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Dr. Vinitha Vakkayil [Assistant Professor MSH]

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Editorial Message



Dear Readers,

If innovation is the key to bright future ,our students never run short of novel ideas. We envisage them to be free thinkers and responsible technocrats and entrepreneurs. The courses offered at our institute poses academic challenges which drive them away from their comfort zones and enable critical and creative thinking as well.

We believe that every individual is creative in diverse ways. Success comes to those who keep striving and give their best with honesty in every opportunity. No doubt our success invariably depends on what we perceive, observe and explore within ourselves ,the reflection of which we find in the world around us.

This issue of KATHAN is also a launch pad for the students' creative ideas. We are sure that the hard work. And positive efforts put in will touch the readers .

Happy Reading!!

Industry Visits

4th Semester (Mechanical Engineering Department)

Department of Mechanical Engineering of UPL University of Sustainable Technology had organized an industrial visit to the Cattle Feed Plant of Dudhdhara Dairy - Dediypada for 6th Semester Mechanical Engineering students on 28/03/2022. Students were able to understand various aspects involved in the design and development of a cattle feed making plant which involves mixing, processing and packaging of cattle feed. The mixing and processing units were controlled with SCADA based automated control system. The visit was very much helpful to students in correlating theoretical concepts of Fundamental Machine Design, Manufacturing Processes and many more subjects. UPL University of Sustainable Technology is very much thankful to Mr. Piyushbhai Patel (Sr. Manager - Dudhdhara Dairy), Mr Chirag Patel (Sr. Mechanical Engineer) and Mr. Sanjaygiri (Site Head) for their support.



Industrial Visit to Cattle feed Plant of Dudhdhara Dairy - Dediypada

6th Semester (Mechanical Engineering Department)

A visit to Shri Ambica Auto Sale and Service was organised for 2019 batch 6th sem on 30th March 2022. Visit was quite informative and helpful to the students as it was related to their current semester subject Automobile Engineering. During this visit, students got to learn various components of small and large segment vehicles of TATA Motors including gearbox, differential, braking system, hydraulic jack, steering system, suspension system etc. We are very thankful to Mr. Jaydeepgiri Goswami (General Manager, HR) for permitting this visit and Mr. Nikunj Gandhi (Supervisor - Service) for explaining all key aspects very well.



Industrial Visit to Shree Ambica Sales and Services – Kamrej

Department of Electrical Engineering, SRICT & IE(I) Student Chapter jointly organized an Industry visit at UPL Unit 12, Dahej for 6th and 4th Semester Electrical Engineering students on 25/03/2022. Students got exposure to the 66kV Gas Insulated Substation (GIS) and its various components. Overall the visit was very informative to the students.



Industry Visit at UPL Ltd. Unit-12, Dahej

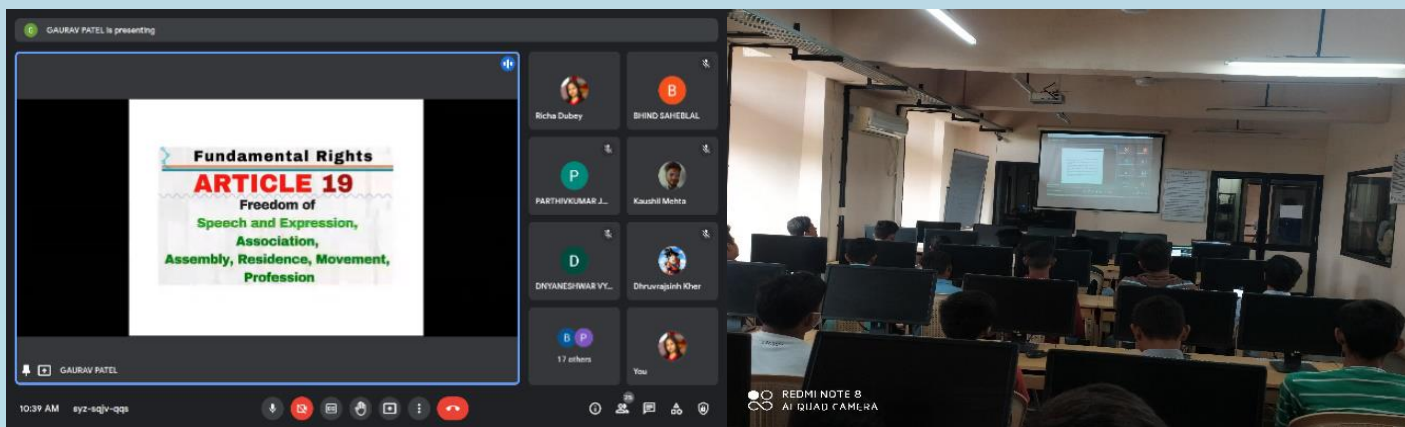
An industry visit to Sterlite Organics Pvt. Ltd, Panoli was organized on 23/03/2022 for 4th and 6th semester Chemical Technology students. Sterlite Organics is a small scale company started by the alumni of SRICT Mr. Brijesh Kapadiya along with two other Chemical Engineering students. They manufacture intermediates of pharmaceutical APIs. Mr. Brijesh explained the production processes of the company and equipment including four SS reactors, one Glass lined reactor and a 15 m height packed column . The students also interacted with him and overall it was a very informative visit for the students.



