

CECRI NEWS

(A monthly newsletter of CSIR-CECRI)

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73rd Meeting of the Research Council

The 73rd Meeting of the Research Council of CSIR-Central Electrochemical Research Institute (CSIR-CECRI) was held on March 5, 2024 at CSIR-CECRI, Karaikudi. This Meeting, first of the newly constituted Research Council, was held in an *Open* mode in Dr. Abdul Kalam Auditorium, CSIR-CECRI. **Dr. K. Ramesha**, Director, CSIR-CECRI welcomed the RC Members and all the participants. The Chairman, **Dr. Nalin Shinghal**, former Chairman & Managing Director, Bharat Heavy Electricals Ltd., New Delhi, assured total support of the RC to the progressive activities towards the Mission and Vision of the Institute. He solicited active and interactive participation from the staff members during the meeting. The Meeting commenced with opening remarks by the Chairman and Members. **Dr. K. Ramesha** highlighted that the Institute had fared well during the period since the previous meeting. **RC Chairman** congratulated Team CSIR-CECRI for the elaborative arrangements for the 73rd Meeting as well as the detailed minutes of the 72nd Meeting.



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CSIR-CENTRAL ELECTROCHEMICAL RESEARCH INSTITUTE

Your Destination for Innovative Research

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Further, he said that CSIR-CECRI is poised to create a big impact societally, strategically and also in pure science. **Prof. Vijayamohan Pillai**, Chair, Chemistry & Dean (R&D), Indian Institute of Science Education and Research, Tirupati and former Director, CSIR-CECRI stressed that Electrochemistry exists in every walk of life and will remain eternal forever. The technologies emerging within CSIR-CECRI should be assessed against global bench marks and the aim should always be to compete with the best in the world, he remarked.

Prof. Raj Ganesh Pala, Department of Chemical Engineering, Indian Institute of Technology, Kanpur and Alumnus of B.Tech., CSIR-CECRI felt privileged to be a part of Institution building of his alma mater. From brain to battery, electrochemistry exists everywhere and CSIR-CECRI will ever remain relevant in this area, he opined.

Shri. Ravi, Executive Director & Director General, ONGC Energy Centre, Delhi stressed on the significance of green energy ensuring a greener *one planet one earth*. CSIR-CECRI should grab this timely opportunity in establishing itself as the frontrunners

in this area especially on technologies to reduce hydrocarbon dependency, he added. **Dr. Arvind Kumar Mishra**, Director, CSIR-CIMFR, Dhanbad mentioned that CSIR-CECRI is working on solving the real global issues especially on the *Panchamirth* by our Hon'ble Prime Minister, **Shri. Narendra Modi** with the ultimate goal of achieving Net-Zero by 2070. He called for more collaborative efforts in finding efficient technologies to meet the rapidly increasing energy need.

Following the opening remarks, **Dr. K. Ramesha**, Director, CSIR-CECRI made a detailed presentation on the significant happenings in the Institute since the previous RC Meeting on August 25, 2023. He solicited the continued support and guidance of the RC in making rapid strides in the path of glory. All the **Heads of Divisions** then made a brief presentation on the recent progress made which were critically reviewed by the RC. Presentation by **PIs of Special Projects** (Mission, CFE, AcSIR, Skill Development, Jigyasa, etc.) also ensued. RC Chairman & Members gave valuable suggestions and inputs especially on projecting CSIR-CECRI as a global giant. The Meeting concluded with remarks by the RC Chairman.



75th Meeting of the Management Council

The 75th Meeting of the **Management Council (MC)** of CSIR-Central Electrochemical Research Institute was held on March 28, 2024 at CSIR-Central Leather Research Institute (CSIR-CLRI), Chennai. In this first Meeting of the newly constituted Management Council, **Dr. K. Ramesha**, Director, CSIR-CECRI & Chairman, MC conducted the proceedings. MC Members including **Dr. K.J. Sreeram**, Director, CSIR-CLRI deliberated the Agenda Items in detail on the progress of the Institute especially on technical service projects, human resource requirements and augmentation of the facilities. Suggestions were made on strengthening the infrastructure of the Institute enabling acceleration in the progress.



