

**No. DSIR/MS/2023/01**  
Government of India  
Ministry of Science & Technology  
Department of Scientific & Industrial Research  
MONTHLY SUMMARY FOR THE CABINET  
(For the month of **January, 2023**  
(Part-I Unclassified)

**Major achievements during the month of January, 2023:**

**Council of Scientific & Industrial Research (CSIR)**

**New Technologies/Processes Developed/Transferred**

- **CSIR-CEERI**
  - First prototype of UV-C LED chip is developed under work package of WP 2.2 of IDEAL Mission Mode Project (Emission wavelength  $\sim 280 \pm 5$  nm), VF@ 20 mA = 9.5 V. Chips were packaged at M/s. Kwaliti Photonics Pvt. Ltd. Hyderabad
- **CSIR-CFTRI**
  - Developed processes:
    - for the preparation of Spice Bread;
    - for preparation of Fiber enriched Rusk;
    - know-how for Gluten-free Cake-mix
  - Developed the following Technologies:
    - Roller milling process for semolina (sooji/rava) from millets and preparation of multimillets semolina;
    - Instant Halva, Upma and Rava Idli mix from millets and multimillets semolina - M/s Salem Food Products Pvt. Ltd., Salem, Tamilnadu.
- **CSIR-CLRI**
  - Developed a Technology for the process of preparation of Pseudocorium, a leather like material from agricultural wastes and transferred to M/s. Zaibunco Industries Pvt. Ltd, Jajmau, Uttar Pradesh
- **CSIR-CIMFR**
  - Developed Technologies for Improved Soft Coke Making and Transferred to:
    - M/s. Prakash Associates, Dhanbad, Jharkhand
    - M/s. Sony Infrastructure, Betul, M.P
    - M/s. Sony Trading Company, Dhanbad, Jharkhand,
    - M/s. S.R.S. Coke Industries, Gaya, Bihar
    - M/s. Ekram Soft Coke Industries, Dhanbad, Jharkhand

- M/s. Bhagwati Coking Coals Private limited, Dhanbad, Jharkhand
  - M/s. Bajrang Fuels, Ramgarh, Jharkhand.
- **CSIR-IIP**
  - Developed technologies for:
    - Extraction optimization of beta-glucan from deoiled yeast cake.
    - Purification of lutein and beta-carotene from yeast pigment mixture.
    - Deconstruction of Sorghum biomass and syrup to generate monomeric fermentable sugars and further production of ethanol through yeast mediated fermentation.
    - Characterization of Shola biomass for value mapping.
    - New Variants of the re-formulated LPG Sweetening Catalyst for Thoxcat ES and commercialized in the Middle East (M.E.).
- **CSIR-NAL**
  - Developed technologies for:
    - Fiber Bragg Grating (FBG) packaged sensor assembly for railway application and installation fixture thereof
    - Improved oxygen sensor for automobile application and its manufacturing thereof
  - License Agreement signed with M/s. Gopalan Aerospace India Private Limited for NAL's Multicopter Drone for Societal Applications.

### **Collaborations/Agreements/MoUs Signed (National)**

- **CSIR-CBRI**
  - Signed an agreement with Central Public Works Department, Ministry of Urban Development for undertaking a project on “Third Party Quality Assurance and Technical Advice on Construction of 100 bedded ESIC Hospital & 32 Nos. Staff Quarters with Boundary Wall around the plot i/c Electrical, Horticulture & all other related services at Bahadurgarh, Haryana” on 19<sup>th</sup> Jan., 2023.
  - MoU was signed with M.J.P. Rohilkhand University, Bareilly (UP) on 23.01.2023 for Academic and Research Interaction.
- **CSIR-CCMB**
  - Collaborated with:
    - Pasteur Institute, Shillong Meghalaya for conducting studies to understand microbial genomics and their contributions in human infectious diseases.
    - HERF (LVPEI) for conducting studies to understand microbial genomics and their contributions to ocular diseases and jointly conduct outreach activities.
    - AIIMS Bibinagar for collaboration to Environmental surveillance for prevalence of various microbes and AMR genes in addition to SARSCoV2.

