



Prof. Uday Annapure
Director, ICT Jalna



Streamlining minds मार्गजल

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Academic Year 2020-21



Prof. Aniruddha Padit
Vice Chancellor, ICT

MARJ Newsletter



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Editor: Dr. Kapil Sagrolkar



Colloquy

Chemical engineering: Urban areas – Other side

Medicine

Biomaterials

Food processing

Water and wastewater treatment

ELECTRO-OSMOTIC FLOW MODEL

$V_{eo} = \frac{d_p \Delta \phi}{18 \mu_e}$

Conceptual diagram of rigid colloidal particles immersed in a cationic field

Conceptual diagram of electroosmotic flow in the porous structure in cationic field

Recording

Aman Patni ictmarzoom1@...

Prof. Uday An...

Girishkesh...

Krutanti Pandit

The earth's magnetic field protects us from the plasma created by the solar wind.

Student Achievement

Single Polyethylene chain

Simulation box of Polyethylene chains

Methane hydrate

CH₄

Ionic Liquid



Director's Message



This is just the start. Just like these courses, let me assure you that “we are committed to hone our students’ skills (skills that make them competent, industry ready and excel in their life). For this, we will be going to introduce many more skills related and skill oriented courses for their overall development.



Hello Everyone!

This is yet another successful trimester I have experienced as Director of Institute of Chemical Technology (Mumbai) Marathwada Campus Jalna. Trust me folks, I have spent incredible time with the MARJ fraternity. They are workaholic, research-minded, and truly helpful. I am impressed with their publication in the renowned journals; recognition they get by the prestigious institute; and the research grants they procure. Excellent is the word I would pronounce for them. In this endeavour of theirs, I would like to mention and congratulate two senior faculties of MARJ- Dr Girish Joshi and Dr Manoj Gawande who have been elected as Life Fellows of the prestigious Indian Chemical Society. Dr Gawande deserves one more applaud for receiving RSC (Royal Society of Chemistry) Research Fund Grant 2021. Apart from them Dr Kundu too managed to grab DST research grant in his credit. Hence, he deserves the mention!

On 30 June 2021 Honourable Minister of Higher and Technical Education Shri. Uday Samant visited our campus and he was impressed with the State-of-the-Art Laboratories we developed over the period of three years. His praiseworthy words energised and encouraged us all which resulted into amplifying working attitude further. Thank you Shri. Uday Samant ji for visit.

Last year we started Two Year M. Tech Program in the department of Food, Polymer and Pharma. It was a well procured thought and we have got the second batch admitted too. I welcome all the new entrants

of Two Year M. Tech Program.

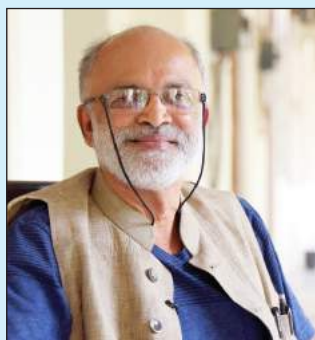
Dear all, we are going to start two new courses under the title “Communication Skills and Soft Skills”. We have prepared the general outline, structure and syllabus of these courses. We are planning to introduce them in the next semester. These courses will be offered to i-M. Tech students, Two Year M. Tech Students and even to the Research Scholars. I am sure these courses will enhance the communication skills and soft skills for the overall development of their personality. I congratulate Dr Kapil Sagrolikar for taking the lead and offering these courses. This is just the start. Just like these courses, let me assure you that “we are committed to hone our students’ skills (skills that make them competent, industry ready and excel in their life). For this, we will be going to introduce many more skills related and skill oriented courses for their overall development”.

Before I take your leave let me tell you all that ‘this (grim time) too shall pass’ and very soon we shall see the sun shining on a normal bright day. I thank and congratulate MARJ fraternity for yet again keeping faith and continuing your work at MARJ. Let us not lose hope. Remember guys, tail-end of Covid 19 is yet to leave. Hence, let us not take it lightly, and follow all the govt. norms. Let us hope that very soon we will get back to normal life.

Prof. Uday S. Annature
Director



Encouragement from the Vice Chancellor



In the first week of June, a complete 3D contour mapping of the allotted land have been carried out and a master plan for the new campus has been made to be submitted to the Government. The continuous assistance and an accommodating attitude of Government of Maharashtra especially that of Hon'ble Minister Shri Uday Samantji is gratefully acknowledged and we all should keep it in mind that ICTMARJ, Marathwada Campus, is being looked upon as a trendsetter for the Marathwada region by the Government of Maharashtra.



Dear ICTMARJ family, Faculty-Staff and Students,

At the onset, my compliments to you all for admirably not only surviving yet another period of the pandemic and not letting it affect your spirit and motivation. In fact, you all have taken it in the right spirit and have started many new initiations.

Under the quiet and efficient and yet unassuming leadership of Professor Uday Annapure, I can see a significant change for good. Weekly seminars, and other similar events have enhanced the co-curricular activity quotient of 165 student community. As promised last year, MARJ and ICT-IOC Bhubaneswar campus students have been considered on equal terms for their eligibility of Merit-cum-Means scholarship to be distributed annually and you will see a few of your friends getting benefitted.

Online teaching has become a norm for both these campuses, and the young faculty has taken it as fish to water. The Saturday seminars and co-curricular activities conducted in a virtual mode at ICT-MARJ are keeping students well engaged and well interested.

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Wishing you all the very best and requesting you all to be extra careful and stay safe. Let us celebrate yet another successful period.

Prof. Aniruddha B Pandit

Vice Chancellor, Institute of Chemical Technology

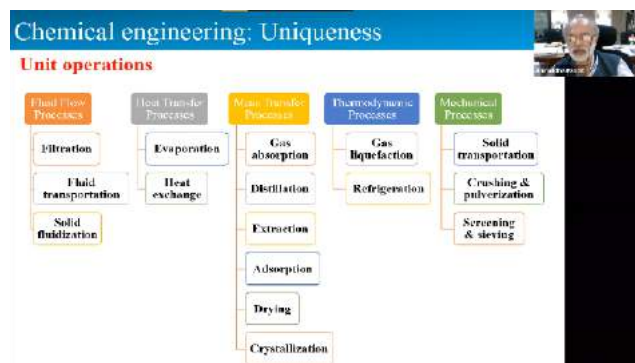
Academic Endeavour

Colloquy

Collaborating and creating one harmonious family is the culture of ICT MARJ. On this pretext, we started a weekly webinar series- 'COLLOQUY'. The purpose of this series is to provide a platform where eminent scholars, professors, and distinguished personalities of wide range of fields of knowledge share their research interests, expertise, and knowledge with students, faculty members, budding entrepreneurs, industrialists and other interested ones.