Students during their visit to Sterlite Organics Pvt. Ltd, Panoli

Expert Lectures

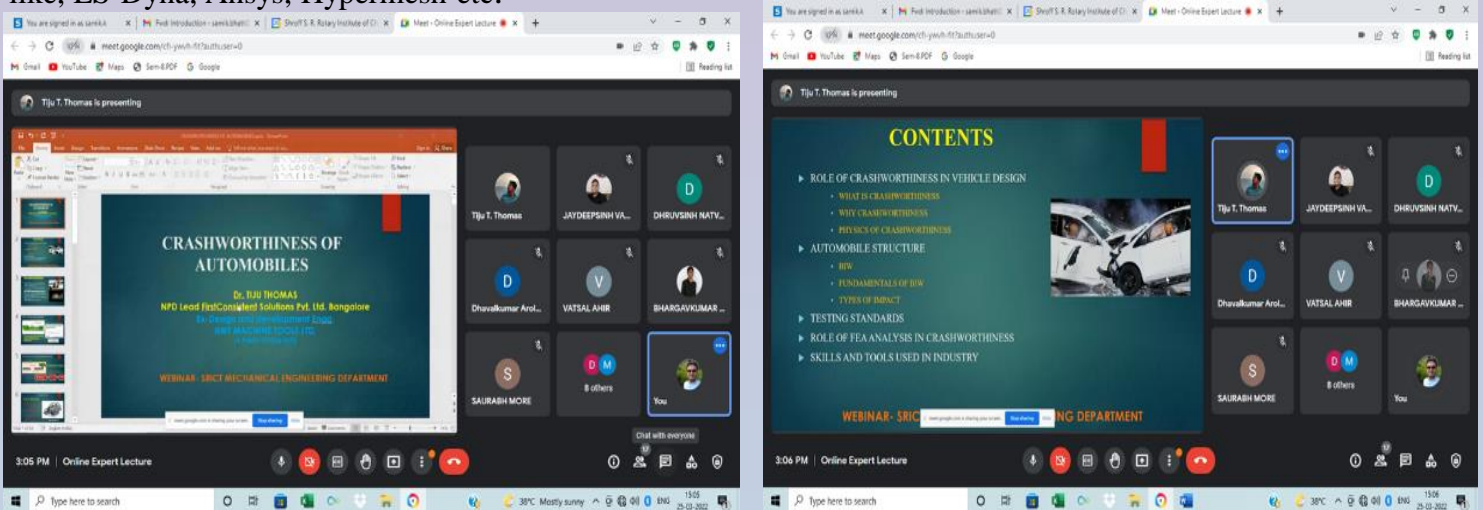
The Department of Electrical Engineering of SRICT organized Online Expert Lecture on "Indian Constitution- Article-19 Right to Freedom" for the B.E Sem 2 (Electrical Engineering, Mechanical Engineering, Environment Science and Technology and Chemical Technology) students on 25th March, 2022. Expert lecture was delivered by Mr. Gaurav Patel, Advocate, Gujarat High Court. Students learned about Fundamental Rights & Freedom of Speech and Expression, Association, Assembly, Residence, Movement and Profession .Mr. Patel interacted with students regarding their opinion and understanding on various sections of Article-19 of Indian Constitution.



Expert Talk by Mr. Gaurav Patel, Advocate, Gujarat High Court.

An online expert lecture was organised by the Mechanical Engineering Department on 25/03/2022 for the 4th & 6th Semester students on “Crash worthiness in Automobile Industries”. This session was delivered by **Mr. Tiju Thomas (New Product Development Head, First consistent Solutions Private Limited, Bengaluru)**. Sir, discussed the importance & role of the crash worthiness in automobile industries and explained fundamental laws, types of impact, their testing standards, role of FEA analysis in crash worthiness, skills & tools used in the industry.

