



Chapter News Letter



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EDITORIAL . . . ✍

Dear Readers,

We take great pleasure in welcoming you to our newsletter. We have created this publication with the intention of providing a space for the generation of knowledge, dialogue, critique, debate. The immediacy of e-based publication makes it possible for us all to be fully connected to each other and to developments in our field and to be directly involved in ongoing knowledge construction. It is indeed a great honour to be the newsletter editor for ASM international and it is an immense pleasure to launch this newsletter on 'International Women's Day'.

In this issue, we will recount about this year's Women's day theme - 'Break the Bias' and women's contribution in materials and metallurgy as well as many other activities in which members were actively involved. We also have reviews on the technical topic, 'What is green hydrogen and how it is different from grey and blue hydrogen'. A huge thank you to my team who contributed in this newsletter, without which there wouldn't have been this newsletter issue.

ASM International Pune Chapter celebrated Women's Day on 5th March.

Last but not least, I would like to thank Krutika ma'am and Louis sir and all the members for their everlasting support throughout the creation of this edition.

Editors:

Amanjeet Kaur
Vaishnavi Ugale
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Cummins College, Nagpur





From Chairman's Desk:

Let me acknowledge women participation in ASM, particularly management of Pune Chapter. Our women force had planned a grand wonderful women's day celebration. I am sure, many of you had attended the program and had enjoyed it.

This grand program will have and most important part launch of worked out of for Women Materials – Students to 30 plus years of Leader, Tata Group Innovation, Tata the chief mentor. He is also supporting structure of the program.

For effective management of the various sub-committees. These regularly for expediting their activities.

Our students Outreach Committee is Advantage Chapters. We received Advantage Chapter in Govt Polytechnic Pune. Both will be formally inaugurated

Technical Talk is the unique feature of activity. We will be focussing on arranging two technical talks per month.

Due to Covid-19 Pandemic we could not plan and organise Students Camp & Teacher Camp. We will be restoring both these activities this year.

Best wishes.



Udayan Pathak, FASM

motivational talk, Panel Discussions Mentorship Program exclusively Engineers at different levels of careers experience. Dr Rajiv Narvekar, Practice Management Centre has agreed to be core team to decide & finalise the

chapter activities, we have formed committees have started meeting

actively pursuing new Materials formal charter for forming Materials Nagpur & PVG Engineering College in this month.

our chapter. We have strengthened this

ASM INTERNATIONAL



About ASM

As the world's largest and most established materials information society, ASM connects you to a global network of peers and provides access to trusted materials information through reference content, data and research, education courses and international events; helping you to solve problems and improve materials related outcomes.

Mission: To gather, process, and disseminate materials information globally, through education, networking, and professional development for members, organizations served by our members, and the materials community.

Vision: To be the leading global resource for materials information.

The society embraces lifelong relationships with members through a virtuous circle of education, experience, and learning under the umbrella of the following core values

Core Values:

- Integrity and transparency in all society operations
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- Continuous improvement via an adaptable and flexible organization



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ASM INTERNATIONAL PUNE CHAPTER CELEBRATED WOMEN'S DAY

ASM International Pune Chapter celebrated Women's Day on 5th March in the Auditorium of MKSSs Cummins College of Engineering for Women, Pune. MKSSs's Cummins College of Engineering for Women and The Institution of Engineers, Pune Local Centre joined hands with ASM for the event. The celebration was, in mixed mode, Offline at CCOEW auditorium and online using Zoom Platform. More than 100 participants attended the function including Engineering students from Cummins College of Engineering for women at Nagpur and Pune.

The program started with Traditional Lamp lighting at the hands of dignitaries, Dr Madhuri Khambete, Principal Dr Gautam Chandekar HoD Mech. from CCOEW, Udayan Pathak, Ruta Barve from ASM. The honour of lighting the lamp was given to two students, Rajeshwari & Abha.

On this occasion, Mentoring Program for Women Materials Engineers was launched jointly by Ms. Deepa Deshpande, Director Precicut & Mr. Pradeep Goyal, ASM India Mentor & Founder Chairman of Pradeep Metals. Ruta Barve, Jt. Secretary Pune Chapter elaborated the structure of the program. This exclusive mentoring program is designed in consultation with Dr Rajiv Narvekar, Senior Practice Leader Tata Management Training Centre & Group Innovation Centre. He also agreed to be the Chief Mentor.