- Pune Knowledge Cluster Foundation (PKCF) to convene a consortium of R&D research and clinical institutions to advance pathogen genomics surveillance to track various SARS-CoV-2 variants and accelerate bio informatics and global data sharing.
  - CDFD Hyderabad for collaboration and co-operation for usage of diagnostics infrastructure and other research facilities and collaborations.
- **CSIR-CDRI**
  - MoA executed with DBT, New Delhi on 16-01-2023 w.r.t. “Pre-clinical development of CPMD-1049 targeting drug resistant Mycobacterium tuberculosis.”
- **CSIR-CECRI**
  - Collaborated with:
    - M/s. Automotive Robotics (India) Pvt Ltd., Hyderabad for project Title Investigate ARi's materials in Lithium-ion and Sodium-ion Batteries and battery making know-how, thereof
    - M/s. Balaji Construction, Raipur Chhattisgarh for project Title Electrochemical De-Fluoridator for Drinking water
- **CSIR-CFTRI**
  - MoU was signed with Central Ayurveda Research Institute (CARI) Bengaluru on 19.01.2023 to carry out collaborative research projects pertaining to understanding of diet in diabetes and evaluation of dietary articles for their compositions and efficacies with special reference to diabetes.
- **CSIR-CLRI**
  - Technology transfer agreement has been signed with M/s. Zaibunco Industries Pvt. Ltd, Jajmau, Uttar Pradesh towards licensing of Process Technology of preparation of Pseudocorium, a leather like material.
  - A collaborative agreement has been signed with IK Gujral Punjab Technical University, Jalandhar towards Collaborative programmes in R&D.
- **CSIR-CMERI**
  - License Agreement was signed with M/s Himatsingka Agencies Pvt. Ltd., Dumka, Jharkhand on 04/01/2023 on licensing of Front Shovel & Multi Barrel Tear Shell Launching System of Mob Control Vehicle (MCV) Technology Know-how.
- **CSIR-IICT**
  - Collaborated with:
    - Neptune Technologies, Dahej, Gujarat for Evaluation of catalysts for N-alkylation of aniline with methanol.
    - Aurobindo Pharma, Hyderabad for Structure elucidation of Icatibant injections using NMR spectroscopy.
- **CSIR-IIP**
  - Collaborated with:

- Chhattisgarh Biofuel Development Authority, Raipur to Set up of a Sustainable Aviation Fuel (SAF) plant based on alcohol to jet (ATJ) Technology,
- HPCL-Mittal Energy Limited, Noida for Single Reactor HEFA Technology for Drop in Liquid Sustainable Aviation and Automotive Fuel (DILSAAF) and Conversion of Waste Plastic to Oil and any other area of mutual interest.
- BASF India Limited, Mumbai: To mutually identified areas, joint R&D projects and any other collaborative opportunities
- **CSIR-NIIST**
  - Collaboration with M/s. Abode Biotec India Pvt. Ltd., Hyderabad for Process development of a novel probiotic yeast and with M/s Hindalco Industries Limited, Mumbai for Development of high strength aluminum alloys for structural applications
- **CSIR-CRRI**
  - MoU was signed for technical collaboration with Roads and Buildings Department of Government of Andhra Pradesh on 5th January, 2023.

Patents Filed		Patents Granted		Patent Prosecutions	
India	Abroad*	India	Abroad*	India	Abroad*
18	15	30	15	32	135

\* Data reported to IPU during the said period and may increase later during national phase entries

### High impact S&T services offered

- **CSIR-CCMB**
  - Molecular Diagnostics Services for 137 families comprising of 162 samples.
- **CSIR-CDRI**
  - Common Research and Technology Development Hub (CRTDH): Provided analytical services, and consultancy for new drug product development to one Medium-Sized Enterprise in the Pharmaceuticals sector. Obtained a Form 37 License as a Drug Testing Laboratory from the Central and UP State drug regulatory authorities.
  - Animal Facility Laboratory: The CPCSEA (Committee for the Purchase of Control and Supervision of Experimental Animals) approved experimental animals (total no. 83) were supplied to outside research organizations for research purpose. This includes 35 mice and 48 rats.
  - Sophisticated Analytical Instrument Facility: Provided service for analysis of sample by IR (Infrared), Mass, NMR (Nuclear Magnetic Resonance) and EM (Electron Microscopy). In the month of January, total 197 samples have been analyzed for 35 users.

