ASM INTERNATIONAL

Bangalore Chapter – News Letter

Issue 12 - April 2023

Council Office Bearers

Contents

Chairperson's Message

Dear Readers,

I am pleased to share with you the first issue of our chapter's newsletter for the year 2023.

We are on a mission to discover and spread ideas that spark imagination, embrace possibility and catalyze impact. Our society is devoted to arouse curiosity, to reason, to wonder and in the pursuit of knowledge. We welcome people from every discipline and culture who seek a deeper understanding of the materials world and connection with others, and we invite everyone to engage with ideas and activate them in our community.

Professional societies provide a forum for like-minded people to exchange ideas, views and information. It gives ample opportunities to keep ourselves abreast about emerging technologies and create networks with other operating and service companies with whom we can share experiences, seek advice, share common goals, concerns, and perspectives. Professional societies contain a veritable wealth of information available through conferences, meetings, online, publications, and presentations. It is time for us to take a lead in creating a platform for interfacing of various societies associated with materials, with ASM. I believe in this age of cut throat competition, creating such an interface between like-minded professional societies can enhance our knowledge, skills and capabilities by the free flow and dissemination of state of the art scientific & technological knowledge and information.

ASM Bangalore Chapter has been regularly organizing monthly technical talks and I hope you have found them useful and interesting thus far and plan on attending future tech talks too. These tech talks cover a variety of topics provided by operating companies, service companies and academia etc. For the convenience of our members our technical talks are conducted in the virtual mode but it is seen in recent times that participation from our fellow members has not been very encouraging. The programs committee works hard to make such programs effective and innovative. So I request our fellow members to attend such programs regularly thereby supporting us with fresh ideas, knowledge, skills and other important strengths that individual members can bring to the team's work.

In the spirit of giving and being thankful I, for one, would like to thank my team of office bearers and office bearers of the India National Council for their continued efforts, guidance and support towards our chapter activities.

Please feel free to contact me if you would like to make suggestions, serve on chapter chairs, or just visit.

Jyothi Sriram

ASM INTERNATIONAL
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About ASM International

ASM International formerly known as the American Society for Metals was established in 1913 as a professional body of heat treaters. It has since evolved as an international professional body of material scientists, engineers, R&D professionals and academicians with the motto of collecting &disseminating knowledge on Materials and Processes. The worldwide network of more than 38,000 individuals is led by members, guided by members' needs and fueled by members' participation.

About ASM Bangalore Chapter

ASM Bangalore chapter is actively involved in dissemination of materials centric knowledge among working professionals, researches and academicians. ASM Bangalore chapter began its activities in the year 2006. Since then it has dedicated itself in spreading information based on materials among various stakeholders. Bangalore is a strategic center for several major automotive, aerospace, defense & R&D institutes and thousands of engineering professionals and it is imperative to educate & connecting the community in the field of Metals & Material science Technology. Under the able leadership of present chairperson Mrs. Jyothi Sriram and capable Office Bearers, ASM Bangalore chapter is gaining wide popularity by activity involving and supporting the technological up-gradation of Engineering community.

The Prime Objectives of ASM Bangalore Chapter:

1. To disseminate materials centric information among professionals by organizing seminars, lectures, One/two days' workshops
2. To bring together Scientists, Intellectuals and Professionals working in the field of materials science to exchange ideas/knowledge/information.
3. To encourage and support student chapters among various Engineering colleges in the state of Karnataka and enlighten them, the importance of materials properties, selection and its application.
4. To Promote consultancy services by ASM members to solve industry problems in the area of materials.
5. To recognize and award ASM members for their contributions to field of materials science.

ASM Bangalore chapter has members with rich expertise and professional experience with deep insight to practical applications in the field of materials science & engineering. ASM Bangalore chapter offers consultancy in the broad areas of Material selection &Characterization, foundry practices, mechanical testing, forging, heat-treatment, failure analysis, Corrosion control, Nondestructive Evaluation (NDE), process simulation to name a few.

ASM Membership

A membership in ASM gives you every imaginable edge you seek in your career.

