



Chapter News Letter


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EDITORIAL . . . ✍



Dear readers,
'The real antidote to epidemic is not segregation, but rather co-operation'
 -Yuval Noah Harari,
 (A historian, philosopher and the best selling author of Sapiens, Homo Deus and 21 Lessons for the 21st Century.)

This is very much appropriate in current Covid-19 Pandemic. We all are locked down in homes. Many are working from homes. Many more are utilizing this time to refresh their knowledge, learning new skills and nurture their hobbies. This is complemented by technology.

Keeping pace with this, ASM Pune Chapter is effectively using Ring Central Video Conferencing Platform provided by ASM International. We have organized new online seminars and courses for next three months. 1st ASM Lecture Series was inaugurated on 24th April 20. You will find more details inside.

We also planned online Training Programs Metallurgy for Non-Metallurgists and Failure Analysis.

You might have noticed, we have re-strengthened our Monthly Technical Talk. We conducted four technical programs. You will find details inside this issue.

In this newsletter, Harold T. Michels' article 'Can Copper Help Fight Covid-19?' is included. It will give different perspective of inter relationship in the field of metallurgy.

In 'Face the business crisis-how?' Mr. Vishwas Kale of Vijayesh Instruments Pvt Ltd talks about bouncing back in current situation with the help of some possible steps.

Under the column, 'Women Metallurgist Speaks' first time we crossed the Indian borders. We are pleased to introduce Dr. Fahmida Gulshan, Professor and Head at Bangladesh University of Engineering and Technology (BUET). She talks about her journey.

Students' Outreach is one of the focus of ASM Pune Chapter. We conducted four programs for students of Government Polytechnic, Pune. You will find more details in the issue.

Our chairman has penned his thoughts for all of using the column "From the Desk of Chairman..."

I appeal all ASM members and colleagues to participate in online interactive seminars and share your views.

Stay home, Stay safe!

Editor
 Jaswandi Gotmare

PERSPECTIVE

CAN COPPER HELP FIGHT COVID-19?

Experts on copper and microbiology recommend the expanded use of copper alloys in public spaces to reduce the spread of COVID-19 and minimize future pandemics.

Harold T. Michels, consultant and retired senior vice president, Copper Development Association, Manhasset, New York*
Corinne A. Michels, distinguished professor emerita, Queens College — CUNY, Flushing, New York

Copper can be a powerful weapon in the fight against COVID-19 and future pandemics, but we have to use it. Throughout history, copper was recognized for its antimicrobial activity[1]. With the advent of antibiotics, the value of copper as a medical treatment was pushed aside and lost from our collective knowledge base. While the world focuses on treating those with COVID-19 and developing testing kits and vaccines, prevention will soon take greater prominence. An ever-increasing body of research indicates that

copper alloys have the potential to control the spread of infectious disease and blunt the impact of future pandemics. "An ounce of pre-vention is better than a pound of cure."

INACTIVATION STUDIES

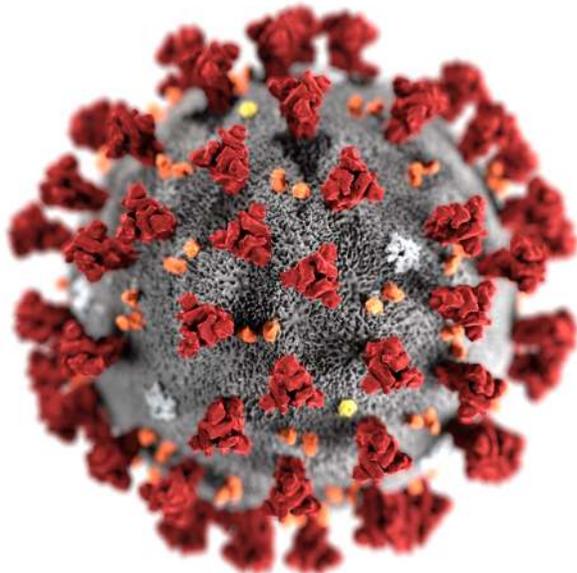
A recent, highly publicized New England Journal of Medicine article authored by van Doremalen et al.[2] reported that Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), the newly emerged strain of coronavirus that causes COVID-19 infections, retains

Monthly Technical Programs Planned

1. 21st May - Dr. Rahee Walambe :
Role of Material Science Engineers in field of artificial intelligence
2. June - Dr. Yogesh Gurjar :
Materials used in Medical instruments
3. July - Mr. Chandrachood, General Manager GKN:
New Opportunities in Powder metallurgy.



