



**CHRIST**  
(DEEMED TO BE UNIVERSITY)  
BANGALORE • INDIA

# The **TORQUE** #2

Department of Mechanical and  
Automobile Engineering



**E-MAGAZINE**  
**AUG-DEC 2021**



**SCHOOL OF ENGINEERING AND TECHNOLOGY**





## VISION

Develop Mechanical and Automobile Engineering graduates to be successful in chosen professional career with innovative academic processes for the overall development

## MISSION

To provide excellent academic ambience in curricular cocurricular and extracurricular initiative facilities and teaching learning experience.

To nurture holistic development of individuals.

To imbibe professional ethics driven by a sense of moral responsibility committed to the service to society

## B. TECH IN MECHANICAL ENGINEERING

Program Educational objectives (PEO's) :

### **Fundamental Knowledge**

Demonstrate fundamental knowledge in basic science and Mechanical Engineering, with critical and solution-oriented thinking for attaining professional excellence.

### **Industry Integration**

Facilitate with industrial exposure within and outside the curriculum to integrate theoretical concepts with the latest industry practices.

### **Working in Team**

Exhibit professional competence towards real-time problem solving by cross-disciplinary understanding and effective team-building skills.

### **Social Responsibility**

Develop professionals with ethics, driven by a sense of social responsibility and service towards their peers, employers





## EDITORIAL

"The TORQUE" highlights how the energy of the students and the experience and wisdom of the faculty have been fused together to form a dynamic department. The faculty are polishing and fine tuning the students into budding engineers. The students have begun to kickstart their careers through participation in various activities.

"The TORQUE" #2, showcases the array of events conducted by the Department of Mechanical and Automobile Engineering during the months of Aug and Sep 2021. This includes tech talks by industry professionals, department orientation sessions, placement trainings, research publications, etc. Also included are the numerous achievements of our students and faculty, making our department proud. Finally, there are technical articles serving as food for thought. "The TORQUE" will culminate as "The SPARK" at the end of the academic year to summarize the efforts and achievements in our journey towards 'EXCELLENCE AND SERVICE'.

Our heartfelt thanks to Mr Sethu S for his multitudinous and continual support to me in designing this newsletter expeditiously and excellently. Special thanks to Head of the department, Dr Hebbar sir for his constant guidance. A wholehearted gratitude to all the faculty members in providing the information towards the newsletter.

I hope that you will enjoy reading this newsletter as much as we have enjoyed putting it together! Do send us your feedback and suggestions for improvement at [itsmelwyn@gmail.com](mailto:itsmelwyn@gmail.com) or [anil.rego@christuniversity.in](mailto:anil.rego@christuniversity.in) or [sajna.panigrahi@christuniversity.in](mailto:sajna.panigrahi@christuniversity.in)

-Editors,  
"The TORQUE" #2



# Best Wishes

A new academic year gives us a chance to begin new and fresh... it is an opportunity to look ahead and work harder to make it a better and a brighter future.... Wish you all lots of luck as you are all set to begin a new year at academics amidst the difficult times of COVID 19... May you all shine bright and happy with your efforts



**Rev Dr Fr Benny Thomas**  
Director, SOET & SOA



**Rev Fr Jiby Jose E**  
Campus Director, Kengeri Campus



**Dr Iven Jose**  
Dean, School of Engineering  
& Technology



**Dr G S Hebbar**  
HoD, Mechanical and  
Automobile Engineering



**Dr James Sathya Kumar**  
Coordinator, Automobile Engineering



**Dr Pal Pandian P**  
Coordinator, Robotics and Mechatronics

## About the Department

The life of a student at Department of MECHANICAL AND AUTOMOBILE ENGINEERING has variety of hues and encompasses an exciting and challenging set of experiences. The core values of the department are to guide the students to develop their overall personality and make them worthy technocrat to compete and work at global level. Department has procured state of the art equipment like 3D Printer, KUKA Robot, FFT analyzer, Wind Emulator etc. to cater the need of both researchers and students. The students and faculty of Mechanical Engineering Department are challenged to go beyond the portals of the classroom, by involving themselves in project work, professional conversation and by participating in various technical as well as co-curricular events.



### Advanced Lab Facilities

- Nano and ceramic coating
- Surface Engineering
- Spray Drier
- 3D Printing
- Kuka Robo And FMS
- CNC with Hard-machining
- Industry Automation
- Renewable and Alternate Energy
- Modern Automotive Technologies

### Industry Demand Softwares

- CREO
- ANSYS
- SOLIDWORKS
- STAR-CCM
- MATLAB
- 3DEXPERIENCE CATIA
- SIMULIA Abaqus

### Research Thrust Areas

- Composite Materials and Coatings
- Alternate Fuels
- Welding Technology
- Hard Machining
- MR fluids
- Hybrid Vehicles



# PROGRAMMES OFFERED

## Undergraduate:

1. Bachelor of Technology in Mechanical Engineering
2. Bachelor of Technology in Automobile Engineering
3. Bachelor of Technology in Robotics and Mechatronics
4. Bachelor of Technology in Mechanical Engineering (Lateral Entry)
5. Bachelor of Technology in Automobile Engineering (Lateral Entry)
6. Bachelor of Technology in Robotics and Mechatronics - (Lateral Entry)

