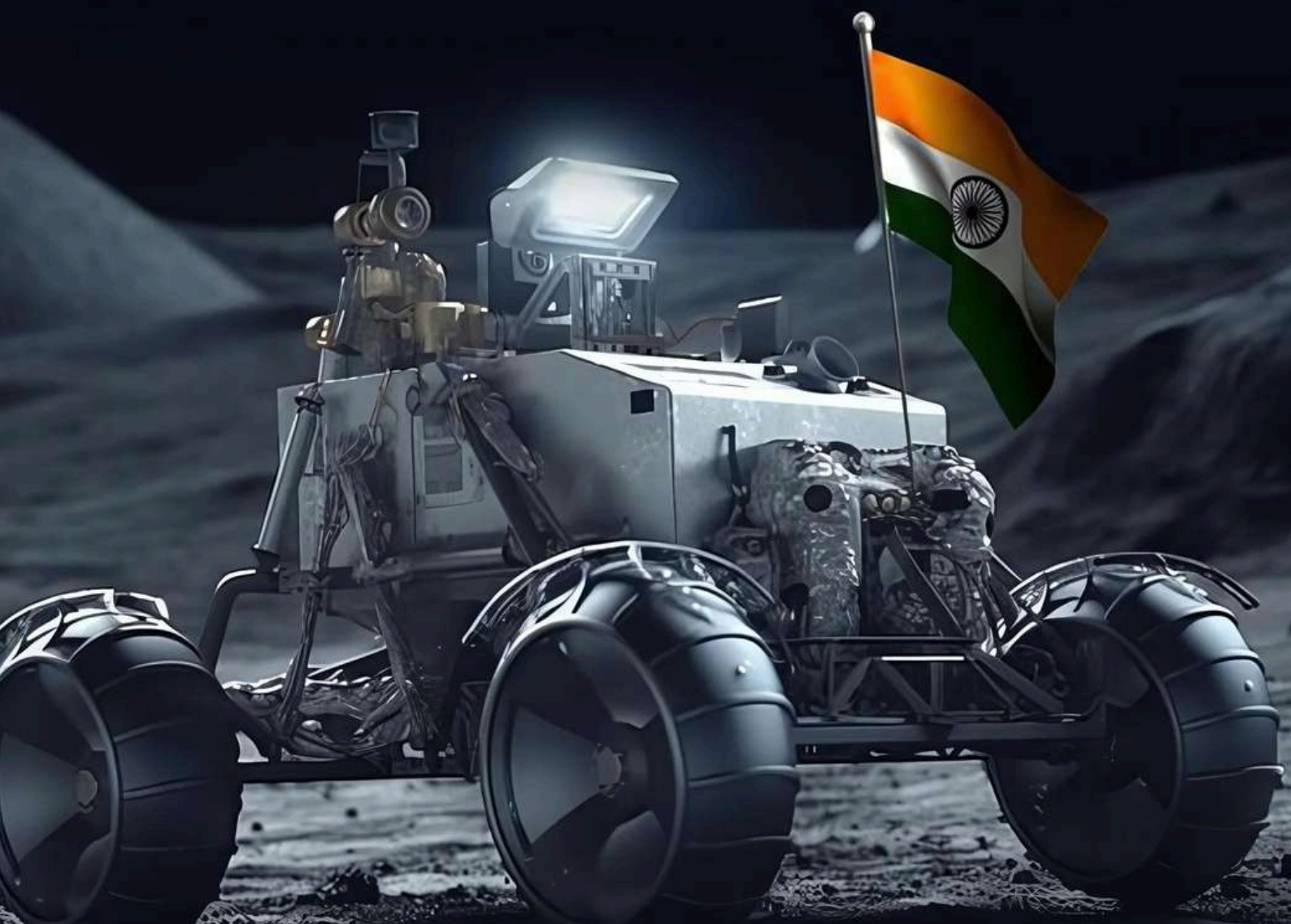
ISSUE 10 | VOLUME 14 | OCTOBER 2024

# ASPIRE

*ACHIEVEMENTS IN SPORTS,PROJECTS,INDUSTRY,RESEARCH AND EDUCATION*

## DEPARTMENT OF MECHANICAL ENGINEERING



SRI SIVASUBRAMANIYA NADAR COLLEGE OF ENGINEERING
RAJIV GANDHI SALAI(OMR), KALAVAKKAM, CHENNAI, TAMIL NADU, INDIA

# From the HoD's desk.....

Dr. K S Vijay Sekar
Professor and Head,
Department of Mechanical Engineering

We are happy to share the October edition of Aspire!

