



CECRI NEWS

(A monthly newsletter of CSIR-CECRI)
compilation of significant happenings

Indo-Russian Collaborative Project

CSIR-Central Electrochemical Research Institute has ventured into a collaborative project entitled *Surface-modified porous Ti-based implants produced by additive methods for cranio-maxillofacial and dental surgery* with National University of Science and Technology "MISiS", Moscow, Russia. This proposal aims to fabricate the bioactive glass ceramic layer onto additive manufactured 3D implantable surgical implants by DC magnetron sputtering and electrophoretic deposition improving the bioactivity of the implants with: *Development of nHA & nBAG coatings to enhance the tribological, antibacterial and corrosion resistance properties of the metallic implants* (from Indian Side) and *Development of new electrolyte compositions containing bioactive and bactericidal components for plasma-electrolytic oxidation (PEO) of highly porous titanium implants obtained by additive method* (from Russian Side).



Ion Assisted Confocal Co-Sputtering Facility at CSIR-CECRI

Combinatorial Sputtering of Thin Film Metallic Glasses onto 3D Printed Customized Implants

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DigitALL:
*Innovation and Technology
for Gender Equality*

- Theme of
**United Nations for
International Women's Day-2023**



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National Safety Week Celebrations

A week-long wide array of events marked the 52nd **National Safety Week (NSW) Celebrations** at CSIR-CECRI, Karaikudi during March 6-10, 2023 by the **Lab Safety Committee (LASAC)**, CSIR-CECRI revolving around this year's theme of "**Our Aim - Zero Harm**".

The celebration was inaugurated by Dr. K.J. Sreeram, Director, CECRI and in his inaugural address he insisted on the importance of safety awareness in every walk of life especially in a lab environment. Later, Mr. K.M. Sridhar, Controller of Administration, CSIR-CECRI administered **NSW-52 Pledge** to the CSIR-CECRI community.

On March 7, 2023, a **Quiz Competition** with a special focus on safety was conducted in which a majority of the CECRI community took part eagerly. The event proved to be an eye-opener for the participants & audience who turned in large numbers and gained valuable insights.

Meanwhile, **NSW Slogan Competition** was also organized for school students and CSIR-CECRI community, separately. Around 50 students from various schools in & around Karaikudi and 100 participants from CSIR-CECRI fraternity took part and showcased their imaginary/vocabulary skills. In order to trigger competitive spirit among them, all the participants were encouraged to display their slogans in the Noticeboards kept for this purpose in the Main Building Foyer area.

An interactive and highly informative session on **Best Lab Safety Practices** was conducted by Mr. S. Gopal, Security Officer and Mr. A. Kishor Kumar, Security Assistant of CSIR-CECRI at Karaikudi on March 8, 2023. The practical demonstrations was witnessed by a chunk of curious participants who updated themselves with safety methods and the awareness to remain alert always in the work environment.

A fire safety and emergency response training covering all emergency situations, including earthquake, tsunami, fire accident, road accident and air contamination incidents was organized by LASAC for the benefit of CSIR-CECRI fraternity on March 9, 2023. A team from **Tamil Nadu Fire & Rescue services (TNFRS)**, Karaikudi gave this exclusive training/demonstration at various venues within the CSIR-CECRI Campus covering all the members of CSIR-CECRI Family. Participants learnt a lot from this training including essentials on safety awareness, life saving skills and disaster management.

The NSW-52 celebrations concluded on March 10, 2023 with a **Valedictory Event** during which the **National Safety Lecture** by Shri. G. Murugan, Security Officer, National Institute of Technology, Trichy on **Lab Safety in Research and Development** was arranged. Shri. Murugan gave examples of accidents of different magnitude and variation in which he interacted with the audience on possible solutions and provided them with the actual action taken. He recreated the scenes and created connectivity by provoking the thought process of the audience eventually getting them educated and updated.

Earlier, Dr. J. Mathiyarasu, Chief Scientist and Chairman, LASAC, CSIR-CECRI presented a summary of the activities organised to commemorate 52nd National Safety Week Celebrations at CSIR-CECRI, Karaikudi. In his valedictory address, Dr. K.J. Sreeram, Director, CSIR-CECRI lauded the efforts of LASAC, CSIR-CECRI for their combined efforts in commemorating NSW and their continued efforts in concentrating on the significance of safety aspects which are indispensable in a R&D Laboratory. At the end, the prize winners of various competitions were awarded with prizes and certificate of merit. The event concluded with a vote of thanks by Dr. P. Tamilarasan, Scientist and Member, LASAC, CSIR-CECRI.