Students got exposure to the application of various solvers used for the crashworthiness of automotive structures like, LS-Dyna, Ansys, Hypermesh etc.



An expert lecture was organised by the Mechanical Engineering Department for the 4th & 6th Semester in seminar hall-3 on 24/03/2022. This session was delivered by **Mr. Ravi Singh (Manager, Mechanical Maintenance, NTPC Ltd., Jhanor)** on the topic of “Gas Turbine” in which he explained Gas Turbine Cycle, Heat Balance, Gas Turbine Requirements, Factors affecting its performance. The efficiency & specific output of the gas turbine power generation systems and the manufacturing units for gas turbines in India were also discussed. Students appreciated the knowledge & experience of the expert.



Dr. Jayesh Shah, retired scientist of BARC, Mumbai delivered an expert lecture on 26th March 2022. 4th sem CT students attended this lecture on "Importance of Innovation in Research"



Dr Jayesh Shah during the session

Mr. Himanshu Thakkar, Manager- Quality Assurance, Synergia Science Pvt Ltd, Dahej delivered an expert lecture on 28th March 2022 at 3 p.m. in Classroom -18. The lecture "Good Laboratory Practice" was attended by 4th & 6th semester CT students. The speaker explained all aspects of good laboratory practice and the need of developing such practices and culture in corporate domain. He also emphasized that companies stringently maintain and ensure quality in every unit operation. CT faculty members were also present in this lecture.



Himanshu Thakkar is delivering Expert talk

One more expert talk was organized on an online mode on "Effective Time Management Skills" for the Diploma Engineering Sem 2 (Electrical Engineering, Mechanical Engineering, Environment Science and Technology and Chemical Technology) students on 31st March, 2022. Expert lecture was delivered by Mr. Kartik Shah, Leadership Coach, COLLABACT Vadodara. Students learned how to decide goals in Life and how to design an effective action plan to achieve them. Mr. Shah interacted with students regarding deciding priority of work and utilization of time for the set priorities.

WINSTINCT-2022

SRICT celebrated its Annual Sports Event "WINSTINCT-2022" during the 8-10th March, 2022 at university campus. It was presided by the Chief Guest Mr. Vaibhav Agarwal, (Principal, Bharatiya Vidya Bhavan's GIPCL Academy, Nani Naroli) and Mr. B. R. Bishnoi (National President & Founder Martial Arts Expert of Buddhist Kung Fu Federation of India). Welcome speech was delivered by Prof. Omprakash Mahadwad. Guests were greeted with floral welcome and mementos. The inauguration of the event took place by unwrapping the sports equipment box by chief guest in presence of Provost (I/c), Registrar (I/c), Deans, HoDs, teaching and non-teaching staff and students. Guests particularly appreciated the effort behind the event organized in a well-disciplined manner. After the formal functions, guests couldn't stop themselves from playing a couple of balls and displayed their batting and bowling skills as well. There were 13 outdoor and indoor sports events organized under the banner of WINSTINCT -UPL University in which students as well as faculties showed their active participation. All the events were smoothly coordinated by faculty and student event coordinators within schedule with more than 1000 student participants. Everyone enjoyed refreshments on second day of event.



Inauguration of Sports Day



Volleyball Event



Students at the Badminton Court

One-to-One Meeting

One to one interaction with students have always been conducted at SRICT not only for the academic improvement of students but also for the purpose of building trust, providing support and receiving feedback/ Suggestions. For the same purpose an interactive session was organised for the 8th semester Electrical Engineering students with Mr. Ashok Panjwani, President-UPL University on 03/03/2022. During the session, Dr. Shrikant Wagh, Provost-UPL University, Dr. Jalpa Thakkar, Head-Electrical Engineering Department and Mr. Krunal Shah, Class Advisor and Asst. Prof. Electrical Engineering were also present and discussed the feedback of facilities provided and the problems and difficulties faced by students. Feedback was taken regarding the current internship training and students were encouraged to upgrade their capabilities with involvement in the extra-curricular courses like data science, Artificial Intelligence etc. Students appreciated the efforts taken by management for their academic growth.



One to One Meeting of Sem-8 EE students with Ashok Panjwani Sir

8th SEM 1-2-1 Meeting

One to One meeting of 8th Semester Chemical Technology students was organized in the institute on 12th March, 2020. Students were present in the meeting to discuss the status of the ongoing internship in various industries, emerging issues as well as the status quo of their studies and project work with honorable President, UPL University of Sustainable Technology Mr. Ashok Panjawani. Provost, Dr. Shrikant J Wagh along with departmental Head and other faculty members were also present to address the issues. The meeting was coordinated by Ms Monika Patel, Assistant Professor, department of Chemical Technology.