We profile Amartya Sen, awarded the Nobel Memorial Prize in Economic Sciences in 1998 for his pathbreaking work in understanding poverty, famine, and inequality.

INVENTE 24 was celebrated with much fanfare this year with the innovative abilities of the students in organizing tech and non-tech events reaching stratospheric levels t was an honour for Mechanical to host the event and also listen to the inspiring inaugural speech of Mr Sathyanandan Mahadevan, VP and Head-Power solutions business, Ashok Leyland about the latest research and commercial trends in the Engine development and EV segment.

HCL Cyclothon event was launched by HCL, with the backing of the Cycling federation of India, marking a new beginning for cycling enthusiasts across the country.

The Mechanical team and NTU, Taiwan team had an online meeting discussing the possibilities of research and consultancy collaborations on either side with the potential of signing an MOU going ahead in areas of mutual growth.

In an event studded month, guest lectures, internships and placements were in full swing and some of our students share their experiences in enlisting for NPTEL courses as well as securing placements despite coming from difficult backgrounds. Mech alumni share their success stories in securing an MS seat in Columbia and getting a good placement opportunity in McDermott .

Best Wishes for a momentous October,
KSV
vijaysekarks@ssn.edu.in

# Amartya Sen: Pioneering Economist and Advocate for Human Welfare

Amartya Sen, born in 1933 in Santiniketan, India, is a renowned economist, philosopher, and Nobel laureate whose work has shaped welfare economics, development theory, and human rights. He was awarded the Nobel Memorial Prize in Economic Sciences in 1998 for his contributions to understanding poverty, famine, and inequality. Sen's early experiences, particularly the Bengal famine of 1943, deeply influenced his focus on social justice. He studied at Presidency College, Kolkata, and Trinity College, Cambridge, where he earned a PhD in economics.

In his book *Poverty and Famines* (1981), Sen introduced the concept of "entitlement failures," showing that famines result from unequal access to resources rather than food shortages. This shifted how hunger crises are addressed. His "Capability Approach" focuses on individual freedoms and well-being, asserting that development should be measured by people's ability to lead fulfilling lives rather than by income alone. This idea helped create the United Nations Human Development Index (HDI).

Sen has advocated for democracy and public reasoning, emphasizing that political freedoms and transparency are crucial for economic development. His works, such as *Development as Freedom* (1999) and *The Idea of Justice* (2009), remain central to global debates on social justice and governance. Throughout his career, Sen has received numerous honors, including the Bharat Ratna, and held prestigious academic posts at Harvard, Oxford, and Cambridge. His legacy continues to inspire efforts for human dignity and equality.

# INVENTE’24: A FUSION OF INNOVATion and fun

Invente'24, held on the 27th and 28th of September 2024 at both SSN College of Engineering and SNUC, was a remarkable event that combined technical excellence with creative fun. The event featured a wide array of technical and non-technical competitions, offering students a dynamic platform to showcase their talents. From hackathons, coding challenges, and robotics competitions to gaming events and entertaining quizzes, Invente'24 catered to diverse interests. The event fostered a spirit of innovation, teamwork, and collaboration, creating an engaging and vibrant atmosphere. It left a lasting impression on participants, making it an unforgettable experience for everyone involved.


# HCL group launches inaugural HCL Cyclothon

HCL Group proudly unveiled its debut edition of the HCL Cyclothon Hyderabad, marking an exciting new chapter for cycling enthusiasts. The grand launch was graced by Mr. Jayesh Ranjan (IAS), Special Chief Secretary, Department of ITE&C and I&C, Government of Telangana, alongside Mr. Rajat Chandolia, AVP and Head - Brand Strategy, HCL Group, who officially kicked off the event.

