



Mechanical

Aspire

Achievements in Sports, Projects, Industry, Research and Education

All About Nobel Prize- Part 56

Tracing Using Isotopes

George de Hevesy was born in Budapest on August 1st, 1885. After graduating from the Gymnasium of the Piarist Order, George de Hevesy studied at Budapest University, Berlin Technical University, and the University of Freiburg in Breisgau. Following that, George de Hevesy worked at a number of European universities. He was granted a professorship at Freiburg University in 1926, but later fled Nazism in 1934, arriving first in Copenhagen before moving on to Stockholm in 1943, where he worked at the University of Stockholm until his death.

His early investigations involved a study of the chemical behaviour of molten salts and his introduction to practical radiochemistry came in Rutherford's laboratories at Manchester. His work there, and later in Vienna and Budapest, mainly concerned the investigation and use of radium and lead isotopes.

In Copenhagen, de Hevesy's researches were initially concerned with isotopic separations and in 1923, together with Coster, he discovered the element Hafnium. He was responsible for pioneer work in the use of isotopic indicators both in inorganic and life sciences and later, in Freiburg, he was involved in the first clinical use of isotopes. On his return to Copenhagen, he demonstrated the formation of new artificially radioactive isotopes and subsequently introduced a method of activation analysis based on neutron bombardment of the element to be investigated. This method was to replace X-ray analysis with fluorescent X-rays which he introduced during his stay in Freiburg. The year 1934 saw the beginning of numerous investigations in the field of plant and animal physiology, using labelled atoms: these researches were supported by generous grants made by the Carlsberg Foundation, the Rask-Ørsted Foundation, the Rockefeller Foundation and others.



George de Hevesy

His work in Sweden has continued on the same lines and he has studied, amongst other things, the effect of X-rays on the formation of nucleic acid in tumours and in normal organs, and iron transport in healthy and cancerous organisms; this work is supported by the Swedish State Research Council and the Wallenberg Foundation.

Professor de Hevesy is the author of several important books on radiochemistry and his many scientific papers are valuable and accurate records of devoted work. He was awarded the Cannizzaro Prize (Academy of Sciences, Rome) in 1929, he was the Copley Medallist (Royal Society, London) in 1949, Faraday Medallist in 1950, Baily Medallist in 1951 and Silvanus Thompson Medallist in 1955. In 1959 he received the Ford Foundation's Atoms for Peace Award Medal, in 1961 the Niels Bohr Medal and the Rosenberger Medal of the University of Chicago. Honorary degrees conferred upon Professor de Hevesy include Doctor of Philosophy, Uppsala, Freiburg, and Copenhagen; Doctor of Science, Ghent, Liège, London, and Capetown; and Doctor of Medicine, São Paulo, Rio de Janeiro, Turin, and Freiburg. He is a Fellow of the Royal Society (London), the Swedish Academy of Sciences, Gothenburg Academy, and eleven other scientific academies. He is Honorary Fellow of the Chemical Society

(London), the Royal Institution (London), the British Institute of Radiology, the Finnish Chemical Society, the German Bunsen Society, the German Physiological Society, the Chemical Society of Japan, and the American Society of Nuclear Medicine. In addition, he holds honorary memberships of many more learned societies.

Watch video: [Tricking the Nazis and Transforming Medicine: George de Hevesy](#)

Quiz:

In earlier years, inventions were often recognised with Nobel Prizes. Which one of these inventions is NOT Nobel Prize awarded?



a) The Transistor



b) The Laser



c) The Dynamite

Answer: [Refer last page](#)

Source: nobelprize.org

Info to Alumni- Campus Update

The FIFA world cup Final match (France Vs Croatia) was live telecast at the Justice Pratap Singh Auditorium on July 15. The event was received well by the students, filling the auditorium with a lot of excitement and fun. The Quarter Final match (Uruguay vs France) was also telecast live on July 6th.

External Recognition

Dr. KSV writes...

A team of faculty members from SSN College won a TV game show named "Zhagaram" conducted by Podhigai TV, Doordarshan. The game show is conducted live on Saturdays, and this opportunity came through the Tamil Saral mandram students at SSN. The runners up were faculty of DB Jain Arts and Science college. The faculty decided to contribute the first prize of Rs.10,000 towards the SSN Tamil Saral Mandram activities.

The faculty members are:

Dr. K.S.Vijay Sekar and Mr. C. Arun Prakash from Mechanical Engineering

Dr. R. Sundareswaran and Dr. S. Sampath Kumar from Mathematics Dept.

Dr.R. Anantharaj from Chemical Engineering and Dr. A. Chandrasekaran from Physics Dept.



Faculty team wins in TV show

Other Department Roundup

An MoU for a Master of Science program in Biomedical Engineering between SSN College of Engg and Drexel University, Philadelphia, USA, has been signed on May 21, 2018. People pursuing this MS program will finish their first year at SSN college, followed by another year at Drexel university.

Info to Alumni- Department Update

External Recognition

Dr.D.Ananthapadmanaban, Associate Professor, Department of Mechanical Engineering reviewed the following papers to be presented in CMSE 2018 International Conference in China, December, 2018

1. Effect of Density on Powder Metallurgy Material Shaped Charge Jets Perforation Performance [09.07.2018]
2. Study on critical infiltration behavior and law of liquid Aluminum alloy in carbon fiber preform [13.07.2018]



Dr. D. Ananthapadmanaban, Associate Professor, Dept of Mechanical Engineering reviewed a paper titled "Characterization and Mechanical Behaviour of Zirconia Reinforced Aluminium Matrix Nanocomposites Fabricated through Powder Metallurgy Technique" to be presented in AIMTDR International Conference to held at Anna University during December, 2018. [10.07.2018]



Dr Ramana A.S

Dr. M S Alphin, Associate Professor/ Mech. Presented an invited lecture on Dynamic Systems at Mohamed Sathak AJ College of Engineering, Chennai [14.07.2018]
Dr Alphin M S, Associate Professor/ Mech., delivered an invited Guest Lecture on Vibration at St Joseph's Institute of Technology, Chennai [03.07.2018]



Dr M.S Alphin

Dr. Ramana. A.S, reviewed technical paper for Energy Conversion and Management Journal. [19.7.2018]

Dr.L.Poovazhagan, Assoc.Prof./Mech., delivered a guest lecture at St Joseph's Institute of Technology, Semmancheri for final year Mechanical Engineering students on the topic of Nanocomposites. [02.07. 2018]



Research Publications

Dr. Alphin M S, Associate Professor Published a book titled, Bio-dynamic response in tracked excavators, Lambert Academic Publishing, 978-613-8-38667-4, 2018 [01.07.2018]

Dr.L.Poovazhagan, Assoc.Prof./Mech., published a research article titled "A decision making trial and evaluation laboratory approach to analyse the challenges to environmentally sustainable manufacturing in Indian automobile industry", in the international journal of 'Sustainable Production and Consumption' (Elsevier) with Source Normalized Impact Factor 1.161. [04.07.2018]

Arthur Jebastian Sunderraj and Dr.D.Ananthapadmanaban, Associate Professor have sent a paper titled "Feasibility of the use of Zirconia based Nanocoolant for Machining", which has been accepted for publication in the International Journal for Innovations in Engineering and Technology (Thomson Reuter indexed), Volume 10, Issue 4, July 2018 [23.07.2018]

K.Rajkumar,(Associate Professor) published the following papers in the international journal, Materials Today: Proceedings 5 (2018)

1. Effect of Abrasive Waterjet Machining Parameters on Hybrid AA6061-B4C- CNT Composites, [13438–13450] Co-authors: A.Gnanavelbabua, P.Saravanan, S.Karthikeyan, R.Baskaran
2. Experimental Investigations on Multiple Responses in Abrasive Waterjet Machining of Ti-6Al-4V Alloy, [13413–13421] Co-authors: A.Gnanavelbabua, P.Saravanan, S.Karthikeyan
3. Preparation of Super Hydrophobic Loofah Sponge for Fast and Efficient Separation of Oil from Seawater, Materials Today: Proceedings 5 (2018) [14367–14374], Co-author: S. Diwakar



Department Activity



Dr R Prakash

Dr.N.Nallusamy, Professor and Dr.R.Prakash, Associate Professor, conducted the Interactive Academic Seminar on “Past Present and Future Challenges faced by Exhaust After Treatment systems for Diesel and Gasoline Engines” for UG (Mech & Chemical) & PG (Energy & Environmental Engg.) students. [05.07.2018]