ABHYUTTAN- Academic Excellence Award (7th sem)

Abhyuttan event was organized to felicitate B.E. 2018 batch (7th semester) students for their GTU results of Winter-2021 on 11/03/2022. The program was organized by Mechanical Engineering Department, SRICT. Dr. Shrikant J. Wagh (PROVOST, UPL University) introduced the honorable chief guest of the event, Mr. P. M. Shah (Director, DISH, Govt. of Gujarat). Honorable treasurer of ARES, Rtn. Kishore Surti and Mr. B. D. Dalwadi (CEO, BEIL) congratulated the students for their hard work and diligence. President of UPL University, Mr. Ashok Panjwani, appreciated the students for their efforts and urged them to keep up the enthusiasm and continue with their efforts which will be helpful in their future endeavors. He also shared unique details of the results of 7th sem GTU Winter-2021.

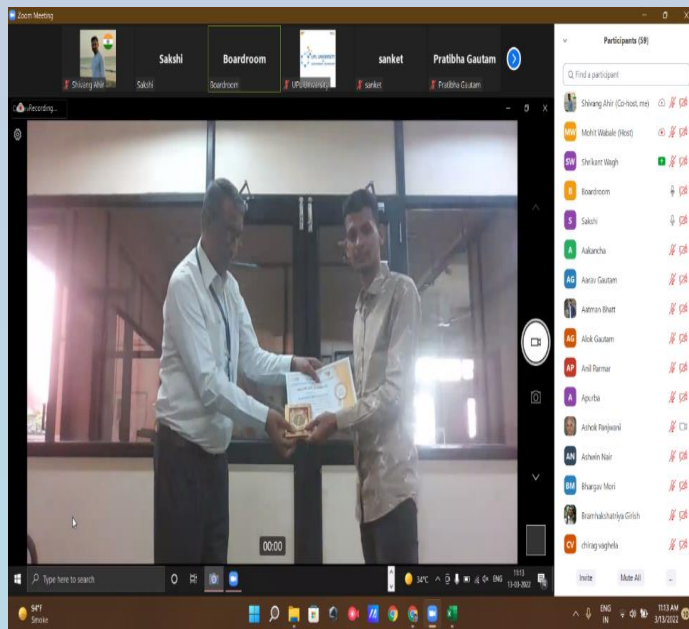
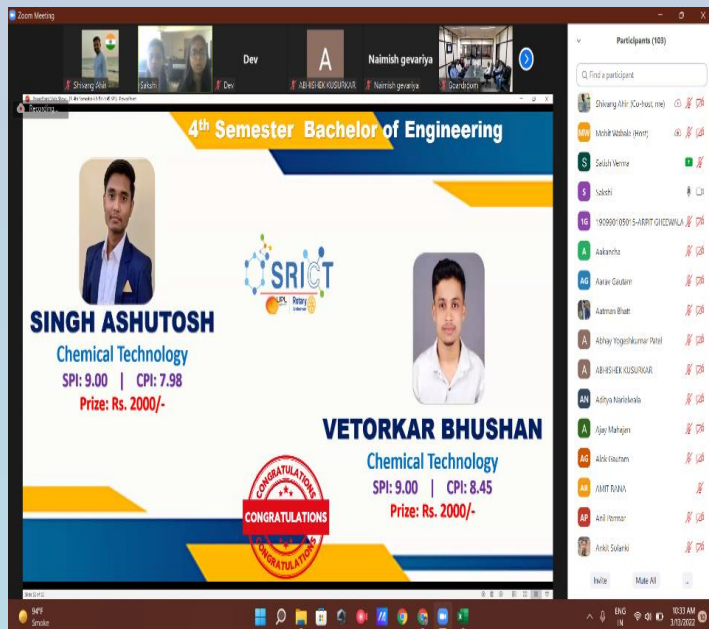
Mr. P. M. Shah congratulated Gold medalists and recipients of the excellence award. He also appreciated the management and faculty members for organizing such a unique event to motivate students. Chancellor of UPL University Mrs. Sandra R. Shroff appreciated the students and faculty members for their whole-hearted efforts. Dr. Hemant Gupta (Professor, HOD, MED) thanked the management for granting cash prizes to students, and all other helping hands for organizing such a wonderful event.