STAY HOME | STAY SAFE



SOCIAL DISTANCING

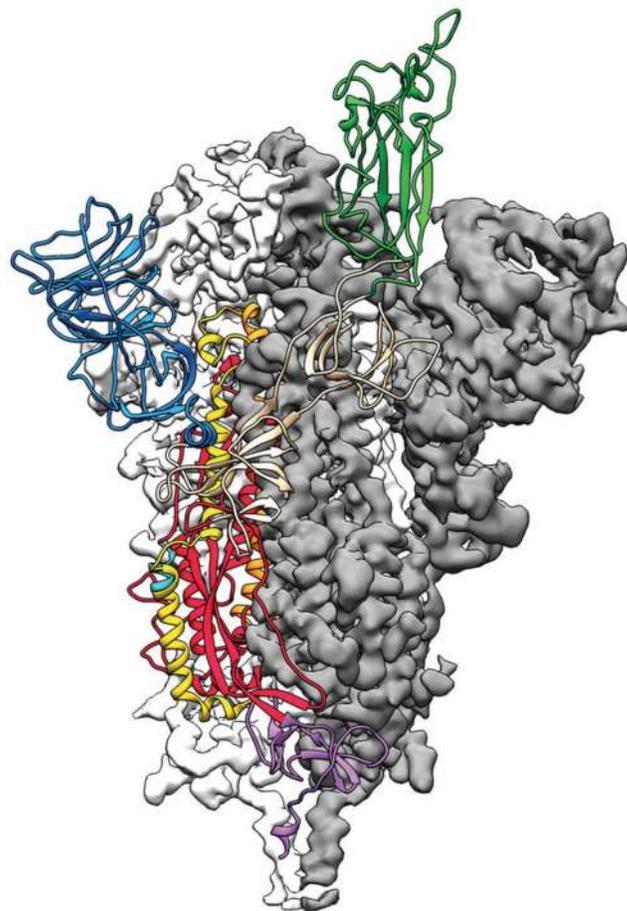
infectivity in aerosols and on a variety of common surfaces for extended periods of time. Most significantly, while the virus remained infective on plastic and 304 stainless steel for up to 48-72 hours, inactivation was observed in 4 hours on a 99.9% copper alloy. This finding was largely overlooked by media reports.

Another coronavirus, Human Coronavirus 229E (Hu-CoV-229E) causes a broad spectrum of lung disorders. An article published in 2015 authored by Warnes et al.[3] showed that Hu-CoV-229E remained infectious following exposure to polytetrafluoroethylene (PTFE or Teflon), polyvinyl chloride (PVC), ceramic tile, glass, silicone rubber, and stainless steel, but was rapidly inactivated on copper and on a range of copper-zinc and copper-nickel alloys. Complete loss of infectious activity was reached after as little as a five-minute exposure, depending on the particular alloy tested. Not only was the inactivation rapid but it was accompanied by the irreversible destruction of viral RNA and massive structural damages.

Figure 1, taken from Warnes et al.[3], is rich in content and calls for a detailed explanation. In the experimental protocol, a small sample of a suspension of virus particles was spread onto a 1 cm² coupon of metal of the indicated composition. After a designated time, the virus particles were washed from the surface of the coupon and the number of infectious viruses remaining was determined. This number is expressed as the number of plaque forming units (pfu) per coupon. Figure 1 plots the number of pfu (on a logarithmic scale) versus the time of exposure to the alloy surface.

COPPER ALLOY PERFORMANCE

Figure 1a shows a series of brasses ranging from 60 to 95% Cu (balance Zn), C110 (100%), Z130 (100% Zn), and S304 Stainless Steel (18% Cr – 8% Ni), which served as the experimental control. Both S304 and Z130 displayed no significant loss in infectious viral particles, while C110 (100% Cu) and C210 (95% Cu) showed the fastest reduction, followed by increasing time for complete inactivation in the following order: C210 (95% Cu), C220 (90% Cu), C230 (85% Cu), C260 (70% Cu), and C280 (60% Cu). Note the inverse correlation between decreasing copper content and increasing time for inactivation in brass. Figure 1b is a plot of the data from the first 30 minutes of Fig. 1a. It shows a gradual decline, followed by rapid inactivation. Figure 1c shows a series of copper-nickel alloys ranging from 70%Cu to 90%Cu, N022 (100% Ni), and S304. N022 and S304 showed no significant loss in virus particles. The copper-nickel alloys displayed increasing complete inactivation time with decreasing copper content in



A 3D atomic scale map, or molecular structure, of the 2019-nCoV spike protein. The protein takes on two different shapes, called conformations — one before it infects a host cell, and another during infection. This structure represents the protein before it infects a cell, called the prefusion conformation. Courtesy of Jason McLellan / University of Texas at Austin.

the following order: C110 (100% Cu), C706 (90%), C725 (88% Cu), C710 (80% Cu), and C715 (70% Cu). Again, note the inverse correlation between decreasing copper content and increasing time for inactivation in copper-nickel alloys. In Fig. 1d, a very small amount of inoculum, which dried immediately, was placed on the metal samples to simulate a finger touch of the surface. Inactivation of Hu-CoV-229E was complete in 2.5 minutes on C110 (100% Cu) and 5 minutes on cartridge brass C260 (70% Cu) while S304 stainless steel displayed only a modest reduction, most likely due to evaporation. These results strongly support the conclusions that copper alloys rapidly inactivate Hu-CoV-229E virus and that the copper in the alloy is responsible for the inactivation.

These two articles[2-3] used different strains of coronavirus but this is unlikely to be the source of the observed differences in inactivation times. The anti-coronavirus activity of copper alloys probably extends to all strains of coronavirus because this class of virus is essentially structurally identical. We have all become familiar with the spherical shape of coronavirus with its protruding spikes. The virus' RNA (its hereditary information) is contained inside a spherical "envelope" that protects the RNA. The envelope is a thin sphere of lipid molecules (fatty acids) arranged in a double layer or a lipid bilayer. Embedded within this lipid bilayer are two viral proteins, E and M. A third protein, S, or spike protein, is anchored at one end into the lipid layer and projects outward from the surface as radial spikes. These spikes give this group of viruses their name because they look like a "corona" when viewed at high magnification.

Minor variations in the hereditary information (RNA) produce slight variations in the proteins exposed at the outer surface.