VISIT - **http://www.asmblrchapter.com/membership.php** - for Benefits and Forms

Or Call Membership Chair – Mr. Manohar Hegde – 9901964251 / Mr. K. L. Srirama - 9845699661

Or write ASM Bangalore Chapter : asmblr2015@gmail.com

ASM INTERNATIONAL
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Featured Articles:

Role of E-glass fiber on properties of (PPS) composites

PPS - polyphenylene sulfide

Mechanical, Thermal and Electrical

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The present work focuses on the fabrication and characterization of E-glass fiber reinforced Polyphenylene Sulfide (PPS) composites. The composites were fabricated using compression molding method. The fabricated composites were characterized for mechanical properties such as tensile, flexural, impact properties and thermal properties like heat distortion of neat PPS and glass fiber reinforced composites. The various percentages such as 10, 20, 30 and 40 wt% of glass fiber was added into the PPS matrix to analyse the role of the same on mechanical, thermal and electrical properties. The results exposed that, the PPS composites filled with 30 wt% of glass fiber was found to be optimum in terms of mechanical properties such as tensile, flexural, impact strength and dielectric strength compared to neat PPS and other weight percentages. The Heat Distortion Temperature (HDT) was considerably higher than the neat PPS as a result of the high strength and high glass transition temperature of the glass.

In recent years, more research works are having a common objective towards the development of materials, which offers low weight processing high strength, stiffness, dimensional and thermal stability. The composite materials are meeting these requirements; hence, composite materials replace conventional materials. Based on the kind of matrix materials employed, composite materials can be classified as metal matrix, ceramic matrix, and polymer matrix composites. The fiber-reinforced polymer composite materials provide higher strength to weight ratio, stiff- ness, thermal and tribological properties to the composites which are the most important factors in various engineering applications like automobile, aerospace, space, marine, sports, infrastructure and electrical and electronics industries. The commonly used matrix material for fabricating the polymer composites are epoxy, polyurethane, polyester, polypropylene, polyvinyl butyral [1,2]. The matrix material gives composites toughness, which protects them from harm, as well as corrosion and heat resistance. PPS (polyphenylene sulphide) is a thermoplastic semi-crystalline polymer from the advanced plastics category that is used to make composites [3,4]. Polyphenylene sulfide has low viscosity and considerable fragility, but when mixed with reinforcement materials it exhibits

good mechanical, thermal resistance, physical and chemical properties also dimensional stability [5]. PPS-based poly- mer composites with glass fibre and carbon fibre reinforcement have been carefully investigated for mechanical and tribological characteristics in a variety of applications [6,7]. Natural and synthetic fibers are extensively used in fabricating polymer compos- ites for various applications mentioned above. Synthetic fibers such as carbon, Kevlar, E-glass, etc., are extensively used in fabricating polymer composites which provide high strength and stiff- ness [8]. Glass fiber-reinforced thermoplastics are used to fabricate the different components in various engineering applications since they provide excellent mechanical properties, low cost and easy processing. The process ability and recyclability of Glass- fiber-reinforced thermoplastics make them environmentally friendly [9]. The composites can be fabricated by hand layup, vacuum bagging method, resin infusion technique, filament winding method, compression molding, injection molding, pultrusion method [10].

Moulding is a popular method for producing short fibre reinforced polymers since it is both cost-effective and labor-saving when compared to other plastic moulding methods [11]. In this method, the composite is fabricated by injecting the molten metal into the mold. The Heat Distortion Temperature is also known as Heat Deflection Temperature, which is a measure of a polymer composite material's resistance to the alteration under a given load at an elevated temperature. This test is very much essential to know the stiffness of the polymer composite material as the temperature increases which is very crucial in selecting the material for engineering applications. The electrical strength of a substance as an insulator is measured by dielectric strength. The maximum voltage required to cause a dielectric breakdown through the material is measured in Volts per unit thickness and is termed as dielectric strength. A better insulator is one with a higher dielectric strength.

The present work focused on investigating the tensile, flexural, impact properties, heat distortion temperature and dielectric strength of polymer composite having E-glass as reinforcement material and Polyphenylene Sulfide as a matrix material fabricated using injection molding method.

2. Materials and method

2.1. Polyphenylene Sulfide (PPS)

PPS (Polyphenylene Sulfide) is a high-performance semi- crystalline engineering thermoplastic material with a unique set of characteristics. High-temperature performance, dimensional stability, outstanding electrical insulating capabilities, chemical resistance, and flow ability are just a few of these characteristics.

2.2. E-glass fiber

E-glass is the most common type of reinforcing fibre used in low-alkali polymer matrix composites and is stronger than glass [12]. Good electrical properties, tensile strength, compressive strength and stiffness, but relatively less resistance to impact. The properties of matrix and reinforcements are depicted in Table 1.

