



CECRI NEWS

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

"One Week One Lab" at CSIR-CECRI

Union Minister and Vice-President of CSIR, **Dr. Jitendra Singh** launched the "One Week One Lab" Campaign of CSIR at New Delhi on January 6, 2023 which is aimed at highlighting India's global excellence in technology, innovation and StartUps. This exclusive campaign will showcase the legacy, exclusive innovations and technological breakthroughs of each CSIR lab through week long events including industry & start-ups meet, students connect, society connect, display of technologies, etc. He declared that all **37 CSIR Labs** in India will be turned into **Global Centers of Research and Innovation** in their respective fields of Specialization. Accordingly, **One Week One Lab Campaign** was organized at **CSIR-CECRI** during **July 24-28, 2023** with a wide variety of events connecting all the stakeholders, i.e. Industry, Academia, Society, Alumni and Students including an exclusive event on IPR Awareness.



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All 37 CSIR Labs in India will be turned into Global Centers of Research and Innovation in their respective fields of Specialization

- **Dr. Jitendra Singh**
Hon'ble Minister
of Science & Technology, GOI and
Vice-President, CSIR



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Day 1 (July 24, 2023)



The **One Week One Lab** (OWOL) Campaign at CSIR-CECRI was commenced with a customary invocation and a traditional way of lighting lamp. In her welcome address, **Dr. V. Saraswathy**, Chief Scientist welcomed the gathering and briefed on the idea behind the invoking of this initiative of OWOL Campaign. **Dr. K. Ramesha**, Director, CSIR-CECRI in his Presidential Address put forward the purpose of OWOL and called for the combined efforts in making this event a grand success. He thanked all the stakeholders for their unstinted support towards this Campaign.

Dr. Debashish Bhattacharjee, Vice President, Technology & R&D, Tata Steel Ltd., Kolkata was the Chief Guest and in his address, he recalled the crucial contributions of CSIR-CECRI in collaborative projects of Tata Steel and called for strengthening the bond in the future as well. **Shri. D.M. Raipure**, Chairman Tungabhadra Board, Karnataka & **Dr. Kartik Kumar**, R&D Director, Saint Gobain India Ltd., Chennai were the Guests of Honour and they reminisced their association with CSIR-CECRI & its role in realizing their R&D goals. A Video on **CECRI's R&D Glimpses** and a Booklet-**CECRI's Technology Capsule** were released by the dignitaries.

Later, the **Technology Pavilion** showcasing the technology profile and R&D capabilities of CSIR-CECRI was inaugurated. All the guests witnessed the research

outcome of the recent years and a glimpse of the on-going R&D activities. The Chief Guest also inaugurated the **Molten Salt Metallurgy Facility** and the **γ -MnO₂ Pilot Plant** at CSIR-CECRI, Karaikudi.

CECRI-Industry Connect was organized in which delegates from various industries actively deliberated and provided their feedback on the on-going collaborations and future requirements to strengthen their relationship with CECRI. The event witnessed the handing over of two prototypes of **Piezoelectric Dynamic Pressure Sensor** developed by CECRI to ISRO's IPRC. **Technology Transfers** on *Mixed Metal Oxides Coating Technology for Anode of Electrochemical Cell for the Production of Hypochlorite from Brine and Sea Water* was formalized. An extempore signing of **Agreement for Contract R&D on Atmospheric Corrosion Testing** with **Saint Gobain India Ltd.** also took place.

The Day-1 also had **CECRI-Alumni Connect** Event through hybrid mode in which Alumni of B.Tech., Ph.D. and TWAS Fellows of CSIR-CECRI interacted with the present students. The present batch were briefed on the emerging trends in the field of electrochemical science & technology and various funding schemes available around the globe in this area. The TWAS fellows turned into torch bearers and shed light on their successful stay at CSIR-CECRI which turned out to be life-changing moments for them.



Day 2
(July 25, 2023)



The Day-2, July 25, 2023, marked CSIR-CECRI's 76th Foundation Day. Dr. A. Sivashanmugam, Chief Scientist, CSIR-CECRI welcomed the gathering and briefed on the 76 glorious years of CSIR-CECRI, thanked all the stakeholders and solicited their support in the future as well. Dr. N. Kalaiselvi, Director General, CSIR & Secretary, DSIR graced the occasion as the Chief Guest. In her address, she highlighted the pivotal role of electrochemistry and electrochemical processes in addressing energy and environmental issues. *Electrochemical processes and our everyday life processes are synonymous and inseparable*, she opined.