ABHYUTTHAN (2nd and 4th sem)

An online felicitation program, ABHYUTTHAN, was organised to felicitate 2019 and 2020 batches of students for their GTU results of 2nd and 4th sem (Summer-2021) on 13/03/2022. Program was coordinated by Mr. Shivang Ahir (Assistant Professor, MED). Dr, Shrikant J. Wagh (PROVOST, UPL University) introduced honourable chief guest of the event, Mr. Jignesh Gohil (HR Head, Zydus Lifesciences Limited), in his welcome speech. Honourable Secretary of ARES, Rtn. Angiras Shukla congratulated the students for their hard work and diligence. President of UPL University, Mr. Ashok Panjwani appreciated the meritorious students and anchors of the event for their efforts. He also introduced few unique courses which are going to be introduced in the near future at UPL University.

Mr. Jignesh Gohil congratulated all the gold medalists and recipients of excellence award. Chancellor of UPL University, Mrs. Sandra R Shroff appreciated the students and faculty members for their whole hearted efforts. Dr. Hemant Gupta, HOD of Mechanical Engineering Department, thanked the management for granting cash prizes worth Rs. 5,06,000 to 239 students, and all other helping hands for organising such a wonderful event.



International Women's Day Celebration at UPL University

Women Development Cell of UPL University celebrated International Women's day on 8th March 2022 at University campus with Various events like Self Defense training, Fun games and an Expert session on women's health. Ms. Naitika Patel, SDM- Ankleshwar was the chief guest of the program.



Mr. B. R. Bishnoi, National President and founder martial art, Kung-fu federation of India gave important instructions related to self-defense.



The program was followed by a speech on the topic of "Awareness of Health and Hygiene" by Dr. Palak Kapadia, Gynecologist, Ankleshwar.

The event was coordinated by Dr. Jalpa Thakkar, Head- EE dept. & Co-ordinator of Women Development cell under the guidance of Prof. Shrikant J Wagh, Provost UPL University of Sustainable Technology.

Thalassemia Checking Camp

The UPL University of sustainable technology has been arranging awareness drives regarding Thalassemia since 2012. One more Thalassemia checking camp was organized by SRICT-ISR on 9th March 2022 with the support of Indian Red cross Society, Ahmedabad. Thalassemia is a genetically transmitted disease. Surprisingly, there is no cure for this blood disorder affecting children but it can be prevented. The majority of children born with thalassemia in India die undiagnosed or due to lack of proper treatment.



Faculty Achievement

“International Workshop on Materials Science and Computational Methods” (Online) attended by Dr. Trupti Patel. The workshop was organized by PG and Research Department of Physics, Jamal Mohamed College, Tiruchirappalli under DBT Star College Scheme from 15-02-2022 to 16-02-2022.



Dr. Trupti Patel presented a paper entitled “Evaluation of Chlorophyll Concentration in Southern Ocean Using SeaWiFs satellite and SeaDAS Software” at International e-Conference “SciClave-2022” organized by Sankalchand Patel University, Visnagar on 28th Feb- 4th March, 2022 and secured second position for the paper presentation.

WONDERS OF NANO TECHNOLOGY

[Dr. Nilesh Prakash Badgajar-Associate Professor & Head of Department of Chemical Technology]

What do you mean by nano particles?

Nano Particles are the particles of size between 1 nm to 100 nm

- 1 nm is only three to five atoms wide.
- ~40,000 times smaller than the width of an average human hair

Nanometer - One billionth (10^{-9}) of a meter

- The size of Hydrogen atom 0.04 nm
- The size of Proteins ~ 1-20 nm Feature size of computer chips 180 nm
- Diameter of human hair ~ 10 μm
- At the nanoscale, the physical, chemical, and biological properties of materials differ in fundamental and valuable ways from the properties of individual atoms and molecules or bulk matter