## Postgraduate:

1. Master of Technology in Machine Design
2. Post Graduate Diploma in Research Methodology (PGDR)

## Doctoral (PhD):

1. Doctor of Philosophy (PhD) in Mechanical Engineering

## Honors:

1. Digital Manufacturing

## Minors:

1. Robotics and Automation



## CU-MBRDI DAIMLER TRUCK TEAR DOWN FACILITY

The Christ University – Mercedes Benz Research and Development India Pvt.Ltd(CU-MBRDI), Bengaluru formally signed a MoU on August 2017 in establishing a Daimler Truck Tear Down Facility at Faculty of Engineering, CHRIST This facility is for the tear down of Daimler trucks starting with a Low Duty Truck (LDT) followed by Heavy and Medium Duty Trucks which involves the dismantling of trucks in sequence starting from cabin and Steering system, Engine Periphery, TransmissionSystem, Electrical System and Suspension and Braking Systems. This facility is basically for training the MBRDI employees and students and faculties of CHRIST

# FACULTY ACHIEVEMENTS

## FDP/QIP

S.No	Date	Faculty Name	Topic	Organizing Institution
1	23 <sup>rd</sup> to 27 <sup>th</sup> Aug 2021	Dr P Pal Pandian	AICTE Training And Learning (ATAL) Academy Online Elementary FDP on "Robotics: Advances and Applications"	Maharaja Agrasen Institute Of Technology, Delhi, 110086
2	23 <sup>rd</sup> to 27 <sup>th</sup> Aug 2021	Dr P Pal Pandian	AICTE Training And Learning (ATAL) Academy Online Elementary FDP on The role of Additive Manufacturing in the Era of Industry 4.0	Chennai Institute of Technology, Chennai-600069, Tamilnadu.
3	13 <sup>th</sup> to 17 <sup>th</sup> Sept 2021	Dr P Pal Pandian	AICTE Training And Learning (ATAL) Academy Online Elementary FDP on "Internet of Things"	JC Bose University of Science and Technology, YMCA Faridabad, Haryana
4	27 <sup>th</sup> Sept to 1 <sup>st</sup> Oct 2021	Dr P Pal Pandian	Sheetmetal Design in Solid Edge	ICT Academy
5	27 <sup>th</sup> Sept to 1 <sup>st</sup> Oct 2021	Dr Sajna P Panigrahi	Sheetmetal Design in Solid Edge	ICT Academy
6	27 <sup>th</sup> Sept to 8 <sup>th</sup> Oct 2021	Dr P Pal Pandian	Two Weeks National Level Virtual Faculty Development Programme on Advanced Materials and Manufacturing Technology	Department of Automobile Engineering, Easwari College of Engineering, Chennai - 600089, Tamilnadu.
7	4 <sup>th</sup> Oct 2021	Dr Ivan Sunit Rout	Applications of Artificial Intelligence and Machine Learning in Mechanical Engineering	SRM Institute of Science and Technology, Vadapalani Campus, Chennai-600026.
8	4 <sup>th</sup> Oct 2021	Prof Harish Kumar M	Applications of Artificial Intelligence and Machine Learning in Mechanical Engineering	SRM Institute of Science and Technology, Vadapalani Campus, Chennai-600026.
9	4 <sup>th</sup> to 8 <sup>th</sup> Oct 2021	Dr P Pal Pandian	5 Days FDP on Applications of AI and ML in Mechanical Engineering	Department of Mechanical Engineering, SRM Institute of Science and Technology, Chennai 600026, Tamilnadu.
10	18 <sup>th</sup> Oct 2021	Dr P Pal Pandian	Learning through virtual labs through technical institutions	Lendi Institute of Engineering and Technology, Vizianagaram-535005.
11	18 <sup>th</sup> to 22 <sup>nd</sup> Oct 2021	Dr P Pal Pandian	One week VFDP on Learning through Virtual Labs for Technical Institutions	Lendi Institute of Engineering and Technology, Denkada - 535005, in association with National Institute of Technology Karnataka Surathkal - 575025.