Shri. Bhupinder Singh Bhalla, IAS, Secretary, Ministry of New and Renewable Energy (MNRE) delivered the 76th Foundation Day Lecture. In his lecture, Shri. Bhalla recalled the significant contributions of CSIR and CSIR-CECRI in various collaborative projects with MNRE. *CSIR has been a valuable partner for MNRE in many scientific and technological endeavours and we share a common platform in solving issues revolving around the Sustainable Development Goals*, he expressed. He added: our special focus at MNRE is on clean and affordable energy in which CSIR-CECRI has specialized skill sets and has successfully carried out insurmountable R&D work across the Globe. He stressed the importance of large-scale processes for green hydrogen production and called for renewed efforts under National Green Hydrogen Mission, Carbon Capture, Utilization and

Storage and allied areas. The Directors of Sister Labs, Dr. K.J. Sreeram, Director, CSIR-CLRI and Dr. N. Anandavalli, Director, CSIR-SERC offered felicitations. Green Hydrogen Laboratory (HyLab), Electroplating Facility and Climate Action Building (CAB) were inaugurated by the dignitaries. A product on the commercialization of CSIR-CECRI's Technology on 3D Printable Polymer Filaments by the licensee M/s. Monotech Systems Limited, Chennai was also released.

CECRI-Industry Connect on Corrosion Mitigation was conducted on Day-2 in which a large number of industrial clients were involved in intriguing discussion on the evolving issues and the interventions required in this niche area of CSIR-CECRI. Delegates from all parts of the country contributed their valuable thoughts in this exclusive Brainstorming Session to mitigate this global menace. The Chief Guest released the Brochure of 20th National Conference on Corrosion Control scheduled during 7-9 December 2023 at Coimbatore.

Later, as a part of CECRI-Social Connect, a Students Rally was organized to create awareness among the general public on CECRI's technological contributions, Intellectual Property Rights (IPR) and One Week One Lab activities which was inaugurated by Smt. Asha Ajith, IAS, District Collector, Sivagangai District who inspired the students with her speech on CSIR-CECRI's contribution to Science & Society.



Day 3
(July 26, 2023)



Padma Shri Prof. Anil K. Gupta, Honey Bee Network, National Innovation Foundation, Ahmedabad was the Star of the Show on **Day-3**. He mesmerized the audience with his captivating talk and sowed the seeds of intellectual curiosity & hunger for acquiring new knowledge among the minds of the student participants. Prof. Gupta applauded the multitude of efforts undertaken by CSIR in this regard especially CSIR-Jigyasa (a student-scientist connect initiative).

Prof. Gupta began his lecture by eliciting examples of how ideas/curious thoughts could be turned into innovative products/technologies. He mainly focused on ideas/thoughts originated from school students and how it got transformed into effective end use solutions, many of which scaling upto life-changing ones. He gelled with the student participants instantly, flushing their fears and opening up their creative minds to pour out thought-provoking queries. Prof. Gupta answered all their queries with ample examples in the highly interactive & informative Q&A Session and encouraged them to ask more from him via emails.

Later, **Dr. T. Pavan Kumar, Sr. Scientist, CSIR-Institute of Minerals and Materials Technology (CSIR-IMMT), Bhubaneshwar** delivered a lecture on Intellectual Property, Intellectual Property Rights and its Management. A large number of students gained valuable insights from this informative lecture. **Shri.**



Anil Mohan, Assistant Commissioner, Kendriya Vidyalaya Sangathan, Chennai Region graced the occasion as a Guest of Honour and motivated the students with his inspiring address. He profusely thanked CSIR-CECRI for providing this golden opportunity to the students.

As a part of OWOL, **Do-It-Yourself Kit Demonstration** was conducted for the students by a Team of Scientists, Engineers and Scholars of CSIR-CECRI on the following: 1) *Solar-based Li-ion Battery Power Bank*, 2) *Rechargeable LED Torch Light using Li-ion Battery*, 3) *Li-ion Battery-powered Heart Rate Monitoring System* by Dr. S. Hemavathi, 4) *Supercapacitors* by Mr. Gokulnath, 5) *LEDs* by Mr. P. Sriram, 6) *Automated Robot Arm for manufacturing Smart Solar Panel for Home Appliances Kit - Home Automation Kit*, 7) *Fire and Hazard Safety Intimation Kit* by Mr. S. Jamal Mohammed and 8) *Electronic Gadgets* by Mr. Thipperudraswamy. All the student participants were given hands-on training on the above and at the end of the event the DIY kits were distributed to all.