2.3. Fabrication of composite specimens

The glass fibers of 4 mm length are incorporated to Polyphenylene Sulfide (PPS) with different weight ratios, viz., 10%, 20%, 30% and 40% using injection molding. Glass fiber filled Polyphenylene Sulfide pellets were pre-dried at 150 C for 24hrs before Moulding. The dried pellets were then

transferred to a steel mold, which was placed in preheated mold at 135–177 C. The mold was kept under pressure 78 MPa using a hydraulic press for 10 min at the same temperature and the specimens were then cooled at a constant temperature of 149 C for 6 h. The composite specimens were removed from the mold.

Table 1
Properties of matrix and reinforcement.

Physical and mechanical properties	Polyphenylene Sulfide (PPS)	E-Glass Fiber
Density (g/cm^3)	1.35	2.6
Diameter (mm)	–	0.793–3.175
Tensile strength (MPa)	65–80	1725
Tensile modulus (MPa)	3.3–4	7.24
Elongation at break (%)	1–4	4.8
Glass transition temperature (C)	85–95	840

2.4. Measurements

At a temperature of 26 C, all characteristics were measured. For each of the qualities tested, at least six specimens (replicates) were taken, and the average results are provided. The ASTM D-256 standard was used to determine the Izod Impact Strength. Tensile strength and tensile modulus were determined using ASTM D- 638 M and the Universal Instron Testing Machine Model 4301, respectively, with standard and dumbbell-shaped specimens with a load of 2 mm/min. ASTM D-790 was used to determine the flex- ural strength and flexural modulus. The Heat Distortion Temperature (HDT) and Dielectric Strength ASTM D149, IEC 60,243 were also tested.

2.5. Die material and specification

The EN8 material is used to create injection moulding dies. Cold drawn is the most common form of supply. EN8 is a medium car- bon steel that is unalloyed and has a high tensile strength. Tensile characteristics vary, but typically range from 500 to 800 N/mm2. EN8 is available in the shape of a bar that may be cut to size. Table 2 shows the composition of the die materials, whereas Fig. 1 shows the die specification. Specimen requirement for heat distorsion test shown in Tables 3 and 4 shows the dielectric strength of the glass fiber reinforced PPS composites.

3. Results and discussions

3.1. Mechanical testings

Mechanical characterisation tests, including as tensile, flexural, and Izod impact tests, were performed in accordance with ASTM standards. Six specimens were subjected for each case and the average value of the results was recorded as the mechanical properties of the individual composite.

3.1.1. Tensile properties

The tensile properties of all the composites were presented in Fig. 2. It was discovered that when the content of fibres in the com posites. Polyphenylene Sulfide (PPS) composites increased, the tensile strength increased. The tensile strength of the neat PPS matrix was found to be 65 MPa which is 112.30% lesser than that of PPS composites reinforced with 40 % of the glass fibers.

The other PPS composites reinforced with 10, 20 and 30 wt% of fibers were found to exhibit the tensile strength of 84, 114 and

136 MPa. The tensile strength of PPS composited with 40 wt% of fibers was found to be 64.28, 21.05 and 1.47 % higher than that of composites with 10, 20 and 30 wt% of fibers reinforced into it. A similar kind of trend was found in tensile modulus also.

3.1.2. Flexural properties

The maximum stress in the composite laminate's outermost fibre layer is generally referred to as flexural strength. The convex side of the test generates tensile stresses, whereas the concave side generates compression stresses. As a result, the flexural strength is the stress measured on the convex side. The specimen with a dimension as per ASTM D790, 128mm x 12mm x 3mm is put on the edges of two knives, with overhanging specimens on either. The edges of two knives, with overhanging specimens on either side, in this test. The force was placed in the centre of the specimen and the 2 knife edges formed the test's 3 points. The flexural properties of the neat PPS matrix and PPS matrix filled with varying % of glass fibre was shown in fig 3.

As expected the PPS reinforced with glass fibre was found to have better flexural strength – the reason being the load on the matrix has been shared and sustained by the glass fibers reinforced into it [13]. Among the composites with different fiber content, the PPS with 40 wt% of glass fibers found to high the highest flexural properties (flexural strength and modulus). To take an account, the flexural strength of 40 wt% fiber-filled PPS composites was 57.57, 27.6 and 8.33 % higher compared to the PPS with 10, 20 and 30 wt% fiber respectively.

Table 2
Composition of EN8 material.