Invited Lecture on CSIR COHORT Study

Under Phenome India-CSIR Health Cohort Knowledgebase Project (PI-CHeCK), Project Coordinator(s) from CSIR-IGIB & CSIR-CCMB, Dr. Shantanu Sengupta & Dr. Swasti Roychowdhury, delivered a lecture on *Benefits of CSIR Cohort Study* at CSIR-CECRI, Karaikudi on March 10, 2023.

They presented the significance of such study enabling a compilation of unique database of CSIR employees, pensioners and their dependents which will facilitate monitoring of health status at regular intervals.



INTERSECT-2023

The 31st National Symposium of Electrochemical and Chemical Technology on *Enriching Minds towards Sustainability through Electrochemical Science and Technology* (INTERSECT-2023) was organized by Centre for Education, CSIR-CECRI on March 3-4, 2023 at Karaikudi. **Dr. Sanjeev Katti, former Director General, ONGC Energy Centre** in his inaugural address inspired the students by citing several examples and from his personal anecdote. He pepped up the students with his positive speech and persisted them to pursue their passion in their professional career. During the

inaugural function, student achievers were awarded with the CBTAA Awards.

Various **Technical Events** (paper presentation, poster presentation, tech connexion, workshops, etc.) and **Cultural Events** (snapshot, riddles, talent show, treasure hunt, etc.) were scheduled and spread across two days inducing intense participation. Dr. B. Ramesh Babu, Chief Scientist, CSIR-CECRI and Dean, Centre for Education distributed Certificate of Merit to all the prize winners during the valedictory event on March 4, 2023.

One-Day Seminar by SAEST



A one-day Seminar on *Paradigm Shift in Electrochemistry: Evolution of Interfacial Architectures* was organized by The Society for Advancement of Electrochemical Science and Technology (SAEST) in association with CSIR-CECRI on March 29, 2023 at Karaikudi. Eminent speakers who work in the area of electrochemical science and technology across India were invited to deliver the lectures. More than 200 delegates attended this Seminar. As a part of this event, a farewell and felicitation was conducted to Dr. James Joseph, Chief Scientist and Head, Electrode and Electrocatalysis Division, CSIR-CECRI superannuating on March 31, 2023 after a long illustrious service.

Medical Awareness Event

A **Medical Awareness Event** was conducted at CSIR-CECRI Karaikudi in collaboration with **Guru Hospitals, Madurai** on March 15, 2023 for the benefit of Staff Members, Dependents, Pensioners, etc.

In the forenoon, a special Lecture on *How to Win Cancer?* by **Dr. Tim Houghton**, Onco Surgeon, Guru Hospitals was arranged. In this lecture, various types of cancer, ways to prevent them and cure, healthy lifestyle and the importance of undergoing screening tests at prescribed intervals was explained in detail to the audience. At the

end, the audience raised many doubts which were cleared with authority by the expert speaker.

In the afternoon, an exclusive **cancer screening camp** (especially *Cervical Cancer and Breast Cancer*) for Women Employees, Pensioners, Dependents (> 35 years old) was conducted. In this screening vital investigations like PAP Smear, Mammogram and Echo was carried out for the participants in a Special **Mobile Cancer Screening Unit** equipped with all the sophisticated medical instrumentation facilities.

International Women's Day Celebrations

International Women's Day-2023 was celebrated at CSIR-CECRI with great zeal and verve with a bouquet of events revolving around this year's IWD Theme of United Nations - **DigitALL: Innovation and Technology for Gender Equality**. The following are the events planned by CECRI Ladies Forum to propagate the significance of womanhood and awareness to achieve accolades in all areas of life with a special focus on scientific aspirations:

Date	Event	Venue
March 1	Competition for School Students	CSIR-CECRI, Karaikudi
March 2	Competition for College Students	CSIR-CECRI, Karaikudi
March 3	School Visit for Science Awareness Program	Panchayat Union Middle School, Pethachikudiyiruppu, Sakkottai Union, Sivagangai District
March 7	Health Care Session	CSIR-CECRI, Karaikudi
March 7	Women in Science Conclave	CSIR-CECRI, Karaikudi
March 8	IWD-2023 Celebration and Valedictory Function	CSIR-CECRI, Karaikudi

The celebrations commenced with a cluster of **competitions** during March 1-2, 2023 for students including elocution competition (*on a given topic as well as impromptu*), drawing competition, poster presentation competition, dance competition and skit competition. A large number of school and college students took part enthusiastically and proved their skill sets. A school visit was organized on March 3, 2023 with a prime aim to create science awareness and to attract them in taking up science as their career. The students were briefed on the various scientific avenues available to them as per their choice of subject by a team of experts from CSIR-CECRI.