Towards the end of the day's events, a presentation of Innovative Ideas by students was organized. The students were thrilled to present their ideas before the elite gathering which marked the successful realization of the objectives of the event. An exclusive feedback session for the teachers accompanying the students was also arranged.



Day 4 (July 27, 2023)



The events of **Day-4** were parallelly conducted at Chennai and Karaikudi. The **Energy Technology Meet** was held at CECRI Chennai Unit located in the CSIR Madras Complex at Taramani, Chennai.

The ET Meet was inaugurated by **Shri. R. Venkatadri**, Chief-Innovation and Digital Officer, Tata Chemicals, Mumbai who briefed the participants on the collaborative R&D activities with CSIR-CECRI in the area of clean energy. **Prof. A. K. Shukla**, former Professor, Indian Institute of Science, Bengaluru and former Director of CSIR-CECRI, Karaikudi, and **Shri. R. Madhan**, Director, IGSTC, New Delhi graced the event as the Guests of Honour.

Prof. Shukla highlighted the various path-breaking achievements of CSIR-CECRI in the past and the path ahead for it to prove its mettle in all areas of electrochemical science & technology especially energy technology. Shri. Madhan recalled the close association of IGSTC and CSIR-CECRI in various ventures and solicited sustained efforts in strengthening the ties in the future as well. **Dr. K.J. Sreeram**, Director, CSIR-CLRI and **Dr. N. Anandavalli**, Director, CSIR-SERC, Chennai delivered the Special Address on the occasion.

The Event included Two Major Sessions: **Hydrogen Energy: Generation, Storage, and Utilization** and **Battery Technologies for e-Mobility** with lectures by industrial

delegates from various industries across India and scientists of CSIR-CECRI. Avenues announced by the Govt. of India under the **National Hydrogen Mission** were deliberated in detail. Discussions were also done on reorienting CSIR-CECRI's R&D efforts towards this emerging area and reap the benefits of a rewarding future.

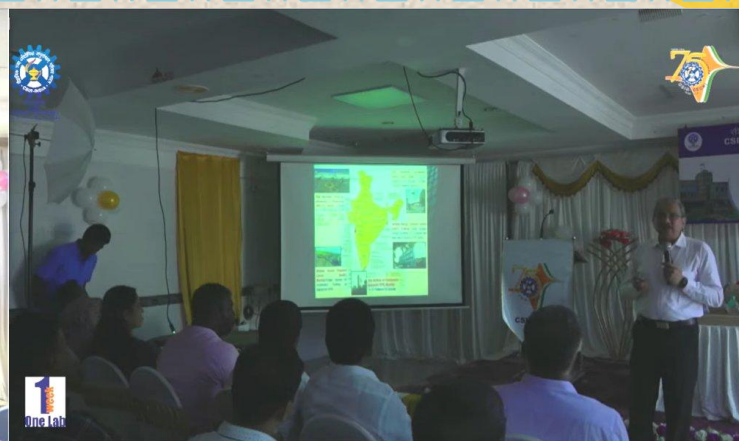
A Panel Discussion on **Driving India's Green Future: Exploring the Potential of EV Industries, Li-ion Batteries, and Fuel Cells** was also held in which the roadmap for CSIR-CECRI towards a successful and sustainable future was discussed in detail. Meanwhile, exhibits on the on-going R&D activities, strength and capabilities of CSIR-CECRI were also showcased.

On Day-4, at CSIR-CECRI, Karaikudi, **Workshop on Patent Writing** was conducted by **Dr. T. Pavan Kumar**, Sr. Scientist, CSIR-IMMT, Bhubaneswar. Dr. Pavan Kumar gave a comprehensive training beginning with an overview of the IP spectrum and went on to delineate in detail the essentials of patents - structure, scope & significance. He also explained elaborately on patent search & claim drafting and patent filing & case studies.

The Workshop was highly informative and educative as Dr. Pavan Kumar interacted with the participants and offered clarifications on various queries raised by the them with ease.