Carbon (%)	Silicon (%)	Manganese (%)	Sulphur (%)	Phosphorus (%)
0.40	0.25	0.80	0.015	0.015

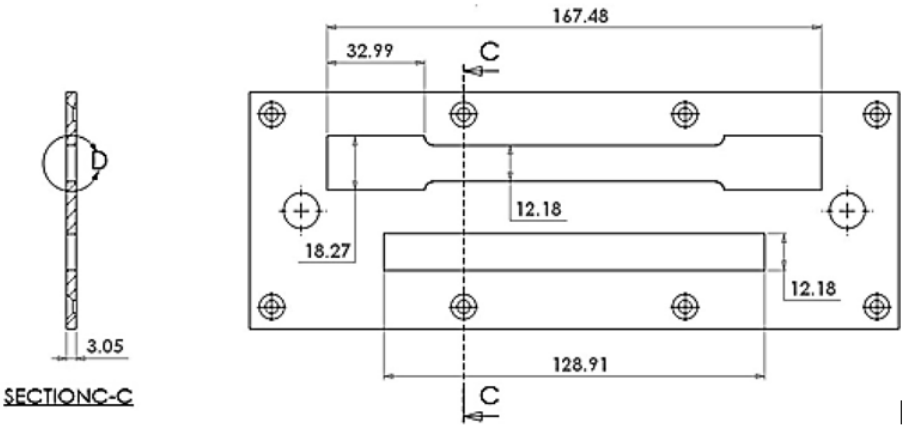


Fig. 1. Die specification for casting specimens (All dimensions are in mm).

Table 3
Specimen requirements for heat distortion temperature.

Particulars	Dimensions (mm)
Distance between supports	100
Distance between supports to point where load acts	50
Width of the specimen	3
Depth of the specimen	12
Length of the specimen	126

Table 4
Dielectric Strength of glass fiber reinforced PPS composites.

Composition	Dielectric Strength (kV/mm)
PPS	13.2–24.0
PPS + 10% GF	14.2–24.0
PPS + 20% GF	13.8–30.0
PPS + 30% GF	13.0–32.0
PPS + 40% GF	9.17–28.0

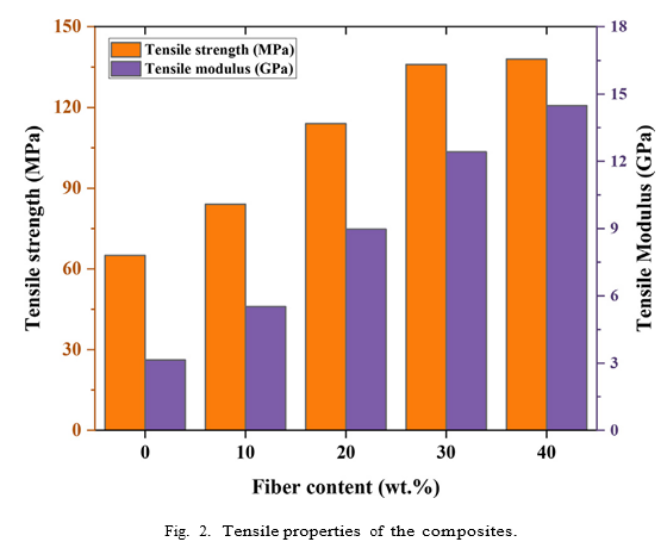


Fig. 2. Tensile properties of the composites.

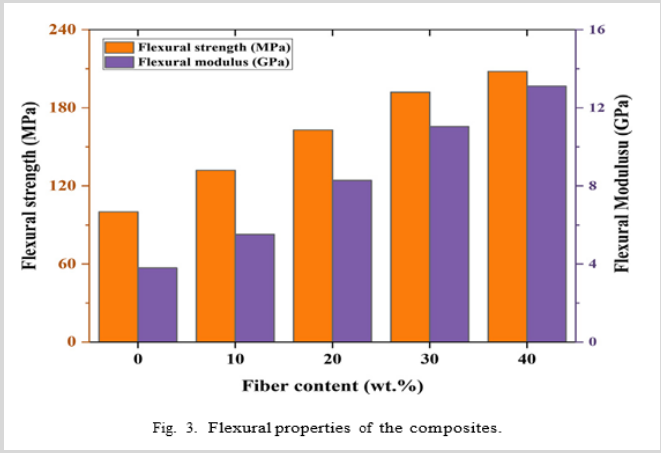
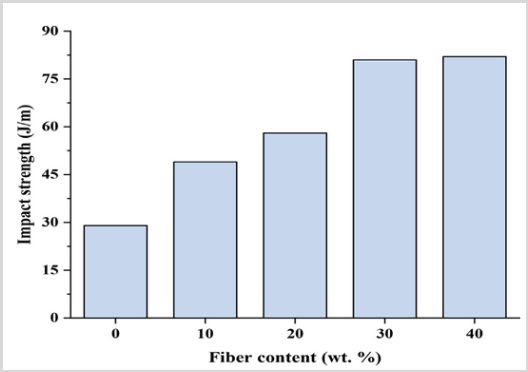


Fig. 3. Flexural properties of the composites.