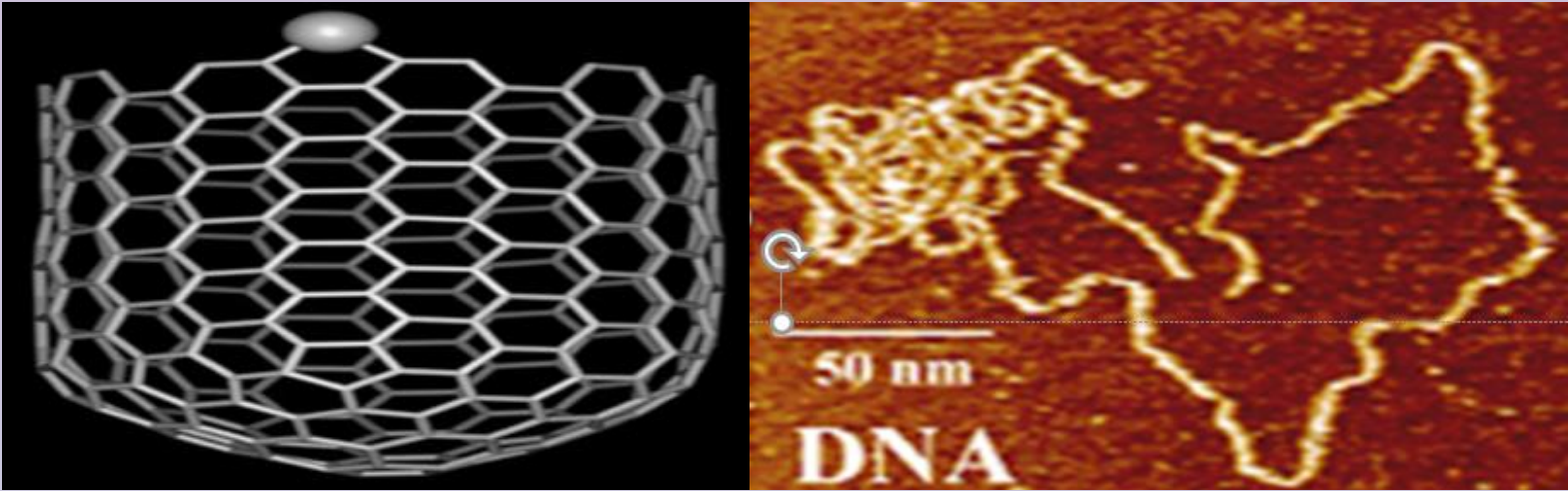
WHY NANO PARTICLES?

No particles are of interest because of the new properties (such as chemical reactivity and optical behaviour) that they exhibit compared with larger particles of the same materials. For example, titanium dioxide and zinc oxide become transparent at the nanoscale and have found application in sunscreens.

NANOPARTICLES HAVE A RANGE OF POTENTIAL APPLICATIONS:

In short-term applications such as in cosmetics, textiles and paints. In the longer term applications such as drug delivery where they could be used to deliver drugs to a specific site in the body. Nanoparticles can also be arranged into layers on surfaces, providing a large surface area and hence enhanced activity, relevant to a range of potential applications such as catalysts.

EXAMPLES OF NANO STRUCTURES



WHAT IS NANOTECHNOLOGY

Nanotechnology deals with the creation of USEFUL materials, devices and systems using the particles of nanometer length scale and exploitation of NOVEL properties (physical, chemical, biological) at that length scale.

VARIOUS NANOMATERIALS AND NANOTECHNOLOGIES

Based on the size and shape, the Nano materials are classified as follows

- Nanoparticles
- Nanocapsules
- Nanofibers, Nanowires
- Fullerenes (carbon 60)
- Nanotubes
- Nanosprings, nanobelts
- Quantum dots, Nanofluids

Quantum well

- It is a two dimensional system
- The electron can move in two directions and restricted in one direction.

Quantum Wire

- It is a one-dimensional system
- The electron can move in one direction and restricted in two directions.

Quantum dot

- It is a zero-dimensional system
- The electron movement was restricted in entire three dimensions

APPLICATIONS OF NANOTECHNOLOGY

1.Nanotechnology Applications in Medicine

- Because of their small size, nanoscale devices can readily interact with biomolecules on both the surface of cells and inside of cells.
- By gaining access to so many areas of the body, they have the potential to detect disease and the deliver treatment.
- Nanoparticles can can deliver drugs directly to diseased cells in your body.
- Nanomedicine is the medical use of molecular-sized particles to deliver drugs, heat, light or other substances to specific cells in the human body.

2.Nano Computing Technology

- **Past**
- Shared computing thousands of people sharing a mainframe computer
- **Present**
- Personal computing
- **Future**
- Ubiquitous computing thousands of computers sharing each
- and everyone of us; computers embedded in walls, chairs, clothing,

light switches, cars characterized by the connection of things in the world with computation

3.Sunscreens and Cosmetics

- Nanosized titanium dioxide and zinc oxide are currently used in some sunscreens, as they absorb and reflect ultraviolet (UV) rays.
- Nanosized iron oxide is present in some lipsticks as a pigment.

4. Fuel Cells

- The potential use of nano-engineered membranes to intensify catalytic processes could enable higher-efficiency, small-scale fuel cells.

