

CECRI NEWS

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New Year Address by DG-CSIR

Dr. N. Kalaiselvi, Director General, Council of Scientific and Industrial Research (CSIR) and Secretary, Department of Scientific and Industrial Research (DSIR) addressed the entire CSIR and DSIR fraternity on January 1, 2024 on the occasion of New Year 2024. In her online address, **2023 Reflections and 2024 Resolutions**, she highlighted the milestones achieved in 2023 and set the tone for the targets in 2024 and beyond. **Quantifying Quality Research** should be our Motto for the year 2024, she declared. *Our prime focus should be on promotion of Industrial R&D with a special emphasis on Micro, Small & Medium Enterprises (MSMEs) as they are in desperate need of our support*, she added. She also emphasized the necessity of promoting more Startups which will enable the technological advances to reach the common man at a faster rate and encourage entrepreneurship among our educated youth thereby strengthening **Skill India** objectives.



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CSIR-CECRI

CSIR-CENTRAL ELECTROCHEMICAL RESEARCH INSTITUTE

Your Destination for Innovative Research

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Dr. Kalaiselvi began her address highlighting the achievements of **DSIR** and its enterprises - National Research Development Corporation (**NRDC**) and Central Electronics Limited (**CEL**) - in 2023 and the future goals for them. She praised the flagship programmes of DSIR - Promoting Innovations in Individuals, Start-ups and MSMEs (**PRISM**) and Patent Acquisition and Collaborative Research and Technology Development (**PACE**). PRISM is paving way for innovations and PACE is accelerating them into technologies & patents, she said. Both these schemes have excelled in the areas of green technology, clean energy, industrially utilizable smart materials, waste to wealth, affordable healthcare, water & sewage management, etc. thereby igniting the passion for R&D among industries, R&D labs, academic institutions/ universities, she added.

She then delineated in detail the landmarks reached by **CSIR** in 2023 and the roadmap ahead to be conquered. To begin with, as a Phase I activity, **CSIR Vision 2030 Document** has to be revisited and finalized based on the Performance Appraisal Board's (**PAB**) Report probably in 2 parts (2024-2027 & 2027-2030) which will form the base for **CSIR@2047** in

alignment with **India@2047** - the Centenary Year of Indian Independence, she put forth. She applauded the tremendous success of the **CSIR Foundation Day & Decadal Achievements Exhibition at Bharat Mandapam** and insisted that more such outreach activities are to be organized.

Dr. Kalaiselvi briefed on our Hon'ble Prime Minister's Vision and thoughts during the CSIR Society Meeting held in October 2022 and shared the success story of his idea of adoption of a CSIR Lab each by one Member of CSIR Governing Body. Similarly, the mega event of **One Week One Lab** mooted by our Hon'ble S&T Minister, Dr. Jitendra Singh has been a huge success, she remarked. On the same lines, One Week One Lab Director was invited to CSIR HQ to present on the ongoing and upcoming R&D activities of their Lab due to which the Strengths, Weaknesses, Opportunities and Threats could be identified for further necessary action, she added. She further said that a similar CSIR Themewise exercise has also been initiated. She also shed light on the **CSIR AMRIT** (Accelerating Modern Research, Innovations and Technologies) **Lecture Series** by Eminent Experts (initiated in May 2023).

New Year Address by Director, CSIR-CECRI

Following DG-CSIR's New Year Address, **Dr. K. Ramesha, Director, CSIR-CECRI** addressed the CSIR-CECRI fraternity. He praised the team spirit and strenuous efforts of all the members of CECRI fraternity during institutional events of importance, to name a few - OWOL including CECRI Foundation Day, Nobel Day Celebration, Skill Development Training Programmes, Vigilance Awareness Week, Medical Camps, etc. and solicited continuous support and efforts in fulfilling the targets set by DG-CSIR.

Timely monitoring and critical review of projects especially FTI projects is crucial for their success, he opined. He further insisted on stringent evaluation of Project Assistants and PhD Students during their interviews followed by monthly review of their progress. He also added that all Scientists should introspect their own progress and maintain Quarterly Progress Reports. He also called for strengthening of our IPR portfolio, enhancement of our website and maintaining high cybersecurity standards.



23rd National Convention of Electrochemists



Since its establishment in Karaikudi in 1964, the **Society for Advancement of Electrochemical Science and Technology (SAEST)** has brought together the academic and industrial communities to exchange ideas, disseminate the knowledge on electrochemical science and technology and learn about the advancements made in the field.