• Chemical Science for Nation Building on 22 May 2021 by Prof. A. B. Pandit

The inaugural webinar of the series was delivered by our Honourable Vice Chancellor (ICT Mumbai), Prof. A.B. Pandit. He spoke on the topic "Chemical Science for Nation Building". In this session, Prof Pandit spoke about the role of chemical sciences and chemical technology in improving the quality of life, boosting the economy and fostering sustainable development. He recalled the innovative initiatives taken by



ICT such as the eco-cooker and cavitation hand pump. The development and installation of cavitation hand pump in a village resulted in clean drinking water that led to eradication of many hazardous diseases. The highlight of the session "local solution to global problem" encouraged young minds to be innovative and creative in their pursuit of developing technology for the future.

• Methanol: A Growth Engine- An Overview on 29 May 2021 by Prof. V. V. Mahajani

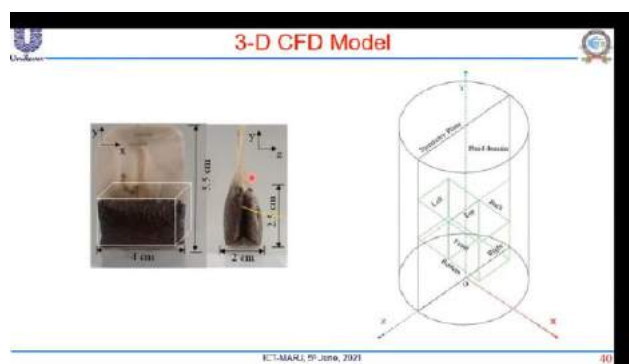
The 2nd talk of the Colloquy series was delivered by Prof V V Mahajani (Former



Professor of Chemical Engineering, ICT Mumbai) on the topic "Methanol: A Growth Engine". "Methanol is proving to be the building block (engine) for various green chemicals which are the driving force for the green revolution which will model the creation of a sustainable development" said by him. He also said that this would contribute to the renewable sources of energy in the foreseeable future. In this session, Prof Mahajani shed light on different roles of methanol as a green chemical which ranged from biodiesel to dimethyl ether. He also discussed its existing methods of manufacturing and new upcoming technologies.

• Tea Infusion Kinetics on 05 June 2021 by Prof. Ashwin Patwardhan

Prof. Patwardhan, Head of the Department of Chemical Engineering, ICT Mumbai spoke on "Tea Infusion Kinetics". He said that we all know tea as one of the most consumed beverages globally but very little do we know about the infusion kinetics that goes behind the brewing of this very common, yet preferred beverage. In this session, he explained the use of the basic principles of chemical engineering, right from unit operations to chemical reaction engineering; to create a mathematical model for

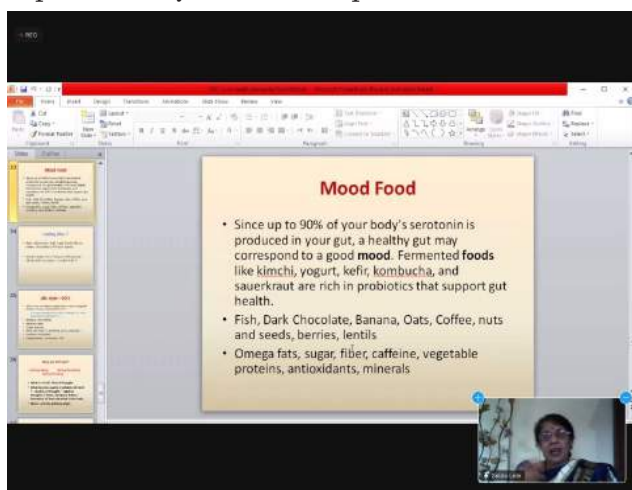




the dissolution of tea granules; and achieving better infusion kinetic results. Not only was this an engaging session, but it also showed us the chemical engineering dynamics from a very miniscule stance and how it affects our daily life.

• **Living Healthy with Immunity Boosting Diet and Lifestyle on 12 June 2021 by Prof. Smita S. Lele**

The 4th webinar of the Colloquy series was delivered by Prof. Smita S. Lele (Emeritus Professor, Former Director, ICT MARJ). She spoke on the topic “Living Healthy with Immunity Boosting Diet and Lifestyle”. Her talk started with the energetic statement- “we have often heard the maxim ‘Health is Wealth’, but have we ever taken a minute from our busy lives to contemplate upon this proverb?” She explained why health is important for the overall



well-being of a person. She took the listeners through the basics of health and immunity, and how incorporating the right amount of essential nutrients and vitamins and food in our diet can help us improve our lifestyle in many ways.

• **Food Processing in Academic Research and Industry: Current Status and Future Directions on 19 June 2021 by Prof. KSMS Raghavarao**

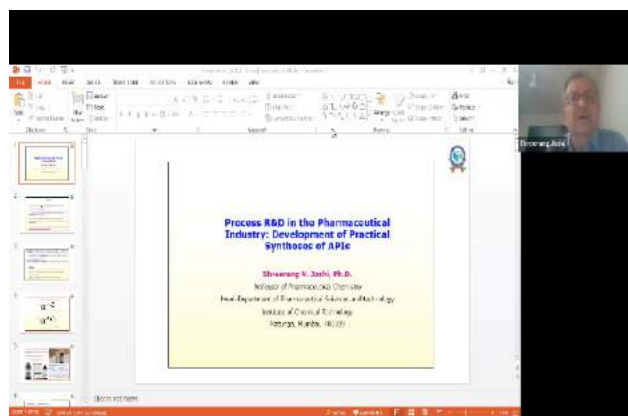
In this talk, Prof Raghavarao (from the Department Of Chemical Engineering, IIT Tirupati) threw light on the basic transport phenomena in chemical engineering- namely heat, mass and momentum transfer. He discussed their interdependency and how this helped him carry out various projects ranging from



fluidization beds, extraction and drying processes to make integrated machines which produce better yields. He also stressed on ATPE (Aqueous Two Phase Extraction) and how it combines the various small unit operations involved in biotechnology and integrates the process, thus enhancing productivity in this domain. Prof Raghavarao encouraged the young minds to carry out innovation based research and challenge the conventional wisdom as this is the most important step moving ahead in the field of food and biotechnology.

• **Process R&D in the Pharmaceutical Industry: Development of Practical Syntheses of APIs 26 June 2021 by Prof. Shreerang V. Joshi**

“It is easy to get a thousand prescriptions, but hard to get one single remedy” there cannot be a better start to the 6th webinar of the Colloquy series than this one. Enthusiastic Prof Joshi (Head, Pharmaceutical Sciences, ICT Mumbai) provided us with an overview of API (Active Pharmaceutical Ingredient) Process Development and various issues related to the safety, environment and economics of it. In this insightful session, he specifically focused on effective, innovative and practical synthesis of APIs in relation to the Bromohexine HCl





and synthesis of metabolites of Glimpiride. He explained the importance of combining synthetic organic chemistry with innovation, to achieve sustainable and economical process for API development. Real life examples correlating the need of creativity, timeline, regulatory and environmental issues for the development of an effective process for APIs.