- **CSIR-CRRI**

- Field study and suggestion for Economical Design of pavement for strengthening of the existing truck parking area at ICD Dadri, U.P. for Container Corporation of India Ltd.
- Design for FDR mix and evaluation of trial patch of FDR road in the State of U.P. for Blacklead Infratech Pvt. Ltd.
- Design of Rigid Pavement (Approach Road) in RDC Store at Mehrauli, Delhi for Central Public Works Department (CPWD), New Delhi.
- Review of the Alternate Pavement Design for work named Improvement of Henglep-Thingkhew-Tipaimukh Road using Soil Stabilization Technology with Evocrete Admixture in the state of Manipur for CCL International Ltd., Ghaziabad.
- Investigation on ROB at km 290+445 of Bareilly-Sitapur section of NH-24 in state of UP National Highway Authority of India (NHAI), Bareilly.
- Investigation and Design of retaining wall/protection wall for the construction of missing links in Lakpath-Gaduli-Hajipur-Odma-Khavada-Dholavira-Mauvana-Godakabet-Santalpur road (NH No.754k), Gujarat for MKC Infrastructure Ltd., Gujarat.
- Assessment of FDR related work executed on PMGSY road Sinduria to semrahani (Package UP4795, UPFDR-17) in Mahrajganj, Uttar Pradesh for Rural Road Development Authority (RRDA), UP.
- Design of Thin white topping (TWT) pavement (from km 0+800 to 2+240, km 5+050 to km 8+500) on Nagpur-Amravati Road of NH-53 in Nagpur City for SPD Infra Consultant Pvt. Ltd., Nagpur.
- Alternate Pavement Design and mix design for construction of NH 124D in the state of Uttar Pradesh for Prabha Infrastructure Pvt. Ltd., Varanasi.
- Evaluation of Viatop Premium Pellets for application in Stone Matrix Asphalt (SMA) for Amaz Chemicals LLP, Mumbai.
- Evaluation of LCR/MIF Value of MacGrid EG 30S (i.e. biaxial extruded polypropylene geogrid) for pavement design of Dantiwara-Piper-Merta city section of SH-21, Rajasthan for Maccaferri Environmental Solutions Private Limited, Maharashtra.

- **CSIR-IHBT**

- Raised sixty-four experimental animals for the external client to support their ongoing projects and activities.

- **CSIR-IIIM**

- Following activities carried out under Floriculture Mission:
  - Interactive Workshop cum Seed Distribution Programme at CSIR-IIIM Canal Road Jammu under CSIR Floriculture Mission on 17.01.2023 wherein 96 farmers were provided free of cost hybrid marigold seeds.

- Interactive Workshop cum Seed Distribution Programme at KVK Kathua under CSIR Floriculture Mission on 18.01.23 wherein 49 farmers were provided free of cost hybrid marigold seeds.
  - Interactive Workshop cum Seed Distribution Programme at DC office Samba under CSIR Floriculture Mission on 19.01.2023 wherein 47 farmers were provided free of cost hybrid marigold seeds.
  - Interactive Workshop cum Seed Distribution Programme at CSIR-IIIM Canal Road Jammu under CSIR Floriculture Mission on 21.01.2023 wherein 20 farmers were provided free of cost hybrid marigold seeds.
  - Young StartUp Conclave at Kathua from 28 - 29 Jan, 2023 wherein Agri-tech entrepreneurs and StartUps represented CSIR Floriculture Mission.
- **CSIR-IIP**
  - Testing services offered to institute, industrial clients and AcSIR activities. These tests include gaseous fuels (ASTM D7833, D5504), liquids fuels (D6730, UOP744, D5623, D4815, D6584 and IP 391), engine oils (ASTM D3524, D3525), lubricating oils (ASTM D7419), waxes (ASTM D5442), GC-MS and HRMS of petroleum fuels and general chemicals.
  - The first photochemical synthesis of linear carbonates from the reaction of CO<sub>2</sub> with alcohols using silver doped ceria nanocomposite at room temperature under visible light irradiation is described.
  - Process Simulation and Pinch analysis of Crude distillation Unit-II (CDU-II) CPCL, Chennai.
  - Development of Coal Tar -Petroleum Hybrid Pitch, Sponsored by Tata Steel Limited
    - High softening point hybrid pitch (> 200°C) prepared from TI Free Coal tar and Petroleum feed stock.
    - Second batch of 1.67 Kg of Toluene Insoluble Free (TIF) Coal Tar feed (Second Sample) prepared to make high softening point -Petroleum coal tar Hybrid Pitch
  - Testing & Evaluation of Fire-Resistant Hydraulic Fluid for M/s FUCHS Lubricants Pvt. Ltd., Kolkata.
  - Testing and Evaluation of Grassroots Innovations (Bukhari Heater and LPG saving device) for National Innovation Foundation, Dehradun, Uttarakhand.
- **CSIR-NAL**
  - Independent safety assessment of new generation single section digital axle counter (NGSSDAC) and new multi section digital axle counter (MSDAC) as per SIL-4 of CENELAC - Central Electronics Limited (CEL).