Business Development and CSIR Theme Leads

- ❖ Meeting on Redox Flow Battery Mission [Mar 6]
- ❖ Review Meeting on CRPPC Technology of CSIR-CECRI [Mar 11]
- ❖ Project Review Meeting (MLP 88) with TMD, CSIR HQ [Mar 14]
- ❖ Meeting with Axiom Research Labs Pvt. Ltd., Bangalore on Green Hydrogen [Mar 13]
- ❖ Discussion on Printable Photovoltaics with Powered Electron Pvt. Ltd., Kolkata [Mar 13, 26]
- ❖ DEG Meeting for Mission Mode Project on Battery to Battery Recycling [Mar 15]
- ❖ FTT Project Review Meeting under CLP Theme of CSIR [Mar 18]
- ❖ Meeting with Honeywell [Mar 21]
- ❖ Meeting on Redox Flow Battery [Mar 21]
- ❖ Meeting with High Energy Batteries, Mathur on R&D collaboration [Mar 22]
- ❖ Review Meeting on CSIR-FIRST Projects [Mar 27]

Non Disclosure Agreement Signed

- ❖ *Performance Evaluation and Optimization of Reliance Graphene for Supercapacitor Application* with M/s. Reliance Industries Limited, Mumbai [Mar 7]
- ❖ *Aluminium Anodizing Process* with M/s. Ankit Fasteners Pvt. Ltd., Bengaluru [Mar 15]

Skill Development Activities

Skill Development Training Programmes:

- ❖ A Skill Development Training Programme on *Paints and Coatings for Corrosion Protection: Marine, Industrial and Decorative Applications* was organized by CSIR-CECRI during March 18-22, 2024. 47 participants took part in this programme.

JIGYASA:

- ❖ 16 PG Students, 4 Research Scholars and 2 Faculty Members of PG & Research Department of Chemistry, V.O. Chidambaram College, Tuticorin and 66 UG (General Chemistry and Industrial

Chemistry) students and 4 Faculty Members of Department of Chemistry, Government Arts College, Chidambaram visited CSIR-CECRI, Karaikudi on March 20, 2024. **Dr. M. Sathish**, Principal Scientist, CSIR-CECRI delivered a talk on *Supercapacitors* followed by a demonstration to the students. Then the students visited **Electroplating & Metal Finishing, Electrochemical Process Engineering, Corrosion & Materials Protection and Central Instrumentation Facility** Divisions and gained valuable insights on the ongoing R&D activities at CSIR-CECRI.

Phenome India – CSIR Health Cohort Knowledgebase (PI-CHeCK)

Phenome India-Council of Scientific and Industrial Research (CSIR Health Cohort Knowledgebase - PI-CHeCK) is a project to identify India specific risk factors for cardiometabolic diseases. This unique study will provide scientific insights as a step towards personalized and precision medicine. It is an attempt by CSIR to represent the diversified Indian population through all its labs spread throughout the country. The health cohort study will help collect data on multiple parameters which will include clinical questionnaires, lifestyle & dietary habits, anthropometric parameters, body composition measurements, scanning based measurements, blood biochemistry and molecular assay-based data.

PI-CHeCK camp was organized at **CSIR-CECRI, Karaikudi** during March 14-18, 2024. More than 380 participants including from CSIR-CECRI Chennai and Mandapam Units got registered and more than 300 registered participants could successfully complete the sampling. **Dr. Shanthanu Sengupta**, CSIR-IGIB, New Delhi and **Dr. Swasti Roychowdhury** (South Zone Coordinator), CSIR-CCMB, Hyderabad and a team of volunteers/research scholars from pan-CSIR labs organized this event. Dr. V. Ganesh and Dr. V. Murugan, CSIR-CECRI along with a team of volunteers/researchers coordinated the logistics including registration, approval of identity, creating awareness among the participants and sampling.

National Safety Week Celebration

The 53rd **National Safety Week** (NSW-53) was celebrated at CSIR-CECRI with many awareness and educative events by the **Lab Safety Committee (LASAC)**, CSIR-CECRI during March 4-8, 2024 on the designated theme for 2024 - **Focus on Safety Leadership for Environmental, Social and Governance (ESG) Excellence**.

The celebrations began on March 4, 2024 with administering of **Safety Week Pledge** followed by the inaugural address by **Dr. K. Ramesha, Director, CSIR-CECRI** who stressed on the significance on safety awareness especially in a scientific environment. He also distributed the newly designed Lab Coats to the research community of CSIR-CECRI.

The **National Safety Day Lecture 2024** was delivered by **Shri. S. Senthil Kumar**, Assistant District Officer, Tamil Nadu Fire and Rescue Services (TNFRS), Sivaganga District, on **Emergency response during disasters**.

The TNFRS Karaikudi Team gave a **Fire Safety and Emergency Response Training** covering all

emergency situations, including earthquake, tsunami, fire accident, road accident and air contamination.

On March 6, 2024, volunteers from Alagappa Nursing College gave **Medical Emergency Response Training** including CPR (Cardiopulmonary resuscitation), chemical related emergency response and electrical shock response. Staff Members, scholars and project personnel attended the above training programmes in large numbers.

NSW-53 Quiz and Slogan Competitions were organized and the participants were encouraged to post their slogans in the boards at the entrance for display to stimulate more interest and participation. The winners were felicitated with prizes and certificates of merit.