•Polymers for Automotive Applications on 03 July 2021 by Prof. S. T. Mhaske

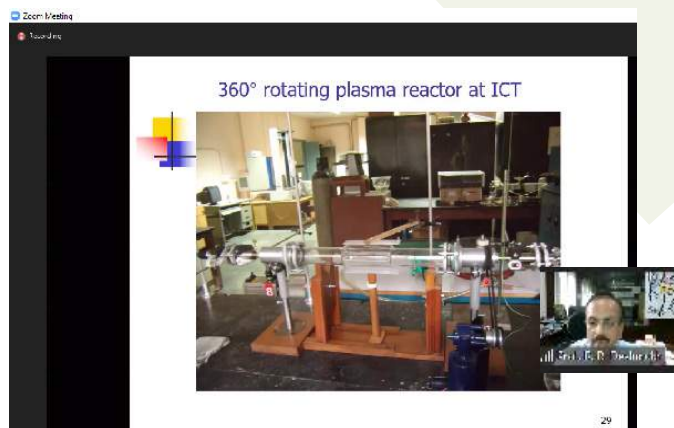
Prof. Mhaske (HOD, Polymer and Surface Engineering, ICT Mumbai) started with explaining the growth rate of automation in our country. He discussed the benefits of using plastic such as superior insulation power, flexibility, anti-corrosion property and much more. Other than this, he introduced the audience to many other materials which can be replaced by plastic, such



as ceramic, metal alloys and metal bodies which lead to many benefits right from cost and weight reduction, up to design flexibility and good impact strength. He elaborated on considering plastic for internal parts like bonnet, fuel tank, engine parts; external parts like bumpers, handles and a lot more. Apart from this, he discussed the usefulness of polymers for material design.

•Plasma: the 4th State of Matter & Its Application on 10 July 2021 by Prof. R. R. Deshmukh

ICT Mumbai Registrar Prof. R. R. Deshmukh introduced the audience to the concept of plasma in terms of its history and existence-natural and generation at lab level. He also talked about the science involved in various applications



of plasma in the fields of surface coating, food processing, textile, dentistry, biotechnology and pharmaceuticals. Furthermore, the types of plasma generation explained were thermal equilibrium plasma generation and non-equilibrium cold plasma generation. He highlighted research work involved at his lab in ICT based on 360 degree plasma reactor, surface treatment, surface coating and pulsating plasma. Towards the end, he encouraged fellow researchers and students to take perpetual efforts in increments towards adding value to science and technology regardless of the outcome.

•Cost Effective Upper End Research Instrumentation and Materials in India on 17 July 2021 by Dr Rajendra Joshi

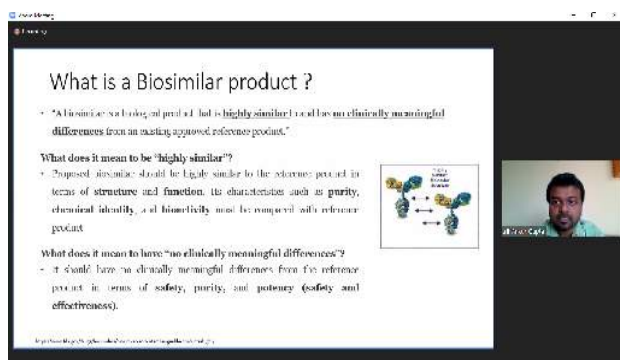
Dr Joshi's (Founder & CEO RI Instruments & Innovation India RI Nanotech India Managing Director RINZTECH NZ LTD, New Zealand) session revolved around various analysis techniques (Micro Raman, NMR, TEM, SEM, AFM) for research and the science associated with it. The significance of Raman Effect and its spectroscopic utilization for powder, liquid, sprays applications along with oncological research



and drug delivery were lucidly illustrated. The production of graphene and its derivatives were discussed. Specifically, emphasis was thrown on graphene oxide (GO) with its wide range of applications – alcohol sensors, rechargeable batteries with replaceable electrodes, solar tiles, anti-bacterial sanitary pads, filters and how graphene/GO could replace non-ferrous metals. Altogether, the talk introduced the audience to certain research instruments and materials along with insights into their significance and applications.

• **Biosimilars on 24 July 2021 by Dr. Ankur Gupta**

Dr. Gupta (Senior Research scientist, Aurobindo Pharma) gave a brief introduction of the Biosimilar- a biologic medical product (also known as biologic) highly similar to another already approved biological medicine. He briefed about Drug Development Comparison between New Medicines (trials and phases) & Biosimilar (Analytical & Clinical Studies) and Phases of Process Development for Reference Medicine Development vs Biosimilar Development (Total



Time) - Ref Product (Clinical) & Biosimilar (Analytical).

He discussed with us with the Biosimilar Development Process and Product Quality Attributes like (Glycosylation, Charge Heterogeneity, and Aggregation). He also described the Process Scale for the commercial scale and regarding the FDA approved Biosimilar products. The session was insightful and informative, and acquainted us with new concepts in the Medicine for the modern world.

• **Antiviral Activity, Efficacy and Trends in Use of Surfactants in Health, Home Care and Sanitization on 31 July 2021 by Prof. R. D. Kulkarni**

The Colloquy invited speaker for 31 July 2021, Prof R.D Kulkarni (Department of Oil, Oleochemicals and Surfactants Tech, ICT Mumbai) took a trendy session on “Antiviral Activity, Efficacy and Trends in use of Surfactants in Health, Home Care and Sanitization” with regards to the Pandemic situation. The session started with the overview on microbial interfacial chemistry, mechanism of surfactant action and influencing parameter along with efficacy and some commercial examples of various surfactant types. A sense of importance around impact of surface antimicrobial surfactant products in current times along with research trends on efficacy from various surfactants by various research groups was highlighted. A meticulous aspect of regulations in terms of claims made by antimicrobial cleaning products was elaborated on. The experience of Prof. Kulkarni in the domain made the session quite informative and well curated for the audience.

• **Fundamentals of Electrochemistry and Voltametric Techniques on 07 August 2021 by Prof. Annamalai Senthil Kumar**

The Colloquy held on 7 August 2021 was an insightful session taken by Prof. Annamalai Senthil Kumar from Vellore Institute of Technology on “Fundamentals of Electrochemistry and Voltametric Techniques”. The subject was introduced throwing light on the Nobel Prize awarded in 2019 for discovery of Lithium-ion batteries. From there on Prof. Kumar went on to keep the session based around the fundamental concepts around lithium ion batteries and innovations associated. Modern electrochemical systems, double layer electrode/ electrolyte interface and polarography were also elaborated on. An interesting discussion between Faradic and Non-Faradic reactions followed by Cyclic Voltametry and its applications led to several questions in the subsequent Q&A session by curious members of the audience.