With the strong support of the Cycling Federation of India (CFI), represented by Mr. P. Malla Reddy, Vice President, the collaboration promises an exciting future for cycling in India. HCL's mission to amplify human potential is brought to life through this event, scheduled for December 15, 2024, in Hyderabad. Cyclists of all levels are encouraged to join, and registrations are now open. Let the countdown to an exhilarating ride begin!


## International Journal Publication - SCI /Clarivate Indexed

M. Dhananchezian. A Comparative Study of Dry Turning Performance of 4340 Alloy Steel with As-Received and Cryogenically Treated Coated Cermet Cutting Tools." INTERNATIONAL JOURNAL OF AUTOMOTIVE AND MECHANICAL ENGINEERING. 21 (2), pp. 11302 - 11315.
Clarivate Impact Factor: 1.


Figure 2. Photographic view of the experimental setup

## International Journal Publication - SCI /Clarivate Indexed

A. Arun, S. Santosh, K. Rajkumar. ”Investigations on the interaction of laser parameters for efficient microdrilling of NiTiV smart alloy system.” Laser Physics. 34(8), pp.1-15.
Clarivate Impact Factor: 1.2.

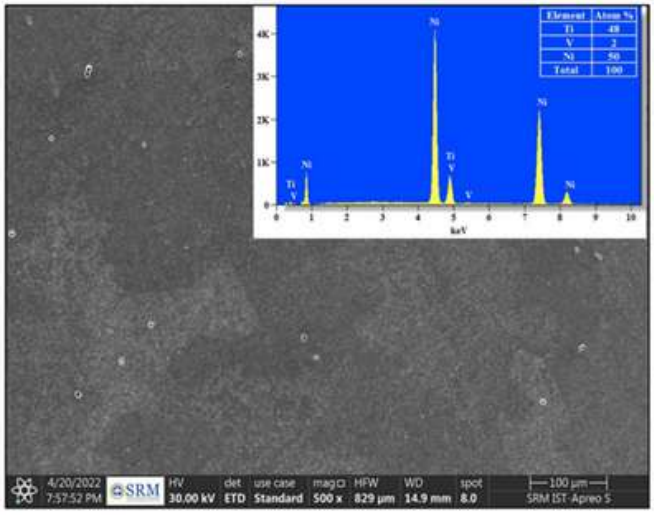
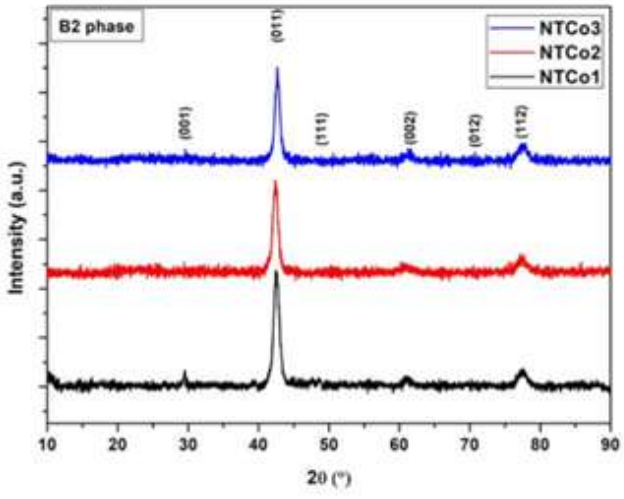


