



CECRI NEWS

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

Dr. K. Ramesha assumes charge as Director

Dr. K. Ramesha assumed charge as the Director of CSIR-Central Electrochemical Research Institute (CSIR-CECRI) at CSIR Madras Complex, Chennai on April 29, 2023. Dr. K.J. Sreeram, Director, CSIR-Central Leather Research Institute, Chennai (CSIR-CLRI) who was holding Additional Charge as Director, CSIR-CECRI since August 10, 2022 [consequent upon the appointment of Dr. N. Kalaiselvi, the then Director of CSIR-CECRI as the Director General of Council of Scientific and Industrial Research (CSIR)] handed over the charge to Dr. Ramesha in the presence of Dr. N. Anandavalli, Director, CSIR-Structural Engineering Research Centre (CSIR-SERC), Chennai & Coordinating Director, CSIR Madras Complex. In his maiden address to the CSIR-CECRI fraternity on May 1, 2023 as the Director, Dr. Ramesha called for unified efforts toward the glory of this unique Institute entirely devoted to Electrochemistry.



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Mr. KR. Karupiah
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Mr. T. Ashok Balamurugan

“

*My happiness is limitless
because it does not consist
naturally in my own happiness,
but my happiness consists in
the happiness of the thousands
of students*

– Dr. RM. Alagappa Chettiar

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Dr. K. Ramesha joined CSIR-CECRI as a Quick Hire Scientist in 2008. Since then, he has been working with CSIR-CECRI at various positions upto Senior Principal Scientist in 2016 and the Scientist-in-Charge of CSIR-CECRI Chennai Unit (*where the Country's first indigenous Lithium-ion Prototype Production Facility is housed*) before being elevated as the Director of CSIR-CECRI now.

Dr. Ramesha obtained his M. Sc. (Chemistry) in 1993 from Mangalore University, and Ph. D. (Solid State & Structural Chemistry) in 2000 from Indian Institute of Science (IISc), Bangalore. His areas of specialization are materials for energy storage, particularly for Li-ion batteries and other futuristic energy storage devices such as Na-ion, Li-S, Li-Air, and all solid state batteries.

He was a postdoctoral fellow at University of Maryland, USA, University of California, USA, and Los Alamos National Laboratory, USA during 2001–2006. In 2007, he joined the Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Bangalore as a Fellow and worked there till his joining in CSIR-CECRI.

Dr. Ramesha is a recipient of K. P. Abraham Medal for Best Ph.D. Thesis from IISc, Bangalore. He has published

91 research papers in national and international peer-reviewed journals including two papers in the prestigious journal, *Nature Materials*. He has two patents and five technologies to his credit. He has also transferred two processes/know-how. He has guided 10 Ph.D. scholars and a number of post-graduate students.

He was leading the team involved in developing indigenous Li-ion battery prototypes which is involved in fabricating cylindrical-type Li-ion batteries containing various cathode chemistries such as LiNMC, LiNCA, etc. He has developed all solid state Li-ion battery technology using garnet phases as solid electrolytes. For the first time, he had established the role of reversible anionic redox chemistry in doubling the capacity of layered cathodes.

Dr. Ramesha was leading the CECRI Chennai Unit to newer heights accomplishing accolades all the way including a number of awards instituted to honour recent R&D performances in commemoration of the **81st Foundation Day of CSIR** on September 26, 2022 (*Highest Grant-in-Aid External Cash Flow Earning Scientist/Division, Highest Industrial External Cash Flow Earning Division, Successful Transfer of Technology, etc.*)



Birth Anniversary of Dr. RM. Alagappa Chettiar

Rich homage was paid to Dr. RM. Alagappa Chettiar on his 114th Birth Anniversary on April 6, 2023 by a delegation of staff members of CSIR-CECRI, Karaikudi led by Dr. V. Saraswathy, Chief Scientist at his Memorial. Later floral tributes were paid to the statue of

Dr. Alagappa Chettiar in CSIR-CECRI Campus and his selfless contributions to the society including the establishment of a premier R&D Institute of CSIR-CECRI in this remote place was remembered with reverence and immense gratitude.

Azadi Ka Amrit Mahotsav and CSIR-CECRI@75

Under the AKAM and CSIR-CECRI@75 Lecture Series, a lecture on *Structure-Property Correlation in Battery Electrodes: Few Case Studies* by Prof. Prabeer Barpanda, Materials Research Centre, Indian Institute of Science, Bengaluru was arranged on April 6, 2023. He spoke about different types of cathodes for sodium-ion and

lithium-ion batteries and the inductive effect of different anions on polyanionic cathodes. He also highlighted on how fluorine substitution can enhance the working potential of polyanionic cathodes. He further presented a comparison of Na₂Mn₃O₇ cathode with other manganese-based layered oxides.