On March 8, 2024 a special lecture was delivered by **Dr. M. Sivarajan**, Principal Scientist, CISRA, CSIR-CLRI, Chennai, on **Safety Leadership for Environmental, Social, and Governance (ESG) Excellence** in which he highlighted the vital and critical safety aspects & practices.



Official Events

- ❖ Meeting of CSIR-ISTAD with the CSIR-TWAS Fellows [Mar 5]
- ❖ Students Academics Committee Meeting [Mar 7]
- ❖ Meeting with Prof. Chetan Solanki, Energy Swaraj Movement, on Jigyasa activities (Team ELT) [Mar 13]
- ❖ Space Allotment Committee Meeting [Mar 8]
- ❖ Laboratory Strategic Group Meeting [Mar 8, 13, 18]
- ❖ Official Language Implementation Committee Meeting [Mar 20]
- ❖ Evaluation of CSIR EPIC Hackathon [Mar 25]
- ❖ Dissertation Project Works Committee Meeting [Mar 26]
- ❖ Interview for engagement of Project Personnel [Mar 27]

INTERSECT-2024

The **32nd National Symposium of Electrochemical and Chemical Technology** on the theme *Scientific Advancements and Strategies towards a Sustainable Society (4S)* was organized by the Centre for Education, CSIR-CECRI at Karaikudi during March 14-15, 2024. The event with a right mix of scientific, technical and cultural proportions proved to be an ideal launching pad for the B.Tech. Students of CSIR-CECRI and college students from all over Tamil Nadu with the participants gaining valuable insights on the evolving trends towards a sustainable

future. The Chief Guests, **Prof. C. Muthamizhchelvan**, Vice-Chancellor, SRM Institute of Science and Technology, Chennai and **Dr. Shankar Venugopal**, Vice-President, Mahindra & Mahindra Research Valley, Chennai briefed the students on the output expected from them in taking the scientific advancements to the future generation ensuring a sustainable society. **Dr. K. Giribabu**, Chairperson, INTERSECT-2024 and **Dr. C. Naveen Kumar**, Secretary, CECRI B.Tech Alumni Association (CBTAA) coordinated the Symposium arrangements.

International Women's Day 2024 Celebration

As in previous years, **CECRI Ladies Forum (CLF)** celebrated **International Women's Day 2024** with a grand gala of events highlighting the designated Theme for the year 2024 - *Invest in Women: Accelerate Progress*. Women folk of CSIR-CECRI took part in these events enthusiastically in large numbers on March 18, 2024 and exhibited their individual talents in Dancing, Singing, Skit Drama, Mimicry etc. A Special Lecture on *Inspiring Inclusion* by **Prof. V. Vijaya**, Indian Institute of Management, Tiruchirappalli was arranged on March 19, 2024. Prof. Vijaya put forward inspiring examples of women achievers and appealed to the women force of CSIR-CECRI to stride forward with pride and power.



51st SSBMT (Indoor) Finals 2024

The **Table Tennis Team of CSIR-CECRI** consisting of:

- 1) **Ms. D. Sangeetha**, Jr. Secretariat Assistant (G)
- 2) **Ms. A.S. Haripriya**, Technical Assistant and
- 3) **Ms. K. Gayathri Devi**, Jr. Secretariat Assistant (S&P)

qualified for and took part in the **51st Shanti Swarup Bhatnagar Memorial Tournament (SSBMT) [Indoor] Finals** organized by CSIR-Institute of Minerals and Materials Technology (CSIR-IMMT), Bhubaneswar during March 15-19, 2024 and emerged as **CHAMPIONS** in the following categories:

- ❖ **Ms. D. Sangeetha** (Singles)
- ❖ **Ms. D. Sangeetha & Ms. A.S. Haripriya** (Doubles)



CFE and AcSIR Highlights

- ❖ CFE Faculty Meeting [Mar 7]
- ❖ Screening of Budget of Govt. of Tamil Nadu 2024-25 among B.Tech. students [Mar 11]
- ❖ Meeting on B.Tech. Final Year Projects [Mar 12]
- ❖ Synopsis submission of Mr. Sumanta Kumar Das, CSIR SRF (Guide: Dr. A.K. Sahu) [Mar 11]
- ❖ DAC-I Meeting of Ms. V. Suruthi (Guide: Dr. S.T. Nishanthi) [Mar 11]
- ❖ DAC-III Meeting of Ms. E. Harsha (Guide: Dr. Aiswarya Bhaskar) [Mar 12]
- ❖ DAC-I Meeting for Ms. M. Seevalapriyal, AcSIR Scholar (Guide: Dr. C. Jeyabharathi) [Mar 13]
- ❖ DAC-I Meeting for Ms. Sriraja Subhasri (Guide Dr. M. Pandiaraj) [Mar 14]
- ❖ Synopsis Submission of Ms. Ammu Surendran, AcSIR Scholar (Guide: Dr. Aiswarya Bhaskar) [Mar 20]
- ❖ DAC-I Meeting for Ms. Jeyasri [Mar 20], Ms. M. Gomathy and Ms. G. Hemalatha, AcSIR Scholars (Guide: Dr. S. Vengatesan) [Mar 21]
- ❖ DAC-I Meeting for Ms. Athira Prakash, AcSIR Scholar (Guide: Dr. R. Malini) and Ms. A. Kayalvizhi, AcSIR Scholar (Guide: Dr. C. Jeyabharathi) [Mar 25]
- ❖ DAC-I Meeting for Mr. Akshai Gopi, AcSIR Scholar (Guide: Dr. A. Sivashanmugam) [Mar 26]
- ❖ DAC-I Meeting for Mr. S. Hari Prasaad, AcSIR Scholar (Guide: Dr. S.M. Senthil Kumar) and Ms. T. Mehala AcSIR Scholar (Guide: Dr. R. Malini) [Mar 26]
- ❖ PhD Viva Voce for Ms. M. Kiruba, AcSIR Scholar (Thesis Title: *Alkyne-driven microstructural evolution of metal/metal hydroxide electrodeposits*; Guide: Dr. C. Jeyabharathi) [Mar 28]