These proteins, particularly S, are responsible for attaching to and gaining entrance into respiratory cells where the RNA uses the metabolic machinery of the host cell to produce more viruses. Variations in these proteins do not produce significant variation in the overall structure and function of the virus. Thus, one can surmise with a reasonable degree of confidence that the efficacy of copper alloys against Hu-CoV-229E should also be observed when tested with the newly emerged SARS-CoV-2 and SARS-CoV-1, the causative agent in the SARS epidemic of 2003.

Scientists believe that the differences in exposure times observed by van Doremalen et al.[2] and Warnes et al.[3] result from technical differences in the experimental protocols and not from inherent differences among the viral strains. Figure 1d demonstrates that small sample sizes, in this case 1 microliter or 1/50th of a drop, were inactivated in 5 minutes or less. Similar results from a variety of laboratories studying copper alloy killing of bacteria found quite clearly that the volume of the inoculum placed onto the metal coupon contributes significantly to the speed of inactivation. Killing was very slow during the time the sample was drying on the surface but, once it dried, a precipitous decrease in the number of survivors was observed[4]. Another laboratory developed a "dry" technique of applying bacteria to the coupon with a cotton swab[5]. They found complete bacterial killing occurred in a minute or less using this method. Samples of 50 microliters were used by van Doremalen et al.[2] but no information on drying time, surface preparation, or sample distribution is provided. Preparation of the metal surface can be a critical factor. An insoluble organic coating, like benzotriazole, is typically present on copper sheet when it leaves the mill. This coating increases surface

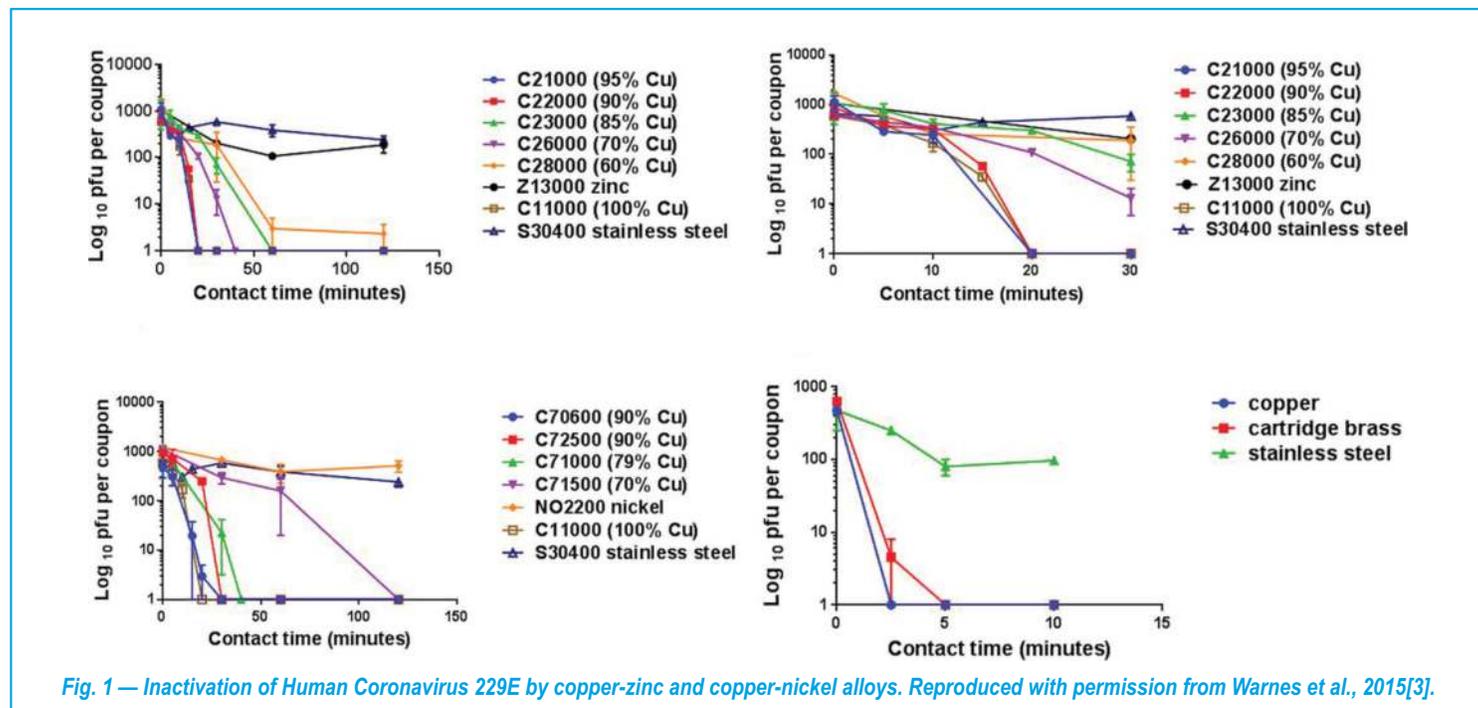


Fig. 1 — Inactivation of Human Coronavirus 229E by copper-zinc and copper-nickel alloys. Reproduced with permission from Warnes et al., 2015[3].

tension, and, thus, would inhibit inoculum distribution, slow evaporation, and most likely inhibit copper ion release from the surface. These two factors, drying time of the inoculum and surface preparation, are the most likely factors affecting the inactivation time.