Weekly Faculty Meet

ICT MARJ is a newly established institute and a lot of things are under the development stage. This pandemic has slowed down the progress of the institute development but never stopped us from moving forward. Thanks to regular online faculty meetings with the institute director. The various decisions related to academics, infrastructure and instrument procurement was taken in the Weekly Faculty Meet. Few new faculty members joined the institute during the lockdown and their introduction/interactions were taken place during the Meet. It would have been very difficult for them if there were no periodic faculty meetings. Infrastructure development such as research lab, chemical engineering lab progress, etc. were discussed and monitored due to Meet. The director Prof. Annapure used to take a regular

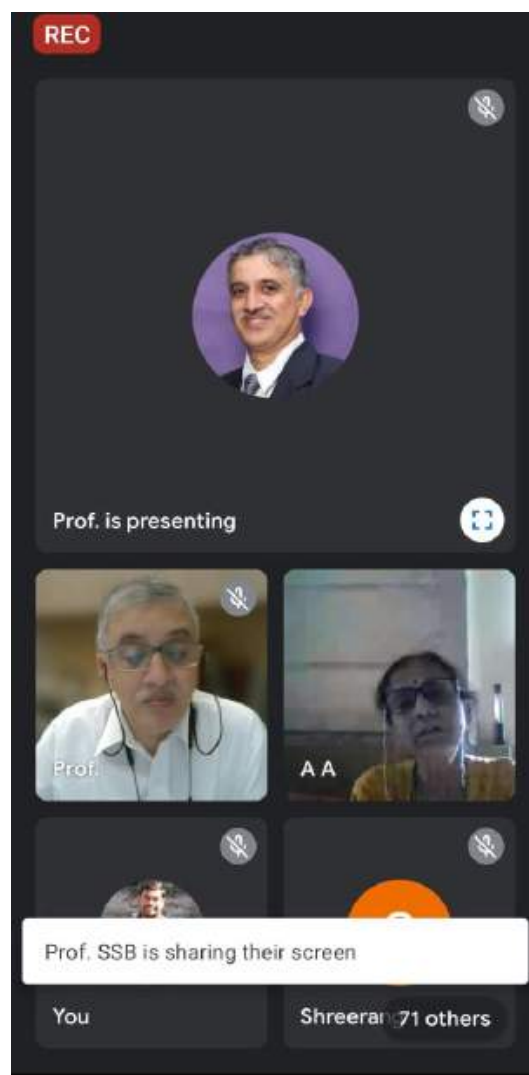
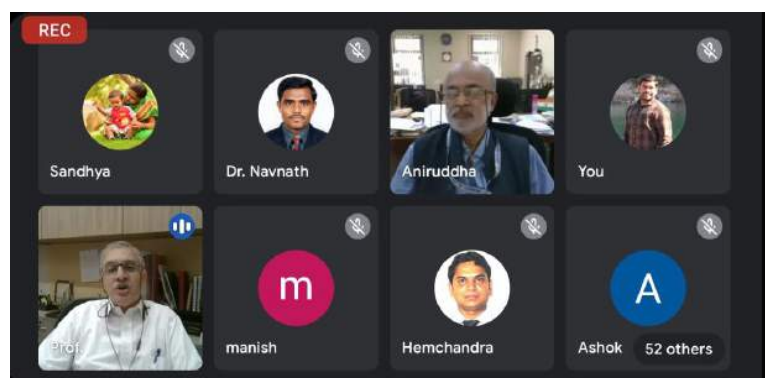
update from all the faculty members on various academic and infrastructure development. Few more students from i-M. Tech and Two Year M. Tech (Food, Pharma and Polymer) background have also taken admission to ICT MARJ during the Covid situation. Conducting an induction program for them was very challenging and it needed meticulous planning.

In the faculty meeting, the faculty team was formed to conduct the induction program. The decision of conducting colloquy by inviting eminent scientists and industrialists every weekend was also taken in one of the faculty meetings. Overall the regular faculty meet has been come out to be a very fruitful activity to move forward in this difficult situation. Dr. Manoj Jadhao was instrumental in conducting the Meet.

One Day Teachers' Training Workshop

All the teaching staff of ICT MARJ actively attended one day Teachers' Training Workshop organised on 28 June 2021 by ICT Mumbai campus. The workshop was aimed at covering many aspects about conducting classes, preparing question papers keeping in mind the Bloom's taxonomy, grading answer-sheets, etc. The workshop discussed issues pertaining to teaching online, challenges in online content creation and while doing so maintaining the ICT standards.

The day was filled with fruitful sessions that enriched the knowledge of MARJ faculty. We thank the organisers for organizing such a workshop.



Fire Safety Workshop

ICT MARJ conducted One Day Fire Safety Workshop on 05 July 2021. Suraj Fire and Safety Services, Jalna helped us conduct this workshop. Mr. S. R. Jadhav from Suraj Fire and Safety Services provided us with the demonstration on the types of fire and different ways of controlling it. The demonstration included real life experiences and examples e.g. use of fire extinguishers. Thereafter, we had the first-hand experience by performing the demonstration under the supervision of Mr. Jadhav. Deputy Director Dr. Parag Nemade initiated the demo. He was followed by PhD students Mr. Gajanan Shinde, Miss Saylee Bhaviskar, Miss Namita Karna, and Miss Supriya Joshi. Mr. Jadhav cleared all the doubts and queries posed by the students, and support staff. Dr Saurav Raj coordinated the program.



Annual Progress Presentation of TARA

Evaluation of the progress is an important aspect and way to track and channelize the growth of Research Scholars. In order to do so, ICT MARJ conducted Research Progress Seminar Presentation on 26 July 2021. All the TARA members (Research Scholars) discussed the progress of their research work so far. Their presentation included the publication records-research papers, book chapters, review articles, etc. The research supervisors, subject experts and other faculty members from the Mumbai as well as Jalna campus joined the seminars and provided the scholars with their valuable suggestions.





Project and Grants

1. Dr Manoj B. Gawande bagged RSC Research Fund Grant 2021

We are very glad to share with you that Dr. Manoj B. Gawande was awarded with the prestigious RSC Research Fund Grant for the year 2021 by the Royal Society of Chemistry (RSC), Cambridge, UK. The grant will be utilized for the synthesis of molecularly dispersed catalysts for the conversion of carbon dioxide to fuels and chemicals. This is the first-ever international grant received by Dr Gawande.