Dr.R.Prakash, Associate Professor, Faculty Adviser SAEINDIA SSN CE Collegiate Club, BAJA SAEINDIA 2019 Virtual Round. [12.07.2018 to 14.07.2018]



Dr Nallusamy

Dr. N. Lakshmi Narasimhan and Dr. M. Nalla Mohamed, Associate Profs, jointly organized a guest lecture on 17.07.2018. The invited speaker was Mr. S. Muralidharan, Int'l Business Consultant who delivered a lecture on Career Prospects in Python and R Programming. [17.07.2018]



Dr Nalla Mohamed

PhD Viva Voce

R.Vimal Samsingh , Asst Professor , completed his PhD Viva Voce examination on the Topic 'Modeling and Characterization of Planar Microwave Sensor for Fault Diagnosis using Non-destructive testing on 20-7-2018 at CEG, Anna University [20.07.2018]

Industry Interaction

Dr. N. Lakshmi Narasimhan, Assoc. Prof/Mech, had a first round of discussion with Mr. Ajay Joshi, Murugappa Morgan Thermal Ceramics Ltd. (MMTCL) regarding a technical project, which the company is interested in to carryout jointly. [24.07.2018]

Dr. N. Lakshmi Narasimhan, Assoc. Prof/Mech, had a project discussion with Mr. Kumarasubramaniam (Sr. GM, L&D, TI - IIC, Avadi, Chennai). The progress of the ongoing industrial project was discussed. [09.07.2018]

Dr. N. Lakshmi Narasimhan made a presentation to the CII Manufacturing panel on his industrial Faculty Internship at TI Industries during their visit to SSN campus. [13.07.2018]



Dr N Lakshmi Narasimhan

MoU

Dr. N. Lakshmi Narasimhan, Assoc. Prof/Mech, got an MOU signed between SSN and Barola Technologies (National Drone Academy) for organizing Joint Certification Programmes at our campus.[09.07.2018]

Dr. N. Lakshmi Narasimhan got an MOU and NDA signed between SSNCE and Preethi Kitchen Appliances[16.07.2018]

Student Activity

D Vishal, Internship at Tube products India [10/05/18 to 15/08/2018]

Vimaleswar Babureddy, Internship at IIT Madras under Dr.Piyush Shakya[10/05/18 to 10/07/18]

BMW donates engine to SSN

Info from Dr. R. Prakash...

BMW had announced a Skillnext program for technical skilling initiative, with an aim to enhance the understanding of automotive technology.

We had applied for this scheme in January 2018. In connection with this, they supplied a Twin Power Turbo In-Line 4- Cylinder Diesel Engine with 8 Speed Steptronic Automatic Transmission on 13.7.2018. It is completely free of cost. The given engine and transmission assembly is only for demo purpose. It will help our students to enhance their knowledge on current technology in the field of automobiles. Our sincere thanks to BMW team



Industry Interaction

The meeting of the Manufacturing panel of CII Chennai Zone was hosted at SSNCE on July 13, 2018.

Partial list of Members present:

- Convenor Mr. N.Anbuezhian- GM, Caterpillar
- Mr.R.Umashankar, Sr,Manager production, Danfoss industries ltd
- Mr.N.Mohan, JMD, Formulated Polymers Ltd
- Mr.R,Babu, Director Business development, Automotive product group Asia- Johnson Electric
- Mr.R.Anandakumar, GM-TQM, Schwing Stetter India Pvt Ltd,
- Mr.R.Kannan, CII representative
- Representative of Grundfoss pumps



After the usual CII monthly meet, SSN was given the opportunity to present its work. Our theme was to showcase how useful internships can be at industries.

- Dr.N.Lakshminarasimhan shared his experience as faculty intern at Tube Investments Ltd along with Mr.Kumarasubramaniam GM-Learning and development. After a week of visit to all the factories, Dr.NLN had listed out 20 possible projects that can be taken up by students as interns, in the area of energy savings. The very idea was awarded Best Practice Award at The Murugappa group Annual Best Practices Meet.
- Dr.AK.LakshmiNarayanan shared his experience of interning with TI Metal Forming on the use of Friction stir welding for solving some of the industrial issues.
- Dr.S.Sureshkumar shared his experience of mentoring two batches of students who won the Valeo innovation award. It was to explain the extent to which students can go to establish an idea and its proof of concept.
- Mr.T.S.Murali, final year student who has done a few internships, shared his experience of solving problems at industries during internship.

The visiting CII team was quite happy about the extent of work and the enthusiasm prevailing in campus on taking up industrial work. Sr.Manaer Placements-Mr.A.S.Sriram joined us for lunch and had a chat with the visiting delegates.

After lunch, the visiting team wanted to see our Research Facility.

Dr.AKL describes what happened at the lab

Five experts from caterpillar, Danfoss, and others visited our research lab to see the research work related to friction stir welding. We had displayed various samples welded by friction stir welding processes for the following applications.

- a) Friction stir welded dual phase steel top hat sections and crashworthiness testing for automotive applications.
- b) Friction stir welded P92 steel for nuclear applications
- c) Friction stir welded Heat Sinks with Al-Cu Interface for Electronic Industries
- d) Friction stir back extruded Magnesium alloy tubes for Biomedical applications.
- e) Friction stir welded 409M-304 dissimilar joints for rail coach applications.



The experts had asked a few clarifications on how the different geometry can be joined by this process and I have shared my experience with them.

After this lab visit, the R&D head of Danfoss was interested to see the friction stir welding process. The demonstration on friction stir welding of magnesium alloy was given. He also invited me to initiate a research work and to check the feasibility of FSW process to one of their products.



Acknowledgements:

Our sincere wishes to the CII team who visited and to those who could not visit but wished us well. It was Mr. Babu of Johnson Electric, who initiated the idea of meeting outside CII office. Thanks to our Management who readily accepted to host the team for lunch. Our Placement coordinators did a good job of managing the show like a placement visit. -VeA



Faculty Write up

Mr R Vimal Samsingh writes..

PhD Viva Voce

Mr R Vimal Samsingh defended his doctoral dissertation on the title “Modeling and Characterization of Planar Microwave Sensor for Fault Diagnosis using Non-Destructive Testing” on the 20th of July 2018 at College of Engineering, Guindy, Anna University.

The research was focused on the area of Non-Destructive Evaluation (NDE). Several non-destructive testing techniques like Radiography, Ultrasonic, Eddy current testing and Infrared method are available in practice. Most of the mentioned methods are best suited for homogenous conducting material.



In recent past, there is extensive usage of composite material for industrial application which are heterogeneous in nature. A unique testing method is required for every type of material to be tested and the possibility of using microwaves for non-conducting and heterogeneous material was explored. The research investigated the use of planar microwave sensors for non-destructive evaluation that addressed threefold application.

The first application was the use of planar microwave sensors for characterizing the properties of non-conducting materials. Secondly, detection of faults or defects such as delamination, cracks etc. in materials was done using microwave planar sensors.

To exploit the major advantage of microwave non-destructive evaluation, the study was limited to use of these sensors on non-conducting materials. The possibility and precision of planar microwave sensors was firmly established through appropriate mathematical models and novel feature extraction algorithms.

Finally, microwave systems aimed at diagnosis in the healthcare industry were developed and implemented.

Curriculum revision - Autonomous R2018

As part of Autonomy status, SSN was conferred the right to modify its curriculum and syllabus. Each dept has its own Board of Studies to advise on curriculum changes. The final approving authority is the Academic Council.

Accordingly, the SSN mech team worked out a modified syllabus and presented it for approval to the Board of Studies on 6-7-2018.

Members of the Mech Board of Studies:

Prof S.Iniyan ,CEG, Anna University

Prof G. Venkatarathnam, IITM, Chennai

Prof. N.Alagumurthi, Pondicherry Engineering College

Mr.S.Viswesh, CEO, SVP Lasers Ltd.

Mr.S.Santhosh, Research Scholar, IITM
(Distinguished Alumnus)

After incorporating the suggestions by the Board of Studies, the improved version was presented to the Academic Council on 13-7-2018. As suggested by the Academic Council, the syllabus and curriculum have been revised and sent for their approval.



Photo courtesy Dr.M.S.Alphin

Faculty Write up

A write up by Dr. M S Alphin...