PROTECTING PUBLIC SPACES

Small dry inoculums of infectious agents closely simulate what happens when a contaminated hand or a droplet from a cough or sneeze contacts a surface, making these results particularly relevant to the spread of disease in public spaces. Copper alloy inactivation is not limited to coronaviruses and works on viruses with different structures. Reports from the Keevil laboratory have shown that copper alloys inactivate murine norovirus[6] and Influenza A virus[7]. As in their Hu-CoV-229E study, the rate of norovirus inactivation was found to be inversely correlated with copper concentration in both the copper-nickel and copper-zinc alloys, the common theme in all of the studies of antimicrobial copper alloy surfaces.

Longevity of the antimicrobial activity of copper alloys is another very important consideration when selecting materials for components for deployment in public spaces. This is really a three-part question: How long will the copper alloy maintain its ability to kill/ inactivate a disease organism; will disease organisms become resistant to killing/inactivation by copper alloys; and what type of maintenance/cleaning is required? Antimicrobial activity of copper alloys appears to be long-lasting. The brass and adjacent wood surfaces in Grand Central Terminal in New York City were used to answer this question. This beautiful Beaux-Arts building is lavishly decorated with marble and brass, an antimicrobial alloy, and opened to the public over a century ago. Defined areas were sampled with a sterile cotton swab and the total number of bacteria picked up by the swab determined. No information was collected on the cleaning history of the surface sampled or frequency of touching. The results are shown in Fig. 2. Bacterial count is expressed in CFU/100 cm², or colony forming units per 100 square centimeters. The brass surfaces, with 88 and 51 CFU/100 cm², had a significantly lower bacteria count relative to the adjacent wood, with 563 and 1866 CFU/ 100 cm². This finding confirms that the brass components have retained antimicrobial capabilities after decades of hand touching.

Viral inactivation by copper alloys has been largely unstudied but the reports mentioned here show the rapid irreversible destruction of viral particles[3,6,7]. Since viral structure, of necessity, is largely constant, resistance is unlikely to be an issue. In the case of bacteria, the simplest mechanism of killing that is consistent with the data is the Membrane Target theory[4]. In this theory, an essential component of the bacterial membrane, unsaturated fatty acids, are modified by exposure to Cu⁺/Cu⁺⁺ ions in a manner that causes complete loss of membrane integrity and cell rupture. Resistance to

copper alloy surface exposure has not been found in the over tens of trillions of bacteria tested in laboratory studies. Thus, at least for bacteria, the heritable change required for resistance is highly improbable or lethal, making the organism inviable[1,4].

Cleaning and maintenance are another important consideration. Most of the antimicrobial copper alloys that have U.S. Environmental Protection Agency (EPA) approval tarnish to some degree, but some are tarnish resistant, making them more useful for inclusion in public spaces. The Antimicrobial Copper Action Network website is a resource where one can read the EPA-approved cleaning protocols (amcopper.com) and obtain information about commercially available antimicrobial copper components. It is important to note that the EPA required extensive independent third-party laboratory testing, as described by Michels and Anderson[8]. The testing results demonstrate that the antimicrobial response of copper is powerful and enduring.

RECOMMENDATIONS

Everywhere we go we touch surfaces that are likely to be contaminated with bacteria, viruses, and other disease-causing microorganisms. Think about the last time you were in an airport, a shopping center, or a hospital. You touched doorknobs, push plates, handles, stair railings, shopping cart handles, restroom faucets, and more. Any one of these surfaces in any of these public environments has the potential to transmit disease-causing microbes to your hands that could result in an infection. Your first line of defense is frequent hand washing, but, what if these common touch surfaces were an antimicrobial copper alloy? They would be working all day, every day of the year to kill the bacteria, viruses, and fungi that cause infectious disease. Over 500 alloys have been approved by the EPA and a large number of alloy producers and component manufacturers have signed on to making the types of items needed.





Fig. 3 — The interior of a Ronald McDonald House in Charleston, South Carolina, retrofitted with copper alloy components.

The world is currently fighting a COVID-19 pandemic. In recent years we have seen HIV, SARS, MERS, and several different strains of influenza each year, not to mention the 1918 flu pandemic. All cause large numbers of fatalities, but, fortunately, only a few spread as rapidly as COVID-19. The COVID-19 pandemic will not be the last. Novel infective agents will continue to emerge and spread worldwide due, in large part, to high global mobility. We must use every weapon available to fight this never-ending battle.

Antimicrobial copper alloys are potentially powerful weapons. These alloys must be widely deployed in public spaces on common touch surfaces, especially in places with high levels of human traffic. Mass transit systems, airports, cruise ships, military bases and ships, shopping centers, schools, hotels, entertainment facilities, sports stadiums, large office buildings, hospitals and healthcare facilities, and more must be retrofitted to include the appropriate placement of antimicrobial copper components such as doorknobs, stair railings, push plates, handles and drawer pulls, electrical switch plates, plumbing fixtures and sinks, and elevator floor buttons. ~AM&P

For more information: Harold Michels, consultant, Manhasset, N.Y. 11030, cu.microbes@gmail.com, www.amcopper.com; retired senior vice president, Copper Development Association, www.copper.org.

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(Source: ADVANCED MATERIALS & PROCESSES | DIGITAL FIRST



From the desk of Chairman . . .

I am extremely happy to connect with you all through this column. As all of you are aware, ASM works purely on volunteering. We have been appealing you to come forward as Volunteer. Thanks Jaswandi for volunteering and accepting the responsibility as editor for April 2020 issue.