To accomplish this, it has been arranging both national and international conferences regularly in collaboration with CSIR-Central Electrochemical Research Institute (**CSIR-CECRI**), the largest and pioneering institute for electrochemistry in South Asia and Institute of reputation with special relevance to their contribution in the field of electrochemical science and technology.

Since its inception at CSIR-CECRI, Karaikudi during March 1989, **National Convention of Electrochemists (NCE)** has been a flagship event of SAEST and so far 22 Editions of NCE have been successfully conducted. **SRM Institute of Science and Technology (SRMIST)** kindly consented to host the **23rd National Convention of Electrochemists (NCE-23)** at Dr. T.P. Ganesan Auditorium, SRMIST, Kattankulathur Campus, Chennai during January 4-5, 2024.

NCE-23 attracted more than **700 participants** from academia and industry, including scientists, faculty members, scholars and research experts from all around the nation. **Three memorial award lectures, twelve expert guest lectures, 54 oral and 220 poster presentations** by research scholars and faculty members from various academic and R&D

institutes featured among the various events during the Convention.

An exclusive **Technological Exhibition** of more than 50 stalls showcasing the products of electrochemical and scientific instrument makers as well as specialty chemicals used in the R&D of electrochemical science and technology was also arranged during NCE-23. Cultural events by students of SRMIST added colour to the convention. Best Oral and Poster presentations awards were chosen by a committee of experts and were awarded with cash prize and merit certificate.

During the inaugural session, **Dr. M. Sathish**, Secretary, SAEST & Convenor of NCE-23 welcomed the gathering and explained the essentiality of NCE-23 for interaction between MSc/PhD students, eminent electrochemists, young & experienced faculty members, and industry experts. The event was presided over by Dr. K. Ramesha, Director, CSIR-CECRI & Patron NCE-23 who stressed on the significance of NCE-23 during this global push towards electric vehicles. He further shed light on the significance of electrochemistry in addressing current and future global challenges in the areas of corrosion, renewable energy conversion, energy storage, green hydrogen production, environment, healthcare and electrometallurgy.

In his initial remarks, **Prof. C. Muthamizhchelvan**, Vice-Chancellor, SRMIST, KTR gave a brief overview of the institute's history as well as its key achievements in academics, research and societal activities. He expressed his gratitude to SAEST and CECRI for organizing this prestigious event at their place.

Prof. Vijayamohan K Pillai (former Director, CSIR-CECRI), President, SAEST & Chairman, Organizing Committee and Dean-Research and Development, Indian Institute of Science Education and Research (IISER)-Tirupati gave an overview of SAEST and crucial role played by NCEs in creating awareness on the emerging trends in electrochemical science & technology. He expressed his gratitude to CSIR-CECRI for its seminal role in disseminating information on the recent R&D in this niche area.

Prof. A.K. Shukla (former Director, CSIR-CECRI), Honorary Professor, IISc, Bangalore graced the event as the Chief Guest and in his inaugural address, he highlighted the indispensable role of electrochemistry in our everyday lives especially batteries. The contributions made by Indian Scientists to science and technology were also briefly acknowledged by him. Prof. Shukla released the NCE-23 Abstracts and Souvenir Book and inaugurated the Technological Exhibition at the venue. In his remarks, **Dr. K.J. Sreeram**, Director, CSIR-CLRI, Chennai detailed on the value of multidisciplinary research and electrochemistry as a whole. The Inaugural Session ended with a Vote of Thanks by **Prof. B. Neppolian**, Dean (Research), SRMIST and Convenor of NCE-23.

Memorial Award Lectures ensued the Inaugural Session and the **Prof. S.K. Rangarajan Memorial Award Lecture** was delivered by Prof. A.K. Shukla, Honorary Professor, IISc, Bangalore. In his talk, Prof. Shukla delineated the relative merits of several energy sources, including solar energy and batteries as well as the significance of renewable energy sources. Additionally, he put forth a techno-economical comparison of several energy storage

systems, including metal, Li-ion, lead acid, redox flow batteries and supercapacitors. He highlighted the indispensable role played by CSIR-CECRI and SAEST in propagating scientific solutions to global problems like depletion of fossil fuels, corrosion, etc.

Dr. G.A. Pathanjali, Managing Director, High Energy Batteries, Mathur delivered the **Prof. S. Sathyanarayana Memorial Award Lecture** in which he emphasized the importance of The Green Age of Energy and Environment. He briefed on the process subtleties and complexity production that go into designing, developing, and qualifying battery systems.