Collaborative industrial project testing

A collaborative project work was carried out by Dr. Alphin M S and Dr.M.Selvaraj for Mixer Grinder Noise and Vibration monitoring / optimization. The following are the test carried out in our Dynamics lab for diagnosing the Vibration Characteristics of Mixer Grinder provided by Preethi Kitchen and Appliances

- Natural frequency of segmented parts
- Mode response
- Damping
- Transmissibility



Dr. M S Alphin



Dr. M Selvaraj

The results and outcomes were shared to the Company.



Faculty Write up

Dr.R.Prakash writes...

Guest Lecture

A Guest Lecture was organized on “**Past, Present and Future Challenges faced by Exhaust After-treatment Systems for Diesel and Gasoline Engines**” in Central Seminar Hall, ECE Department. Dr.Bharadwaj Sathiamoorthy, Vice President & Co-Founder, US Convertors and Cleaircat Inc., USA delivered the talk.



Faculty Write up

Workshop on Design Thinking by Dr.Srikanth Vedantam, IITM on 26-7-18

Dr.Srikanth Vedantam is Head of Engg Design dept of IITM. With an MS in Penn State University and a Ph.D from MIT, US, Dr.Srikanth Vedantam has a rich experience in Design Thinking. He has played a vital role in incorporating concepts of Design Thinking in the curriculum of Engg Design dept of IITM. He was invited to enlighten SSN Faculty on Design Thinking and how to introduce this concept in Curriculum Design. The deliberations in brief are highlighted here-- VeA

In general, engineering graduates are good at Analysis-that is, breaking down a product and analysing why what works. But a similar capability is not prevalent in putting things to work in the first instance. The strength is in applying concepts to identify 'What went wrong?', but not in creating new things. This capability can be systematically developed by invoking Design Thinking principles.

A good curriculum should enable students to think of Societal needs. For example, a portable dishwasher maybe assembled with some motors and holding fixtures-but whether this will be light enough for a user to lift and use, is what matters. If this aspect is not considered in the design, then it is not useful.



Photo courtesy Dr.M.S.Alphin

Design is not merely doing things-it has to be people oriented. People who will be affected by what you make, are all your clients.

Scientists create explanations of how Nature works. Engineers create products using these explanations. They have to create products that meet the Societal needs and work within the prevalent restrictions.

In general, everyone is driven by intuition and always rush to a decision. Subconscious mind then starts justifying the decision with whatever data is available. The key is to use Maths and Science principles to get rational decisions driven by data and logic.

An Inventor can create things. An Engineer can convert this into 'safe to use' and 'with a predictable behaviour.' We should be able to see both the need and the want. Need is essential and want is desirable.

The Design Philosophy consists of several steps.

1. Abstraction of the need- Eliminate solution specific details. Define problems in solution-neutral terms. Convert Quantitative into qualitative. Question and eliminate fictitious constraints.
2. Critical parameter identification-identifying 'make or break' issues, critical constraints and critical parameters.
3. Questioning why and why not -interacting with the customer to get more in-depth info.

A concept called Functional Decomposition can also be used.

The general principles of design Thinking are

1. Empathise - involve the customer
2. Define - identify customer need
3. Ideate - design methodology
4. Prototype - perform the design
5. Test - involve the user in testing the product -iterative nature of process

Incorporating Design Thinking into regular curriculum

DT can be invoked by two methods

1.Offering a large team project in the first year itself, before starting any course.

Then the student starts learning every course with a purpose, trying to apply the concept to the product he has to complete.

2.Incorporating small project components into each course

At the beginning of a course, a vaguely defined problem can be offered. Student tries to redefine the problem as he learns the subject. Care needs to be taken in defining a problem that utilises concepts he would learn in that course.

For example, if the course is "Design of machine elements", the problem statement can be something like "Develop a device that I can use to do exercise at home and then use the energy stored to drive my bicycle".

If the course is Fluid mechanics, the problem could be "Develop a system that can enable a pump to run without electricity". By talking to users, the student has to develop the horsepower needed for the pump and from there on, the design starts.

For just applying an equation, an engineer is not needed. His role is to define a vague problem and then start developing a solution.

Discussion on how to implement in SSN mech

1. Students can be made to brain storm on possible application areas for the course that they are learning.
2. Students can be encouraged to do some hands-on modeling out of cardboard or thermocol to understand how mechanisms work.
3. Design and fabrication project could be a platform for Design Thinking.

Action Taken

The 6th semester "Design and Fabrication project" was identified to be an ideal platform to introduce DT. Currently, students pick up arbitrary projects for fabrication. Some faculty offer patentable ideas for fabrication, based on perceived needs. But no one looks at real Societal needs. Prof. Srikanth appreciated this idea and we have attempted to build this into our curriculum.

Changes made in curriculum (submitted for approval to Academic Council) -

Design and fabrication has been substituted with Design Thinking Practice Lab I and Lab II, spreading over sixth and seventh semesters.

In DT Practice Lab I, students will cover Empathise, Define and Ideate phases and come to a conclusion on what they want to fabricate. This will be treated as Phase I of D&F project.

In 7th semester, they will execute the fabrication (prototyping) and check its working (testing). This will complete the DT in full.

With this experience, students will have one more opportunity to try DT principles in their 8th semester final year project also, which need not be fabrication based. It can even be redesigning an existing product through DT principles.

Internship at Linktech Engineering Private Limited

Jayakumar T and myself are final year students of Mechanical Engineering. Together, we interned at Linktech Engineering Private Limited. The company is a manufacturing unit based out of Chennai. The company manufactures grab bars, stepped bars and other support mechanisms. We worked as project interns in the 'New Product Development Team' of the company. This team was headed by the Deputy General Manager, Mr.A.Srinivasan. We had the technical consultant of the company, Mr.N.Eganathan help us in problem solving. We worked on fabrication of an 'Automated Grab Bar' unit. The grab bar would be installed in a toilet adjacent to the pot. This unit would ideally be helpful for differently abled people and patients. The grab bar was an amalgamation of Mechanical discipline and Electronics discipline. The grab bar comprises of a support system to support the patient and houses an electronic unit possessing sensors to detect the patient's pulse and send a signal to, say an attendant, indicating the patient needs help.



The work is still on. The internship gave us a wonderful perspective. It translated the theory that we already learnt into real time fabrication. Also, something that we experienced was 'learning on the go'. We had no clue about certain design calculations. We had to go back, learn the underlying concept and put it to application. The one-month internship (ongoing) filled the lacuna between college and Industry. We received constant support from faculties to friends to, very importantly, workforce of the company. Amidst this, the major takeaway was to get a real feel of what it is to be part of a shop floor ecosystem and understand the fundamentals of how a supply chain works.

Printed Electronics

Printed electronics is a set of printing methods used to create electrical devices on various substrates. These substrates are usually semiconductors, polymers, nanocomposites, etc. Printed electronics is characterized by its low-cost, low-performance for applications such as flexible displays, smart labels, decorative and animated posters, and active clothing that do not require high performance. The heating jackets use this very technology for low cost and efficient heating. Printed electronics are usually made on strips. These strips have a coating of the material that is conducting or semiconducting in nature. The underlying physics of heating is the Joule Heating phenomena where heating is caused due to the dissipation of the electrical power.



This technology is also used in cars. There is an exciting concept of smart glass and windows that depend on this technology. To give an example, the newer cars have printed circuits on the windshield. Humidity control in cars is a major problem and printed electronics is seen as a way to solve it. During rainy days, water vapor condenses on the windshield and hinders the view of the driver. The conventional solution is to wipe the glass. But, now with printed circuits which are transparent in nature, joule heating effect can be employed and the resistive heating can lead to temperatures of 100 Degree Celsius. This will cause the water vapor to evaporate. The voltage required sometimes is just 10-20V. This is why printed electronics is needed, to solve such problems.

One other interesting application is in the Photovoltaic Cells. If the printed circuit is made transparent and the conductivity is increased by some means, then the current induced for the same voltage can be increased resulting in increased power. Printed electronics is also considered future of PV energy.

Prof Parasuraman Swaminathan from the Printed Electronics Group, Dept of MME, IIT Madras is doing some interesting work in this area. I suggest interested people look into his work.