This program was kick-started with an inspirational talk by Ms Sanhita Karmakar from Kolkata and an interview of Dr. Ms. Fahmida Gulshan (HoD Materials Science, Bangladesh University, Dhaka) by Dr. Ms Sarika Verma (CSIR-AMPRI).

There was a Panel Discussion on "Career Opportunities for Materials Engineers in Current Global Technology Disruption." The eminent panellists were Dr. David Williams (VP ASM International & HOD SEM at Ohio St University), Dr. Anne-Claire Christiaen (Director Advance Design center, Emerson Electric, Ohio), Ms. Jill Long (VP HR, North America & Asia, Bodycote Thermal Processing PLC), Mr. Sachin Ghanpathi (Retd. Director Manufacturing Engineering Cummins India Ltd & Industry 4.0 Expert), and Ms. Shruti Dubey (Student Member, Board of Trustee, ASM International and Chair, Materials Advantage, IIT Kanpur). The session was moderated by Ms. Jaswandi Gotmare of Emerson Innovation Center-Pune.

Dr. Williams emphasized the need of acquiring Numerical and Data analytics skills for Materials engineers. Dr. Anne-Claire mentioned about tremendous career opportunities in circular economy perspective which would be changing the entire design approach from low cost-lightweight materials to carbon footprint approach for environmental sustainability.

Ms. Jill shared the criticality of acquiring new skills like data analytics, machine learning and soft skills like being resourceful, being able to solve problems & troubleshooting. Mr. Ghanpathi highlighted that adopting Industry4.0 is helping manufacturing value chains to be more agile. He also added that collaboration is the key, but basic engineering knowledge will be advantageous. Ms. Shruti drew everyone's attention to a valid point that 'Material' is Omnipresent. Hence along with core subjects of materials science engineering, there is a need to include machine learning & coding in the engineering course.

Mr. Udayan Pathak & Ms. Ruta Barve welcomed the guests and shared activities of the ASM Pune Chapter while Ms. Nita Gaykar expressed the vote of thanks. Ms. Jaswandi Gotmare, Ms. Nita Gaykar, Ms. Ruta Barve organized the event from ASM Pune Chapter. Ms. Pournima Barve and Ms. Tannu Kanojia co-anchored the program.