3.1.3. Impact strength

In the Izod impact test, the test sample was tested to find the energy absorbed by the specimen by creating a notch at the center and kept the impactor similar to a simple cantilever beam, released suddenly to apply the impact load on the specimen. The energy absorbed by the specimen was recorded. Six specimens were subjected to impact testing as per ASTM D256 with a dimension of 128mm x 12mm x 3mm with central notch. The average value of the results obtained was recorded as shown in Fig. 4.

It was observed from the results shown in Fig. 4, the PPS composites with 40 wt% of fibers have high resistance to impact load compared to other PPS composites and neat matrix. When com- pared to neat matrix, PPS composites with 10, 20, and 30 wt% fibres, the impact strength of PPS composites with 40 wt% fibres was found to be 182.75 percent, 67.34 percent, 41.37 percent,



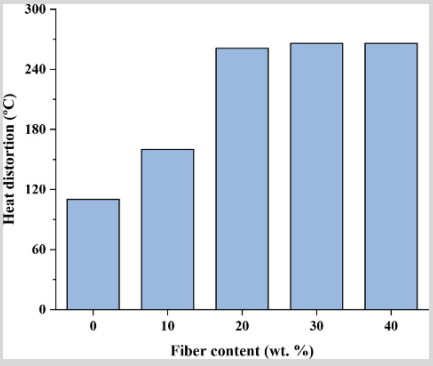
and 1.23 percent, respectively. The impact strength of PPS compos- ites was shown to rise as the amount of glass fibres in them increased. This is due to the presence of glass fiber providing a high impact strength to the composites. The glass fiber content in the composite has higher deformation strength due to the high strain rate. Hence, the more content of glass fiber showed a better impact strength [14,15]. This is in line with the results obtained by the other team of researchers [16].

3.2. Thermal testings

3.2.1. Heat distortion temperature

A standard test specimen that undergoes 0.25 mm defection at a standard load of 455 kPa or 264 kPa is called HDT. HDT is used to establish the temperature at which any random bend occurs when composites are subjected to an arbitrary set of testing conditions [12].

In heat distortion temperature (HDT) a bar of the rectangular cross-section is tested as a simple beam with a central load to give maximum fiber strength of 455 kPa. The specimen is submerged in a heat transfer medium that allows the temperature to be raised at a rate of 20.2 C/min. When the test bar has deflected 0.25 mm, which is the HDT, the temperature is recorded. The HDT values for GFRPPS lies between 258 C and 266 C, which are considerably higher than the neat PPS as a result of the high strength and high glass transition temperature of the glass. The values of heat distortion of various composites are shown in Fig. 5.



3.3. Electrical property

3.3.1. Dielectric strength

In this study, the short-time approach is used to assess the dielectric strength of a 3 mm thick specimen. Voltage is placed between the two electrodes and raised at a consistent rate from zero to dielectric breakdown [17]. The breakdown occurs when an electrical burn-through punctures the sample or the specimen decomposes [18]. The time it takes for the sample to attain dielectric

breakdown determines the rate of voltage growth. The Dielectric strength shows high for 30% compared to 40%.

4. Conclusions

The current study examines the effect of glass fibre concentration in Polyphenylene Sulfide (PPS) on the mechanical and thermal characteristics of composites. The following conclusions are formed based on the findings.

The tensile strength and modulus of PPS composites reinforced with 40 wt% glass fibres were the highest, whereas clean PPS performed poorly.

The flexural strength of composites followed the same trend of tensile properties, i.e., flexural strength of the neat PPS found to be at a lower value and the PPS reinforced with 40 wt% of the glass fiber content was found to be the highest.

Due to the high deformation behavior of glass composites, the composites with higher content of glass fibers provided high impact strength to the PPS composites.

The Heat Distortion Temperature (HDT) was considerably higher than the neat PPS as a result of the high strength and high glass transition temperature of the glass. Due to which these materials may be used in the liquid medium at elevated temperature.