Mass Plantation Drive

In commemoration of CECRI@75 Celebrations and in continuation of its penchant green drive in the Campus, CSIR-CECRI carried out a mass plantation of 100 Coconut Saplings on April 10, 2023. Dr. K.J. Sreeram, Director, CSIR-CECRI inaugurated this Mass Plantation Drive and appreciated the idea and efforts in nurturing our environment. On April 21, 2023, Dr. N. Anandavalli, Director, CSIR-SERC inaugurated the II Phase of Plantation of 200 more Coconut Saplings. She lauded the concept of taking care of our Mother Earth and bringing the new comers of CSIR-CECRI Family to join the bandwagon of promoting greenery around them.



Birth Anniversary of Dr. B.R. Ambedkar

Dr. B.R. Ambedkar was fondly remembered on his 132nd Birth Anniversary on April 14, 2023. A large number of staff members paid floral tributes to the portrait of Dr. Ambedkar and recalled with respect his remarkable

contributions to the Nation especially as the Father of our Indian Constitution and for his untiring works for the upliftment of the underprivileged and downtrodden sections of the society.

73rd Meeting of the Management Council



The 73rd Meeting of the Management Council of CSIR-CECRI was convened on April 21, 2023 at Alagappa Conference Hall, CSIR-CECRI, Karaikudi under the Chairmanship of Dr. K.J. Sreeram, Director, CSIR-CECRI. Dr. N. Anandavalli, Director, CSIR-Structural Engineering Research Centre (CSIR-SERC), Chennai and Member (Director of Sister Laboratory), MC, CSIR-CECRI attended the Meeting.

The MC deliberated in detail on the Agenda Items and the relevant matters related to the Roadmap of the Institute.

World Earth Day

On World Earth Day (April 22, 2023), India set a World Record by successfully organizing The World's Largest Global Climate Clock Assembly and Display event at New Delhi. The objective was to create awareness about the rising temperature and mitigating climate change issues. Prof. Chetan Solanki, Founder Energy Swaraj Foundation thanked Atal Innovation Mission, AICTE and

Jigyasa of CSIR for supporting this inspiring initiative. CSIR-CECRI, Karaikudi also organized a display of the Global Climate Clock for school students. Dr. N. Anandavalli, Director, CSIR-SERC in her inaugural address spoke on the importance of protecting the environment and on global climate change. Later, a Quiz Programme was also conducted for the School Students.

Business Development Leads

- ❖ R&D Discussion with **GAIL (India) Ltd.**, Kochi [Apr 3]
- ❖ Meeting with **Welspun Corp Ltd.**, Gujarat [Apr 5]
- ❖ Review Meeting with **Titantech**, Bangalore [Apr 12]
- ❖ Meeting with **PPN Power Generating Company Ltd.**, Thirukkadaiyur [Apr 17]
- ❖ R&D Discussion with **Indus Towers**, Delhi [Apr 20]
- ❖ Discussion on Rare Earth Electrowinning with **CSIR-IMMT**, Bhubaneswar [Apr 20]
- ❖ Meeting with **Mahanagar Gas Ltd.**, Mumbai [Apr 21]
- ❖ Meeting with **ReNew Power** on Green H₂ [Apr 26]
- ❖ Meeting with **Laal Chemicals**, Chennai [Apr 27]
- ❖ Meeting with **BHEL** on Green Hydrogen [Apr 28]

Official Events

- ❖ Walk-in Interview for engagement of Part-Time Physiotherapist [Apr 11]
- ❖ Walk-in Interview for engagement of Project Personnel [Apr 13]
- ❖ Patent Evaluation Committee Meeting [Apr 19]
- ❖ Review Meeting on Noble Metal Policy [Apr 24]
- ❖ Farewell and Felicitation Function for the Retirees [Apr 28]

CFE and AcSIR Highlights

AcSIR:

- ❖ Doctoral Advisory Committee Meeting (Guide: Dr. S. Ravichandran) [Apr 6]
- ❖ Synopsis Submission of Ms. Nasrin Kabeer (Guide: Dr. M. Sathish) [Apr 17]
- ❖ Scrutinizing Committee Meeting for Ph.D. Admission (August 2023 Session) [Apr 18]
- ❖ Societal Project Review Meeting [Apr 24]
- ❖ CSIR-800 (*Unnat Bharat Abhiyan*) Presentation by Ph.D. scholars [Apr 27]
- ❖ PhD Comprehensive Examinations [Apr 28]