On the forenoon of March 7, 2023, a **Special Healthcare Awareness Session** was organized by CECRI Ladies Forum in which Dr. C. Rathi Lavanya, Gynaecologist, Apollo Hospitals, Managiri spoke about acquiring awareness on general women health with a special emphasis on working women's health issues. She also

spelt in detail on age-wise common ailments and suggested many healthy practices and lifestyle to deal with them.

In the afternoon, a **Women Conclave** on: **DigitALL: Innovation & Technology for Gender Equality** was organized by CECRI Ladies Forum. Eminent panelists for this exclusive event were: 1) Dr. Hema Swaminathan, Professor, Centre for Public Policy, Indian Institute of Management (IIM), Bangalore; 2) Dr. B. V. Sarada, Scientist 'F', Centre for Nanomaterials, International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI), Hyderabad; 3) Dr. Jayashree Padmanabhan, Head, Department of Computer Technology, Anna University, Chennai and 4) Smt. Gayathri Vivekanandan, Chief Executive Officer, Ideas2IT, Chennai.

All the panelists shed light on the emerging trends in innovation and technology and the indispensable role played by women force. By citing several examples, they portrayed the proven leadership of women in various fields projecting them as the role models to emulate. Equality in education and the courage to dare into unexplored areas are the essential elements for upliftment of women, they opined. An engaging Q&A session involving all participants with the panelists ensued.

The celebrations concluded with a **Valedictory Event on International Women's Day 2023 (March 8, 2023)**. Dr. M. Rajeshwari, Former Deputy Commissioner, Kendriya Vidyalaya Sangathan, Chennai Region & Former Principal of KV, CSIR-CECRI Campus, Karaikudi graced the occasion as the Chief Guest. Dr. K.J. Sreeram, Director, CSIR-CECRI presided over the function and appreciated the efforts of CECRI Ladies Forum. Dr. Rajeshwari spoke about the various challenges working women face in everyday life and gave valuable tips on tackling them to emerge victorious. She presented prizes and certificates to the winners of the competitions held in commemoration of the IWD 2023.



Business Development Leads

- ❖ Discussion with **Gujarat Fluorochemicals Ltd.** [Mar 7]
- ❖ R&D Discussion with **M/s. Maxmoc** [Mar 8]
- ❖ Meeting with a Team from **BHEL, Trichy** on Green Hydrogen [Mar 14]
- ❖ Discussion with **Chennai Metro Rail Ltd.** on ongoing project [Mar 14]
- ❖ Discussion on **Indo-German Collaborative Project** on Electrochemical Power Sources [Mar 15]
- ❖ Discussion with **VME Precast Products** on Project Proposals [Mar 16]
- ❖ Meeting with **BGR Tech** on Green Hydrogen [Mar 16]
- ❖ Discussion on the corrosion protection strategies for proposed project - **Arch type Bridge between Vivekananda Rock and Ayyan Thiruvalluvar Statue** at Kanyakumari [Mar 17]
- ❖ Discussion with **Tuticorin Bio-Energies** on Magnesium Production [Mar 17]
- ❖ Discussion with a Team from **IIT, Jodhpur** [Mar 20]
- ❖ Meeting with **Mahanagar Gas Ltd.** on R&D collaboration [Mar 21]
- ❖ Meeting with Officials from **BHEL, Trichy** on Project Proposals [Mar 21]
- ❖ R&D Discussion with **M/s. Consultech** (Vadodara), **M/s. L&T Ltd.** (Chennai) and **M/s. Cochin Shipyard Ltd.** (Cochin) [Mar 21]
- ❖ Online Meeting with **CSIR Innovation Management Directorate** [Mar 22]
- ❖ Project Report Presentation to **Chennai Metro Rail Ltd.** (SSP 19/22) [Mar 24]
- ❖ Final Review meeting for FBR projects under CSIR's **4M Theme** (MLP-0311) [Mar 26, 27]
- ❖ Discussion with Team from **M/s. Celgard** [Mar 27]
- ❖ Discussion with **CSIR-IHBT** on Project Proposals under CSIR's **Waste to Wealth Mission** [Mar 31]

MoU Signed

- ❖ Title: **Surface-modified porous Ti-based implants produced by additive methods for cranio-maxillofacial and dental surgery** with National University of Science and Technology "MISiS" (NUST MISiS), Russia

CFE and AcSIR Highlights

Centre for Education:

- ❖ B.Tech. Final Year Project Review Meeting [Mar 10]
- ❖ Placement Drive for B.Tech. students [Mar 25]

AcSIR:

- ❖ PhD Viva Voce Examination for Mr. C. Murugan, AcSIR Scholar (Guide: Dr. A. Pandikumar) [Mar 9]
- ❖ I DAC meeting - Ms. Shubhi Tripathi, IDDP Research Scholar (Guide: Dr. R. Malini) [Mar 9]

- ❖ I DAC Meeting of Mr. S. Santhakumar, Principal Scientist (Guide: Dr. P. Murugan) [Mar 10]
- ❖ III DAC Meeting for Ms. M. Sornambigai, DST-Inspire SRF (Guide: Dr. S. Senthil Kumar) [Mar 15]
- ❖ PhD Viva Voce examination for Mr. S. Venkateshwaran (Guide: Dr. S.M. Senthil Kumar) [Mar 21]
- ❖ III DAC Meeting of Ms. M. Kiruba (Guide: Dr. C. Jeyabharathi) [Mar 22]

Official Events

- ❖ Meeting on Refresher Course for Cochin Shipyard Ltd., Kochi [Mar 3]
- ❖ Walk-in Interview for engagement of Project Personnel [Mar 6, 7]
- ❖ Online Meeting with the Office of the **Principal Scientific Advisor**, Govt. of India, New Delhi [Mar 13]
- ❖ Meeting of the Monitoring Committee for ongoing construction activities [Mar 15]
- ❖ Invited Talk on Health Awareness and Medical Camp for CSIR-CECRI fraternity [Mar 15]
- ❖ Meeting of the Safety and Security Reforms Committee [Mar 20]
- ❖ Meeting on CSIR-CECRI's '**One Week One Lab**' Programme during the last week of July 2023 [Mar 27]
- ❖ Meeting of the Works Committee [Mar 29]
- ❖ One-day Seminar on *Paradigm Shift in Electrochemistry: Evolution of Interfacial Architectures* [Mar 29]
- ❖ IEM-Quarterly Review Meeting - Stores & Purchase [Mar 31]
- ❖ Felicitation and Farewell Function for the Retirees by CSIR-CECRI Club [Mar 31]

Honours and Awards



Dr. Subrata Kundu

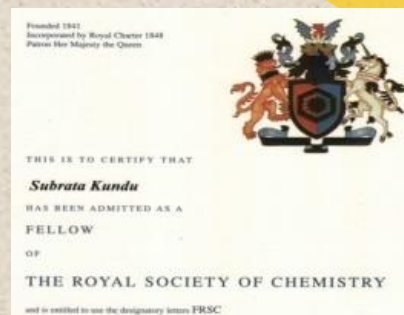
Principal Scientist

Electrochemical Process Engineering Division

CSIR-CECRI

has been elected as

Fellow of Royal Society of Chemistry (FRSC)



Skill Development Activities

Skill Development Training Programmes:

- ❖ A Skill Development Training Programme on **Paints and Coatings for Corrosion Protection** was organized by CSIR-CECRI jointly with Rural Training Centre, Amaravathipudhur during March 6-10, 2023. A total of 26 participants got trained.
- ❖ A Skill Development Training Programme on **Cathodic Protection and Pipeline Corrosion** was organized by CSIR-CECRI jointly with Rural Training Centre, Amaravathipudhur during March 20-24, 2023. A total of 48 participants got trained.



CSIR-JIGYASA:

- ❖ **Vigyana Vindhai Programme:** From 2nd January 2023 onwards, staff members and research scholars of CSIR-CECRI are delivering talks in the Alagappa University Community Radio. The following talks were delivered during March 2023:
 - Ms. SR. Vaishnavy, B.Tech. III year on *Struggle for Swatantrata through Science* [Mar 1]
 - Ms. R. Divyasri, Sr. Project Associate on *Stephen Hawking: Brief Answers to the Big Questions* [Mar 3]
 - Dr. P. Tamilarasan, Scientist on *Electrochemical Spectroscopy* [Mar 6]
 - Dr. S. Vengatesan, Principal Scientist on *The development of indigenous materials for energy applications and its importance* [Mar 8]
 - Mr. S. Hareesh, B.Tech. III year on *Scientific Thoughts in Tamil Literature* [Mar 10]

- Dr. GVM. Kiruthika, Principal Scientist on *Fuel Cells* [Mar 13]
- Ms. R. Ramya & Ms. A. Kayalvizhi, Project Associates on *Marie Curie Life History* [Mar 17]
- Dr. S. Vasudevan, Chief Scientist on *Carbon Vs. Green Hydrogen* [Mar 24]