2. Dr. Debashis Kundu bagged DST sponsored project

Dr. Debashis Kundu has bagged a project sponsored by Department of Science and Technology. The title of his project is "Sustainable, Biodegradable and Affordable Substitutes for 'Single use Plastics' using Castor Oil and

Stubble Aggregate". The duration of the project is three years. This is a collaborative project to be undertaken along with Prof. Tamal Banerjee [IIT Guwahati (Co-PI)], Dr. Suryasarathi Bose [IISc (Co-PI)], Dr. Kaushik Chatterjee [IISc (Co-PI)]. HPCL Green R&D Centre are going to be their industrial partner. We congratulate Dr Kundu for his efforts.

3. Dr Nagsen Meshram received Financial Support for Research Project

Dr Nagsen Meshram received Financial Support for Research Project on "Synthesis and Characterization of Semiconducting Photoactive Materials for H₂ Generation and dye Degradation". This support is offered by ICT Mumbai under Golden Jubilee Fund/UICT Research Fund for the Year 2020-2021.

Publication

• Dr Girish M. Joshi

1. Studies on the Surface and Wetting Properties of Poly(vinylidene fluoride)/Poly(acrylonitrile)/Multiwalled Carbon Nanotube-NH₂ Blends as a Function of Air Plasma Treatment

Journal of Materials Engineering and Performance, 2021,

DOI: <https://doi.org/10.1007/s11665-021-05915-w>, (IF- 1.819)

2. Role of STO in flexible polymer Nanoblends for dielectric Applications
Modern plastic India, 2021 Vol. 22, 5.

3. Functionalized Nanomaterials Based Devices for Environmental Applications

Co-Editor, Publisher: Elsevier, Paperback
ISBN: 9780128222454

-Book ISBN: 9780128232705

Published Date: 6th August 2021

Page Count: 412

• Dr Manoj B. Gawande

1. Surface engineered Iridium-based magnetic photocatalyst paving a path towards visible light driven CH arylation and cyanation reaction

Journal of Catalysis, 2021, DOI: [10.1016/j.jcat.2021.08.014](https://doi.org/10.1016/j.jcat.2021.08.014). (IF- 7.92)

2. Silver nanomaterials: synthesis and (electro/photo) catalytic applications

Chemical Society Reviews, 2021, DOI: [10.1039/d0cs00912a](https://doi.org/10.1039/d0cs00912a). (IF- 54.56)

3. Unlocking the catalytic potency of a magnetic responsive CoFe₂O₄/Ni-BTC MOF composite for the sustainable synthesis of tri and tetra-substituted imidazoles

Materials Chemistry Frontiers, 2021, DOI:

10.1039/D1QM00904D. (IF– 6.48)

4. An earth-abundant Ni-based single-atom catalyst for selective photodegradation of pollutants
Solar RRL, 2021, 5, 2100176. (IF–8.58)

• Dr Somen Mondal

1. Long-range light-modulated charge transport across the molecular heterostructure doped protein biopolymers,
Chemical Science, 2021, 12, 8731–8739. (IF– 9.34)
2. Ultrafast Dynamics in Carbon Dots as Photosensitizers: A Review,
ACS Applied Nano Materials, 2021, 4, 8, 7587–7606. (IF– 3.93)

• Dr Saurav Raj

1. A novel ameliorated Harris hawk optimizer for solving complex engineering optimization problems
International Journal of Intelligent Systems, 2021, 1– 41. (IF– 10.31)
2. Optimal scheduling of distributed energy

resources in microgrid systems based on electricity market pricing strategies by a novel hybrid optimization technique

International Journal of Electrical Power & Energy Systems, 2022, 134, 107419. (IF– 4.63)

3. Voltage Constrained Reactive Power Planning Problem for Reactive Loading Variation Using Hybrid Harris Hawk Particle Swarm Optimizer
Electric Power Components and Systems, 2021, 1–15. (IF– 0.84)
4. Optimal parameter estimation of overhead transmission line considering different bundle conductors with the uncertainty of load modeling,
Optimal Control Applications and Methods, 2021, 1– 15. (IF– 2.53)

• Dr Sameena Malik

1. Enhancement effect of zero-valent iron nanoparticle and iron oxide nanoparticles on dark fermentative hydrogen production from molasses-based distillery wastewater
International Journal of Hydrogen Energy, 2021, 46 (58), 29812–29821. (IF– 5.81)

Extension Activities

• Prof. Uday S. Annapure

1. Srijan, Dipex center for Entrepreneurship Development, organized Youtube Live Session on the occasion of National Technology Day on 13 May 2021 from 4.00 pm to 5.00 pm. Prof. Annapure was the Chief Guest of the Program. He wove his speech so well with the program theme (“Project to Product: a Key to Entrepreneurial Future”) that it enthralled the audience.

DIPEX SRIJAN CENTER FOR ENTREPRENEURSHIP DEVELOPMENT

PROJECT TO PRODUCT
A KEY TO ENTREPRENEURIAL FUTURE

YouTube Live @DIPEX

13TH MAY 2021
4:00 PM to 05:00 PM

DIPEXofficial @dipexofficial
f DIPEX DIPEX

SRIJAN ORGANOISES
YOUTUBE LIVE SESSION
ON OCCASION OF NATIONAL TECHNOLOGY DAY

CHIEF SPEAKER
Dr. Mohit Gambhir
Innovation Director
Ministry of Education,
Innovation Cell,
Govt. of India.

CHIEF GUEST
Dr. Uday Annapure
Director
Institute of Chemical
Technology, Jaina,
Maharashtra

Under the **Expert Lecture Series**,
in association with Microbiologists Society - India,
School of Science - RK University presents
an expert lecture on

Applications of Non-thermal Processes for Food Safety

11/07/2021 | Sunday | 11:00 am (IST) onwards



Expert:

Professor (Dr.) Uday S. Annapure
FMASc, BOYSCAST Fellow
DIRECTOR,
Institute of Chemical Technology (ICT), Mumbai
Marathwada Campus, Jalna, Maharashtra.

Who should attend? - Students, Research scholars, Academicians

Chief Patron: Dr. A.M. Deshmukh, President, Microbiologists Society, India (MSI)

Patron: Dr. Shilpa Jani (President, MSI, Gujarat Chapter), Head Microbiology department, J. & J. College of Science, Nadiad.

Regional Coordinator MSI (Saurashtra and Kutch): Dr. Vijay Kumar, Head, Dept. of Microbiology, RK University, Rajkot

Coordinator: Dr. Swati Goswami, Assistant Professor, Dept. of Microbiology, RK University, Rajkot

To register (FREE), visit: www.rku.ac.in/events/emsi

Contact for more details: swati.goswami@rku.ac.in

- Prof. Annapure delivered an expert lecture on “Application of non-Thermal Processes for Food Safety” on 11 July 2021. The Expert Lecture Series was organized by School of Science, RK University, Rajkot in association with Microbiologists Society, India.
- Dr Girish Joshi** was the resource speaker on 10 May 2021 in AICTE sponsored online Short-Term Training (STTP) on “Emerging Trends in Nano Materials for Electronic and Optoelectronic Devices (Series I)”. This program was organised from 10-15 May 2021 by Department of Electronics and Communication Engineering, Swarnandhra College of Engineering and Technology, Narsapur (AP). Dr Joshi delivered a two hour talk on “Present Scenario of High performance Materials for Device Applications”.