The higher dielectric strength represents 30% GFRPPS as a good quality insulator. Hence the materials can be used for the dielectric materials for capacitors and thin films in high-speed digital circuitry are among the materials being developed for energy storage applications.

Adding E-glass of 30 wt% in the PPS matrix provides good enhancement in the tensile strength, tensile modulus, flexural strength, flexural modulus, impact strength, heat distortion temperature and dielectric strength in the fiber reinforced PPS as com- pared to other wt. %.

Credit authorship contribution statement

Attel Manjunath: Conceptualization, Methodology, Writing – original draft. H. Manjushree: Data curation, Conceptualization, Project administration. K.C. Nagaraja: Writing – review & editing. K.G. Pranesh: Writing – review & editing.

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Note: *The original article is a reprint published in Materials Today : Proceedings 62 (2022) 5439–5443 available online 21 April 2022.*

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Calendar of Events

Special Events & Highlights

Visit of Sri Pradeep Goyal, Senior Vice President(2022-2023) and President-Elect(2023-2024), ASM International, to Bangalore on 8th January 2023

In view of the visit of Sri Pradeep Goyal to Bangalore, a meeting followed by lunch was organized by ASM Bangalore Chapter on Sunday, 8th January 2023 @ at the Main Guest House Lawns, Indian Institute of Science, Bangalore-560012.

RV Educational Institutions
RV College of Engineering
Autonomous Institution Affiliated to Visvesvaraya Technological University, Belagavi
Approved by AICTE, New Delhi

MATERIAL ADVANTAGE
The Student Program for Materials Science and Engineering

Community service from Material Advantage Student Chapter of RVCE on January 13, 2023

No education is complete without students being made to feel for the less privileged and marginalized. RVCE is one of the best technical institutions in Karnataka that has always sought to inculcate a sense of service among the students. The purpose of community service is to prepare students for their future by helping them learn what it means to be responsible citizens. Community service teaches students the value of serving others and helps them develop self-discipline and critical thinking skills. A student who volunteers their time and participates in community service activities outside of the classroom can demonstrate good citizenship and provide an opportunity for the student to build relationships with other people in the community.

To this end, we are glad to share that Materials Advantage Student Chapter of RV College of Engineering, Bangalore, India recently involved in a community work. A government owned primary and middle school by name GLPS Choodenapura, situated in Kodipalya, Kengeri Hobli, Bangalore has more than 52 students from economically weaker background.

One RO based Water filter, two Green Boards with many Chalk boxes and Dusters were donated to the school by students of MA chapter. The school is headed by a very fervent Principal Mrs. Meenakshi M who is doing great work around that area. An event to formally handing over and installation of above articles at the school premises was conducted on January 13, 2023.

Dr. M Krishna - HoD of Mechanical Engineering Department, Dr. Ramesh S Sharma-Faculty Facilitator of MA chapter, Dr. J R Nataraj - Secretary of India National council of ASM, & Dr. Nanjundaradhya N V Professor at Mechanical Engineering Department graced the occasion. Students listed below contributed generously for the cause. MA students and Professors interacted with the students and advised them to study well and put their best efforts also Felicitation of School Principal was done. In turn the students and teachers of the school applauded the efforts of the MA chapter students and felicitated the Professors who supported the initiative.

Names of the students from 1st and 2nd batches of RVCE MA Chapter who contributed for the cause

Akshay Bhagwat	Sashikumargouda P	Shraddha	Santosh Kumar
Sangamesh Akki	Shridhar Navale	Suhas D	Vishal
Ambaresha	Shashank P	Manu K	Puttaraj
Saniya M	Chetan Prasad	Shashank N	Prajwal V K
Sri Harsha S	Srujan U R	Vijayakumara G N	Karthik S
Jaisurya	Sriram Madhav	Pylo Manjaly	Akshay
Ahrar Muhammad	Y Saipranavateja	Shamanth	Ranjan M
Siddappa Kai	Basavaraj GL	Shreyas Harithsa	Shravan B

The photos below depict the glimpse of the event.