Monthly technical lecture is one of the iconic programs of ASM Pune Chapter. We are re-strengthening the same. Since December 2019, we conducted four technical lectures. All these programs got overwhelming response. Our average attendance has crossed fifty. We broke our own record of July 2007, where 104 attendance was recorded for Technical talk by Jumain Shamba. We crossed 117 for program on 3D printing and we regretted almost close to 20 registrations. Keeping pace with the new technology, we adopted to live streaming of monthly technical programs on Facebook page of Pune Chapter. Also I am glad to tell, student volunteers from Cummins College of Engineering has successfully delivered role of MoC in many programs.

Covid – 19 pandemic paralysed whole world, so do ASM Pune Chapter activities. But we were quick to recover. ASM Head Quarter has provided powerful Video Conferencing platform 'Ring Central'. After resolving few initial hick ups, ASM Pune Chapter is now effectively using it. We conducted our April 2020 EC meeting

using this platform. We organized 1st ASM Lecture series for students of polytechnics Maharashtra using Ring central Platform. Mr. Dipak Kulkarni, Principal Govt. Polytechnic Nagpur, formally inaugurated this. Team lead by Dattatrey Chivate has planned about 15–20 sessions under this. Many volunteers as speakers supported him. This is strengthening our focus on “Students Outreach”.

Public gathering and travelling is not possible due to Covid – 19 pandemic and hence we are forced to suspend our training programs. But we worked with ARAI and jointly we are coming up with Training Programs on We based platforms. Nilesh Sakle has taken lot of efforts to make this happen. We need to support him in getting maximum delegates for this program. Details are included in this issue and available on our Pune Chapter website.

Before I close, let me once again appeal all of you for active role on two fronts – 1 connecting new people and motivating them to be the ASM Pune Chapter Member. L. D. Deshpande and Vaibhav Chiplunkar will support you for this. 2 Coming forward for volunteering. We have lot of activities in our mind, but we are facing shortage of new volunteers. Please come forward and support us.

Stay Home – Stay Safe.



Udayan Pathak, FIE, FASM

ONLINE FDP on Renewable Energy Sources: A Way Ahead

ASM International (American Society of Materials) Pune chapter in association with Department of Mechanical Engineering of Maharshi Karve Stree Shikshan Samstha’s Cummins college of Engineering for Women Nagpurin association and ISHRAE (The Indian Society of Heating, Refrigerating and Air Conditioning Engineers) Nagpur chapter organizing six days Online Faculty Development Program on “Renewable Energy Sources: A Way Ahead” during 15 - 21 May 2020. The speakers from industry, academics and research background are delivering lectures on different topics as follows. Digital Certificates will be given to participants after successfully completion of FDP. Faculty, Research Scholars, Students (UG and PG) are the expected participants. Participants can register on <https://bit.ly/2zh075K>. Participants can also contact for any details to Prof Prasanna Mahankar (8605184649) and Prof Yogesh Dandekar (9823016700)

Date	Topic	Speaker
16 th May	Renewable Energy Scenario in India and Green initiatives of MAHA Metro	Mr. Narendra Ahir, Dy. General Manager, Nagpur Metro (Solar)
17 th May	Introduction to E - Vehicle and Design of Battery for E-Vehicle	Mr. Prashant Kumar Tripathi, Mahindra Electric Mobility Limited Banglore
18 th May	Solar Thermal	Dr. Sandip Joshi, RCOEM Nagpur, PhD in Solar Energy from VNIT Nagpur
19 th May	Introduction to Biofuel	Dr. Rajesh Manerikar, Director, Poornam Eco (NGO) Pune.
20 th May	Wind Energy and Its Application	Dr. Brijesh Patel, Head of Aeronautical Engineering Dept., MATS Raipur
21 th May	Power Generation from Geothermal Energy	Mr. Pranav Ambaselkar, BEE Certified Energy Auditor, Director EPES Thermorub India Pvt. Ltd.

Friction Welding: New Opportunities

A Technical Talk on Friction Welding: New Opportunities was presented by Mr Yatin Tambe of Friction Welding Technologies Pvt. Ltd., Pune. The talk was jointly held by ASM Pune Chapter and The Institution Of Engineers (India), Pune Local Centre, at The Institution of Engineers (India), Pune Local Centre, Shivaji Nagar Pune. On Thursday 26th Dec 2019

In the talk Mr. Tambe explained the friction welding basic process. He explained its advantages and limitations, and the various tests carried out to confirm the quality of friction weld joint. Various practical problems faced on friction welded joints were explained in detail. He also explained the friction welding machine operations and setting parameters, Photographs of various machines used in



Mr. Tambe giving his presentation

friction welding and videos of the friction welding process were shown to the audience. Most interesting part in the lecture was the various applications demonstrated by Mr. Tambe ranging from simple butt joint of same metal to metal joint to very complex joint of two very dissimilar metals with a compatible third metal between them and actual usage ranging from simple valve in engine to a complex part in Brahmos rocket.

Plenty of friction welded parts, and their cut sections, were displayed in one section of the auditorium by Mr. Tambe and his team. Audience was seen crowding around the displays. About 42 persons representing academics, industry, technical institutes took the advantage of this event.



The audience



Some of the friction welded parts

FAILURE ANALYSIS AT GOVT. POLYTECHNIC, PUNE

As part of Students' outreach, ASM Pune Chapter conducted a guest lecture on Failure Analysis at Govt. Polytechnic, Pune on the 17th January 2020. Thirty 3rd Year students attended the presentation.

The programme was conducted by ASM Pune chapter Jt. Secretary, M/s Ruta Barve. She was ably supported by training programme in-charge, Mr. D.G. Chivate.