Achievement

लोकमत

प्रा. डॉ. उदय अन्नपुरे यांची
'एफएसएसएआय'च्या
वैज्ञानिक पॅनलवर नियुक्ती

लोकमत न्यूज नेटवर्क

मुंबई : मुंबईतील रसायन तंत्रज्ञान



संस्थेच्या जालना येथील केंद्राचे संचालक प्रा. डॉ. उदय अन्नपुरे यांची नवी दिल्ली येथील भारतीय खाद्य

सुरक्षा आणि मानक प्राधिकरणाच्या (एफएसएसएआय) न्यूट्रास्युटिकल्स, फंक्शनल फूड्स, डाएटेटिक फूड प्रोडक्ट्स या वैज्ञानिक पॅनलवर नियुक्ती करण्यात आली आहे.

अन्न सुरक्षितता आणि मानांकने कायदानुसार एफएसएसएआयची स्थापना करण्यात आली आहे. ही भारत सरकारची स्वायत्त संस्था आहे. अन्न पदार्थांशी संबंधित मानांकने आणि मार्गदर्शक तत्त्वे तसेच विविध मानांकनांची अंमलबजावणी करण्यासाठी निर्देश देण्याचे काम ही संस्था करते. डॉ. अन्नपुरे यांची निव्वळ त्यामुळे महत्त्वाची मानली जात आहे.

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ICT MARJ Director Prof. Uday S. Annapure is on FSSAI Panel, New Delhi

It is our immense pleasure to inform you all that ICT MARJ Director Prof. Uday

S. Annapure has been selected on the Food Safety and Standards Authority of India (FSSAI) Panel, New Delhi. FSSAI is a statutory body established under the Ministry of Health & Family Welfare, Government of India. It has been established under the Food Safety and Standards Act, 2006, which is a consolidating statute related to food safety and regulation in India.

Achievement

Indian Chemical Society Welcomes Two ICT MARJ-Faculty

It's a proud moment for the entire ICT MARJ Fraternity that two of its faculty members namely- Dr. Manoj B. Gawande and Dr. Girish M. Joshi, have been elected as Life Fellows of the prestigious Indian Chemical Society. This is a premier scientific society of India founded in 1924 as National Forum for the community of chemists and members of allied disciplines in the country.

The academic excellence and professional hardship of these faculties have earned them this honour. Institute of Chemical Technology is proud of them for adding another feather to an already well-decorated cap of achievements.



Dr. Manoj B. Gawande



Girish M. Joshi

Socio-Cultural Activities

Campus Vaccination Drive

ICT MARJ participated in the world's largest free vaccination campaign- "Vaccine for All; Free for All" initiative announced by the honourable Prime Minister of India Mr. Narendra Modi. We participated in the campaign from 21 June 2021 and vaccinated all the teaching and support staff afterwards.



Virtual Celebration of International Yoga Day

ICT MARJ organised International Yoga Day virtually on 21 June 2021. ICT MARJ fraternity celebrated this day. Mr. Santosh Shinde and Mr. Devendra Kshirsagar took the initiative and



performed different Yoga positions and styles whereas others followed instructions given by them.



Visit of Minister of Higher Education and Technical Education of Maharashtra Shri. Uday Samant to ICT Marathwada Campus Jalna



Minister of Higher Education and Technical Education, Maharashtra Shri. Uday Samant visited ICT MARJ campus on 30 June 2021. ICT MARJ Director Prof. Uday Annapure welcomed him and presented bird's eye view of MARJ Campus.

While addressing the gathering Shri. Uday Samant directed all the stakeholders of ICT MARJ campus to have a compound-wall for the 203 acre land assigned for the campus, occupy the land and provide the blueprint for the basic and overall development of the campus on this land. For this, he announced and

promised to release Rs. 165 crore fund as soon as possible. The minister was impressed with the State-of-the-Art Laboratories of ICT MARJ. He also admired the ICT for being one of the renowned institutes of India and thanked for having a sub-campus in Marathwada region. In his address he advised MARJ fraternity to provide and impart world class education to the Marathwada student and make them competent so that not only Jalna but also Marathwada students will be benefitted and shine in their career. After his address, Shri. Uday Samant participated in Tree-Planting.

Mr. Arjunrao Khot (State Minister), Mr. Narayan Kuche (member of Legislative Assembly), Prof. A. B. Pandit (Vice Chancellor, ICT), Prof. R. R. Deshmukh (Registrar, ICT), Prof. Uday Annapure (Director, ICT Marathwada Campus Jalna), Dr Parag Nemade (Deputy Director, ICT Marathwada Campus Jalna), and all the teaching and support staff participated event. Along with them, industrialists Sunil Raygattha, Ashish Mantri, and Bhausahab Ghuge too showed their presence.

Student Corner

Student Publication

1. Hanumant B. Kale and Indrajeet R. Warkad (PhD Student) published a review paper entitled, "Silver nanomaterials: synthesis and (electro/photo) catalytic applications", in Chemical Society Reviews under the guidance of Dr. Manoj B. Gawande. (Chemical Society Reviews, 2021, DOI: 10.1039/d0cs00912a (IF-54.56)) Please visit the link for full access of this paper (<https://pubs.rsc.org/en/content/articlelanding/2021/cs/d0cs00912a>)

2. Name of the Magazine: "Insights- Plastic Industry in Focus", April-August 2021, Vol-65.

Name of the publisher or foundation: PlastIndia Foundation

Name of authors: 1. Atharva Jahagirdar; 2. Vedant Kulkarni

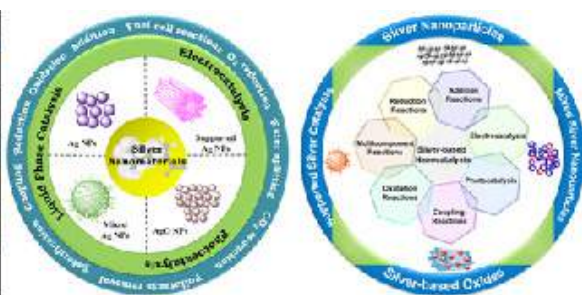
Topic: "Online education- Students Perspective"

Guidance- Prof Mohan Shenoy and Dr Girish Joshi

3. Book Chapter Name: Synthesis, properties, and applications of nanomaterials: A mini review

Authors: Vedant A. Joshi, Girish M. Joshi, and Sudheesh K. Shukla

Book Name: Functionalized Nanomaterials Based Devices for Environmental Applications



Published Date: 6th August 2021

Imprint: Elsevier

4. Gargi Patil under the guidance of Dr. Girish Joshi published a paper entitled "Role of Inorganic Fillers in Nanocomposites for Food Packaging Application" in the Nano Composite.