Day 5 (July 28, 2023)



CSIR-CECRI conducted **Electroplaters' Meet** on the **Day-5** at Madurai, Tamil Nadu to showcase the emerging developments in the field of electroplating to the entrepreneurs/electroplaters of Madurai hub and surrounding Districts. This Event was organized on July 28, 2023 at Hotel Tamil Nadu, Madurai in association with the Electroplaters & Metal Finishers Association, Madurai. **Dr. Rajeev Mehta**, Scientist-H, Inter University Accelerator Centre (IUAC), New Delhi graced the occasion as the Chief Guest. **Shri. P. Natarajan**, President, Electroplaters & Metal Finishers Association, Madurai and **Smt. R. Uma Chandrika**, Assistant Director (Chemical), MSME, Madurai were the Guests of Honour.

Dr. B. Subramanian, Sr. Principal Scientist and Head, Electroplating & Metal Finishing Division, CSIR-CECRI welcomed the gathering and gave an overview of the R&D expertise available at CSIR-CECRI. He also elucidated on the recent trends in the area of electroplating and updated the audience on the augmented R&D facilities at CSIR-CECRI, Karaikudi.

Dr. Rajeev Mehta in his address shed light on the crucial contributions of CSIR-CECRI in this critical area and appealed to the entrepreneurs to effectively utilize the the expertise available at CSIR-CECRI in all their processes. **Shri. Natarajan** and **Smt. Uma Chandrika** offered felicitations and thanked CSIR-CECRI for its seminal role for the upliftment of MSMEs. Lectures were

delivered by eminent experts on significant topics in electroplating. Later a live demonstration on electroplating was conducted for the benefit for the benefit of the participants. An exhibition of electroplated products was also arranged.

In the evening, the **Valedictory Function** of OWOL was held at CSIR-CECRI, Karaikudi. **Dr. G.A. Pathanjali**, MD, High Energy Batteries Ltd., Mathur, Chief Guest, showered accolades on the Team Effort of CECRI in the Grand Success of OWOL. A close connect of CECRI-Industry-Academia should always prevail, he opined. **Dr. Rajeev Mehta**, Scientist-H, IUAC, New Delhi took part as Guest of Honour and he praised the united efforts in this successful Campaign. He recalled the sincere efforts of scholars in a collaborative R&D work and said that this has always remained the hallmark of CECRI.

Dr. K. Ramesha, Director, CSIR-CECRI recognized the valuable and voluntary contribution of each and every member of CECRI Family and expressed his sincere gratitude to all of them. *We have set an insurmountable standard which we need to hold high always*, he called for. Earlier, **Dr. V. Saraswathy**, Chief Scientist, CECRI welcomed the gathering & offered her congratulations to all. **Dr. N. Lakshminarasimhan**, Sr. Principal Scientist, CECRI summed up the proceedings of all OWOL Events. The event was concluded with a detailed Vote of Thanks by **Dr. J. Mathiyarasu**, Chief Scientist, CECRI.



CSIR-CECRI's In-House Symposium

On this 75th Foundation Year of CSIR-CECRI, "CSIR-CECRI's In-House Symposium", an annual event, was initiated in which Scientists of all divisions presented their R&D work. This In-House Symposium provided an opportunity for our Scientists to share their current

research and to collaborate among themselves in the cutting-edge R&D across interdisciplinary areas. The first In-House Symposium was held on **July 7 (Day 1)** and **July 14 (Day 2)**. A total of 22 lectures were organized during these two days.



Azadi Ka Amrit Mahotsav and CSIR-CECRI@75

Under the AKAM and CSIR-CECRI@75 Lecture Series, the following lectures were arranged: 1) *Nanostructured Materials for Green and Sustainable Future Energy Technologies* by **Prof. Sangaraju Shanmugam**, Department of Energy Science & Engineering, Daegu

Gyeongbuk Institute of Science and Technology, South Korea [July 4] and 2) *Electrochromic and photochromic Materials / Devices* by **Prof. Balaji Subramanian**, Department of Physics and Astronomy, Trent University, Peterborough, Canada [July 6].



Rashtriya Boudhik Sampada Mahotsav

CSIR-CECRI organized a One-day Programme on IP Awareness under the *Rashtriya Boudhik Sampada Mahotsav* on July 17, 2023. **Mr. Praveen Raj**, Principal Scientist, CSIR-NIIST, Trivandrum (*Former Patent Examiner, Indian Patent Office*) delivered a talk on IP Awareness and shared the Best Practices in Protecting Inventions and Commercialisation Strategies.

New Member in CSIR-CECRI Family



Mr. G. Balaji Prasanna Kumar
Technical Assistant
(Biotechnology)

Corrosion & Materials Protection Division
Date of Joining: 12/07/2023



- ❖ 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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