Summer Fellowship Research Programme (2018) IIT Bombay

I applied for a summer fellowship research programme at IIT Bombay for the summer of 2018 from 11th May, 2018 to 23rd July 2018 in the Department of Aerospace Engineering under **Prof. Rajkumar Sureshchandra Pant**. My project title was “Course content and improvement for Introduction to Flight”. I had to frame the coursework and content for the summer course. It was quite interesting and exhaustive as I had to get a pre-requisite knowledge of Aircraft Propulsion systems, Flight theories, Atmosphere, and Flight performance parameters. I spent the first two weeks trying to obtain knowledge in these areas. Once I got familiar with the terms, I was ready to create the content for the course depending on the syllabus framed by Prof. Pant. I obtained tremendous amounts of information from the book “Introduction to Flight” by Anderson. Once I was familiar with the course framework and requirements to be met as set by Prof. Pant, I advanced to preparing content through Power Point Presentations, Performance Videos, Animations, CFD Analysis, Real time operation and testing videos for Aircraft nomenclature, Propulsion systems, Ceilings, Level flight, Climbing flight, Lift generation theory, Drag, Atmosphere and Aircraft Performance.



Soon, I was made the Teaching Assistant for the course and had to frame tutorials for the students in class. It was an inverted classroom concept established by Prof. Pant in his course and students came to the class with an intent to solve interesting tutorials and obtain exposure to a lot of interesting information and also to discuss doubts. Being a teaching assistant, I had to be well prepared before the class to be able to answer the doubts raised by students after watching the lecture videos. I had to help my professor in framing his question paper for the mid-semester and end-semester examinations. We also evaluated and assessed the students' performance with standards to deduce their grades. We also conducted a glider competition just after their mid-semester examination to increase their understanding of flight. The students came up with wonderful designs and worked diligently for battling it out in the competition.

On the whole, it was a brilliant experience for me as for the first time I experienced the turmoil faculties at any educational institution experience - framing the course and syllabus! This has enhanced my understanding of the subject and also given me a thorough knowledge of what it is to frame a course. It also gave me an opportunity to be well prepared before class and be ready to face the exhaustive doubt sessions. As a result, my outlook towards approaching a course offered and conducted by a faculty has transformed immensely. I thank the Department for providing me a wonderful opportunity such as this to elevate my thinking capacity on both the technical and ethical levels.

Internship at Dow Chemical Company**Namratha writes...**

During my 8 week internship programme at Dow chemicals I worked on a project titled – “***The study of small bore connections for the avoidance of vibration induced fatigue failures.*** The project emerged due a piping failure at a petrochemical manufacturing unit, St. Charles Operations in Louisiana.

The inputs to the piping team at Central Engineering Chennai included piping isometrics, operating conditions and working fluids.

The project included 5 broad stages

- Suggesting Temporary remedial action for immediate recovery of the plant
- Identification of the cause for failure.
- Adopting a permanent solution to avoid recurrence.
- Analysis of similar site issues for the development of work practices to avoid improper designing.
- Validation of the work practices with finite element modelling software.



This involved being open to reading to strengthen concepts learnt at college. While working on projects I would suggest my counterparts and juniors to go deep and not wide. Something that I learnt from this internship programme was to opt for a single, simple project and to work into the details such as validation and development of standard practices.

Sowmya writes..

I worked on a project titled **“Study on the design of heat exchangers and pressure vessels”** during my two month internship at the Central Engineering Chennai (CEC) of Dow chemical.



The internship experience gave me a good insight into the workings of an industry. The programme was meticulously planned to every minute detail and executed with perfection. We were subjected to a busy two month schedule that included a project, several lectures, a plant visit as well as a final assessment that comprised of a Pro-thon and a presentation.

The Process Containment Equipment (PCE) discipline at CEC that I worked with is involved in contributing to the equipment design of containment/static equipment such as heat exchangers, pressure vessels, distillation columns, air coolers, storage tanks, silos etc.

Equipment design involves

- (a) Obtaining the output data of thermal design of the equipment (example, operating pressure, operating temperature, corrosion allowance, mass flow rate etc.)
- (b) Deciding the material of construction, insulation material, painting specifications depending on the thermal design data
- (c) Calculation of thickness of the equipment wall based on stress analysis using the ASME code.
- (d) Creating equipment drawings to be sent to the vendor

Apart from the above mentioned activities, the PCE discipline serves as the communication channel between other disciplines within DOW and the vendor. PCE also verifies and validates for every specification and all data pertaining to the equipment that appears in the data sheet and drawings sent to the vendor.

During my eight weeks at DOW I worked on several projects involving heat exchangers and pressure vessels that were at various stages of development. I prepared specifications packages of pressure vessels to be sent to vendors, reviewed vendor drawings of heat exchangers, filters and air coolers and also learnt to understand the ASME code and design the thickness of a pressure vessel.

Being at DOW gave us an overall idea of how engineers from several varied disciplines work together, involve in technical discussions and more importantly, how the successful implementation of a chemical plant or any progressive industry as such, needs the cooperation and contribution of every engineering and management discipline.

We thank Mr A.S Sriram, Dr V.E. Annamalai and Dr. N. Lakshminarasimhan for providing this opportunity.

Happy to share that Namratha has received Placement Offer from Dow Chemicals-VeA

Student write up

T.S Murali, 4th year Mech, writes..

Alumni talk

We had an Alumni Talk on 25th July by Adhyanth Ajay, passing out this year and starting his graduate studies in the Department of Aerospace Engineering, Purdue University. His talk was titled "MS Admissions - Things you need to know". He spoke in detail about what a university expects from a candidate. He broke some myths about admissions about GPA saying a very high CGPA is not required but a balanced activity in a candidate is essential to seeking admissions. He spoke about SOPs and Resumes and asked us to put in our story there as to where we want to get in life and why an MS will help us get there. He went on to speak about resumes and asked us to keep it short. On the whole, it was an eye-opener on the process followed in university admissions for the people seeking a masters degree.



Adhyanth Ajay

Student write up

A write up by R. Subramanian, Final year

Career Prospects in Python and R Programming Seminar by Mr. S. Muralidharan

Technology has built a different life for mankind. Programming has served as catalyst in transforming daring and outlandish ideas from lifeless written words into solid reality, the process we reverentially claim 'Technology'. It has become essential to learn a programming language though as students of mechanical engineering, it doesn't qualify as our major field of study. However, automating conventionally mechanical systems has opened the window for developing intelligent systems that improve safety, provide better efficiency and deliver faster response. Before attending this session, I was not keen to know about any programming language thinking that it might not be useful. But after this 2-hour session, I understood how programming has assumed a key role in building a better future for this world.



There is a plethora of programming languages available in the world out of which, **Python** is one of the most user-friendly, versatile programming languages. Tomorrow seems to be the world of Artificial Intelligence and Python will be one of the most significant languages of the future. Nowadays, self-driven vehicles and electric car have started to emerge in the market. This automation is possible through Python language. Also, there are some reasons which makes the users learn Python. They are,

1. Machine learning

The ability of computers to learn from examples instead of operating strictly according to previously written rules is an exciting way of solving problems. For machine learning and data science, python is the most popular language in the world.

2. Deep learning

Deep learning is a part of broader family of machine learning methods where the complex systems such as artificial neural networks can be done using deep learning. In short, things that cannot be done with machine learning can be done with deep learning.

This way, simplicity, community support, ease of use by any one from any background, less follow up on code treatment and more importantly easy-to-learn and understand any concept is making python popular and is taking its effectiveness to different heights. It is also turning out to be the most required skill of current days especially after gaining its importance in the so-called futuristic technologies such as **Artificial Intelligence, Neural Network, Deep Learning, Machine Learning, Data Science and even Automation.**

R programming is an open source language and environment for statistical computing and graphics. R provides a wide variety of statistical (linear and nonlinear modelling, classical statistical tests, time-series analysis, classification, clustering etc) and graphical techniques, and is highly extensible. It includes an effective data handling and storage facility, a suite of operators for calculations on arrays, in particular matrices, a large, coherent, integrated collection of intermediate tools for data analysis, graphical facilities for data analysis and display either on-screen or on hardcopy. It also uses predictive analysis for finding a company's future stands in the global market. **Ford uses R to improve the design of its vehicles by means of predictive analysis.**



Companies are slowly moving to these languages for their implementation of futuristic technologies (such as automation in automobiles, innovation in any daily usage products, devices such as Amazon's Alexa) in the near future due to the accessibility of these programming platforms.