- ❖ **Online Quiz Contest** was organized through our Website on the following National/ International Days of Importance during March 2023 :
 - International Year of Millets 2023
 - World Wildlife Day [Mar 3]
 - National Safety [Mar 4]
 - International Women's Day [Mar 8]
 - Commonwealth Day [Mar 13]
 - International Day of Mathematics [Mar 14]
 - National Vaccination Day [Mar 16]
 - World Forestry Day [Mar 21] and
 - World Water Day [Mar 22]
- ❖ **Visit of Students:** 55 Students and 5 Faculty Members from Muthayammal Memorial College of Arts & Science, Rasipuram, Namakkal District, Tamil Nadu visited CSIR-CECRI, Karaikudi on March 17, 2023 and witnessed the ongoing R&D activities.
- ❖ **Visit of Students:** 17 PG Students (Environmental Science) and 4 Faculty Members from Madurai Kamaraj University visited CSIR-CECRI on March 30, 2023 and gained insights on our R&D activities.

Snapshots



National Safety Week Celebrations



INTERSECT-2023 Events



Medical Awareness Camp



International Women's Day Lecture



Plantation by Newly Recruited Staff Members



Farewell and Felicitation to Retirees

- ❖ Indigenous Li-ion battery
- ❖ Indigenous Sodium Ion Battery
- ❖ Performance Improved Lead Acid Battery
- ❖ CO₂ capture under flue gas conditions
- ❖ Integrated Corrosion Monitoring Sensor Gadget accessible through a Mobile App
- ❖ Thermal Barrier Coatings for Strategic Applications
- ❖ Electrochemical Production of Sodium Hypochlorite as a Disinfectant (against COVID-19)
- ❖ Tri-layered reusable face mask with antibacterial coating
- ❖ Polymer Electrolyte Membrane (PEM) fuel cell
- ❖ Triboluminescent Coating and Smart Camera for Crack Detection in Structural Components
- ❖ Electrochemical Defluoridation of Drinking Water
- ❖ Solar Powered Proton Exchange Membrane (PEM) Based Water Electrolyser for Hydrogen Generation
- ❖ Cement-Polymer Composite Coating System for Corrosion Protection of Reinforcing and Prestressing Steels
- ❖ Solid Lubricant Coatings for Brahmos Missile Application
- ❖ Li Spheres for Torpedo Applications
- ❖ Electrowinning and Recovery of Tin from Primary Ore and Secondary Sources
- ❖ Electroplating of Gold, Copper and Nickel, Chromium, Zinc-Nickel Alloy; Anodizing of Aluminium; Electropolishing of Stainless Steel
- ❖ Electro-catalytic Conversion of CO₂ and butadiene to Adipic Acid; CO₂ to Formic Acid; CO₂ to Oxalic Acid.
- ❖ Farmer Friendly Soil Health (predictive) Analyzer
- ❖ Three Coat System for Steel Structures
- ❖ Inhibitor Cement Slurry Coating for Rebars
- ❖ Electrochemical Preparation of DL-Homocysteine Thiolactone Hydrochloride from DL- Homocystine
- ❖ Electrochemical Perfluorination of Sulfolane to Perfluro Butane Sulfonyl Fluoride
- ❖ Electrochemical Preparation of Calcium Lactobionate and Calcium Gluconate
- ❖ Electrochemical Production of KIO₃
- ❖ Degradable Amorphous Alloy Coatings by Sputtering for Bioimplants
- ❖ Multicoat Protective Schemes for Concrete Structures and Bridges
- ❖ Moisture Compatible Coating for Cooling Towers
- ❖ Temporary Protective Coating for Maraging Steel & 15CDV6
- ❖ Corrosion Resistant Thermal Coating for Hydroclaves
- ❖ Al-Zn-In Galvanic Alloy Anode for Cathodic Protection
- ❖ Formulation of Neutral Paint Removing Jelly
- ❖ Corrosion Resistant Inhibitive Admixtures for Portland Pozzolana Cement
- ❖ Inhibitor Admixture for Concrete
- ❖ Cost Effective Metallic Coatings to Rebars Embedded in Concrete Structures
- ❖ Redox Active Polymer Encapsulated Lamellar (REL) Compound based Anticorrosive Coating for Reinforcement Bars
- ❖ Extraction of Calcium, Magnesium by Molten Salt Electrolysis
- ❖ Extraction of Zinc oxide and Metallic Zinc from Galvanizer Ash
- ❖ Extraction of Rare Earths and Alloys by Molten Salt Electrolysis

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