5. Displays

- Nanocrystalline zinc selenide, zinc sulphide, cadmium sulphide and lead telluride are candidates for the next generation of light-emitting phosphors.
- CNTs are being investigated for low voltage field-emission displays; their strength, sharpness, conductivity and inertness make them potentially very efficient and long-lasting emitters.

6. Water purification

- Nano-engineered membranes could potentially lead to more energy-efficient water purification processes, notably in desalination process.

7.Military Battle Suits

- Enhanced nanomaterials form the basis of a state-of-the-art ‘battle suit’ that is being developed.
- A short-term development is likely to be energy-absorbing materials that will withstand blast waves;
- longer-term are those that incorporate sensors to detect or respond to chemical and biological weapons (for example, responsive nanopores that ‘close’ upon detection of a biological agent).

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Wireless power at different scales

Mr. Hiren Jariwala, Assistant Professor, DEE-SRICT

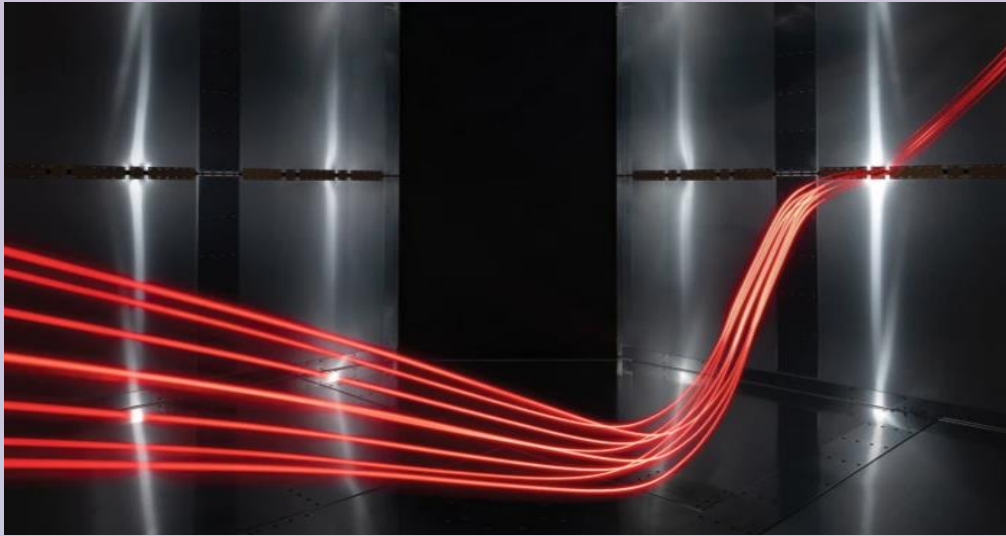


From submillimetre-sized devices to entire rooms, wireless power transfer is a valuable technology in a range of settings.

The appeal of wireless power transfer lies predominately in its convenience it makes it easier to charge a phone, a laptop, an electric car. But the approach can also be used to unleash new capabilities. It can, for example, drive and control flexible microelectronic systems. It can help create networks of sensors distributed across metamaterial textiles. And perhaps of greatest value of all, it can allow sophisticated electronic devices to operate within the body.

Wireless power technology has already established itself as an option for cochlear and ocular implants, and is now being used in a number of emerging, and increasingly intricate, biomedical devices. Last month in *Nature Electronics*, for instance, Arto Nurmikko and colleagues reported the development of wirelessly powered and networked microimplants.

These submillimetre-sized devices termed neurograins have a gigahertz electromagnetic link to an external telecom hub, which affords bidirectional communication at the individual-device level. As a result, wirelessly networked ensembles of neurograins can be created that are capable of autonomous neural recording and stimulation.



Photograph of a wireless power transfer test room built by Sasatani and colleagues. The long exposure of the photograph highlights the path that a wirelessly powered light-emitting diode (LED) took through the room. Credit: Takuya Sasatani and Yoshihiro Kawahara, The University of Tokyo.

Various techniques to build brain–machine interfaces are currently being explored, the most high profile of which being that of the company Neuralink, led by Elon Musk. Such technology typically relies on monolithic arrays of microelectrodes. The neurograin system, with its ensembles of individual microdevices, could offer advantages in terms of placement flexibility and scaling. Nurmikko and colleagues who are based at Brown University, Baylor University, Seoul National University, the University of California San Diego, and Qualcomm Inc. illustrate the potential of the approach by using 48 implanted neurograins to record neural activity in a rat model. They also suggest that the networking approach has the potential to be scaled to 770 neurograins.

Wireless power transfer is usually based on inductive coupling and, in particular, magnetically coupled resonant coils. The approach has a range of around a metre. This is often enough for implantable electronic devices.