## WEBINARS/CONFERENCES

S.No	Date	Name	Topic	Organizing Institution
1	1 <sup>st</sup> Aug 2021	Dr Ivan Sunit Rout	Empowering Teachers to Integrate Technology: Challenges and Solutions	English Language Teachers Association of India (ELTAI), Chennai
2	2 <sup>nd</sup> Aug to 30 <sup>th</sup> Sept, 2021	Prof Darshan S M	Professional Development Programme on "Publications"	Centre for Research, CHRIST (Deemed to be University), Bengaluru.
3	5 <sup>th</sup> Aug to 7 <sup>th</sup> Aug 2021	Dr P Pal Pandian	Innovations in Online Teaching, Learning and Evaluation (IOTLE 2021)	Karunya Institute of Technology and Sciences, Karunya Deemed University, Coimbatore, TamilNadu
4	9 <sup>th</sup> Aug 2021	Dr Ivan Sunit Rout	All about Open Source Software for Teaching and Learning	Cheran College of Engineering, Karur, TamilNadu
5	13 <sup>th</sup> Aug 2021	Dr Ivan Sunit Rout	3D Printing- The Next Industrial Revolution	Department of Mechanical and Automobile Engineering, School of Engineering and Technology, CHRIST (Deemed to be University), Bangalore
6	13 <sup>th</sup> Aug 2021	Prof Harish Kumar M	3D Printing- The Next Industrial Revolution"	Department of Mechanical and Automobile Engineering, School of Engineering and Technology, CHRIST (Deemed to be University), Bangalore
7	13 <sup>th</sup> Aug 2021	Dr Sajna Parimita Panigrahi	3D Printing- The Next Industrial Revolution	Department of Mechanical and Automobile Engineering, School of Engineering and Technology, CHRIST (Deemed to be University), Bangalore
8	14 <sup>th</sup> Aug 2021	Dr Ivan Sunit Rout	Role of IEEE in Engineering - Various IEEE Societies, Standards and Data Center	IEEE Student Branch, School of Engineering and Technology, CHRIST (Deemed to be University), Bangalore, India
9	15 <sup>th</sup> Aug 2021	Dr Ivan Sunit Rout	The Need for Thinking Out of the Box	English Language Teachers Association of India (ELTAI), Chennai
10	21 <sup>st</sup> Aug 2021	Dr Ivan Sunit Rout	How AI is influencing the future of self-driving car technology	Imarticus Learning Pvt Ltd
11	23 <sup>rd</sup> Aug 2021	Dr Ivan Sunit Rout	Cost of Quality & Lean Six Sigma	Vision Excellence Pvt Ltd
12	23 <sup>rd</sup> Aug 2021	Prof Harish Kumar M	Cost of Quality & Lean Six Sigma	Vision Excellence Pvt Ltd
13	24 <sup>th</sup> Aug 2021	Dr Ivan Sunit Rout	Conquering the intricacies of citations and references	Wiley-India Pvt Ltd
14	24 <sup>th</sup> to 28 <sup>th</sup> Aug 2021	Prof Darshan S M	"Material Synthesis and Characterization - Research Prospectus and Optimization Techniques",	Department of Mechanical Engineering, in association with ISTE, IIC and IQAC-MVJ College of Engineering, Bengaluru,
15	27 <sup>th</sup> Aug 2021	Dr Ivan Sunit Rout	AI and ML for core Departments with focus on current Industrial trends	Department of Mechanical and Automobile Engineering, School of Engineering and Technology, CHRIST (Deemed to be University), Bangalore, India-560074.
16	27 <sup>th</sup> Aug 2021	Dr P Pal Pandian	AI and ML for core Departments with focus on current Industrial trends	Department of Mechanical and Automobile Engineering, School of Engineering and Technology, CHRIST (Deemed to be University), Bangalore, India-560074.
17	27 <sup>th</sup> Aug 2021	Dr Reghu V R	AI and ML for core Departments with focus on current Industrial trends	Department of Mechanical and Automobile Engineering, School of Engineering and



18	31 <sup>st</sup> Aug 2021	Dr Ivan Sunit Rout	Mastering the craft of academic writing: A systematic approach	Wiley India Pvt Ltd
19	1 <sup>st</sup> to 2 <sup>nd</sup> September 2020	Dr P Pal Pandian	Virtual international Seminar 2020	Associate Professor Dr Shahrul Nizam Isha Chair of Virtual International Seminar 2020.
20	7 <sup>th</sup> Sept 2021	Dr Ivan Sunit Rout	Metal-organic frameworks: Structural characterization for surface area, pore size and high-pressure gas storage	Anton Paar India Pvt Ltd
21	7 <sup>th</sup> Sept 2021	Dr Ivan Sunit Rout	Winning the game of publishing research papers, raising your profile, and extending the impact of your publications	Wiley India Pvt Ltd
22	9 <sup>th</sup> Sept 2021	Dr Ivan Sunit Rout	Award-winning NAAC Accreditation Data Management System	Inpods USA
23	14 <sup>th</sup> Sept 2021	Dr Ivan Sunit Rout	Attracting grants and funds for research	Wiley India Pvt Ltd
24	2 <sup>nd</sup> Oct 2021	Dr P Pal Pandian	Applications of AI and ML in Industry 4.0	RAMCO Institute of Technology, North Venganallur Village, Rajapalayam-626117, TamilNadu.
25	19 <sup>th</sup> Nov 2021	Dr P Pal Pandian	One Day Webinar on "How To Turn An Idea Into A Patent"	Department of Mechanical and Automobile Engineering, School of Engineering and Technology, CHRIST (Deemed to be University) Bangalore - 560074, Karnataka.