On January 5, 2024, during the the Valedictory Ceremony of the Conference, **Dr. K. Ramesha**, Director, CSIR-CECRI in his presidential address highlighted on the importance of the Convention and the impact it has created. **Dr. Gayatri Dadhech**, Chief Technology Officer, Exide Industries Limited graced the occasion as the Chief Guest and she spoke on the exciting prospects awaiting the newcomers in the energy enterprises. She also emphasized the importance of performance metrics and research in the development of batteries, particularly Li-ion batteries. **Dr. K. Gunasekaran**, Controller of Examinations, SRMIST, KTR, Chennai offered felicitations. Awards for the best oral and poster presentations of NCE-23, sponsored by the Royal Society of Chemistry and American Chemical Society, were distributed to the winners.

NCE-23 came to a conclusion after a Summary of the proceedings by **Dr. M. Sathish**, Secretary, SAEST and a Vote of Thanks by **Dr. S.T. Nishanthi**, Joint Secretary, SAEST.



Visit of Hon'ble Governor of Tamil Nadu

Shri. R.N. Ravi, Hon'ble Governor of Tamil Nadu visited CSIR-Central Electrochemical Research Institute (CSIR-CECRI), Karaikudi on January 29, 2024. Hon'ble Governor was received at the Institute by **Dr. K. Ramesha, Director, CSIR-CECRI** and Mr. Nand Lal Jangid, Principal, Kendriya Vidyalaya, Karaikudi.

Hon'ble Governor witnessed the live stream of **Hon'ble Prime Minister's Pariksha Pe Charcha 2024 Programme** along with students of the Kendriya Vidyalaya, Karaikudi. He then interacted with the students instilling self-belief and self-confidence in them, mainly emphasizing on the essence of our Hon'ble Prime Minister's visionary thoughts which will enable them to face the exams without any fear. More than 250 students took part in

the event and they were enthralled by the energetic and positive approach of the Hon'ble Governor. Hon'ble Governor also distributed the Book on **Exam Warriors** written by Hon'ble Prime Minister Shri. Narendra Modi to the Students.

Hon'ble Governor was presented with a demonstration of technologies of CSIR-CECRI and visited the exhibition of CSIR-CECRI's R&D activities. He was impressed to learn on the legacy of the Institute and the impact of its interventions in the Society. Hon'ble Governor appreciated the efforts of the Institute in strengthening our Hon'ble Prime Minister's Vision of **Viksit Bharat**. He further interacted with the Scientists and called upon them to work dedicatedly towards Nation building.



Business Development Leads

- ❖ Meeting on Redox Flow Battery Mission [Jan 10]
- ❖ Discussion on Project Proposal with Ramcharan Company Pvt. Ltd., Chennai [Jan 12]
- ❖ Meeting with Schneider Electric India Pvt. Ltd. on R&D collaboration [Jan 10, 18]
- ❖ Expert Group Meeting on FTT 5th Tranche under EED Theme [Jan 19]
- ❖ Discussion on CO₂ capture with NLC India Ltd. [Jan 23]
- ❖ Project Review Meeting with GFCL, Gujarat (TSP-05/2023) [Jan 23, 24]
- ❖ Expert Committee Meeting on 4M theme-FBR/NCP Project Proposals (Online) [Jan 31]

Official Events

- ❖ Meeting of CECRI Ladies Forum [Jan 01]
- ❖ Walk-in Interview for Engagement of Project Personnel [Jan 08]
- ❖ Viswa Hindi Diwas [Jan 10]
- ❖ Works Committee Meeting to review ongoing civil works [Jan 11]
- ❖ Manpower Planning Committee Meeting [Jan 12]
- ❖ Technical Discussion on Cleanroom [Jan 12]
- ❖ 3rd One Day Workshop on Lab Safety [Jan 23]
- ❖ Meeting of the Dissertation Project Work Committee [Jan 24]
- ❖ Lab Strategic Group [Jan 02, 19, 25]
- ❖ Farewell Function to the Retiring Employees [Jan 31]

Skill Development Activities

Skill Development Training Programmes:

- ❖ CSIR-CECRI organising an Exclusive Executive Training Programme on **Cross Country Pipelines - Cathodic Protection and Survey Methods** for Bharat Petroleum Corporation Ltd. (BPCL) Engineers and Senior Officials from all over India at Karaikudi from January 29 - February 2, 2024.