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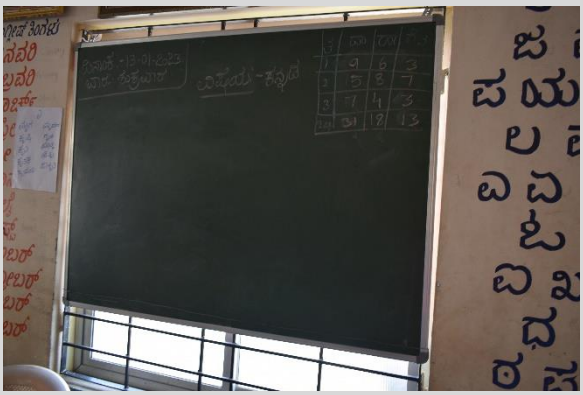



ಸರ್ಕಾರಿ ಕಿರಿಯ ಪ್ರಾಥಮಿಕ ಪಾಠಶಾ

Report on “International Women’s Day” held on March 8, 2023 at Faculty Hall, Indian Institute of Science, Bangalore

ASM (I) Bangalore Chapter in association with Indian Institute of Science, Indian Institute of Metals Bangalore Chapter & Pratt and Whitney jointly organised a full day programme on the occasion of International Women’s Day with the theme “Celebration of Women in Science, Technology, Engineering, Mathematics, Medicine, Education, Entrepreneurship” held on March 8, 2023 at the Faculty Hall, Indian Institute of Science, Bangalore.

The programme was convened by Dr Dheepa Srinivasan, Chief Engineer, Pratt & Whitney R&D Centre, IISc and EC/ASM Member of Bangalore Chapter and Prof Usha Vijayraghavan, Dean, Division of Biological Sciences, IISc and ably supported by Mrs. Jyothi Sriram, Chairperson, ASM (I) Bangalore Chapter. Prof Usha Vijayraghavan is the First Woman Dean to head a division at IISc.

Welcoming the attendees, Prof G Rangarajan (Director, IISc) acknowledged the long road ahead in addressing issues like the "leaky pipeline" & highlighted steps taken at IISc such as pausing the tenure clock, supernumerary quota for women students & special recruitment drives for women faculty.

Prof Rohini Godbole (CHEP, IISc) traced her life's many 'aha' moments & experiences, from fighting for science to be introduced in her school curriculum, to being at CERN on the day the discovery of the Higgs boson was announced.

Dr Soumya Swaminathan (MSSRF) recalled her experiences working at ICMR-NIRT and later as the WHO's Chief Scientist during the COVID-19 pandemic. She stressed on the importance of being tenacious and building partnerships. Prof Sujatha Ramdorai (Univ of British Columbia) shared her fascination for unravelling the beauty of mathematics, and about her foray into policy development. Prof Maneesha Inamdar (inStem) drew parallels from developmental biology to her own life and experiences, and advised young women researchers to believe in themselves.

Ms Ritu Karidhal (ISRO) recounted her experience of working long nights on the Mars Orbiter Mission and how women scientists at ISRO received support from each other and from their families in the lead up to the successful launch.

Dr Annapurni Subramaniam (IIA) highlighted her journey coming from a musical family to astrophysics to becoming the director of the institute she did her PhD in. Prof Sharada Srinivasan (NIAS) spoke about her exploits in archaeometallurgy, her excavations in mines, and her interest in Bharatanatyam.

Dr Sudeshna Adak (OmiX) spoke about the difficulties encountered in starting her own company and her passion for developing a unique product to help people in villages during COVID-19.

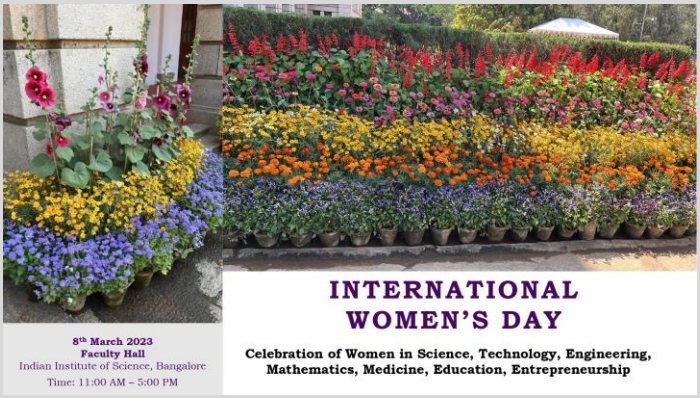
A panel discussion was also organised in which several women scientists and engineers shared their motivations for getting into STEM, the challenges they faced, and how scientific temper can be inculcated. The Panelists included Dr Swati Biswas (GTRE), Dr Sujata M (NAL), Prof Namrata Gundiah (IISc), Prof Kavita Babu (IISc), Ms Suchismita Sanyal (Shell) and Ms Rema Ravindran (Pratt & Whitney), moderated by Dr Kajoli Krishnan (Industrial Physicist).