## RESOURCE PERSON

S.No	Date	Name	Topic	Organizing Institution
1	28 <sup>th</sup> Aug 2021	Dr P Pal Pandian	Evaluator for the Event IDEATHON in Returning Mothers Conference (RMC) 2021	JC Bose University of Science and Technology, YMCA Faridabad, Haryana <a href="https://www.runtheworld.today/app/c/ieee-rmc2021">https://www.runtheworld.today/app/c/ieee-rmc2021</a>
2	23 <sup>rd</sup> to 25 <sup>th</sup> Sept 2021	Dr P Pal Pandian	"Technical Review Committee Member" in the 2nd International Conference on Robotics, Intelligent Automation and Control Technologies (RIACT 2021)	School of Mechanical Engineering (SMEC), Vellore Institute of Technology, Chennai, India in association with Teesside University, United Kingdom. <a href="http://www.riact.co.in">http://www.riact.co.in</a>
3	2 <sup>nd</sup> Oct 2021	Dr P Pal Pandian	One Day National Level Webinar on "Applications of AI and ML in Industry 4.0"	Department of Computer Science and Engineering, RIT AI Research Group, Ramco Institute of Technology, Rajapalayam-626117, Tamilnadu.
4	8 <sup>th</sup> Oct 2021	Dr P Pal Pandian	5 Days FDP on Applications of AI and ML in Mechanical Engineering Title: Applications of AI and ML in Mechanical Engineering	Department of Mechanical Engineering, SRM Institute of Science and Technology, Chennai 600026, Tamilnadu.
5	29 <sup>th</sup> Oct 2021	Dr P Pal Pandian	Robot Operating System	GHOUSIA COLLEGE OF ENGINEERING, RAMANAGARAM
6	1 <sup>st</sup> Nov 2021	Dr P Pal Pandian	Writing and Publishing Scientific Research Articles in SCI Journals- A Framework	R.M.K College of Engineering and Technology, Thiruvallur-601206, TamilNadu.



# PUBLICATION & PATENTS

## Publications

1. Ravichandran G., Rathnakar G., Santhosh N. and Suresh R., A Comparative Study on the effect of HNT and Nano-Alumina particles on the Mechanical properties of vacuum bag moulded Glass-Epoxy Nanocomposites, Mechanics of Advanced Composite Structures (Scopus indexed), Vol.8, Issue 1, pp. 119-131, August 2021. ISSN: 2423-4826.
2. Ramesha K, Influence of Heat Treatment and Reinforcements on Tensile Characteristics of Aluminium AA 5083/Silicon Carbide/Fly Ash Composites (Scopus indexed), Vol. 14, Issue 18, pp. 1-27, September 2021. ISSN: 19961944
3. Dr Pradeep Kumar G S , Umesh V Dry Sliding Friction and Wear Performance of HVOF Sprayed WC-Co Coatings Deposited on Aluminium Alloy(Scopes Indexed), 9th September 2021, ISSN: 2250-2122, 2250-2130

## Paper Presented in Conferences

1. Dr. Reghu V.R., Telemedicine- Emergence of the New Digital Healthcare Platform , International Conference- "Renaissance: Challenges & Prospects of New Normal of Life in Various Spheres Surviving the COVID-19 Pandemic Era ( RENAISSANCE 2021) organized by School of Business & Management , CHRIST ( Deemed to be University), Bangalore, India on August 6 – 7, 2021.
2. Dr Ivan Sunit Rout, Dr P Pal Pandian, Dr Anil Raj, Mr Anil Melwyn Rego , Parametric analysis of control parameters for investigating the machinability of Inconel 718 using ceramic inserts of round type& presented in 3rd International Conference on Manufacturing, Material Science and Engineering (ICMMSE 2021), 24-25 September 2021, CMR Institute of Technology, Hyderabad.
3. Dr Anil Raj, J. Pratap Kumar, Dr Ivan Sunit Rout, Mr Hadiya Pritesh Dulabhai, Dr Shijo Thomas, Prediction of Friction stir welding parameters using Response Surface Methodology Won Outstanding Presentation Award in Third International Conference on Computing in Mechanical Engineering (ICCME 2021), 22-24 September 2021, SCMS School of Engineering and Technology, Vidyanagar, Karukutty, Ernakulam- 683576, Kerala.

## PATENT(S)

1. Ravikumar R, "Optimizing and diagnosis of Chiller Systems using Machine Learning", Indian Patent: 202141035122 ,The Patent Office Journal No.33/2021, Dated 13/08/2021
2. Gowtham Sanjai S,Dr Parvati Ramaswamy "Nano alpha - Al<sub>2</sub>O<sub>3</sub> particles Agglomerated by Spray Drying to Produce Free Flowing Powders Suitable for plasma spray coatings", Indian Patent: 202141035836 A , Dated :20/08/2021
3. Dr Parvati Ramaswamy , "A process to beneficiate  $\alpha$ -alumina and magnesium aluminate composite powder from black aluminum dross suitable for synthesis of refractory or sintered products", Indian Patent : 202141035837 A, Dated - 20/08/2021
4. Dr P Pal Pandian, Dr Ivan Sunit Rout "Development of multi-sensor smart robot for intelligent border security Surveillance system" Indian Patent: 202141033795 A, The Patent Office Journal No.32/2021, Dated 06/08/2021



Dr Parvati Ramaswamy



Dr P Pal Pandian



Dr Ivan Sunit Rout



Prof Gowtham Sanjai



Prof Ravikumar R



# PLACEMENTS



ADITHYA S  
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ALLEN VARGHESE  
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ASHLAY CHERIAN  
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SULEMAN AHMED  
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AHLAZ RAJA KEVI  
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JEFRIN  
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ASHWIN S  
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DXT TECHNOLOGY