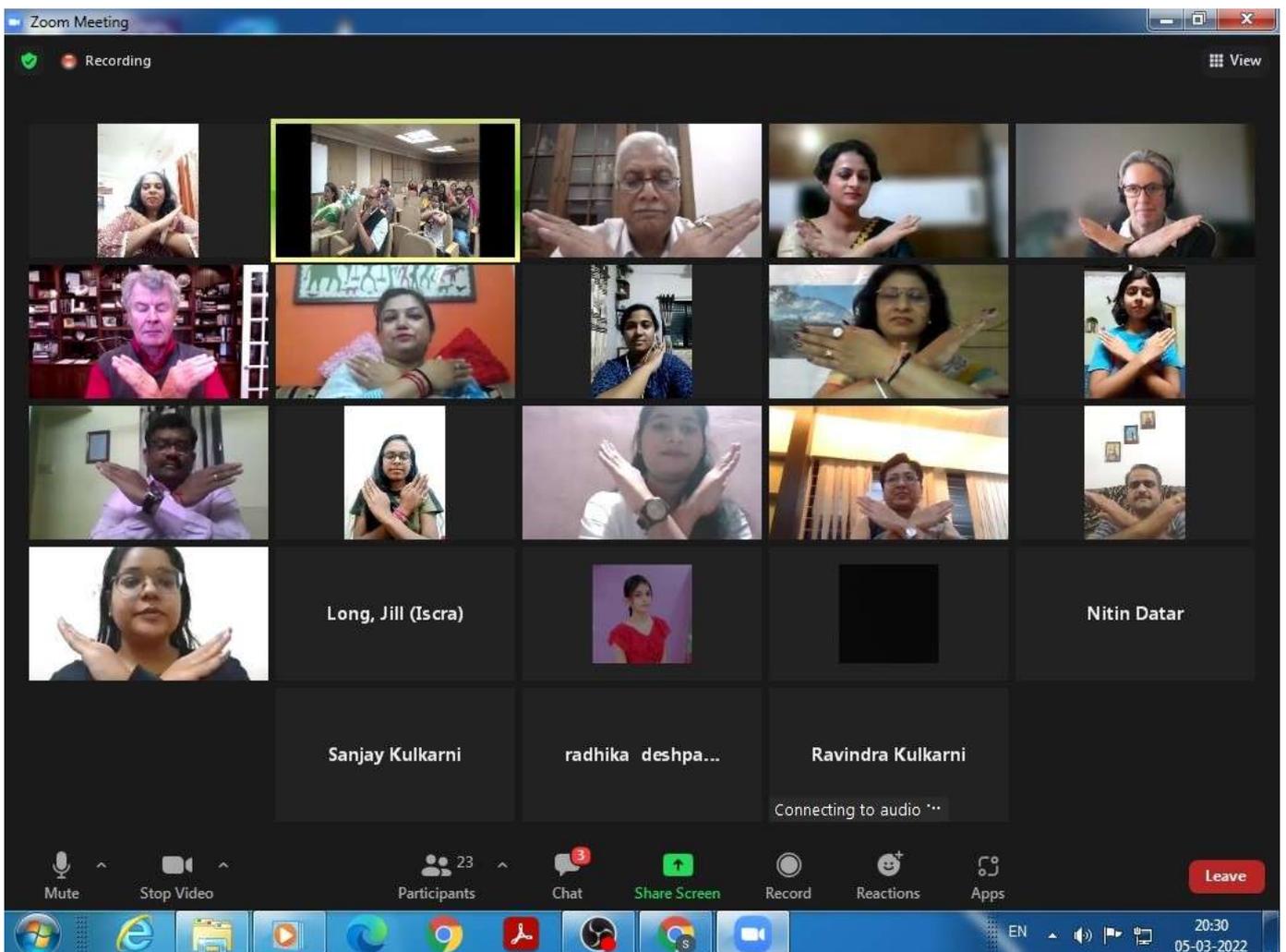
This program was the example of true diversity and inclusion.



*Traditional Lamp Lighting, symbolizing Knowledge removing the ignorance
(Clockwise from top Dr Madhuri Khambete, Udayan Pathak FASM, Rajeshwari & Ruta Barve*



Panel Discussion in Progress



#Break The Bias



INTERNATIONAL WOMEN'S DAY THEME



#BREAK THE BIAS

#BreakTheBias is the start for a gender equal world. A world free of bias, stereotypes, and discrimination; one that is diverse, equitable, and inclusive. Difference is valued and celebrated.

We are all responsible for our own thoughts and actions - all day, every day and we can break the bias in our communities, our workplaces, our schools, colleges and universities. Together, we can all break the bias - on International Women's Day and beyond.

So, what does one mean by bias? It can be anything from:

- * A man never accepting a female boss or leader 'Because she is a woman'.
- * Undervaluing an individual because of their age
- * Disregarding any advice, comments or opinions from particular ethnic groups
- * Always assuming that because someone was originally from a particular country or region of UK that they will behave in a particular way.
- * Accusing women of being bossy when the same statement from a man is considered 'Speaking like a leader'.
- * Accusing women and women of colour, of being over emotional; when they have been assertive, to cut them down.

Anyone who is struggling with how to approach breaking biases

- Anyone who has been successful in deconstructing bias within their teams and organizations that wants to share ideas and take a role in inspiring others
- Anyone in the agile community who wants to understand and explore bias and elevate women in their organization

Every year International Women's Day release a theme to celebrate the day – and women all over the world. This year it is #Breakthebias and this couldn't come at a better time. There is a significant amount of anger and unrest caused by factions and a reluctance to listen to other people's points of views. In a number of countries, women are still excluded from decision making.

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ROLE OF WOMEN IN METALLURGY AND MATERIAL

1. INDIRA SAMARASEKERA

Indira Samarasekera is one of Canada's leading metallurgical engineers. She was the first woman in Sri Lanka to become a mechanical engineer, the first female professor in the Department of Metallurgical Engineering at the University of British Columbia (UBC), and the first female president of the Metallurgy and Materials Society (MetSoc) of the Canadian Institute of Mining, Metallurgy and Petroleum (CIM). From 2005 to 2015, Indira served as president of the University of Alberta; she was the first woman and the first engineer to hold this position.