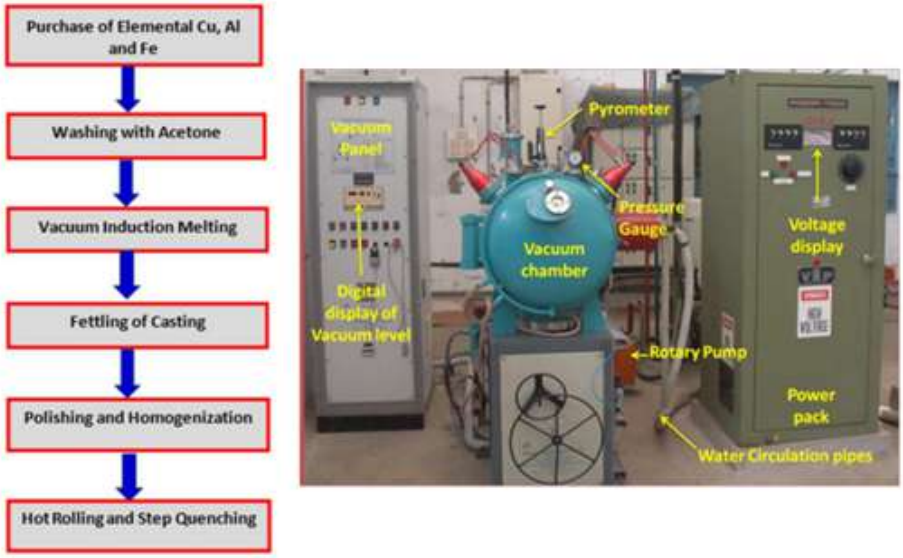

**Figure 1.** Microstructure of $Ni_{50}Ti_{48}V_2$ base sample with EDX.

G Swaminathan, V Sampath, S Santosh.” Effect of cobalt addition on thermal cycling behaviour of Ti50Ni(50−x)cox shape memory alloys." Physica Scripta . 39(3),035929 PP. Clarivate Impact Factor: 2.6.

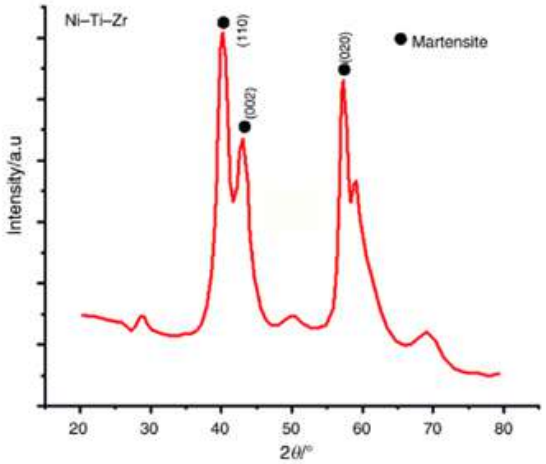


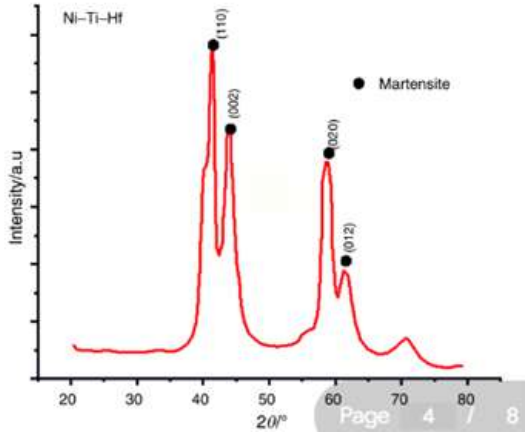
## International Journal Publication - SCI /Clarivate Indexed

S. Santosh, S. Srivatsan .” Unravelling the use of silica recovered from waste foundry sand in sustainable water jet machining of a copper-based ternary shape memory alloy." Materials Today Sustainability. 24, PP. 1-16. Clarivate Impact Factor: 7.1.




Santosh Sampath.”Influence of high temperature ternary and quaternary additions on the phase transformation and actuation fatigue characteristics of NiTi shape memory alloys”. Thermal Analysis and Calorimetry. 148(23), 13273–13280. Clarivate Impact Factor: 3.



## DEPARTMENT OF MECHANICAL ENGINEERING
## CLASS OF 2025

# PLACEMENT UPDATE

CATERPILLAR

T.EN TECHNIP ENERGIES

MITHILA V
[INTERNSHIP+FULL]

CAVISHWAR B
[INTERNSHIP]

THOUSHIK RAM

ZOHO

MCDERMOTT

ASHOK LEYLAND

SAIRAM R SURESHBABU

HARI SHANKAR
RENGANATHAN

SARAN D

# GUEST LECTURE ON SHAPE MEMORY ALLOYS

On 9th August 2024, a guest lecture was organized by Dr Santosh and Dr Ananthapadmanaban on "Shape Memory Alloys: Principles, Mechanisms, Applications, and Future Trends" was delivered by Prof. V. Sampath, Department of Metallurgical and Materials Engineering, IIT Madras at the Mechanical Seminar Hall. Prof. Sampath introduced the audience to the fascinating properties of shape memory alloys (SMAs), focusing on their ability to return to a pre-deformed shape when heated above a specific temperature. He explained key mechanisms like phase transformations between austenite and martensite, and the role of temperature and stress in activating the shape memory effect.