MEHUL GUPTA  
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BANSI KUNAL SHAH  
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UNO MINDA



GUNA SAI S M  
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VEROLT



MICHELLE MARIE  
DE NORONHA  
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7BTME  
MORPHLE LABS



ARPIT NAG  
1861407  
7BTAE  
MBRDI (CAR)



JEAN MC DANIE  
1861472  
7BTME  
MBRDI (TRUCK)



AMAL BABY  
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DXC TECHNOLOGIES



SHARATH SURESH  
7BTME  
DXC TECHNOLOGIES





Art Work by **TENZING WANGMU (1861226), 7BTAE**

## A FORGOTTEN PROMISE



I was raving about triumphs when there was a downpour,  
 A downpour of blood, mush and tears.  
 We often forget, when lavishing over our victories the rationale of our gaiety.  
 I shudder to think of the pre independence wars,  
 Shudder the gallantry of our brave hearts.  
 They fought for their idols, they fought for their progeny.  
 But never for themselves, a metaphor for bravery.  
 One by one they fell to the sword-that sword of grisly hate,  
 But never once did they lower their heads,  
 Never once did they give up their place.  
 Each day that we live with pride,  
 Is the outcome of their sacrifice?  
 It thundered on that day  
 That day of deliverance.  
 Every drop of tear shed, every drop of blood,  
 Poured down as invisible beads of a deluge.  
 The doors of heaven lay wide open,  
 As every prayer was answered,  
 Every dream realized,  
 And every sacrifice promised a new beginning.



By **S. Narayana Reddy (2061223)**  
(3BTAE)



# VISHNU BHOWMIK'S EXTRAORDINARY EXPERIMENT

Almost every young millennium of the present generation admires scientific fantasies from various literatures and exposition mediums. But Vishnu Bhowmik was not very keen on having a faith in this kind of fictional theories established for mesmerizing those entertainment aspirants. He was more interested in exploring the real discoveries. The typical "Marvel Comics" strategy of justifying unexplained or impossible scientific concept is just introduce an alternative reality or just simply say "Quantum". This sounds very cool to discuss but these are confined with baseless logic and are very difficult to understand for a student of science like Vishnu Bhowmik. The 19-year boy was paying attention to his very first lecture in Engineering Class. The physics teacher was explaining about the relative frame of reference. Vishnu was fascinated by this new approach about space and time. An Absolute Frame which defines all the dimensions of any matter in space even the time, called "Ether" acts as a reference for all the physical properties and their movements acting in front of our eyes. Till that lecture he didn't knew that everything in this universe we are experiencing is not bound to be, as it is, as we think of it. They are all an illusion which is not absolute yet relative. The length of a solid pen he was holding has different magnitude with respect to another frame of reference which has indeed a different inertia, but they exists in the same time. Ironically time is also relative in both the frames and has different way of spending with respect to each other. After understanding the thorough derivation of Gallian and Lorentz Transformation of relative frames written on the black board and when the teacher explains the Michelson-Morley Experiment, something strikes very hard in Vishnu Bhowmik's mind. The Eisenstein's Theory of relativity was not an alien concept for him. He had already read about many incidents and stories in Mahabharata and Vishnu Purana where the relative frame's transformation of physical quantities can be seen. These concepts and theories have already been discovered in India thousands of years back. Like, when a king Kukudami tries to find a perfect husband for his daughter Revati, he travels many lightyears far crossing many universes and when he returned back he found that hundreds of years have already passed but he didn't aged a day which describes the theory of Time Dilation accumulating Twin Paradox. Here in another universe the speed of the king was near about the speed of light with respect to the earth and the time flows very slow for him but fast in earth. Another incident in which when " Bheem " one of the brothers of Pandavas was thrown in a wormhole to another galaxy by his enemy, after that when he came back, he was weighing ten times his original weight but his height decreased. This explains the concept of Length contraction and Variation of Mass from Lorentz Transformation. This lecture deeply influenced him and he spent rest of the two semester's sleepless nights researching about the applications of relativity. Till the end of his 3rd semester, Vishnu had already acquired sufficient knowledge about the Physical theories of mechanics of Solids, Thermodynamic laws and mathematical expressions which should be needed for executing his idea about the experiment on engineering application of relative Frames. He had already done the calculations, derived expressions and designed the model of a working PERPETUAL MOTION MACHINE. This idea was first introduced by an Indian Mathematician Bhaskaracharya II around 1159 A.D. He had made a self-rotating wheel consisting of curved blades filled with mercury. In Each blades, the mercury flows to the corner and make it perpetually heavier than the adjacent one and the wheel will continuously rotate itself. Today we can see this structure in fidget spinner. Vishnu had taken a fidget spinner for creating his model. This concept will perfectly work with first law of thermodynamics where the energy released by the weight of one of the wing of spinner will transform to the other wing in form of centripetal force and rotate it. But the problem arises here was the 2nd law which tell that the energy will be continuously releasing in the form of friction in the bearings of the spinner even in vacuum. How to overcome the release of energy from bearing. Here the concept of relativity comes into picture. His university has a large particle accelerator machine. on that machine an experiment was conducted for generation and stability of bosons from a Bose-Eisenstein condensate. That night he breaks into the lab and used that machine and conducted the experiment for providing higher velocity to the particles of the bearing of the spinner. But it was near about impossible to acquire the velocity of light. He wanted a buffer catalyst. For that he used boson particles generated from that machine already in a previous experiment. These bosons have ability to get speed of light. They strike the particles of bearing ring and the ring started to rotate till it gets the speed of light. Now from our frame of reference it is in motion but for its own individual frame of reference, it is in rest. So, the bearing ring in rest doesn't have any frictional contact with the atmosphere or with the axel of spinner. Here the release of energy does not happen.