Thus, I got an idea about the scope of these programming languages which will benefit us in our future. At the beginning, I had an aversion towards programming languages which made me choose mechanical engineering thinking that programming is not necessary. But this session about the scope of Python and R programming enlightened me about the need of programming languages for broad scope of our future.

I would like to thank Dr.N.Lakshminarasimhan and Dr. M.Nalla Mohamed for organizing the workshop and providing me with a new perspective of looking at the art of programming.

Mr. S. Muralidharan, Intn'l Business Consultant and former Executive Director, Millennium Synergy Pvt. Ltd., New Delhi, has shared the material of his Seminar with us, find the same in the **Annexure 1**

Airbus performs world's first automatic air-to-air refuelling contact with large aircraft receiver

Airbus Defence and Space has followed its earlier achievement in demonstrating Automatic Air-to-Air (A3R) refuelling of a fighter with another world-first – the same operation performed with a large receiver aircraft.

In a joint operation with the Royal Australian Air Force (RAAF), which is collaborating with Airbus in development of this pioneering technology, Airbus' A310 company development tanker performed seven automatic contacts with a RAAF KC-30A Multi Role Tanker Transport, also made by Airbus.

The system requires no additional equipment on the receiver and is intended to reduce refuelling boom operator workload, improve safety, and optimise the rate of air-to-air refuelling (AAR) in operational conditions to maximise aerial superiority. Airbus has begun work towards introducing the system on the current production A330 Multi Role Tanker Transport (A330 MRTT).

During initial approach of the receiver, boom control is performed by the tanker's Air Refuelling Operator (ARO) as usual. Innovative passive



techniques such as image processing are then used to determine the receiver's refuelling receptacle position and when the automated system is activated, a fully automated flight control system flies and maintains the boom aligned with the receiver's receptacle. The telescopic beam inside the boom can be controlled in a range of ways including: manually by the ARO; a relative distance-keeping mode; or full auto-mode to perform the contact.

In the 20th June flight off the southern Spanish coast, the A310 tanker performed the scheduled seven contacts over a two-hour test period.

David Piatti, who again acted as Airbus Test ARO, or “boomer”, on the A310, said: “It was extremely impressive to see how accurately the A3R system tracks the receiver. It can be very useful to be able to refuel another tanker or transport, for example to extend its deployment range or to avoid taking fuel back to base, but it is also a challenging operation and this system has the potential to reduce workload and the risk involved.”

The trial was conducted in conjunction with Test Pilots and Flight Test Engineers from the RAAF's Aircraft Research and Development Unit (ARDU).

Squadron Leader Lawry Benier, Executive Officer for ARDU, said the RAAF were assisting Airbus Defence & Space on the development of A3R and other technologies to increase the utility of the KC-30A within a battlespace. “It's very encouraging to come to Spain and see the progress that's been made with A3R, and be able to witness it firsthand refuelling our KC-30A,” Squadron Leader Benier said. “Refuelling large receivers is a role RAAF has conducted extensively on operations and exercises, allowing us to extend the reach and responsiveness of our air mobility fleet, as well as keep surveillance aircraft in the air for longer.”

Watch video: [World's first automatic air-to-air refuelling contact with large aircraft receiver](#)

Source: [Airbus](#)

Shree Kumaran Alloys

Located at Coimbatore and established in the year 2005, Shree Kumaran Alloys is a steel foundry producing carbon steel, alloy steel, stainless steel, duplex stainless steel and heat resistant steel castings for a variety of demanding applications.

As on their website:

Commercial production was commenced from March, 2006 and since then the Company earned a reputation as a reliable supplier of quality castings and has built a huge customer base that includes some of the prestigious industrial houses such as Karmen International Pvt .Ltd , Audco India Limited, Larsen and Toubro Ltd., Bharat Heavy Electrical Ltd., Bharat Earth Movers Ltd., Multi National Companies like Flowserve India Ltd., Ampo Valves India Private Ltd., Circor Flow Technologies India P. Ltd., Export customers like Ampo S. Coop, Spain and Hofmann Engineering Pty. Ltd., Australia etc.,

- Total area of 120000 Sq. Ft and built at up area of 30000 Sq.Ft.
- Induction melting furnace of 400 KW rating with liquid metal capacity of up to 1400 kg.
- Electric and oil fired heat treatment furnaces with 30000 liter capacity water tank for quenching with mechanical agitation.
- Double Impeller conveyor type shot blasting machine.
- Separate 600 A Welding rectifiers for casting up-gradation grade wise.
- Full range of fettling equipment for finishing of castings.

The Company has established a comprehensive range of inspection and testing facilities:

- 32 Elements Direct reading spectrometer with Fe and Ni bases and channel for ultra low Nitrogen
- 40 MT capacity Universal Testing Machine with extenso meter
- 300J capacity Impact Testing Machine
- Magnetic Particle Testing, Dye Penetrant Testing and Ultrasonic testing.
- Radiography outsourced from reliable partners.
- Level II qualified personnel for supervising NDT inspections.
- Complete range of inspection facilities for layout inspection and routine inspection.



Being in the field of supplying castings for critical applications, the Company has concentrated on establishing and effectively implementing a quality management system that focuses on customer satisfaction and continual improvement through effective team work. The company has complied with mandatory systems and procedures and obtained necessary certifications to instill confidence in the minds of its valued customers.

Website: [Shree Kumaran Alloys](http://ShreeKumaranAlloys.com)

If interested to work, mail your resume to ska@shreekumaranalloys.com

Amazing Innovation- 77

Flying whale: Airbus BelugaXL takes flight

With a livery that reflects its namesake, the first of Airbus' five BelugaXL heavy transport aircraft completed its maiden flight at Toulouse-Blagnac, France. The three-story tall airplane touched down after finishing its first four hours and eleven minutes in the air.

Development of the BelugaXL began in November 2014 when it was found that the existing fleet of BelugaST aircraft was insufficient for future needs. With an architecture based on the Airbus A330-200 Freighter, the BelugaXL is 63.1 m (207 ft) long with a wingspan of 60.3 m (198 ft). It's powered by a pair of Rolls Royce Trent 700 engines and its 8.8 m (29 ft) fuselage is large enough to handle 53 tonne (117,000 lb) of cargo – the equivalent of seven full-grown elephants or two fully built 350 XWB wings.



In addition, the BelugaXL is noted for its newly-developed lowered cockpit, which has the same layout as the Airbus A300-600s and A310s to accommodate the two pilots and loadmaster. The redesigned cargo bay has a semi-automated handling system and climate control for sensitive payloads, like satellites or paintings.

Watch video: [YouTube](#)

Source: [Airbus](#)

Amazing Innovation- 78

CanguRo Smart Scooter that can follow you around or take you for a ride

Developed by Shunji Yamanaka at Chiba Institute of Technology's Future Robot Technology Research Center (fuRo) in Japan, the CanguRo is designed to be a follow-me personal assistant and (slow poke) people mover. In the former mode, it is 550 mm (21.6 in) long and uses artificial intelligence smarts known as scanSLAM to generate 3D maps using data from sensors and estimate its own location within that space. That sensor array includes 3D LiDAR, a wide angle camera and distance sensor. It runs on fuRo's own robot operating system, and can automatically follow its user around or be wirelessly controlled from a tablet or smartphone. And it can be automatically sent to a specific location, to meet its user after a meeting perhaps.



The CanguRo can also transform into a scooter-like transporter, raising the seat and lengthening the ride to 750 mm (29.5 in). It rolls courtesy of in-wheel brushless motors to the 12-inch wheels at the front and steers via the 10-inch chunky rear wheel. A top speed of 10 km/h (6 mph) and 0.93 Nm of torque isn't going to win any races but should get its rider to the lecture hall or board room in a relaxed state.

Source: [fuRo](#)

Amazing Innovation- 79

New cloaking technique lets light pass right on through

The concept of an invisibility cloak sounds like pure science fiction, but hiding something from view is theoretically possible, and in some very-controlled cases it's experimentally possible too. Now, researchers have developed a new device that works in a completely different way to existing cloaking technology, neatly sidestepping some past issues and potentially helping to hide everyday objects under everyday conditions.

