and is a member of editorial boards/committees of 5 international journals including "Advanced Materials and Processes (AM&P) and Journal of Materials Engineering and Performance published by ASM International. His contribution in reviews of journal papers, articles in Metals handbook and active role in selection committees, is noteworthy. Dr Sahay has recently co-edited a special issue on Process Modeling and Optimization of Thermal Processing published by ASTM International, has 6 patents, 57 Journal papers and 80+ presentations in technical conferences to his credit.

Dr Sahay is recipient of various awards and honours, including 2011 Fellow of IIM, 2002 Young Metallurgist and 2008 Metallurgist of the year given by Steel Ministry, Government of India, 2008 Tata Group Promising Innovation Award, and three John Deere Enterprise Innovation awards.

Pune Chapter congratulates Dr. Sahay for bringing this unique honour for the first time to the Chapter and wishes him all the best in achieving even greater awards and honours in future.



Know Our Members



Hemant K. Zaveri

Hemant K. Zaveri, is a B.E.(Met) from COEP, 1980 batch & has done his DMM from Mumbai Univ.

Has @ 10 years of marketing experience with various steel plants like Krishna steels & Bhoruka Steels & Hitech Ind.(Bihar) Ltd., & @ 33 years

of experience in industrial marketing.

Currently operates his own proprietary firm – A.S.A. Marketing, in Pune, since 1990. Primarily into business of calibrations & manufacturing of thermocouples and oxygen probes, heating elements, compensating cables, etc.. His is the firm was one of the first firms in private sector in Pune, to get 'NABL' accreditation in 2003 for calibrating thermocouples and oxygen probes. Even today is the only laboratory accredited for calibrating oxygen probes. He manufactures oxygen probes in the brand name of 'CYCLOPS'.

Hemant caters to most of the heat treatment plants (commercial & captive) in and around pune

Hemant is happily married to Seema - a housewife and an entrepreneur in her own right. Is blessed

with daughter – Aashnaa, & son – Adhish. Aashnaa having completed her MBA from IGTC, Mumbai, & all the 06 diplomas in German from Max Mueller Bhavan, Pune, worked with Deutsche bank & Tata Consultancy, before marriage, and is currently settled with her husband Amit Shah In L.A.(USA). Adhish completed his graduation in Mass Media from SIES College, Mumbai. After having worked with JWT for over 4 years, is currently working with Birla Sun Life - Mutual Fund Divn., As Marketing Manager – Brand & Products & intends to complete his MBA very soon.

Hemant is fond of ghazals, bird watching, boating, trekking and most outdoor activities. He is a Brown Belt in karate.

He can be contacted on 09422313853 or seemahz@gmail.com.

Volunteer yourself for your Chapter!

For more efficient working & expanding network of your ASM International Chapter, please support your chapter by offering your time. Lot of avenues to choose areas of your liking. Options are - Membership Development, Education Programs, Students Outreach, Member Service, Website, News Letter, Technical Program and Social Events. Contact ASM International Pune Chapter asm.pune@gmail.com

Training Programme on - "Modern Heat Treatment including Vacuum Heat Treatment was successful

Training Programme on "Modern Heat Treatment including Vacuum Heat Treatment was conducted on 11th and 12th July at Hotel Ramee Grand at Apte Road, Pune. The programme was attended by 19 participants

from various Industries. Guest Speakers - Mr. M.S.Ganesh spoke on Vacuum Heat Treating and Mr. Pankaj Deval spoke on Quenchants and Polymers Mr. Pradeep Kulkarni spoke on Customers expectations from Heat Treating and Quality Assurance. The remaining topics were covered by our E C members.

The participants appreciated the Programme as per the feedback received from them.

K.C.Gogate

Mr.Gogate was instrumental in arranging the technical programme.