The time also runs much slower for the bearing with respect to the axel so it will not rot for very long time for this reference frame. That overcomes the reaction of material with moisture and atmospheric conditions. He had already introduced a pressure plate connected to the bearing to disconnect the transmission of its motion and to reconnect it with the axel of the spinner. This plate acts as a clutch as the bearing must be rotated first without connecting the axel. This experiment worked on that model and now he had a perfectly working PMMC. Now he decided to make a larger machine. he created a spinner with a diameter of 5 meters. he was going to create history in the world of engineering and science. He started comparing himself with Jagdish Chandra Bose, and Albert Einstein. The moment he pressed the start button of that machine he said to himself with a huge sense of vanity – “I am the greatest Scientist of this Century”. The spinner started to rotate. After a minute suddenly the shaft holding the axel breaks, and the spinner fell in the ground. Many huge luminating light waves and energy beams came out of that spinner with a furious blasting sound. There was complete blackout. Vishnu got fainted out. Vishnu Bhowmik wakes up covered in dust and pieces of his machine. he was thinking where he had done his calculations wrong. He had calculated the torque produced in the axel, already overcame the distortion failure, managed the bending moment of the pole and the shaft holding the axel. Here one thing he missed. When the perpetual wheel rotates by the weight transformation to one side of the spinner, it also transfer the center of mass of that object. Here the bending moment he calculated was according to the original center of the spinner, but when the center shifted then the gravitational force also increases accordingly and the perpendicular distance from the shaft to the pole also changed. That’s why the shaft fails. He realizes his mistake and walks towards the spinner. He tried to hold the spinner, but his hand just goes through that object like air. He didn’t understand what just happened. He was trying to hold anything, but he can’t. He was just passing through every solid object. He couldn’t be able to make contact with any mass. Maybe due to the accident, the bearing which was in other reference frame had a junction breakage with his reference frame and he was accumulated on that junction and now trapped between the space time interface. He is not completely accommodated in any physical frame. That’s why none of the physical properties work on his body. He is not in a space yet he himself became a space. He is unbounded by Ether. Now he had to get out of this situation. How could he do? the machine which was a working in the system in which both reference frames were connected is now broken. He couldn’t repair it either. He was helpless and scared. He couldn’t be able to think of any solution. Suddenly he remembers that the small spinner which he had used as a model is still running. He can use that spinner for returning to his original orientation. He runs towards that smaller spinner. He can see it was running. He couldn’t be able to touch that either but he can touch the contact surface between the bearing and axel. Because it was the junction point of both the frames. But not from Y-plane but only from X plane. The only way to transmit to the original physical frame is to make the movement of bearing and the axel same with respect to other. For that the torque of bearing must be decreased. But it is rotating in Y direction and on that direction he can’t do anything. So he came up with this brilliant idea. He would push the contact surface perpendicular towards its principal axis. On the principal axis the shear stress will be zero and by pushing towards that direction the shear force starts to reduce. This also reduces the torque of the bearing because the rotation was in YZ-direction and then a point came where the velocity of bearing from its reference and the velocity of axel from respective reference frame became same and they got synchronized. On that particular moment, Vishnu Bhowmik who was in contact with the bearing got pulled out to the original reference frame along with the bearing. The Extra- Ordinary experiment Vishnu Bhowmik conducted was a near success but not conclusive. still his tiny brain has to understand the mystery and miracles of science. He realizes that he is not the greatest scientist of this century, no one is, but the Science itself.

END

**By SRIJAN DUTTA**

**2167203**

**1MTMD**





## RESEARCH IS FUN AND NOT SO NERVE RACKING AFTER ALL!

ARTICLE BY,  
DR PARVATI RAMASWAMY  
PROFESSOR



This article is based only on real life stories and not some hypothetical situations created to dramatize the contents. Better still, it actually re-lives the experiences of some of our own alumni's who once were our own department undergraduates. Some of those who will read this may also see themselves in the role performed by the main character in this story. What I am going to narrate is known to me so clearly because I have been a witness to this amalgamation of nervousness and excitement over many years. Honestly, I have also enjoyed the repeated scenario thoroughly because at the end of this seemingly harrowing journey was the bounce and thrill of self-satisfaction of achievement, self-revelation, promises of a rewarding future awaiting each one of those who went through the "research experience".