We see objects because light bounces off them in a particular way before landing on your retinas, and they get their colors by reflecting more light of that particular color. The basic concept of cloaking objects involves finding ways to disrupt that process and build them into devices or metamaterials. Over the years, most techniques we've seen (or not seen, as the case may be) involve bending light waves around the object. Others work on a principle called "temporal cloaking." In this situation, light at the leading edge of a wave is sped up, while that at the trailing half is slowed down, creating a gap in the middle. If something were to move through that gap, no light would hit it, letting it pass through like parting the Red Sea. At the other end, the gap is closed by slowing down and speeding up the light waves, and an observer would be unaware that the object was there at all.

For the new device, which the team calls a "spectral cloak," light isn't redirected around the object but is made to pass right through instead. The device selectively shifts light from one part of the spectrum to another, before shifting it back to normal on the other side. If you're cloaking a green object, for example, the device shifts green light to the blue part of the spectrum so it can pass through, then reverses the process. With no green light to bounce off the object, it becomes effectively invisible.

Source: [The Optical Society of America](#)



Amazing Innovation- 80

HAMR micro-robot now walks on – or under – the water

First announced in 2013, the original version of the tether-powered/controlled HAMR (Harvard Ambulatory MicroRobot) measures just 4.4 cm/1.7 inches in length, and can move along the ground at a maximum speed of 8.4 body lengths per second. Its construction was inspired by pop-up books, and involved sandwiching together 23 microscopic layers of material and then laser-cutting them into the desired patterns.

The latest version of HAMR weighs just 1.65 grams, and is equipped with foot pads on all four of its legs. These pads provide surface tension-induced buoyancy when the robot enters the water, keeping it from sinking (it can even carry a payload of 1.44 grams without going under). Using flaps on the underside of the pads, it subsequently makes its way across the surface, moving its legs in a swimming gait at a frequency of up to 10 Hertz.

Source: [Harvard University](#)



Alumni Update

Alumni Info:

Arun of 2011-15 batch got placed in CTS. After a two year stint in CTS, he has now joined IIM, Kozhikode.



Arun Uthaiyasuriyan

Info from Alumni:

1. Venkatraman writes (From a mail to VeA)

I'm happy to inform you that we - Bhaskar, Saisriram and Venkatraman, 2017 passed out students, placed in Ashok Leyland have successfully completed our 1 year GET training program.

We have been graduated and are now posted as Deputy Managers.



Bhaskar



Saisriram



Venkatraman

2. Vishal Vasanth (2013- 17 batch) writes

Over the last 5 years of me teaching and running Warhorse, I have had an immense amount of learning and developed some very good skillsets. While the company has grown to a stage where we have a full time team of 10 and revenues of more than 50 lakhs a year, the clientele we are reaching is very elite and very niche. Our clientele includes the children of some of the top industrialists, film stars, entrepreneurs and HNIs of Chennai. At the stage we are in, it is not possible for us to reach out to people who do not have the ability to afford our rather high course fees and this has been bothering me for a while.

On another note, we have developed our content for college students very effectively and are in fact working with a college in Mysore in developing their skillsets in communication, thought process structuring and entrepreneurship. If you think it'd be useful to our department, we can arrange for something.

Founder & Head of Outreach and engagement

Warhorse www.warhorse.in

(Vishal founded his enterprise "Warhorse" while he was in his third year of studies and in the last five years has grown well as a successful businessman. This is a real case of succeeding by following one's passion. Vishal was good at talking and that is what he made as his investment! -VeA)



3. Shashank Suresh (2009-13 batch) writes..

I've recently started my new position as control engineer, with TeKshift, in Aachen Germany. Hope all is well at your end, and congratulations on the autonomy status

(Shahsank had completed his MS in Automotive Engg from Eindhoven University of Technology, Germany and then worked in Royal Enfield, Chennai for past two years.-VeA)



4. Radheesh Dhanasegaran (2010-14 batch) writes.. (addressed to Dr.NLN)

I am glad to write this mail to share with you, that I have successfully completed my Masters of Science (M.Sc) degree in Applied Mechanics (Fluid Mechanics specialization) at the Chalmers University of Technology, Sweden by May 2018 and have started my employment as a Junior Researcher (Doctoral Student) at the Lappeenranta University of Technology, Finland.

The two years in Sweden were really wonderful with respect to learning various aspects during my Masters. From a challenging course work to an intensive Master Thesis, it was a really a great experience at Chalmers. Apart from education, it shaped me as a person with respect to self and time management skills, following work ethics and more. In my first year, it was very challenging to adapt with the system in a new country and weather experience, where there were back to back assignments and examinations.

Most of the assignments in my coursework had to be solved using Matlab, which was a bit challenging initially. So I advise my juniors, especially the ones, who are aiming for their Masters in Europe to have a good practice with the tool before coming. For my Master Thesis, I worked on Experimental and Computational Heat Transfer studies in Aero engine Outlet Guide Vane(OGV), which was a one year work and I would mention it as one of my greatest learning opportunity and experience.



Then I started with my PhD at the Lappeenranta University of Technology, Finland by the mid of June 2018, for which I am going to work in the area of Turbomachinery for Waste Heat Recovery applications in the marine industry using Organic Rankine Cycle (ORC), which is an emerging research topic with respect to green shipping concepts. I hope it will be a great experience with lots of new learning.

All these things wouldn't have been possible without your guidance at SSN and valuable recommendations. Thank you so much once again for that.

I am coming to India for vacation in a week and will be there till 2nd week of August, during which I would like to visit our campus and meeting you.

I am reading all the issues of Aspire and feeling really happy to know the progress of our department. I hope my juniors are taking it to the next level.

And I was really proud that our institution has got the Autonomous status. Kindly keep sharing it and I will also definitely be in touch as always. Wish you have a great health.

Thank You.

(After two years as Project Associate at IITM, Radheesh moved over to Chalmers University of Technology for his MSc in Applied mechanics, specialising in Fluid dynamics. His present job entitles him to take up Ph.D.level research work-VeA)

Alumni Visits

Presence at the Annual Alumni meet (TRIBUTE) alone is not a measure of Alumni interaction with us. Alumni visit us regularly, as and when they drop in to Chennai. This is an attempt to capture data on their visit to our campus. This data will be provided monthly by C.Arun Prakash, faculty in charge of Alumni at Mech.- VeA

- Santhosh (ME Mfg 2015 passed out) visited us as a Member of the Board of Studies for finalising mech engg curriculum- Autonomous R2018.(6/7/18)
- Adhyanth (BE 2018 passed out) visited us to interact with students on how to plan for higher studies (25/7/18)
- Thamizharasan, Vignesh, Vigneshwaran, Tarun Subramanian and Visveshwar of 2017 passed out batch visited the dept to meet faculty and appraise of their future plans and movements for higher studies.
- Radheesh of BE 2014 passed out batch visited us as a courtesy call amidst his other work in Chennai. He is currently doing his PhD at the Lappeenranta University of Technology, Finland.

August 2018

- QIP sponsored short term course on Mechanical Properties and Deformation Behaviour of Structural Materials organized by the **Department of Metallurgical Engineering, IIT (BHU)** in conjunction with The Quality Improvement Program Center, IIT (BHU) **during 27th August – 1st September, 2018**. This course has also laboratory component. It will deal with almost all kind of testing procedures pertaining to mechanical properties. The course is aimed at those who deal with strength, rupture, failure and design of the component and structure-property relationship in their academics and research. **NDT** will also be discussed in this course. There is no course fee for those who are from AICTE approved colleges.
- DST-SERB sponsored national level seminar on “Challenges in Materials for Energy conversion storage and enhancement applications” on **10-11 August 2018**.
- Refresher Course on “Patent Agent Examination conducted by Centre for Intellectual Property Rights (CIPR) of Anna University, Chennai 20th to 24th August 2018. Interested participants are requested to confirm their participation by sending their details along with fee on or before **10th August 2018**.
- Two-Day Workshop on Advances in Welding and Surfacing Technologies on **10th and 11th August** organized by Department of Mechanical Engineering of Vel Tech. The course covers welding defects and inspection along with remedies to improve weld quality. It deals with the physics involved in welding processes.

September 2018

- Faculty Development Programme on Advances in Heat Exchangers at CIT Coimbatore on Advances in Heat Exchangers" from **24th to 30th September, 2018**. Registration form duly signed by the Head of the Institution must be sent by email on or before **24th August 2018**.

August 2018

- Bannari Amman Institute of Technology is organizing a Two day National Conference on “Energy, Ecology and Environment” on **2nd & 3rd August 2018** with an opportunity to publish the article in UGC approved/Scopus Indexed Journal. The conference covers wide spectrum of Topics in the emerging field of energy and environment with a multi-disciplinary approach. Faculty members/research scholars and PG/UG students can participate.