Prof. Sampath also highlighted various applications of SMAs, such as in medical devices, aerospace, automotive industries, and consumer electronics. The lecture concluded with a discussion on future trends, including material improvements and integration with emerging technologies like robotics and smart materials. The session ended with an engaging Q&A, where attendees discussed advances and challenges in SMA research and applications.

# GUEST LECTURE ON AEROSPACE MATERIALS AND METALLURGY

On 3rd September 2024, a guest lecture was organized by Dr Santosh and Dr Ananthapadmanaban where II Year B Section students participated in the guest lecture. The topic of the Guest lecture was “Aerospace Materials and Metallurgy”. There was a brief introduction to Aluminium , Aluminium alloys, and their properties. A few Figures showing aircraft parts in complete detail, the materials used in each of the parts and their evolution over the years were nicely explained by Dr.Vijayaram.

The role of Composites and Nanomaterials was explained and the metallurgy behind some typical aerospace materials was detailed. There is a possibility of holding a value-added course in Aerospace materials in the future with the help of Professor Vijayaram.

# WORKSHOP ON EPC DESIGN

Dr.T. Micha Premkumar, Dr. MS Alphin, and Dr. M. Nalla Mohamad along with an expert from Haddy design, Mr. Judes Linin X L have Successfully conducted the workshop on EPC Design using Autocad plant 3D on 19 September 2024 in Mechanical CAD Lab.

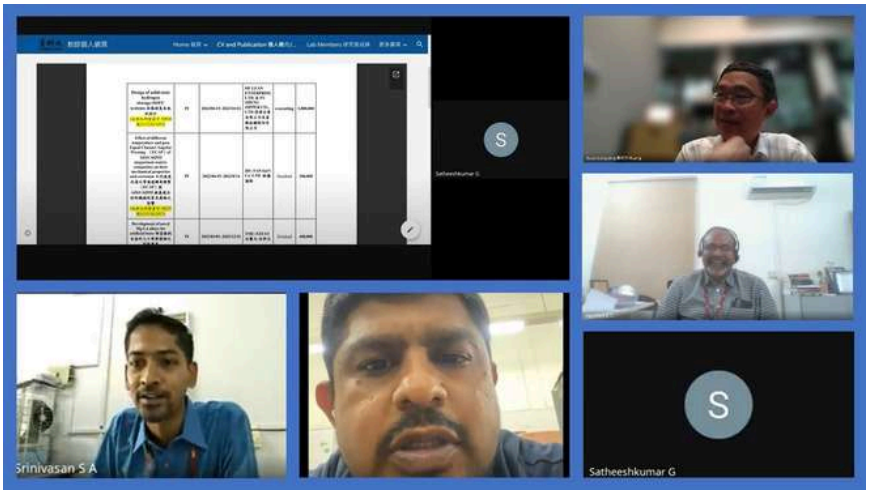
# SSN MECHANICAL INTERACTS WITH NTU, TAIWAN
# Dr SA Srinivasan tunes in.....

On 16 Sep 2024, Dept of Mechanical Engineering held a highly productive video conference meeting with Prof. Song-Jeng (Issac) Huang, MNCML laboratory, Head – Solid State Hydrogen Energy Research Centre, National Taiwan University (NTU), Taiwan, to discuss potential inter-institutional collaboration. Dr Sathiyalingam Kannaiyan – NTU project manager joined the meeting with team SSN headed by Dr K.S. Vijay Sekar, Head / Mechanical with Dr G.Satheesh Kumar, Asso. Prof. / Mechanical and Dr S.A.Srinivasan, AP / Mech.