"Nerve – racking" was one term used by our hero, an under graduate student, just into his 5th semester, who was coerced into presenting a technical paper in front of an elite audience in an International conference, way back in 2017. Totally nervous, apprehensive and scared to the core – we may use any number of adjectives to describe the state of mind of this ~20 year old. The reason for the fear was not baseless. He was a student in the Mechanical Engineering Curriculum, performing research in Materials Engineering more out of curiosity and fancy than genuine interest in materials research. This was an alien field and right from his second year on, the evenings were filled with strange materials related terminologies. Powder processing, granulation, calcination, spray drying, plasma spraying, microstructure, cross section metallography, scanning electron microscopy, crystalline phase structure, X-ray diffraction, inter-planar spacing, sintering and so on and on the discussion his seniors in their final years and teachers deliberated upon. He was very excited and curious how papers are written, where to start and how to put in the sentences to convey the findings in a most comprehensive manner, check for plagiarised contents, find relevant references, finally go through the anxiety of writing the paper to the best of his/his team's ability, submit before the deadline, wait for acceptance, savour the joy of receiving the acceptance email, register for conference...everything was fun without much responsibility (he was after all a kid researcher) and evenings passed like a whirlwind dream. Conference dates came closer, coloured white, blue or yellow forms floated by, clamour for 85% attendance happened by not missing any class, permission from hostel obtained, train /bus reservation done, envious class mates because he could officially bunk classes with attendance taken care of; travel with other paper authors (fellow students) was lots of fun as well. Although our student in the picture had sincerely carried out a lot of experiments after class hours in the 4th block mezzanine floor, visited industries and other research labs, gone through the excitement of learning newer things, lived through many boring repetitive days, waiting anxiously for the research results etc. etc. as is usual with any research activity, never did he expect that one day he would be facing this situation of presenting a paper where his friends/research partners could not somehow attend the conference. He had always been told that in the first time conference participation, he will only attend and see his seniors or teachers present the papers. Well not a surprise that our man earnestly wished that the earth would just open up and devour him into oblivion and send him back to the surface after the valedictory function of the conference was over.

Well, nothing so dramatic happened in real life. The student walked onto the stage visibly exuberating a confidence he felt the least, began with a few stutters and thereafter the flood gates of a wonderful technical oration were thrown open to the audience. The 15 minutes presentation was a precisely crafted metaphor of a well-articulated materials research paper followed by a series of questions and answers from the audience which were fielded by our man with mastery on the topic. Man, was I proud? An understatement, I hugged him with pride and joy and could see the red happy face beaming with happiness knowing that he really had presented his paper with flying colours any seasoned researcher would have. Ma'am, he exclaimed "once I started my presentation, I almost became a teacher, better still, I was able to look at everyone in the audience right face to face, felt proud to explain my research work because it was something I had worked on myself, it was my own research work".



The realisation that it was not necessary to have a master's or doctorate degree to make small but valuable research contributions had finally dawned on our friend: what is needed is sincere interest, motivation and commitment. It was not at all nerve racking any more. With good grip on the research he had performed, who had gone through the grind of performing meaningful work and really understood the science behind it by real life experience and not as a classroom theory class, the 5th SEM undergraduate had evolved. He had evolved so much that went on to present many more papers in the remaining months, made valuable contributions in material research, and most importantly emerged victorious in overcoming the self-created battle of doubt, incompetence and inferiority complex within himself.

Just a few years ago a curious but inhibited researcher, nearing the end of teens, who was happy to do something outside the regular class, today is not only an extremely proud CHRISTITE (isn't "once a christite forever a christite" true?), but also pursuing masters in materials research thousands of miles away from home and all set to become the proud alumnus of a University of International repute. Crediting his participation in undergraduate research as foundational to where he is today, our timid 20 year old of yesteryears is a super confident young researcher today. He goes on to claim that the experience as an undergraduate to "fail a lot", "fear a lot" and expand on the learning techniques was an eye-opener into what the world has to offer. The "not to be missed research opportunities" to the motivated and committed young undergrads are an integral part of being prepared for and getting through the latter years in either a career or advanced learning with utmost ease and high level of competence.

And so, Research is Fun and Not so Nerve Racking after all! All are invited to join the fun in any area of research of their choice. Give it a try, maybe it will become the game changer of your life as it has done for many alumni's of our department.

## SPRAY DRYER MODEL - SPD-P-111

The Laboratory 'Spray Dryer' Facility, procured under a Major Research Project, MRP ENG 1705 was installed in the Advanced Materials Laboratory, Bangalore Kengeri Campus of CHRIST (Deemed to be University) on November 29, 2019. Spray dryers basically convert liquids to solids i.e. free-flowing powder. It is done by removing the moisture content of a liquid. Spray dryers are widely used in the ceramics, food and pharmaceutical industries. Specific applications are making milk powder, coffee powder, in the pharmaceutical industry in the form of antibiotics, medical ingredients and in the food industry as food additives. Some of the daily life uses of spray dryers are instant drinks like Rasna juice, milk and soup powder.

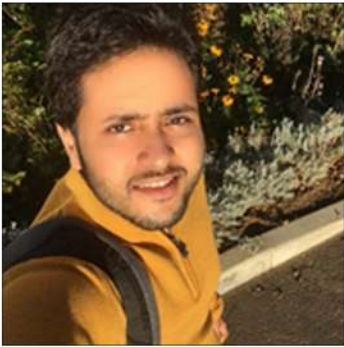
The powder is non-sticky, and once added with water, the powder mixes very well; this aspect is very useful in the making of solid medicines that get absorbed by the cells very easily. The model used in CHRIST (Deemed to be University) is a laboratory-scale model and is used for small scale research. The model can run for 8-10 hours a day and produces 50-100 grams of powder a day.