September 2018

- WCX 2019 Call for Papers : Present your forward thinking to 10,000 of your peers and subject matter experts at the 2019 WCX World Congress Experience. **Last date for submission: September 4th, 2018**. Abstract submissions are now being accepted for Body/Chassis/Safety, Propulsion/Powertrain, Electronics/Connectivity, Environment/Emissions, Materials/Light weighting, and Design/Manufacturing.
- Seminar on Composite Materials for General Engineering, Armour and Aerospace Applications conducted by the Department of Production Engineering of PSG College of Technology, Coimbatore on **28-29 September, 2019**. The Keynote Speakers are from University of New South Wales, Canberra, Australia and Eminent Scientists from India. Faculty members and research scholars can attend/present paper in the seminar. The selected papers will be published in International Journal of Materials Engineering Innovation (Inderscience) Scopus Indexed Journal as Special Issue.

October 2018

- International Conference on Innovative and Emerging Technologies for Farming - Energy and Environment organized by Vellore Institute of Technology at its Vellore campus during **12-14 October 2018**. This international conference aims to bring the academicians, industry practitioners and researchers to provide the best solutions using the innovative and emerging technologies of the global demands in agriculture, energy, environment and water. The theme of the conference is to provide “Technologies for Non-Technologists”. The latest achievements and breakthrough developments in the aforementioned areas will be disseminated in the conference by plenary sessions and knowledge sharing keynote lectures.

Submission of abstracts: **July 30, 2018**

December 2018

- TRIBOINDIA – An International Conference in Tribology conducted by Veermata Jijabai Technical Institute (VJTI), Mumbai, India from **13th-15th December 2018**. Submission of a Technical paper can be made online on the Tribology Society of India at the following link : <http://tribologyindia.org/triboindia-abstract-submission.html>
Submissions can also be done by email on triboindia2018@vjti.ac.in
Events include an Exhibition stall showcasing your products and services to the conference delegates during the conference and a business meet to present your products and services to the conference delegates for 20 minutes. Participants can attend the conference as a delegate.

January 2019

- International Conference on Recent Advances in Materials, Manufacturing & Energy Systems (ICRAMMES) organized by the Department of Mechanical Engineering of VRSEC on **3-4th January 2019** in VRSEC, Vijayawada, AP, India. Our submission deadline for extended abstract is on **30th September 2018**.

February 2019

- 6th international conference on Recent Advances in Composite Materials (ICRACM-2019) will be held at Indian Institute of Technology (BHU), Varanasi-221005, India from 25th to 28th February. The ICRACM- series aims at bringing together the academicians and researchers in various disciplines to share knowledge and exchange views, for useful industrial applications of composite materials. Contact: www.iitbhu.ac.in/institute/notification/ICRACM-2019.pdf

Last date for submission: 25 August 2018

March 2019

- The 2nd International Conference of Computational Methods in Manufacturing (ICMCM) will be organized at IIT Guwahati, India during **March 8-9, 2019**. The 2nd ICMCM conference details are available at www.iitg.ac.in/icmcm2019/. The details about paper submission is available in the webpage. The registration details will be updated in due course. The last date for full paper submission is **August 30, 2018**.

August 2018

Challenges/Contests

- Matrix release idea rally is an Idea Rally is an online gathering of the best and brightest minds, coming together to make a collaborative effort to explore and discuss topics that are important to our world. The challenge is to come up with the idea that address the following chemistry challenge: How can we increase the release of volatile material from a matrix. Rally is between **30th July 2018 to August 9, 2018**.

For more info : <https://www.ideaconnection.com/idea-rally/matrix-release/?ref=ft>

September 2018

- KPIT Sparkle gives you an opportunity to imagine, ideate and develop technical innovations with high social impact to solve existing blind spots within the energy and mobility disciplines.

We invite registrations from students across the nation to come ahead and be a part of revolution where innovation lies at the epicentre. Visit <https://sparkle.kpit.com/> for more details.

- TATA INNOVERSE- Design solutions for various challenges posed and win exciting prizes and attractive awards.

For more info on challenges visit www.tatainnoverse.com.

- Nokia open innovation challenge: The Nokia Open Innovation Challenge, in partnership with [NGP Capital](#), is looking for new innovative products and solutions within the Industrial IoT domain. It is time to submit your greatest ideas for technology and business models which could change the world. Together with Nokia Bell Labs experts and mentors you can make a difference and potentially grow your business to new levels.

Last date for submissions: September 6, 2018

For more information visit: https://www.nokia.com/en_int/about-nokia/news-events/events-calendar/open-innovation-challenge

January 2019

- Anveshana Innovation Science and Engineering Fair during January-February 2019 Sikshakara sadhana, Bangalore. **Anveshana** is a 'Science & Engineering' competition which will culminate in a Fair where the students will exhibit their projects/models.

This Competition involves undergraduate Engineering students and underprivileged school going students where the students will follow philosophies and practices of hands-on learning, research orientation, to make models based on Engineering-Science concepts. The Engineering Students will mentor school students in the creation of models while inducing knowledge and confidence in them.

College Students, who are willing to participate can visit www.anveshana.org and register online on or before **31st August'18**.

May 2019

- Fentress Global Challenge : In line with the speculative nature of the competition, participants should seek to improve every dimension of the airport terminal building.

All entries should delve into one or more broad topic related to airport architecture and the future of aviation such as mobility, urbanization, globalization, technology, flexibility, security, project feasibility, and passenger experience in 2075.

For more details, visit <https://fentressglobalchallenge.com/competition-brief>

Last date for submission: 31 May 2019

Forthcoming Project Challenge

Don't miss out on this amazing opportunity!



5th - 8th OCTOBER, 2018
INDIRA GANDHI PRATISHTHAN
LUCKNOW, UTTAR PRADESH

As it says on the letter from
Member Secretary, AICTE:

STUDENTS ENGINEERING MODEL COMPETITION (SEMC)

6th & 7th OCTOBER, 2018

G. D. GOENKA PUBLIC SCHOOL,
LUCKNOW, UTTAR PRADESH

www.scienceindiafest.org

As you may be already aware, the 4th edition of the **India International Science Festival (IISF) 2018** is going to take place at Lucknow during 05th -08th October, 2018. IISF is envisaged to be an integral part of India's long term vision in developing and widening the scientific temper among various strata of the society.

It aims at providing a common platform to young students, scientists and technocrats from the whole of India for exchange of knowledge and ideas to make innovations for the betterment of people.

As part of the IISF- 2018, an Engineering Model event **“Students Engineering Model Competition”** will be held on 6th- 7th October. The purpose of this event is to encourage innovation and creativity among engineering students across India. We are encouraging the students to become a part of nation building through promoting the **engineering models for the benefit of national missions.**



In the above context, AICTE being the partner organization to “Students Engineering Model Competition” under IISF- 2018, our approved institutes are requested to disseminate the program among students and encourage them to participate. **The last date for submission of applications through portal (www.scienceindiafest.org) is 20th August 2018.**

For further detail about the program, registration and other related queries, you may write to IISF Secretariat correspondent

Mr. Madhavan K V, Cell No- 7065149258, madhavvalakode@gmail.com, semc@scienceindiafest.org,

Ministry of Earth Science, Prithwi Bhavan, New Delhi.