The virtual meeting, attended by representatives from both institutions served as a platform to share mutual interests, exchange institutional highlights, and explore opportunities for academic cooperation. Our delegation presented an overview of our college, emphasizing our commitment to innovative research, interdisciplinary education, and our existing global partnerships. NTU, in turn, showcased their state-of-the-art research labs and ongoing projects, offering valuable insights into their cutting-edge facilities and areas of expertise.

The core focus of the discussion centred around formulating a Memorandum of Understanding (MoU) that would enable the two institutions to collaborate on various academic and research fronts. Both parties expressed keen interest in pursuing joint research projects and securing collaborative grants in thrust areas of Green Hydrogen and Automation in the energy sector.

Additionally, the meeting highlighted the mutual benefits of joint publications, faculty internships, as well as student and faculty exchange programs. These initiatives aim to have committed academic growth, enhance knowledge sharing, and strengthen ties between the institutions, enabling an international experience for students and researchers alike. With a shared vision of advancing academic excellence and global collaboration, the meeting concluded with an agreement to draft and finalize the MoU, signalling the start of a promising and long-term partnership. Prof. Song-Jeng (Issac) Huang expressed his willingness to visit the SSN campus and discuss and sign the MoU during his upcoming visit to India on October 22, 2024.




# KSV INVITED AS SPECIAL SUPPORT MEMBER TO SRM WORKSHOP...

Happy to share that I invited as a special support member to the two-day workshop on “Environmentally sustainable automotive friction materials for electric vehicle" on September 14th, 2024, by the Department of Automobile Engineering, SRM Institute of Science and Technology. The event drew many speakers from Industries such as RANE, BRAKES INDIA ,TATA MOTORS, MAHINDRA, CUMI etc. who shared their expertise in Electric vehicles and how they were handling challenges and opportunities in friction materials. It was an opportunity to network with these industry experts and listen to the latest trends in automotive sector. I also met Mr Karthikeyan, one of our alumni from the 2007-11 batch, the first batch of mechanical engineering at SSN.

# EVENTS ATTENDED

| | |
|---|---|
| 02/09/2024 | Dr. Laxman Kumar Malla, Assistant Professor attended a One-day Faculty Training Program on GATE-JAM 2025 Examinations organized by the GATE-JAM Office, IIT Madras on 31.08.2024 |

# NON-TEACHING STAFF ACTIVITIES

| | |
|---|---|
| 27/09/2024 | Mr. Bal Sundaram. P / Asst. Lab Instructor / Mechanical department / attended the one-day webinar * Teaching with MATLAB & Simulink \| SSN * on 23.09.2024 at 2 to 3 pm |

# INTERNATIONAL JOURNAL PUBLICATION

| | |
|---|---|
| 06/09/2024 | M. Dhananchezian has published a paper titled “A Comparative Study of Dry Turning Performance of 4340 Alloy Steel with As-Received and Cryogenically Treated Coated Cermet Cutting Tools” in the journal ‘International Journal of Automotive and Mechanical Engineering’. |
| 06/09/2024 | A. Arun, S. Santosh, K. Rajkumar have published a paper titled “Investigations on the interaction of laser parameters for efficient microdrilling of NiTiV smart alloy system” in the journal ‘Laser Physics’. |

# INTERNATIONAL JOURNAL PUBLICATION

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| 06/09/2024 | G Swaminathan, V Sampath, S Santosh have published a paper titled “Effect of cobalt addition on thermal cycling behaviour of Ti50Ni(50−x)cox shape memory alloys” in the journal ‘Physica Scripta’ |
| 06/09/2024 | S. Santosh, S. Srivatsan have published a paper titled “A Unravelling the use of silica recovered from waste foundry sand in sustainable water jet machining of a copper-based ternary shape memory alloy” in the journal ‘Materials Today Sustainability’. |
| 06/09/2024 | Santosh Sampath has published a paper titled “Influence of high temperature ternary and quaternary additions on the phase transformation and actuation fatigue characteristics of NiTi shape memory alloys” in the journal ‘Thermal Analysis and Calorimetry’. |

# Lingaash kumar FROM THIRD YEAR WRITES...

I am Lingaash Kumar, currently in my 3rd year of engineering, and I recently completed a 4-week NPTEL course titled "Selection of Nanomaterials for Energy Harvesting and Storage Applications." This course proved to be incredibly useful in deepening my understanding of how nanomaterials play a crucial role in improving the efficiency of energy systems. I gained insights into how specific nanomaterials are selected for applications like solar energy harvesting, fuel cells, and advanced battery technologies. The course covered both theoretical concepts and practical applications, providing me with a comprehensive view of the latest advancements in energy storage and sustainability. This newfound knowledge has strengthened my interest in the field of nanotechnology, and I am excited to apply these concepts in future research and projects related to energy innovation.