2. PEARL SULLIVAN

Pearl Sullivan is a materials engineer and an expert in polymer-based composite materials. She is the founding director of the Collaborative Nanotechnology Graduate Program at the University of Waterloo, an inter-disciplinary graduate program that is the first of its kind in Canada. She is currently dean of the Faculty of Engineering at the University of Waterloo and is the first woman to hold this position. Pearl is a passionate promoter of engineering and is committed to advancing engineering education and research.



3. PRITI WANJARA

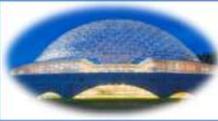
Priti Wanjara is a metallurgical engineer and currently the team leader of the Coatings and Metallic Products Group at National Research Council (NRC) Canada – Aerospace. She is a leading researcher in the fields of metallurgy and materials science and author or co-author of more than 100 publications. Priti served as the second female president of the Metallurgy and Materials Society (MetSoc) of the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) and remains a dedicated and active member of the metallurgical engineering community.



4. LIANA CENTOMO

Liana Centomo is a metallurgist with a background in chemical engineering. She has twenty-five years of experience working in extractive metallurgy and is currently the manager of technology and environment at Canadian Electrolytic Zinc Limited (CEZinc), on behalf of the Noranda Income Fund. She is a dedicated member of the Hydrometallurgy Section of the Metallurgy and Materials Society (MetSoc) of the Canadian Institute of Mining, Metallurgy and Petroleum (CIM).





GREEN HYDROGEN

What is green hydrogen? How does it differ from traditional emissions-intensive 'grey' hydrogen and blue hydrogen?

Hydrogen is the simplest and smallest element in the periodic table. No matter how it is produced, it ends up with the same carbon-free molecule. However, the pathways to produce it are very diverse, and so are the emissions of greenhouse gases like carbon dioxide (CO₂) and methane (CH₄).

Green hydrogen is defined as hydrogen produced by splitting water into hydrogen and oxygen using renewable electricity. This is a very different pathway compared to both grey and blue.

Grey hydrogen is traditionally produced from methane (CH₄), split with steam into CO₂ – the main culprit for climate change – and H₂, hydrogen. Grey hydrogen has increasingly been produced also from coal, with significantly higher CO₂ emissions per unit of hydrogen produced, so much that is often called brown or black hydrogen instead of grey. It is produced at industrial scale today, with associated emissions comparable to the combined emissions of UK and Indonesia. It has no energy transition value, quite the opposite.

Blue hydrogen follows the same process as grey, with the additional technologies necessary to capture the CO₂ produced when hydrogen is split from methane (or from coal) and store it for long term. It is not one colour but rather a very broad gradation, as not 100% of the CO₂ produced can be captured, and not all means of storing it are equally effective in the long term. The main point is that capturing large part of the CO₂, the climate impact of hydrogen production can be reduced significantly.

UPCOMING EVENTS

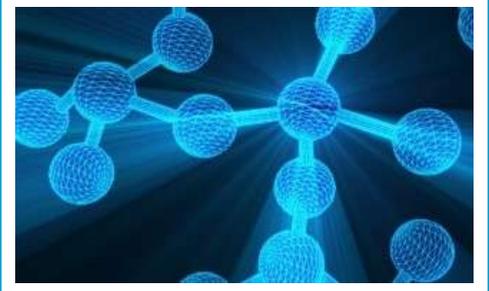
Thursday, 17th Mar 2022	Understanding 3D Printing in Metals	Dr. Guruprasad Rao, <i>Director of faculty of Design, MIT-WPU, Pune</i>
Thursday, 21st Apr 2022	Shot peening - from design perspective	Mr. Amit Aradhya <i>MD, Presicut Engineers</i>
Thursday, 28th Apr 2022	Flash Carbide Technology	Dr D A Karandikar <i>Chief Executive & Technical Officer at Kinetic Surface Technologies</i>
Thursday, 12th May 2022	Safety in Heat Treat Shop	Mr. Sanjay Kulkarni <i>DM, Heat Treatment & Special Processes</i>

Did You Know?