The programme was tailor made for students. Ruta explained the basic concepts of failure analysis with the help of slides. She then took a case study of a automobile gear, which had failed in service. She explained the methodology involved in getting to the root cause of the failure. She also explained how we can overcome immature failures by doing a thorough failure analysis. The students showed great interest in the presentation.



D.G. Chivate and Ruta Barve



Ruta giving her presentation



A Technical Lecture on "Selection of Materials " given on 20th January 2020 at Government Polytechnic, Pune

Under the " Students Outreach" activity, a training program was arranged by Mr. Dattatray Chivate on 20th January 2020 for Government Polytechnic (GPP), 3rd year Students on "Selection of Materials " . The presentation was made by Mr. Nitin Datar

Selection of materials is covered in syllabus of 3rd year Diploma Metallurgical Engineering and presentation was made covering material selection, criterion with a simple case study with illustration. The main emphasis was given on the basics of Material selection criterion in phase of Role of designer, Decision making and Product analysis before

selecting any material.

Case study was taken in a very simple way, illustrating function of product, relation of function on types of product, Breaking the product to component level, System analysis, selection criterion for materials, review of properties , options available and finally cost impact.

The presentation was well received by all the students with lot of interactions seen between Mr. Nitin Datar and students. HOD of Metallurgical Department was also very positive for such presentations and expected similar support from ASM International Pune Chapter in the field of knowledge sharing .



Mr. Nitin Datar explaining some finer points



The students listening attentively

WORKSHOP ON METALLOGRPHY

As part of the Students' outreach by ASM Pune Chapter, a full day workshop on metallography was held at the Government Polytechnic Pune. Mr. Chivate arranged for the workshop with the support of Conation Technologies, Pune..

Since the students were from the metallurgy stream, it was easy to demonstrate the different microstructures, some of the samples were supplied by Mr. Nitin Datar and Mr. Srikant Kulkarni. Students were shown pure iron microstructures and

the changes that occurred with addition of Carbon. Students were also shown how to make linear measurements using software. Microstructures of different grades of steel were shown.

Sixty seven students attended this workshop. Student returned to their classroom refreshed with the knowledge of microstructures.



Students attending the workshop



Mr. Chivate explaining the finer points of metallography

Metal Additive Manufacturing Solutions

ASM International Pune Chapter, EOS, Innovae3D and Moldex3D jointly held a technical lecture on Metal Additive Manufacturing Solutions By Joe Ajay, N.Natarajan & Abhisekh Tiwari. This technical presentation was held on the 24th January 2020 at Hotel Pride, Pune .A record 117participants attended the meet. This programme was shown live on ASM Pune Chapter facebook page.

The program was divided into three parts. In the first part, Mr. Joe Ajay of EOS gave a brief introduction on the development of Metal Additive manufacturing and the industries using this process, a wider prospective of metal additive manufacturing

as an overview. He amply supported his presentation with graphic displays.

Mr. N. Natrajan of Innovae3D in his presentation 'Higher level Tooling Productivity through Metal AM' spoke of How Metal 3D Printing can impact Tooling. He explained what is conformal cooling, which is used injection molding dies. He explained that conformal cooling helped to reduce the Injection molded plastic part cost by reducing the production cycle time (~15-30%) and by improving the part quality through uniform cooling. Next he spoke of Tool Repair using 3D Printing.Tool life can be extended by locally adding material on worn out



Mr. Joe Ajay giving his presentation



Mr N. Natrajan with his presentation



Mr. Abhisekh Tiwari

and damaged areas. This enables longer operating life and reduced operating costs He also explained how rapid tools are made using 3D Printing, wherein Tool parts can be directly printed to shorten the developmental time.

Mr. Abhisekh Tiwari of Moldex3D in his presentation spoke about Moldex3D software, how it supports 3D manufacturing. Software simulation is an important aspect of 3D manufacturing in plastic molding dies, as it gives an insight of the different parameters we may face while actual 3D manufacturing. Abhisekh showed many simulation slides to explain the importance of simulation.



A house-full audience listening attentively



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"Welding Success Story of Pinaka and Defence"

ASM International Pune Chapter and College of Engineering, Pune, jointly held a technical lecture, "Welding Success Story of Pinaka and Defence" by Mr. Vineet Marathe on 25th February 2020 at the College of Engineering, Pune.

Mr. Marathe in his presentation explained how a chance encounter with a ARDE Dignitary helped him to forge a long lasting alliance with defence related supply.

With vivid displays he showcased the various developments he did for the defence establishment. His expertise in welding

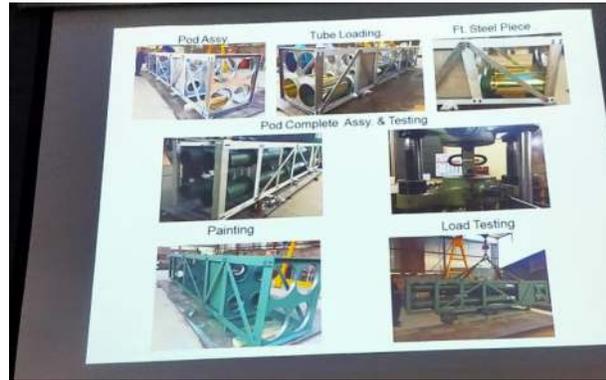
and fabrication of various metals ranging from maraging steels to Aluminum alloys to duplex steels to name a few, helped him to win new contracts with Defence and Aerospace.