# NEELA MEGA BHAVANI S K FROM FOURTH YEAR WRITES...

Every person encounters a life-changing incident in their life, and this is my moment. As a final year mechanical engineering student, I am honored and eagerly awaiting the start of my career at Caterpillar, one of the most prestigious and dream companies for every core mechanical engineer at heart.

Being a simple girl from a humble background, and the firstborn of a four-member family, I have always had a burning desire to succeed in life. My father, the sole breadwinner, works tirelessly as a driver, inspiring me to work hard and improve our family's situation.

My journey began at a government-aided school, where I struggled to get into crowded public buses to reach school on time. Despite the hardships, I never lost sight of my dreams. Securing a seat at the prestigious SSN College was a milestone, made possible through hard work and a student loan.

However, joining SSN wasn't as exciting as it should have been, due to my own insecurities and low self-esteem. But the desire to succeed, coupled with friends' support, helped me set my goals higher and work relentlessly towards achieving them. Since my first year, I've been drawn to core mechanical engineering concepts and manifested working at Caterpillar.

To my surprise, the universe made it happen. As part of Women's Day celebrations, I was offered an internship at Caterpillar – my dream come true. With hard work, college support, and encouragement from friends and family, my life-changing moment arrived! Soon after the internship, I received a Pre-Placement Offer (PPO) as the first placed student in my department, with my dream company. I take this opportunity to thank my college, esteemed faculty, and dear friends for helping me achieve my goal.

*" Trust yourself, work hard, manifest your dreams, and the universe will pave the way to make them a reality!"*

# Mohamed Akmal Baig OF MECH'24 SHARES...

Mohamed Akmal Baig (Mech24) pursuing Master's at Columbia University

I am proud to announce that I'm starting my Master's in Mechanical Engineering at Columbia University, New York. Wanting to do my masters in a prestigious university has been a dream of mine for quite a long time now. Getting to live in NYC and getting to attend lectures in classrooms that have hosted some of the greatest minds of our generation is a dream come true.

Effort is one thing, but getting to his point wouldn't have been possible without my friends and family pushing and guiding me along the way

On a special note, I would like to thank my professors and mentors SURESH KUMAR SUNDARAM, Dattaguru Anantha Padmanaban, Lakshminarayanan A K, NallaMohamed, and Vijay Sekar K.S. for trusting me with various projects and helping me gain research experiences.

SSN College of Engineering provided me with the tools to succeed as an engineer, but I don't think coming this far would have been possible without Apex Racing Team. From late-night gossip sessions in the garage to making critical engineering decisions, pretty sure I've spent more time inside the garage than in my classrooms.

Apart from Columbia, I got into the Imperial College London and the University of Southern California for my master's, but seeing overall fit and other factors, I ended up choosing Columbia :). All the best to all my friends who've taken on a similar journey of moving abroad and starting from scratch, hopefully the destination will make all the hard work worth it.

# VAITHEESHWARAN R OF BATCH 2023 SHARES...

I had the privilege of graduating in 2024 with a degree in Mechanical Engineering from SSN, and I am currently working as an Associate Piping Engineer at McDermott. Reflecting on my journey through the Mechanical Department, I can confidently say it was a transformative experience, both academically and personally.

My time at SSN was marked by various leadership roles, most notably as Event Head for Invente'23, where I led the MECHATHLON event, a role that sharpened my leadership and organizational skills. I also had the honor of serving as Secretary of the ASM Society and was an integral part of the Material Advantage Student Chapter. Being involved in the Mechanical Alumni Association Club allowed me to network with alumni and students alike, fostering a strong sense of community and belonging.