The speakers and panelists collectively emphasised the importance of positive mentoring, networking, leadership training, institutional support and elimination of invisible biases in shaping the development of a woman scientist.

The programme concluded with vote of thanks by Mrs. Jyothi Sriram, Chairperson, ASM (I) Bangalore Chapter.

The Link to the Glimpses of the event is available at the following link:

https://drive.google.com/file/d/1eVqUihqB5PAwmxNlaDPptQjSO9kON3b/view?usp=share_link

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Technical Talks

ASM International Bangalore Chapter organized an Online Tech Talk on the topic - "FAILURE INVESTIGATION a powerful tool for Industry to increase safety and profitability" by Sri Paresh Haribhakti, Managing Director, TCR Advanced Engineering Pvt Ltd., India.	
Date / Venue	January 28, 2023 through Zoom Meeting
	

ASM International Bangalore Chapter organised an Online Tech Talk on the topic – "Effectiveness of Lasers in Processing of Exotic Materials" by Dr. B. Shanmugarajan Dy. General Manager, Welding Research Institute, Bharat Heavy Electricals Ltd., Tiruchirapalli.	
Date / Venue	February 25, 2023 through Zoom Meeting

ASM International Bangalore Chapter organized an Online Tech Talk on the topic - "The smart way to achieve hard goals: Secrets to 10X success" by Sri Prashant Pimpalkhute, Founder Director, Mactexcel Consultants.	
Date / Venue	March 24, 2023 through Zoom Meeting
	

Report on the Visit of Prof. Pierpaolo Carlone, ASM Trustee, to Bangalore on February 6th & 7th, 2023

Date: February 6, 2023

1. Prof. Pierpaolo Carlone had meeting with Prof. Dr. K N Subramanya Principal RV College of Engineering and Professors from Industrial Engineering Department.

2. Delivered the Talk on "Pultrusion of composites: challenges, limitations, and advantages". Audience were Students/Professors of RVCE and Invitees from Industry,

3. Visited Center of Excellences at RV College of Engineering and met the Student members of Materials Advantage.

4. Had an exclusive Dinner Meeting with ASM Office Bearers of Bangalore chapter.

Date: February 7, 2023

a) Visit to National Aerospace Laboratory

The team visited Advanced Composite Division of NAL and met Director of NAL Dr. Abhay Anant Pashilkar. Participating of NAL in ADMAT 2024 conference and taking up of sustaining membership with ASM Bangalore chapter were important points of discussion during the visit.

b) Visit to Department of Materials Engineering, IISc, Bangalore

Prof. Dr. Pierpaolo Carlone delivered a lecture titled: "Recent trends in Liquid Composite Molding processes: manufacturing challenges and Potentialities" at Prestigious Materials Engineering Department of Indian Institute of Science, Bangalore.

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Events Calendar 2021-23

1. Memberships	Drive by Headquarter / India Task Force
2. Monthly Technical Talks	To improve consistency and Participation
3. Student Outreach	a) Events for Students – Talks + Industrial Visits b) Membership & Student Chapter Formation c) Support in Projects / Training d) Material Camps
4. Major Events	a) One/Two Days Workshops / Seminars b) Annual Get-together c) Annual General Body Meeting d) Hosting of INC Meeting / Visiting ASM Leaders e) Support to other ASM Chapters / Local Associations in their events.
5. Technical Talk	Every 3rd Saturday 5.00 pm
6. Executive Council Meetings	This Qtr. – January 21, 2023 ; February 18, 2023 ; March 18, 2023 ;

ASM International Bangalore Chapter cordially welcomes the following New Members who have joined during the period – From 1st January 2023 to 31st March 2023:

Sl. No.	Names of the New Members
1	Mr. S. Kamalakannan, Sri Rasi Extrusion, Tamil Nadu
2	Mr. P. Lakshmiganth, GTR Enviro Innovations Pvt. Ltd. , Salem, Tamil Nadu
3	Mr. S. M. Murugan, Salem Material Technology & Company, Salem, Tamil Nadu
4	Mr. T. Yuvaraj, TUV SUD South Asia Pvt. Ltd., Erode, Tamil Nadu

SUSTAINING MEMBERS OF ASM (I) BANGALORE CHAPTER

HEXAGON
Hexagon-MSC Software Corporation

Lakshmi Vacuum
Lakshmi Vacuum Technologies

SPECTRUM Passion to Perform
Spectrum Tool Engineers Pvt Ltd

Air Force Technical College Bangalore

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