His latest achievement was the successful production of the pod assembly for guided Pinaka rockets. These were successfully fired from ITR Balsore on the 19th and 20th December 2019.

The lecture was well received and there were many queries which Vineet answered to everyone's satisfaction.



Vineet giving his presentation



Glimpse from Presentation

STUDENT OUTREACH BY ASM AT GOVERNMENT POLYTECHNIC, PUNE

ASM conducted a technical programme at the Government Polytechnic, Pune as part of its student outreach. The programme was conducted by Mr. R.M. Patil, EC Member, and ably supported by Mr. D.G. Chivate. It was held on 12th of March and 60 students attended the programme. The topic of the programme, was "Sealed Quench Furnaces and its Applications in Automotive Industries".

Mr. Patil who has hands down experience on sealed quench furnaces explained to the students the reasons why sealed

quench furnaces are used in automotive industries. He gave a brief outline of the construction of a sealed quench furnace and explained the parameters that are taken into consideration while operating these furnaces. With the help of slides, the various components that are heat treated in sealed quench furnaces were shown to the students.

The students were very much enlightened with the practical aspects they were shown in the use of sealed quench furnaces in automotive industries.



Patil with his presentation



The class in progress



Face the Business Crisis- how?

The global Coronavirus disease 2019 (COVID-19) scenario is a crisis which most of us have not seen before. Apart from unfortunate health issues, many experts say there is likely to be a global recession. Shutting down cities, countries have a big economy flow effect.

Bouncing back from a disaster is difficult but not impossible. Focus on fixing the problem and finding opportunities for growth.

Some possible steps could be:

The reality and the situation

Yes, you are likely to be a victim of the situation. The best way is to accept the reality and stop thinking about your misery. None of that matters now. Do not resist what is already a fact and so do not waste your energy. Living in the past only makes forward progress more difficult. Instead, commit to forward movement.

Make Crisis Management Team

Create a committee of people. It does not matter if it is of four or twelve people. Involve right from top management to lower workforce too. Decide if needed to bring in someone from the outside, a new executive or a consulting firm. Let the committee decide about strategy on how to approach the problem, which may be tactical, operational, or legal. Have a consensus agreement on execution.

Now develop a plan that bridges the gap between where you are now and where you want to be. Figure out the most efficient path to get from point A to point B. It is important to note that offensive and defensive strategy must be balanced at this point to keep the process fulfilling.

Define: Target Goal

You must determine where you want to go.

Use a road-map analogy, this step is similar to locating the end destination on the map. Then it is a matter of plotting the course to get there. The a SMART goal setting system is very helpful

- Specific: There must be a clear and definable end result.
- Measurable: Have a way to measure the progress toward the goal.
- Attainable: The goal has to be a fine balance between your stretched ability while still remaining within reach. If the goal is too easy, then you are not challenging yourself. If it is too hard, then this would set yourself up for failure. A proper goal is that stretches your comfort zone without being out of reach.
- Realistic: Know your technical and financial capabilities and do not set unrealistic goals



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- Timely: A goal without a deadline is useless.

Take actual Action

A plan for financial recovery is only wishful thinking unless it is converted into action. The specific ability is very vital to persistently direct meaningful action to achieving a goal. Actually this is what makes people successful and distinguishable.

Take stock of the inventory

It is necessary to financial recovery is to take inventory of your current situation.

Ask the following questions to assess your situation:

- What are the remaining assets?
- How much money is now owed?
- How much income will come each month?
- How much is spent?
- Are they any long term implications of this financial disaster (legal issues, tax related) that must be included in the plan?

Do Overall Cost Analysis

Find where you can reduce overhead. Negotiate with suppliers for a better price. Find ways to save money. Cut back on inventory if you have some products that do not sell. Cuts costs realistically

Have Communication with Customers and Employees

Be brave to confront the bad news internally and externally.

Have a strategy to disseminate information. It may not just be customers you need to inform to but also key suppliers or vendors.

Re-evaluate Your Marketing Strategy

Your existing customers are your number one asset. Re-do and re-tune marketing to attract new customers and retain existing ones. Re-think and change marketing messages, web site, brochures, and sales letters. They may not know what all other products or services you offer. Ask them what can we do differently to better serve you?

Retain your people

All may not be your top management people, but they know the company organization well. They are knowledgeable about the inside culture of company. This is important for understanding the effect of changes in the business. Be fearless and find people who are unhappy about company's performance. Some uncomfortable truths will come out. There could be some who are keen and willing to go up in management ladder to help the company, if given an opportunity to them.

Rethink of your business

Spend some time to think what you are doing now and evaluate which part of business must be rethought and changed. May be market survey will help to change strategies, customer services etc.

Seek out Growth Opportunities

Look at the changing environments and new technologies that could make what your company does obsolete. Do not be happy to be on top of the competition but try to continually reinvent your business or technology. This will help you to staying ahead of the game instead of later catching up with others.

Correct the path and adjust

As action is initiated, the result one can be certain of is – you will learn from your experience and mistakes. Correction is possible and desirable, but perfection is impossible. Your first plan may not be the best but do the effort.

If you could absorb all the above and act, then you are thinking right.

KNOW OUR MEMBER



Sanjay Laxman Saindane

Sanjay Laxman Saindane has done his MSc in Physics . He has about 20 years of experience in the field of Calibration of Metallurgical Microscope, Metallurgical Equipment, and All types of Hardness Testing Machines. He also Manufactures Metallurgical Lab Equipment.