Centre for Education:

- ❖ B.Tech. Students Project Review Meeting [Apr 18]

Skill Development Activities

Skill Development Training Programmes:

- ❖ Industry Oriented Onsite Tailor-made Special Refresher Training Course on **Batteries for Marine Applications** was organized by CSIR-CECRI for the staff members of Cochin Shipyard Ltd. at Kochi, Kerala during April 11-13, 2023. A total of 52 staff members of CSL completed this course.
- ❖ A Skill Development Training Programme on **Surface coatings for value added products viz. decorative and functional applications** was organized by CSIR-CECRI during April 17-21, 2023. A total of 31 participants took part in this programme.
- ❖ A Skill Development Training Programme on **Industrial Wastewater Treatment Technologies** was organized by CSIR-CECRI during April 24-28, 2023. A total of 46 participants got trained.
- ii) Mr. S. Lokeshwarar, B.Tech. Student on **Reality of Engineering in our Country** [Apr 12]
- iii) Ms. M. Lavanya & Ms. V. Varshini, Project Associates on **History of Nikola Tesla and Thomas Alva Edison's Life History and Inventions** [Apr 17]
- iv) Ms. B. Mahalakshmi & Ms. G. Hemalatha, Project Associates on **Plastics** [Apr 25]
- ❖ **Online Quiz Contest** was organized through our Website on the following National/ International Days of Importance during April 2023 :
 - i) International Year of Millets 2023
 - ii) World Health Day [Apr 7]
 - iii) International Day - Monuments & Sites [Apr 18]
 - iv) World Earth Day [Apr 22]
 - v) World Corrosion Awareness Day [Apr 24]
 - vi) World Intellectual Property Day [Apr 26]
 - vii) World Day - Safety & Health at Work [Apr 28]
 - viii) World Veterinary Day [Apr 29]
- ❖ **Visit of Students:** 20 School Students and 4 Teachers from Panchayat Union Middle School, Thalakovur, Sivagangai District visited our Institute on April 13, 2023 and gained valuable insights on the ongoing R&D activities at CSIR-CECRI.

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 April 2023:
 - i) Dr. S. Sudhakar, Principal Scientist on **Role of Science and Technology in Nation Building** [Apr 7]

Induction Training Programme

An **Induction Training Programme** for the newly joined Staff Members in Technical Group III and Technical Group II of CSIR-CECRI was organised during April 10-17, 2023 at CSIR-CECRI, Karaikudi. The programme was inaugurated by **Dr. K.J. Sreeram**, Director, CSIR-CECRI and in his inaugural address he made a call to the new members to pledge themselves completely towards the CSIR-CECRI family. The objective of the programme is to make them familiar with the entire laboratory system and all the participants should make use of it effectively, he opined.

Earlier, **Mr. K.M. Sridhar**, Controller of Administration, CSIR-CECRI delivered the Welcome Address and **Dr. J. Mathiyarasu**, Chief Scientist, CSIR-CECRI explained in detail the modules of the week-long orientation programme. At the end of the inaugural event, **Mr. P. Shyam Sundar**, Administrative Officer proposed a Vote of Thanks.

The Induction Training Programme comprised of lectures from the heads of all scientific divisions, heads of all administrative sections and support / nodal divisions to educate the new comers on the genesis, significance and nature of R&D activities/work in their respective areas. In addition, lab visits to various R&D divisions were also arranged in which all the lab activities under various projects were showcased to the participants. Also, the role of R&D support facilities like Workshop, 3D Metal Printing Facility, Computer Networking Unit, Central Instrumentation Facility and Knowledge Resource Centre & e-Library was explained / demonstrated which turned out to be an active hands-on experience session for them.

As a majority of the new staff members are to be deployed for the operation and maintenance of the sophisticated instruments in CIF division, exclusive

sessions on the following topics were arranged: Spectroscopic Techniques, Microscopic Techniques, X-ray Techniques and Chromatographic Techniques.

In order to make them aware of various safety aspects required in a R&D lab environment, a special safety training was conducted consisting of lectures on various topics combined with practical demonstrations which turned out to be eye-opener for the participants as they gained vital information especially on precautionary measures. A lecture by the Secretary, CECRI Club on the socio, cultural and sports activities of the Club towards getting together of staff members was also arranged for the benefit of the participants.