5. Vedant Kulkarni under the guidance of Dr. Girish Joshi published a paper entitled "Preparation of Carbon Nanotubes from Plastic Waste Materials" in the Nano Technology.



6. Atharva Jahagirdar, Vedant Kulkarni, Karan Sharma, and Utkarsh Patodi published Book Chapters in Processing & Recycling of Polymer Plastic for Environment Applications. (https://www.morebooks.shop/bookprice_offer_0a1c1d93437ca6c5d3a5e82debe4402a7a446d66f?locale=gb%2%A4cy=EUR)

7. Ayush Deore and Shreyash Deshmukh published a paper on ACS named (Ultrafast Dynamics in Carbon Dots as Photosensitizers: A Review) (<https://pubs.acs.org/doi/10.1021/acsnm.1c01880>)

8. Prajwal Jadhav from 2018 batch and Pratham Shah from 2019 minireview on the thermodynamic and kinetic modelling of ionic liquid promoted inhibition of gas hydrate formation has been published in

American chemical society. (<https://pubs.acs.org/doi/10.1021/acs.energyfuels.1c01445>)

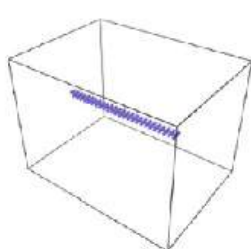
9. Atharva S. Waghmare (2nd Year I-M.Tech Student) published an article titled "Historical Scenario of Polyester Industries in India" during his IPT term at Garware Polyester



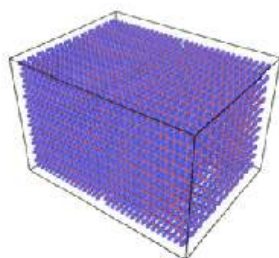
Ltd Waluj. It was published by Modern Plastics India. Dr Girish Joshi guided him. (<http://digital.emeraldgroupe.com/m5/3091200/Modern-Plastics-India/Vol-22-%7C-Issue-04-%7C-May-2021-%7C-Mumbai#page/69/1>)

Student Achievement

Ali Asger from 2018 batch received Summer Fellowship at FOSSEE IIT-B for open source contribution using Open Modelica in the domain of Chemical Process Modeling and Simulation. He has been selected on the basis of Screening Tasks (flowsheets). It was published on-



Single Polyethylene chain



Simulation box of Polyethylene chains

1. DWSIM- “Separating Water Acetonitrile- Isopropanol mixture via Triple Column Pressure Swing Distillation”. (<https://dwsim.fossee.in/flowsheeting-project/dwsim-flowsheet-run/657>)

2. OpenModelica- “Pressure Swing Distillation for Separation of Water and Cyclo-hexane”. (<https://om.fossee.in/chemical/flowsheeting-project/om-flowsheet-run/127>)

3. OpenModelica- “Separation of Pyridine and Water using Pressure Swing Distillation”. (<https://om.fossee.in/chemical/flowsheeting-project/om-flowsheet-run/112>)

Raj Wagh and his project on Modelling of Polyethylene

While performing Molecular Dynamics simulations of various systems, anyone who uses open-source software and doesn't have access to paid ones face one common issue: how to generate initial structure/ data file? And that too in a particular format like .pdb file for Gromacs or .data file for LAMMPS.

In LAMMPS for most of simulations people just search online for these topology files, sometimes they are able to find sometimes they could not. When they find it, file may contain a lot of errors (Like missing dihedrals, impropers, charges or forcefield parameters etc).

Therefore, Raj L. Wagh, the second year i- M. Tech student of ICT MARJ decided to work on it in his project. He wrote a python code which can generate .data file of single Polyethylene chain of any number of monomers or a full simulation box containing number of such chains. (<https://github.com/RajLW/Materials-modelling>)

Student Participation at Conferences

Farhan Shaikh from the 2018 Batch presented paper titled “Effect of Brick Kiln Industry in India” at the International Conference “CHEMBIOEN”. It was organised by NIT Jalandhar. The research was guided by Dr Sunny Kumar.

ICT MARJ is proud of him and his innovativeness.

THE RED DOT CHALLENGE

It is an act against periods shaming and promoting facts on menstrual hygiene. Across the globe, 28 May is observed as Menstrual Hygiene Day to highlight the importance of menstrual hygiene and create awareness about menstruation. The Red Dot Challenge, an initiative by UNICEF aims at social acceptance of menstruation and creating awareness about menstrual hygiene. The 2nd year i-M. Tech (2019-batch) students (Gauri Ladda, Jidnyasa Chintamani, Ketaki Patil, Sakshi Tak, Tanisha Patni) of ICT MARJ supported the initiative of UNICEF- 'The Red Dot Challenge'. They said "we stand together for a change. 'Let us put a period to period shaming'".

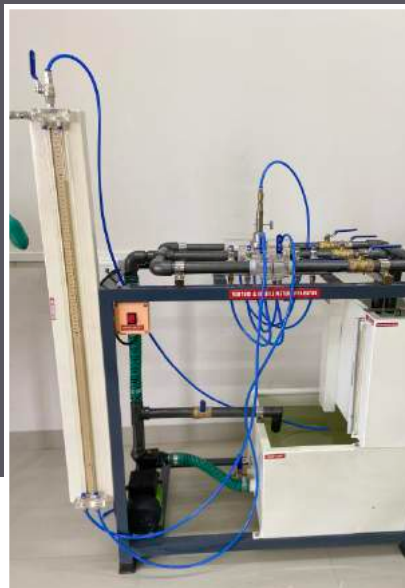


Campus Development Activity

ICT MARJ is committed to provide an outstanding environment for excellence in Research and Development in all the disciplines. Some more feathers have been added in ICT MARJ to boost the research activity in terms of advanced instruments.

Chemical Engineering UG Lab

Chemical Engineering Undergraduate Laboratories contain the laboratory experiments related to the Chemical Engineering curriculum of ICT Marathwada Campus Jalna. There are three Chemical Engineering Laboratories covering the basic and advanced experiments from Fluid Mechanics, Thermodynamics, Heat Transfer, Mass Transfer and Separation Processes, Chemical Reaction Engineering and Chemical Process Control.