The vision behind this investment is to support the research of spray dryers in the engineering field and to promote research in pharmaceuticals as well as food companies. Department have bought this equipment also have experts who have an experience of working with the same technology.





# HIGHER STUDIES



**OMKAR RAO, 2016**

**CRANFIEL UNIVERSITY, Ranked 79th in the world: QS ranking, MSC AEROSPACE VEHICLE DESIGN**



**KEVIN VATTAPPARA, 2016**

**KTH SWEDEN, Ranked 98th in the world: QS ranking), MASTER'S PROGRAMME, ENGINEERING MATERIALS**



**KRISTO TOM, 2016**

**UNIVERSITY OF WOLLONGONG, AUSTRALIA, Ranked 154th in the world: QS ranking, MASTER OF SCIENCE - SUPPLY CHAIN AND PROJECT MANAGEMENT**



**AMAL MATHEW, 2016**

**UNIVERSITY OF TECHNOLOGY, SYDNEY, Ranked 142 in the world: QS ranking, MASTER OF ENGINEERING IN MANUFACTURING ENGINEERING AND MANAGEMENT**



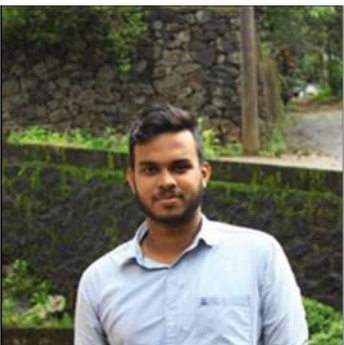
**ABIN JOSEPH, 2017**

**UNIVERSITY OF WINDSOR, CANADA, Ranked between 651-700 in the world: QS ranking, MASTERS IN MECHANICAL ENGINEERING**



**ASWIN SHAJI, 2017**

**UNIVERSITY OF TECHNOLOGY, SYDNEY, Ranked 142nd in the world: QS ranking MASTER OF ENGINEERING MANAGEMENT**



**SEBIN PRAKASH, 2018**

**THE UNIVERSITY OF AUCKLAND, Ranked 83rd in the world: QS ranking, MASTER OF ENGINEERING**



**CLEMENT FERNANDEZ, 2018**

**UNIVERSITY AT BUFFALO, USA, Ranked 340th in the world: QS ranking MASTER OF ENGINEERING BY RESEARCH**



**FEBIN JOSEPH, 2018**

**UNIVERSITY OF WAIKATO (Ranked 266th in the world: QS ranking) MASTER OF ENGINEERING**





**CHRISTY A LUKOSE, 2019**  
**ROYAL MELBOURNE INSTITUTE OF TECHNOLOGY** Ranked 238th in the world:  
 QS ranking) **MASTER OF ENGINEERING (MANAGEMENT)**



**VISHWANATH ASHISH, 2019**  
**CARDIFF UNIVERSITY,**  
 Ranked 154th in the world: QS ranking  
**MSC IN BUSINESS STRATEGY AND ENTREPRENEURSHIP**



**MANOHAR JOEL MURA, 2020**  
**CRANFIELD UNIVERSITY,** Ranked 29th in the world: QS ranking One among 11 universities funded by NASA, **M.SC IN ASTRONAUTICS AND SPACE ENGINEERING**



**DANISH KHAN, 2020**  
**SWANSEA UNIVERSITY, MASTERS IN MECHANICAL ENGINEERING**



**MR KRISHNAUNNI M**  
**BATCH: JUNE 2021**

## **PhD Scholar**

Research Area : Welding Technology & Material Science  
 Supervisor: Dr. Shijo Thomas  
 Proposed Title: Characterization of mechanical & metallurgical properties of the weld between Austenitic stainless steel & Ferritic stainless steel using Laser beam

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## **PSO'S BTECH IN MECHANICAL ENGINEERING**

1. Design, Analyze and Evaluate Mechanical components through domain specific knowledge, experimentation and software tools.
2. Identify, Analyze and demonstrate the attributes of modern machining processes, tools and materials for manufacturing of mechanical systems and components.
3. Investigate thermal systems by modeling and analysis through modern simulation techniques and tools.
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## **PEO's BTech in Automobile Engineering**

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2. Provide students with the necessary instruction and practical experience to work well in a team and multi-disciplinary environments and to be effective in written and oral communicators, both for communicating ideas, mentoring, and for learning from others.
3. Produce graduates who have an understanding of continuous learning, ethical responsibility and service toward their peers, employers, society and follow these precepts in their daily lives

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1. Analyze, design and evaluate various Automobile components and systems using CAE Tools.
2. Develop the ability among the students to synthesize data and technical concepts for Automotive components design.
3. Understand the concept of Electrical, electronics and control systems used in Automobile Engineering.
4. Learn and apply the concept of hybrid vehicles, Alternative fuels, vehicle Maintenance and servicing in Automobile industries



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