Please find links:

<https://drive.google.com/file/d/11zXMDI3V9XkGQ26TnWAc2EFmEV2tueJe/view?usp=sharing>

<https://drive.google.com/file/d/19wGQncpZZJeapaa3RpM20IkbQfocHwIO/view?usp=sharing>



1. DST - Funding Opportunity Announcement (FOA) in Converting Sunlight to Storable Fuels, Energyrich chemicals and Biochemicals (IC5)

Thrust Areas

- Discovering electro catalysts for water splitting, H₂ production and CO₂ reduction
- Accelerating discovery/ understanding of photo-catalysts & photoactive materials for solar driven CO₂ reduction
- Design and engineering of devices for production of energy -rich chemicals
- Design and development of CAPEX & OPEX friendly bioreactor systems and materials
- Improved biomass processing operations as cell rupture, lipid extraction, biomass conversion
- Design & large-scale demonstration of cultivation systems
- Host engineering/strain improvement of micro algae & cyanobacteria for improved photosynthetic efficiency
- Biocatalyst improvement using synthetic biology for photo-bio electrochemical CO₂ reduction
- Process up-scaling and demonstration of technology in above systems
- Process economics and LCA studies for photo-catalysis, photo-electrochemical cells & photo-bioelectrochemical CO₂ reduction

Last date for submission of project proposal: **31st August 2018**

Website Links:

<http://www.dst.gov.in/callforproposals/funding-opportunity-announcement-foa-converting-sunlight-storable-fuels-energyrich>

2. Funding Opportunity Announcement (FOA) in Carbon Capture Innovation Challenge (IC3)

Thrust Areas

- Research on CO₂ capture as absorption/adsorption/membrane based Hybrid model technologies to increase efficiency of CO₂ absorption
- Cost efficient absorbants for solvent based CO₂ absorption, with improved regeneration, capacity & efficiency
- New material development for membrane based CO₂ capture, with improved selectivity, high temperature operation & cost effectiveness
- Enzyme assisted solvent mediated CO₂ capture based technologies
- Value addition to chemicals & value-added products in fuel additives, CO₂ dry reforming, CO₂ to methanol, polymer etc.
- Valorizing CO₂ by Breakthrough Catalytic Transformations into fuels and chemicals
- Electrochemical and photochemical transformation of CO₂
- Research to develop oxy -combustion for utilization in coal-fired boilers
- Sequestration by enhanced oil recovery

Last date for submission of project proposal: **31st August 2018**

Website Links:

<http://www.dst.gov.in/callforproposals/funding-opportunity-announcement-foa-carbon-capture-innovation-challenge-ic3>

3. DST - Call for Project Proposals for India - Japan Cooperative Science Programme (IJCSP-2018)

Who can apply:

- The joint application must include one Indian and one Japanese Principal Investigators, who would be responsible for technical as well as administrative co-ordination of the project and its periodic scientific and financial reporting to the DST/ JSPS respectively.
- The Principal Investigator (PI) and other investigators in India should be scientists/ faculty members working in

regular capacity in UGC recognized Universities/ Deemed Universities/ Academic Institutes and National Research & Development Laboratories/ Institutes. It is preferred that a member of the project team may be designated as Co-PI.

· The Japanese PIs must be full time researchers employed at Universities or other research institutions recognized by JSPS. Further details in respect of Japanese participants JSPS website (www.jsps.gov.jp) may be referred to.

The Duration of Project:

The duration of the projects would be up to two years. (Visits to be completed within one year and 10 months).

The deadline for the submission of proposals is **5th September 2018**.

Website Links:

<http://www.dst.gov.in/callforproposals/india-japan-cooperative-science-programme-ijcsp>

<http://www.dst.gov.in/>

4. SERB - Call for Project Proposals for Early Career Research (ECR) Award - 2018

- The Early Career Research for the purpose of the program refers to the first assignment of the applicant in a regular capacity in a recognized academic institution or national laboratory or any other recognized R & D institution in India.
- The Early Career Research Award is a one-time award and carries a research grant up to Rs. 50 Lakhs (excluding overheads) for a period of three years.
- The research grant covers equipment, manpower, consumables, manpower, travel and contingency apart from overheads.

Submission of Project Proposal: **15 July to 14 August 2018**

Website Links:

<http://serbonline.in/SERB/HomePage#call>

<http://serbonline.in/SERB/ecr?HomePage=New>

5. DST - Call for Project Proposals for Indo-German Collaborative Research Activities in Materials Science and Engineering 2018-2019

- Pursuant to the Memorandum of Understanding (MoU) signed between the Department of Science and Technology, India (DST) and the Deutsche Forschungsgemeinschaft (German Research Foundation, DFG), DST and DFG are opening the possibility for joint Indo-German research project funding in the field of **Materials Science and Engineering** (DFG review boards 405 and 406). Indo-German teams of researchers are invited to submit joint proposals describing integrated research projects in this field with a duration of up to three years.

The proposals will be evaluated separately by DST and DFG on the basis of the projects' scientific merit/quality, the justification for scientific-collaboration and the qualifications as well as the compatibility of the participating team members. The results of the review process will be shared between the agencies. Support will be granted for those proposals where both DFG and DST recommend funding.

Last date for submission of Project Proposal: **21st November 2018**

Website Link:

<http://www.dst.gov.in/callforproposals/dst-dfg-joint-call-inviting-joint-research-proposals>

Once upon a time, a cow went out to graze in the jungle. Suddenly, she noticed a tiger racing towards her. She turned and fled, fearing that at any moment the tiger would sink his claws into her. The cow desperately looked for someplace to escape and at last, saw a shallow pond. Barely evading the tiger's reach, she jumped into the pond, and in the heat of the chase, the tiger blindly leaped after her.

To the surprise of them both, the pond was extremely shallow yet filled with deep recesses of mud. After toppling over each other, the cow and the tiger found themselves a short distance apart, stuck in the mud up to their necks. Both had their heads above water but were unable to free themselves no matter how much they writhed.

The tiger repeatedly snarled at the cow and roared, "I am going to enjoy the sound of crunching your bones between my teeth!"

He thrashed about in fury but soon became fretful as he found no prospect of escape. The cow thoughtfully laughed as the tiger struggled to free himself and asked him, "Do you have a master?"

The tiger disdainfully replied, "I am the king of the jungle. Why do you ask me if I have a master? I myself am the master!"

The cow said, "You may be the king of the jungle, but here all your power has failed to save your life."

"And what about you?" Retorted the tiger. "You are going to die here in this mud too!"

The cow smiled mildly and said, "No, I am not."

"If even I, the king of the jungle cannot free myself from this mud", snapped the tiger, "Then how can you, an ordinary cow?"

The cow gently replied, "I cannot free myself from this mud, but my master can. When the sun sets and he finds me absent at home, he will come looking for me. Once he finds me, he will raise me up and escort me home sweet home."

The tiger fell silent and coldly glared at the cow.

Soon enough, the sunset and the cow's master arrived. He immediately recognized the plight she was in and lifted her to safety. As they walked home, the cow and the master both felt renewed gratitude for one another and pitied the tiger they both would have been happy to save if only the tiger had allowed them.

Moral of the story: The cow represents a surrendered heart, the tiger represents an egoistic mind, and the master represents the Guru. The mud represents the world, and the chase represents the struggle for existence therein. Its good to be independent and not rely on anyone. But don't take it to an extreme, you always need a partner/coach/mentor who will be always on the lookout for you. Having them does not mean you are weak, it's just that you can be stronger with their help.

Contribution: Mr. Sundar Sudharsan, Corporate Executive Chef, Planet Hollywood Beach Resort, Goa.

Thanks & Regards –

Kishore Babu

HR - Department

SCHWING Stetter India Private Limited



Mr. Kishore Babu

Schwing Stetter



It is disheartening to see that so many adults, so called successful people, celebrities included, continue to do things only to seek attention. They never outgrow the clutches of their ego.

True, ego can be a source of motivation, but then, ego is a very poor motivator.

By its very nature, ego needs feeding; hence it is 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. The price ego asks of you to be your motivator, is your peace of mind. Why would you sell your hair to buy a comb?

- A ego-filled heart is always walking on fire.
- Every moment is heavy, every situation is never-tacking and every interaction is tense.
- Never can there be a moment of marriage between ego and ease.
- With ego, you are struggling all the time to win over the situation; you want to get the better of others.
- When you transcend ego, you just want to win over yourself; you want to make the most of your own potential.
- It is you versus you and not you versus the rest.

A crow which was carrying a piece of meat in its beak 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." Drop the piece of meat- ego and gain the freedom of peaceful living.

When ego comes, everything else goes.

When ego goes, everything else comes.

Let your ego, go.

How to let go of ego ? Simple ! Value your peace above everything else.

#WishingMostAndMore

Have a great day & wonderful weekend

R.Ramakrishnan

This issue has two Annexures-

1. Python and R Programming-

Mr.S.Muralidharan

2. "HCL Techbee Mech Program"- an early career development program for Plus Two students

Answer to the question in the 2nd page:

c) Dynamite

The purpose of adding an Annexure is to enable forwarding specific content to persons who may be interested without the need to send the whole Newsletter

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This edition of Aspire was compiled by Nitin Joy, with support from Sowmya K and CT Alagappan



Nitin Joy



Sowmya K



CT Alagappan