ARMAGEDDON-24

The Annual Sports Fest of Centre for Education, CSIR-CECRI for B.Tech. Students (**ARMAGEDDON-24**) for 2023-24 was organized during Feb 29 - Mar 1, 2024. 8 game events for boys, 6 game events for girls and 27 athletic events for boys and girls were conducted under the supervision of officials from Alagappa University College for Physical Education, Karaikudi. To initiate, the Olympic Lamp was lit by the Students General Captain, Mr. Tharun in the presence of **Dr. K. Ramesha**, Director, CSIR-CECRI who then hoisted the

National Flag, Olympic Flag and Institutional Flag thereby inaugurating the Meet. Students took part in the events with zeal and zest and exhibited tremendous sportsmanship. All the prize winners were awarded with Medals, Certificates and Trophies. Dr. B. Ramesh Babu, Chief Scientist, Dean-CFE Dr. P. Murugan, Sr. Principal Scientist, Er. A. Rathishkumar, Principal Technical Officer & Sports Coordinator-CFE and Mr. Jeyakumar PED-CFE coordinated the arrangements for the mega sports event.

Honours and Awards

- ❖  **Dr. A. Pandikumar**, Senior Scientist, EMED, CSIR-CECRI has been bestowed with the **Young Scientist Award 2023 in Chemical Sciences** of The Academy of Sciences, Chennai.
- ❖  **Dr. N. Lakshminarasimhan**, Sr. Principal Scientist, EMED and PPMG, CSIR-CECRI has been appointed as **Editorial Board Member** of the Journal **Solid State Sciences** published by Elsevier.
<https://www.sciencedirect.com/journal/solid-state-sciences/about/editorial-board>
- ❖  **Dr. M. Sathish**, Principal Scientist, ECPS, CSIR-CECRI has been appointed in the **Editorial Advisory Board** of **Electrochimica Acta**, the official journal of the International Society of Electrochemistry published by Elsevier
<https://www.sciencedirect.com/journal/electrochimica-acta/about/editorial-board>
- ❖  **Ms. P. Sangavi**, AcSIR Scholar (Guide: Dr. V. Ganesh) has won the **Best Oral Presentation Award** in the **International Conference on Advance Materials for Energy, Environmental & Sensor Applications (ICAMEESA-2024)** at Mother Teresa Women's University Kodaikanal during February 26-28, 2024 for the work *Electrochemical Monitoring of Microbial and Mammalian Cellular Crosstalk*.
- ❖  **Ms. Ardra S Darsan**, AcSIR Scholar (Guide: Dr. P. Murugan) has won the **Best Oral Presentation Award** in the **ICAMEESA-2024** at Mother Teresa Women's University Kodaikanal during February 26-28, 2024 for the work *Unleashing the Power of One-Pot Magic: Aluminum-Doped Hematite Thin Films Heterostructured with Hexagonal ZnFe LDH as a Promising OER Catalyst in Alkaline Environment*.

Snapshots



INTERSECT-2024



ARMAGEDDON-24



NSD-2024 - Quiz Competition



NSD-2024 - Prize Distribution during Valedictory Event



International Women's Day 2024 Celebration



Phenome India - CSIR Health Cohort Knowledgebase Sampling Camp at CSIR-CECRI, Karaikudi

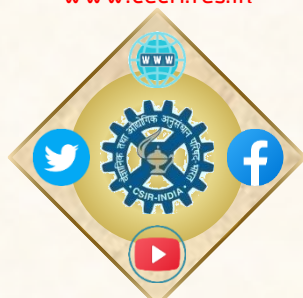


TECHNOLOGY COMPENDIUM OF CSIR-CECRI

- ❖ 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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