JIGYASA:

- ❖ CSIR Jigyasa **EPIC Hackathon 2024** Launch [Jan 05]
- ❖ Visit of School students (Vocational)-APGHSS, Thiruppathur and SBGHSS, Pudukkottai [Jan 11].
- ❖ CSIR-CECRI JIGYASA EPIC Hackathon 2024 Bootcamp-II [Jan 24]



CFE and AcSIR Highlights

- ❖ PhD Viva Voce Examination for Mr. V. Rajagopal, AcSIR Scholar - *Studies on porous organic polymers and their nanocomposites for electrocatalytic and biological applications* (Guide: Dr. V. Suryanarayanan) [Jan 8]
- ❖ Synopsis Submission of Ms. P. Mymoona, AcSIR Scholar - *Designing of atomically precise noble metal nanoclusters for electrocatalytic applications* (Guide: Dr. C. Jeyabharathi) [Jan 17]
- ❖ Synopsis Submission of Ms. S. Hemavathi, Scientist - *Design approaches to improve the electrical and thermal characteristics of battery packs for EV applications* (Guide: Dr. A.S. Prakash) [Jan 23]
- ❖ Centre for Education (CFE) Faculty Meeting [Jan 18]
- ❖ AcSIR Faculty Meeting [Jan 30]

Honours and Awards

- ❖  **Mr. V. Bharathi Mohan**, DST-INSPIRE-JRF & AcSIR Scholar (Guide: Dr. M. Sathish) has won the **Best Poster Presentation Award** in the **Twenty-third National Convention of electrochemists (NCE-23)** held at **SRM Institute of Science & Technology, Kattankulathur, Chennai** during January 4-5, 2024 for the work *Metal telluride coupled P-doped g-C₃N₄ for enhanced photocatalytic performance*
- ❖  **Ms. S. Rajalekshmi**, DST-INSPIRE-JRF & AcSIR Scholar (Guide: Dr. A. Pandikumar) has won the **Best Poster Presentation Award** in the **2nd International conference on Functional Materials for Nextgen Applications (ICFMNA-2024)** held at **Sri Sivasubramaniya Nadar College of Engineering, Chennai** during January 23-24, 2024 for the work *Contribution of ternary metal in layered hydroxides: A study of binary and ternary NiFe LDH electrocatalysts for overall water splitting*

New Members in CSIR-CECRI Family

- ❖  **Mr. Ram Awtar Yadav**
Technical Assistant
(Refrigeration and Air Conditioning)
Engineering & Technical Services and
Central Instrumentation Facility
Date of Joining: 26/12/2023
- ❖  **Mr. Aman**
Technical Assistant
(Civil)
Central Instrumentation Facility
Date of Joining: 29/12/2023

Superannuation

The following staff members of CSIR-CECRI superannuated on January 31, 2024 after a long illustrious service:



Dr. S. Ravichandran
Sr. Principal Scientist
Electrochemical Process Engineering Division



Shri. J. Kennedy
Principal Technical Officer
Central Instrumentation Facility



Shri. PN. Balasubramanian
Senior Technician (2)
Electro-Organic & Materials Electrochemistry Division

Snapshots



75th Republic Day Celebration



Skill Development Training Programme for BPCL



Launch Event of CSIR Jigyasa EPIC Hackathon 2024



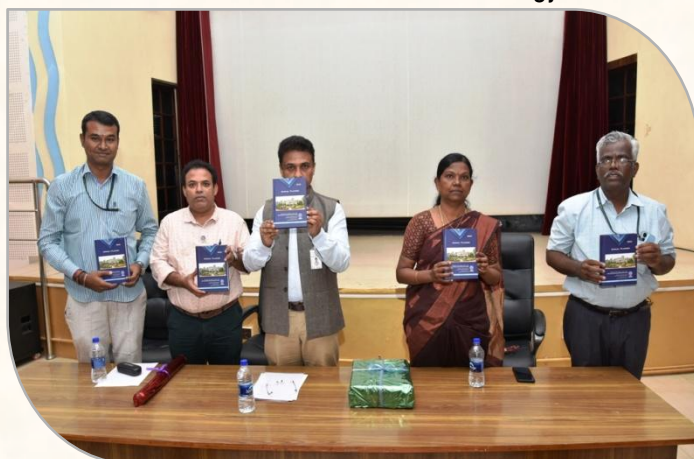
Visva Hindi Diwas Celebration



Visit of School Students under CSIR Jigyasa



Practical Session during One Day Workshop on Lab safety



Release of Work Planner on New Year 2024

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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