But if the focus is on the convenient charging of mobile electronic devices, it is not ideal. In an Article in this issue of Nature Electronics, Takuya Sasatani, Alanson Sample and Yoshihiro Kawahara now report room-scale wireless power transfer.

The researchers are use a technique known as multimode quasistatic cavity resonance. It relies on a resonant structure that is composed of conductive surfaces and lumped capacitors, and can be built into the walls of a room. The approach generates two unique and widely distributed magnetic field patterns that can cover the entire volume of a room and can couple to small coil receivers attached to electrical devices.

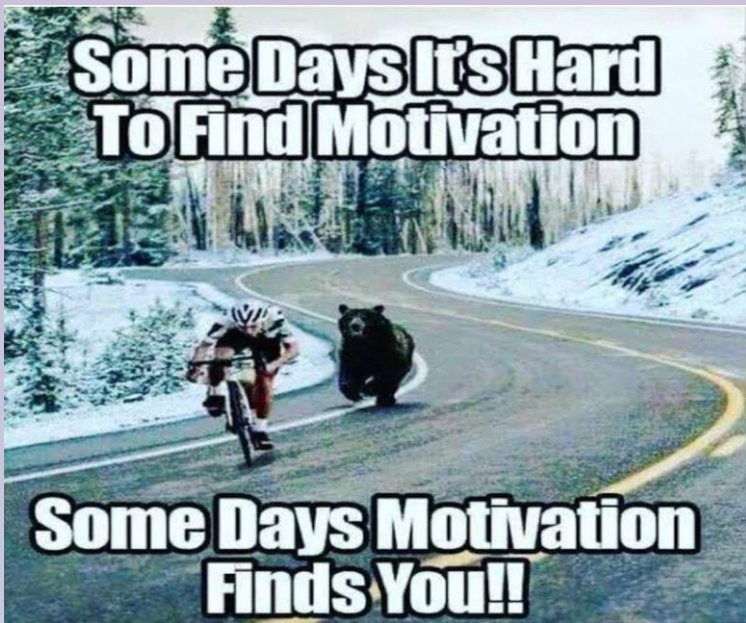
Sasatani and colleagues highlight the capabilities of the approach by building a test room complete with everyday furnishings; lightbulbs, portable fans and smartphones could be wirelessly powered within the space. To maximize power transfer efficiency, the coil receivers should be orthogonal to the magnetic field, but an efficiency greater than 37.1% is still possible at any position within the room. Via simulations, the researchers also explore the safety of the approach and how much power would potentially be absorbed by a person in the room. The exposure levels remain comfortably within guidelines established by the Federal Communications Commission (FCC) and the Institute of Electrical and Electronics Engineers (IEEE).

થઈ જા તૈયાર
મન મક્કમ રાખી ,
મંઝીલ મેળવવા થઈ જા તૈયાર .
દુનિયા છોડી જાય ભલે,
ખુદ ને સાથ દેવા થઈ જા તૈયાર .
ટોચ જેટલા ઊંચા સપના ,
તેને પહોંચી વળવા થઈ જા તૈયાર.
ફરી નહીં મળે ગુરુ દ્રોણાચાર્ય ,
તું એકલવ્ય બનવા થઈ જા તૈયાર .
લક્ષ્ય છે ઊંચા ,
તેને ભેદવા થઈ જા તૈયાર.
ઝરણા ના પાણીથી ક્યાં છીપાય તરસ?
નદી ખોદવા થઈ જા તૈયાર.
નીકળી તો ગયો સ્વપ્ન સાકાર કરવા,
ખુદ માર્ગ કંડારવા થઈ જા તૈયાર.
વિચારો ના વંટોળ માંથી આવી જા બહાર,
ખુદ ને સાચી દિશા બતાવવા થઈ જા તૈયાર.
- અવનિ કવાસવાલા



Students' Corner

Some Days It's Hard
To Find Motivation



Some Days Motivation
Finds You!!

Lazy people fact
#2347827309018287.

You were too
lazy to read
that number.

Who Said English Is
Easy?



Fill this blank with
"Yes" or "No"

1. ___ I don't have a brain.
2. ___ I don't have sense.
3. ___ I am stupid.

*plan A fails,
there are 25
more letters in
the alphabet.*

Compiled by Rohit Patel, Sem2 Chemical Engineering

UPL University of Sustainable Technology

Block No.402, Ankleshwar-Valia Road,
Taluka: Valia, District: Bharuch-393135
TEL: +91-9712177799
MOBILE: 9727745875/76



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