The education I received at SSN was nothing short of exceptional. The faculty's teaching methods, combined with the hands-on experience in labs and the focus on presentations, helped me grasp intricate concepts with clarity. These skills have been indispensable in my career, preparing me for real-world challenges in the engineering field.

To the current students: my advice is to strike a balance between your CGPA and hands-on experience, both are essential for securing top placements. If you are considering higher studies abroad, invest your time in research and aim to get your papers published. This will significantly boost your profile for admission into prestigious universities. Take full advantage of your college years by diving deep into your subjects, participating in technical symposiums like INVENTE, and stepping up to organize events. These experiences will add immense value to your resume.

# *No Competition, No Progress*

## RoboLeague

***(Bharati Vidyapeeth's College of Engineering, New Delhi)***

Link: Register here


## Reliance TUP X

***Reliance Industries Limited (RIL)***)

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## IAL - GenMan (2026 Batch)

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## *From the desk of Ramki – Aspire to Inspire*

From Ramki
Happy Morning – Aspire to Inspire

### Ego

The first major thrill after one learns cycling is to take both hands off the handlebar when the cycle is still in motion. More than the act itself, it is the fact that others notice you doing it that is important.

In fact, eyes, wander with longing to see if others have noticed you perform the act.

Standing on the foot board of a bus or train is considered a demonstration of great courage during adolescence. The craving is not to perform the act, but to get noticed.

Everyone goes through this phase of life where the ego drives one to do anything and everything only to get noticed and recognized. It is a phase when good is good only when it gains attention, and ironically, even good is bad if it fails to attract attention. The ego survives on gaining attention. But then, one must outgrow that phase of life.

By its very nature, ego needs feeding; and hence it's a perpetual beggar. The problem with ego is that when ego is fed, you struggle with a superiority complex, and when ego is starved you suffer from an inferiority complex. Either way, it robs you of your peace of mind.

When ego comes everything else goes. When ego goes, everything else comes.

How many precious relationships have been lost in order to satisfy one ego? While you should have dropped ego and saved the relationship, you ended up dropping the relationships and saving ego.

Ego is never worth the losses.

How many golden opportunities have been missed while you were busy servicing your ego? Every moment is heavy, every situation is nerve-racking, every interaction is tense...an ego-filled heart is always walking on fire. Never can there be a moment of marriage between ego and ease.

A crow carrying a piece of meat found itself being chased by all the other birds. It dropped the piece of meat, and all the birds went after the meat. Now, alone in the sky, the crow remarked, “In losing that piece of meat, I gained the freedom of the skies.”

There is enormous freedom in letting your ego go.
I am sure some of you know this already and it is worth repeating

In an island, all the feelings lived. One day there was a storm. The island was about to drown, every feeling was scared. But love made a boat to escape, every feeling got on boat, one feeling was missing. Love got down to see who it was. It was EGO. Love tried & tried. But EGO wasn't moving & water was rising. Everyone asked love to leave him & come to boat. But love wasn't moving. At last, love died with EGO.

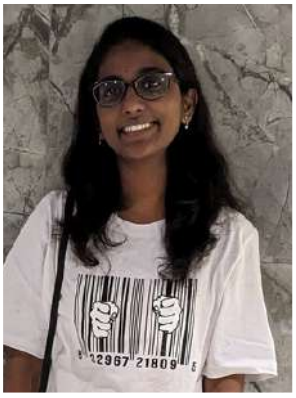
#WishingMostAndMore

# Editorial Team

Dr. M S Alphin

Dr. Satheesh Kumar G

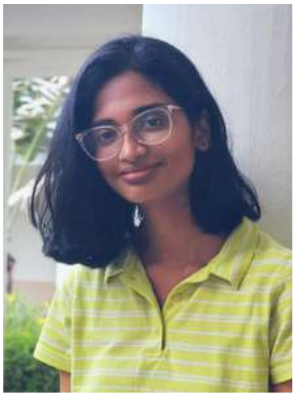
Magari Ramasamy



Abirami Subbaih

Aravindhan R

Nithish Kumar S



Dhivya Dharshini R

Mithun Kumar

**Feedback to *aspire@mech.ssn.edu.in***