Microbiology/ Biochemistry and Animal Tissue Culture (ATC) Laboratory



General lab

Light
Microscope

The instruments procured earlier were successfully installed for practical courses and research purpose which are listed as follows:

1. BSL II Biosafety Cabinets: For handling of microorganisms and animal cells under sterile conditions
2. CO₂ incubator: For culture and growth of animal cells
3. Bright field and Phase contrast microscopes: For routine observation of cells
4. -80°C freezer: For storage
5. Thermal cycler: For running PCR reactions
6. Waterbath/vortexer/solution rocker: For general laboratory purposes

The instruments will support interdisciplinary research works involving biological applications.

Affinity ITC from TA Instruments and Metrohm Electrochemical Workstation

In February 2021, Isothermal titration calorimeter from TA instruments Pvt Ltd was procured. It is a powerful analytical technique for in-depth characterization of molecular binding events and structural stability. ITC provides the most demanding applications in drug discovery, protein-protein interactions, structure-

function characterization and more. In July 2021, Electrochemical workstation from Metrohm Autolab B. V, Netherland, was installed in ICT MARJ. This is the powerful technique for understanding reaction kinetics, sensing materials, corrosion, energy conversion and storage studies, etc. Recently, ICP-MS from Thermo Fisher Pvt Ltd has installed with is the state of art facility used qualitative and quantitative determination of various metals in significantly low concentration. In recent years, ICP-MS has emerged as the best technique for the quantification of inorganic impurities in pharmaceutical and biomedical applications.



Instrument Installation

Wet Lab

Wet laboratory is commonly utilized for lab work and research purposes. As mentioned in previous issue of Margjal our wet lab is fully functional. Several PhD students in the field of Chemistry, Chemical Engineering, Polymer Engineering, Ultrafast Dynamics of Nanomaterials and Biomaterials, Electrochemistry performing their experiments in wet lab.

X-Ray Diffraction (XRD) instrumentation

We are proud to announce that we have installed very sophisticated X-Ray Diffraction (XRD) instrumentation (D8 Advance, Make: Bruker). Instrument engineers provided the preliminary demonstration to students. So, now students can handle and plan their sample XRD analysis on X-Ray Diffractometer. X-Ray Diffraction is a high-tech, non-destructive technique for analysing a wide range of materials, including fluids, metals, minerals, polymers, catalysts, plastics, pharmaceuticals, thin-film coatings, ceramics, solar cells and semiconductors. Throughout industry and research institutions, XRD has become an indispensable method for materials investigation, characterization and quality control. Example areas of application include qualitative and quantitative phase analysis, crystallography, structure and relaxation determination, texture and residual stress investigations.

Apart from this, ICP-MS, BET surface area, High pressure reactors, and Tube furnace are also under the process of installation. Very soon, they too will be added into the State-of-Art analysis facility of ICT MARJ.



Multi-channel Electrochemical Workstation (Metrohm-Autolab)



Metrohm-Autolab was installed successfully. The instrument engineer demonstrated its working and applications to our PhD students. Autolab's potentiostat/galvanostat instruments are cutting-edge technology that may be used in a wide range of electrochemical applications. Modularity is a key aspect of Autolab electrochemical equipment. The instrument is built on a multi-channel potentiostat/galvanostat based on the compact Autolab PGSTAT204. The in-house available features e.g. cyclic voltammetry, linear sweep voltammetry, chronoamperometry, impedance spectroscopy, charge discharge characteristics provide powerful techniques for understanding reaction kinetics, sensing materials, corrosion, energy conversion and storage studies etc.



Lab Instruments



Chemical Engineering UG Lab



Chemical Engineering UG Lab



CO2 Incubator



Shaker Incubator



XRD D8 Advance



International Yoga Day

लोकमत

प्रा. डॉ. उदय अन्नपुरे यांची 'एफएसएसएआय' च्या वैज्ञानिक पॅनलवर नियुक्ती

लोकमत न्यूज नेटवर्क

मुंबई : मुंबईतील रसायन तंत्रज्ञान



संस्थेच्या जालना येथील केंद्राचे संचालक प्रा. डॉ. उदय अन्नपुरे यांची नवी दिल्ली येथील भारतीय खाद्य

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अन्न सुरक्षितता आणि मानांकने कायदानुसार एफएसएसएआयची स्थापना करण्यात आली आहे. ही भारत सरकारची स्वायत्त संस्था आहे. अन्न पदार्थांशी संबंधित मानांकने आणि मार्गदर्शक तत्त्वे तसेच विविध मानांकनांची अंमलबजावणी करण्यासाठी निर्देश देण्याचे काम ही संस्था करते. डॉ. अन्नपुरे यांची निवट्यामुळे महत्त्वाची मानली जात आहे.

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Selection of Prof Uday Annpure on FSSAI Panel, New Delhi

Red Dot Challenge

Academia Corner

Online Education - Student's Perspective

Ekharva V. Jhaugrader
Professor of Chemical Technology, Marathwada University, Jalgaon

Yashant A. Kulkarni
Professor of Chemical Technology, Marathwada University, Jalgaon

Today's world under the shadow of COVID-19 Pandemic has witnessed many drastic changes in the way we live our lives. This can be clearly seen in the education sector. These methods of having interactions with the teachers, being handy with books have eventually lost over or have become like a distant dream. The environment of study, the satisfactory, clarification of doubts, understanding of practical and experimental concepts clearly have been a major problem after the teaching mode has become online based. Many of the important disadvantages of online sessions are the course use and dependence of the electronic media. This is a great or other resources are may result in health or even related issues. But we can also say that there was no other better substitute in this situation that have had students' desire of learning and process of gaining knowledge of the subject they are pursuing verified. Online mode of learning has also given a chance to the students to attend the lectures or any such academic activities at their own leisure or pace. Many of the educational organizations have emerged a large number of online sessions or modules in each program so that students could complete within their own knowledge of subjects. Students are facing less stress that was earlier as they are able to attend their classes from their own convenient time. This has also made a change in mode of assessment. The assessments or exams in some or other mode with the online mode has resulted as a boon for students, whenever could give the exam at their own convenient level. Examination in the form of evaluation of the learning of the student but not an evaluation has not been the use of assess after means to obtain higher marks or scores. This has motivated to improve awareness of the students. Moreover, one of the most important advantages is that students eventually have their confidence on self as being dependent on college to solve a particular problem that may happen in their performance in the practical world where they may face any of such situations. The most important thing that is being learned for student while studying is the retention of the practical knowledge in their sessions. The reason for this is any much significant advantage for the online practical sessions but surely there are lots of disadvantages. A student must be honest with the equipment, must be able to perform experiments, and importantly implement the theoretical knowledge to face practical for their own development in the coming future. A student is desired to apply his learning in practical work for emerging with a practical skill or any workshop. In case, a student is not well equipped with the particular skill, for example if he/she has pursued Chemical Engineering and he is not well in the working of the particular process he/she will not be able to work in an appropriate way that may result in a disaster loss for the industry or related work.



Student Publication