(About these advanced material technologies)

1. Responsive & Smart Materials

In order to comply with the requirements of certain industrial use cases, novel materials currently in development possess application-specific characteristics. Emerging companies work to design materials and products with diverse qualities, from thermo-, electro-, and photochromism to piezoelectricity, shape memory, self-healing, and phase-change attributes, among other characteristics.



2. Lightweighting

Various industries, from aerospace to mobility, search for innovative ways to diminish excess weight and consequently provide superior fuel efficiency and handling. This drives research into materials like aluminum, magnesium, and titanium, as well as high-strength plastics and carbon fiber. These materials offer industries the option to reduce their environmental and operational burdens arising from their heavier parts. This materials industry trend also provides the safety and reliability levels, on par with heftier equivalents.



3. Surface Engineering

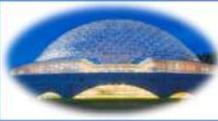
Exposed to continuous wear & tear, corrosion, UV rays, and other harmful factors, industrial surfaces require coatings that demonstrate improved durability. This is essential for protecting automotive, industrial, agricultural, marine, and manufacturing assets, as well as for increasing productivity. Besides, engineering innovations offer the possibility to grant surfaces the properties of hydrophobicity and omniphobicity, self-cleaning, and smoothing. Following the COVID-19 outbreak, surface engineers work to undertake efforts to master antimicrobials for more reliable protection in both industrial and non-industrial sites.



4. Additive Manufacturing

Emerging additive manufacturing facilities strive to evolve beyond traditional thermoplastics. The progress of 3D printing technologies, in turn, spurs the upgrades in metals, alloys, ceramics, fibers, and their compounds. It also encourages the appearance of completely new and durable polymer filaments with improved conductance, melting, ultraviolet (UV), and chemical resistance, among other properties





FUN FACTS

A super-strong, biodegradable material using cellulose nanofibers is developed from wood. The unique nanostructure of the material provides a tensile stiffness of 86 gigapascals and a tensile strength of 1.57 gigapascals—eight times stiffer than spider silk, considered the strongest biomaterial, and stronger than steel on a weight basis. This lightweight material could be an eco-friendly substitute for plastic.

Cellulose Nanofibers

Titanium Fluoride Phosphate

Skoltech Center for Energy Science and Technology researchers in Moscow have created a titanium fluoride phosphate material to serve as a new cathode material. Its strong electrochemical potential and stability at high charge/discharge currents outperform the standard cathode materials of lithium and cobalt, which are expensive and of diminished supply.

Composite Metal Foams Composite metal foams (CMF) consist of hollow, metallic spheres, made from materials such as steel or titanium, which are embedded in a metallic matrix, typically made from steel or aluminum. Testing has shown that "steel-steel" CMF, so-called because both the spheres and matrix are made of steel, is much more fire-resistant than a solid steel plate. In addition, the steel-steel CMF panel is only one-third the weight of the solid steel plate. Therefore, CMFs are considered to be a promising material for protecting heat-sensitive materials during transportation and storage, such as explosives.

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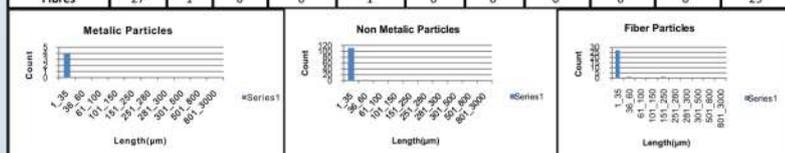
PARTICLE TEST REPORT.

Customer	ABC		
Part No:	A124N	Recd Date:	04-Jun-18
Report No.:	1672	Department :	QA Lab
Sample ID:	ABC	Test Date:	05-Jun-18
Analysis:	Particle	Standard Specification:	As per ISO 16232
Magnification	100X	Filter paper Size:	47 mm
No. of Fields :	5	Scanning Area	30 mm



Particle Size Analysis

Size ranges(µm)	1_35	36_60	61_100	101_150	151_250	251_280	281_300	301_500	501_800	801_3000	Total Count
Metallic	4	0	0	0	0	0	0	0	0	0	4
Non Metallic	111	3	0	0	1	0	0	0	0	0	115
Fibres	27	1	0	0	1	0	0	0	0	0	29



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