Towards the end of the training programme, a Feedback & Assessment Quiz was conducted on April 17, 2023 in order to gauge the level of understanding, the quality of lectures delivered, usefulness of the practical demonstrations and the overall effectiveness of the event. More than **88%** of the participants rated this Orientation Programme as **Excellent / Outstanding** and they fared well in the level of understanding as more than **95%** of the participants scored exceedingly well in the Quiz.

The Valedictory Event was conducted on April 17, 2023 in which Mr. P. Shyam Sundar, Administrative Officer, CSIR-CECRI delivered the Welcome Address. Dr. J. Mathiyarasu, Chief Scientist, CSIR-CECRI summed up the highlights of the Training Programme and moderated the discussion on feedback session. A total of **40 participants** (30 from Technical Group III and 10 from Technical Group II) actively took part in the Training Programme and all of them were awarded with participation certificates at the valediction. The programme concluded with a Vote of Thanks by Dr. V. Ganesh, Sr. Principal Scientist, CSIR-CECRI.



New Members in CSIR-CECRI Family

Technical Assistants



Ms. S. Shailendra Devi
[DOJ: 01/02/2023]



Ms. J. Muthuthiyya
[DOJ: 02/02/2023]



Ms. P. Amritha
[DOJ: 02/02/2023]



Mr. K. Saravanaperumal
[DOJ: 03/02/2023]



Mr. G. Bahath
[DOJ: 03/02/2023]



Mr. C. Balamurugan
[DOJ: 06/02/2023]



Ms. A.S. Haripriya Asokan
[DOJ: 06/02/2023]



Mr. A. Benito Maria Jose
[DOJ: 06/02/2023]



Ms. K. Pavithra
[DOJ: 07/02/2023]



Mr. M.P. Abdul Rahees
[DOJ: 08/02/2023]



Mr. Sudesh Kumar Sahu
[DOJ: 08/02/2023]



Mr. Badavath Gopi
[DOJ: 08/02/2023]



Mr. Dhanikela Vara Prasad
[DOJ: 14/02/2023]



Mr. M.D. Asif
[DOJ: 14/02/2023]



Mr. Gurudayal
[DOJ: 15/02/2023]



Mr. Suman Kumar
[DOJ: 15/02/2023]



Mr. C.R. Ravikumar
[DOJ: 16/02/2023]



Mr. D. Prahasith Sai
[DOJ: 17/02/2023]



Mr. P. Dinesh
[DOJ: 17/02/2023]



Mr. G. Velmurugan
[DOJ: 20/02/2023]



Mr. K. Bidhun
[DOJ: 22/02/2023]



Mr. J. Kamarsamam
[DOJ: 23/02/2023]



Mr. Nimmala Nagarjuna
[DOJ: 23/02/2023]



Mr. Y. Manikanteswara Reddy
[DOJ: 25/02/2023]



Mr. V.M. Shivaprasad
[DOJ: 27/02/2023]



Mr. T. Satyanarayana
[DOJ: 02/03/2023]



Mr. Vandراسي Satya Prasad
[DOJ: 09/03/2023]



Mr. M. Lingapandi
[DOJ: 31/03/2023]



Mr. K. Rohit
[DOJ: 06/04/2023]



Mr. Ajmeera Nagu
[DOJ: 06/04/2023]

Technicians



Ms. P. Nisha
[DOJ: 01/02/2023]



Mr. Santosh Kumar Pandey
[DOJ: 01/02/2023]



Mr. R. Pazhanisami
[DOJ: 08/02/2023]



Mr. Anil Mahadeo Zade
[DOJ: 10/02/2023]



Ms. R. Sivaranjani
[DOJ: 13/02/2023]



Mr. Shrikant Sanjay Mane
[DOJ: 14/02/2023]



Mr. P. Vishnu
[DOJ: 20/02/2023]



Mr. Debapriya Bhowmik
[DOJ: 20/02/2023]



Mr. Talari Ashok
[DOJ: 02/03/2023]



Mr. A.M. Mohamed Sadam Hussain
[DOJ: 02/03/2023]

Snapshots



Homage to Dr. RM. Alagappa Chettiar



Tribute to Dr. B.R. Ambedkar



Onsite Special Refresher Course at Cochin Shipyard Ltd.



Skill Development Training Programme at CSIR-CECRI



Global Climate Clock Display Event on Earth Day



Invited Lecture under AKAM and CECRI@75 Lecture Series



Mass Plantation Drive in the Campus



Farewell and Felicitation to the 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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