Sanjay is the owner of SUN-TECH (A NABL Accredited Laboratory) since 2004. At present the Lab has above 200 satisfied customers in all over Maharashtra.

Apart from calibration , the Lab provides spares, accessories for Hardness Tester and consumables and chemicals apparatus, chemicals for Metallurgical Labs.It also deals in selling of Hardness testers like Rockwell , Brinell. Rockwell Superficial, Micro Vicker, Metallurgical Microscope, Brinell Microscope, Polishing Machines(Single disc, Double disc), Hot Mounting Press, Jominey Hardness Tester, Abrasive Cut-off Machine, Muffle Furnace, etc.

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LADY METALLURGIST SPEAKS

An Interview with Dr. Fahmida Gulshan of Bangladesh

What is your engineering background?

Basically Metallurgical Engineering. I did my Bachelors and Masters Degree in Metallurgical Engineering from Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh.

What attracted you to engineering?

My father was a professor of metallurgical engineering at the most renowned engineering university in Bangladesh. I grew up in the campus of the university. Seeing all the engineers around, I may have wanted to be an engineer.

What part of your job do you like most?

Every year new students are admitted in the department. To get acquainted with them seems to be the best part of my job. Of course I like to take classes, do research and projects. I also love taking the students on industry tours. Working in various government and private consultancy are all part of my profession. I feel good to solve any problem of the local industries.

Did you face any challenges in your journey so far?

Well, there will be challenges in any journey. The biggest challenge in my case was to complete Ph.D. successfully. In 2006 I got two PhD offers [with full funding]. One from University of Limerick, Ireland and another from Tokyo Institute of Technology, Japan. I could not go to Ireland as I was expecting at that time. My eldest daughter was born on August, 2006. When she was 45 days old, I went to Japan with her to attend PhD program at Tokyo Institute of Technology. The joys of motherhood were combined with the excitement of traveling abroad for the first time. At this time my husband could not stay with me in Japan because he also started his new business in Bangladesh. It was not easy to continue PhD with a new born. I was not physically fit. I felt like going back to the country many times. At one stage I had to send my daughter to Bangladesh and my parents and husband took care of her. However, with the continuous support of my parents, husband, and other family members I completed Ph.D. in three years.

After completing PhD I came back to my country and rejoined Materials and Metallurgical Engineering Department of Bangladesh University of Engineering and Technology. From that time to now I am the only female faculty in the department with PhD. It was always difficult to survive in a male dominated environment. I could not discuss any scientific problem with others as most of them are not comfortable to talk/work with females. Some of them do not want to talk/work with females. The only good thing was my father, a professor of same department. Unfortunately, he retired soon leaving me alone with this people. However, in the last 10 years I have published more than 80 papers in journals and conference proceedings, supervised several MSc and BSc theses. I received research projects from different ministries of Bangladesh Government. With my initiative three academic link programs/MoUs have been established between prestigious foreign universities and BUET and I am working as the coordinator of those programs. I am also working as the coordinator of newly established materials research center of BUET. Now I am working as first female head of Materials and Metallurgical Engineering department of BUET. As head of

the department I tried to maintain good relation with the local industries. I managed research funding from local steel industries which is rare in the context of Bangladesh. Each of these works was a challenge. It was not a smooth journey.

Did you face any challenge from being Developing Country?

Well, the main problem of being a developing country is the lack of funding for research. Materials Science/Engineering is a subject where a lot of funds / equipment is required for research. Our government or private sector does not have any such allocation/very little allocation in the research sector.

Sharia legal system, Religious conservatism?

I am fortunate to have grown up in a very liberal family. Religious bigotry, even among many in our neighborhood or society, did not hold me back.

What is the secret of keeping you motivated in the field of science and technology (or research)?

Materials Science/technology is a subject that can directly benefit people / society. There are many interesting topics in Materials Science / Engineering. For example If one works with biomaterials, it means that he/she is directly contributing to medical science by replacing human organs, making artificial organs, etc. Whatever be our working area, Energy materials, Electronic Materials, Composite Materials, Construction materials, is taking every society forward. It makes me feel good that the work I'm doing is benefiting people.

What are your hobbies?

Well, I have a long list. I love to sing, specially Tagores song. I love to listen music. I have a small library at home and love to read. And I love to travel.



Dr. Fahmida Gulshan

Your message for Women Materials Engineers from Asia and World as a whole.

My message would be, Give your best to reach your goal. Materials Engineering is a wonderful area of science to contribute. Discover new materials for the betterment of the society.

Dr. Fahmida Gulshan obtained her Bachelors and Masters Degree in Metallurgical Engineering from Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh in 2003 and 2006 respectively. She topped the list of the graduating students in her batch. Dr. Gulshan received her PhD degree from Tokyo Institute of Technology, Tokyo, Japan in 2009.. She received INSA JRD TATA fellowship and conducted research at National Metallurgical Laboratory, Jamshedpur, India in 2014. She also participated in European Union funded Erasmus Mundus program and visited Wroclaw University of Technology, Poland in 2016 and University of Limerick, Ireland in 2018 and 2019 as a visiting academic staff. Her areas of interest include industrial waste recycling, waste water purification etc. She has published more than 80 papers in reviewed journals and conference proceedings. She is working as the focal person of several academic link programs between BUET and prestigious foreign universities of Poland, Ireland and USA. She is also the coordinator of Materials Research Center of BUET. Besides her professional career she also graduated from the prestigious music school CHHAYANOT and enjoys singing. In her personal life, she is married with two daughters.