Pune chapter office moved to new location

ASM INTERNATIONAL 100th ANNIVERSARY 1913-2013

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Pune Chapter Hosts 6th Materials Camp

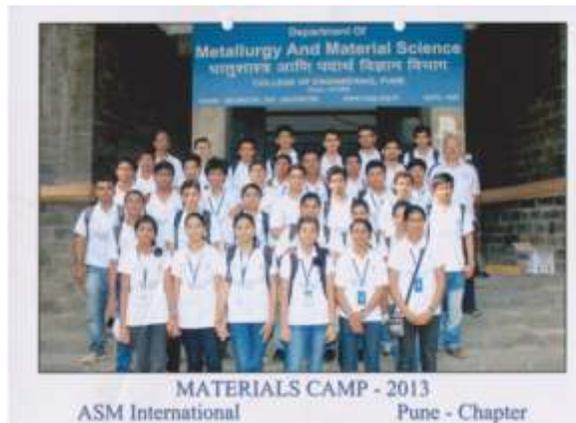
Our annual, prestigious and most praised event for students took place on May 19 to 23, 2013 at Metallurgy and Materials Engineering department, College of Engineering, Pune. This event is specially designed for students seeking admissions to Engineering. Hence this event is always planned immediately after CET exam so that all deserving students can attend the program without any tension of exam or classes. It is commendable to the candidates that immediately after the CET exam they attend this program with full enthusiasm. After six consecutive years of this event we are happy to note that some students are opting for core engineering branch and few for metallurgy also.

The camp was inaugurated by Dr. A. K. Singh Sr Scientist Tata Research and Chairman, Pune Chapter, IIM on May 19. His talk inspired the candidates about research work not only in metallurgy but other related fields and to aim for Nobel Prize. As usual three days were used for hands on experimentation at COEP wherein participants did exercises in material testing, foundry, welding, heat treatment, corrosion, mechanical working etc. One full day was used for nondestructive testing wherein all basic methods like visual, magnetic particle, penetrant, ultrasonic, radiography and electromagnetic were introduced. This is really very rare opportunity made possible with NDT experts in Pune. None of these experts is ASM member but help us each year. Two days we spent for industrial visit- May 20 to visit Tata Motors and May 22 to visit Emitech, Triumph and ARAI. Participants were thrilled to observe the vast applications of various principles they observed at laboratory scale in college to the actual use of production of vehicles and auto ancillaries. Last day there was small quiz test wherein Gaurav Agarwal scored first no. In the camp we not only work on metallurgy but also give chance for participants to demonstrate their other skills by asking them to present to the audience about their experience in Materials camp. Last day prize distribution was done in the hands of Mr. L. D. Deshpande and Dr. Vagge.

Without much advertisement there were 44 applicants for the materials camp. We stopped enrolling further names as we are restricting max participants to 40. However actual attendance was 34 nos, six girls and 28 boys. Since most of applicants are coming through acquaintances, through this news letter I would like to appeal all our members and well wishers that if you want to drop out for some reason after your enrolment, please inform us as soon as possible so that your place can be given to the other deserving candidate. Otherwise some candidates are unnecessarily deprived of the opportunity to attend this camp.

I would like to mention here the names without whose help this materials camp could not have success. Dr. Sahastrbudhe, Dr. Vagge and other staff members of COEP, Dr. Vora and other staff members of ARAI, Mr. Dhananjay Paranjape. All these are not ASM members but without their help our camp cannot take place. We are also grateful to management of Tata Motors, ARAI, Emitech and Trump for allowing us to visit their facility and extending full support during the visit. Mr. Pangare, Mr. Datar, Mr. Kavishwar, Mr. Mistri, Mr. Gophan, Mr. DD Joshi for supporting the activities in NDT. ASM members Mr. Hemant Zaveri, Mr. Chivate, Vinit Marathe, Rahul Gupta, Gowaikar, LD Deshpande and so many others without whose help we can not work. Special thanks to Mr. Ratnaparakhi and Mr. Chimbalkar who were not only present all five days of the camp but were working for it right from inception till end. Most important supporters to make this camp successful are five ASM student members of Government Polytechnic whose names are Tejal Kadam, Jayashri Dangat, Shweta Badakh, Vint Gaikwad, Vaibhav Pharate. I would like to thank them all and wish them and all participants of Materials Camp great success in their future life.

Sudhir Phansalkar



Note: Our EC member Mr. Sudhir Phansalkar, and his team have taken great pains and effort to make the materials Camp a grand success year on year. - **Editor**