- **CSIR-NCL**
  - Supplied around 900 industrially important cultures and identification services to pharma, biotech and academic organizations
- **CSIR-NEERI**
  - Methane and Nitrous Oxide Emission Trends in Domestic and industrial Wastewater based on Intergovernmental panel for climate change guideline.
  - Identification of Possible Attributes that influence the color change from transparent to brown in digestives, a TTK healthcare Product.
  - Environmental Impact assessment study for Meghahatuburu Iron Manganese Ore Mines of Arcelor Mittal India Pvt. Ltd. at Karampada, Tehsil Noamundi, District West Singhbhum.
  - Environmental Audit of Soda Ash Plant, Kuranga Village Dev Bhumi Dwarka, Gujarat.
  - Surveillance of Water Quality at water treatment Plants Groundwater Sources and Distribution Network in Delhi.
  - Coal Mine Pollution and Chronic kidney disease possible role of fibroblast activation.
  - Technical Verification and appraisal of detailed project report for Jharkhand industrial infrastructure development corporation Ltd.

#### **Outreach Activities (Jigyasa, Skill Development, and others)**

- **CSIR-4PI**
  - About 55 students from NGO Daksha Academy visited CSIR-4PI for " Scientists - Students " interaction. The students were briefed for various topics viz high-performance computing, Green House gases, GNSS application in the field of geodesy and Climate Modelling.
- **CSIR-AMPRI**
  - School Visit to Kendriya Vidyalaya No 2, of Raipur District for students - Scientist interaction session Interaction with Teachers, and Meeting with Deputy Commissioner regarding outreach center at Raipur. More than 350 Students, Teachers, and principal of the school have participated in the interactive session.
  - Organized one-week Hands-on Practical Training to CSIR personnel as the IP Coordinators from 9th Jan-13th Jan 2023.
  - Organizer/coordinated India International science festival, IISF 2022, MANIT, Bhopal in event -Artisan technology village -vocal for local from 21-24 Jan 2023, at Learning Resource Centre, MANIT.
- **CSIR-CCMB**
  - Medical Students Research Training program was conducted from 19th to 31st December 2022, and 20 students pursuing 2nd and 3rd year MBBS participated in the same.
  - Young Innovators Program with 25 students from Hyderabad and surrounding towns was conducted from 4-13 Jan, 2023. Participated in

the India Science Fest at Hyderabad with a booth and workshop on 21-22 Jan, 2023. Royal Society of Chemistry's residential Chemistry Camp was co-hosted by IICT, CCMB and NGRI from 23-25 Jan, 2023. An online talk for ~250 Telangana Social and Tribal Welfare schools on stress in animals.

- **CSIR-CDRI**

- Invited talk on Promotion of Mental Health in Youth by Dr Vivek Agarwal HOD of Department of Psychiatry from KGMU on 25 January 2023 at CSIR CDRI.

- **CSIR-CECRI**

- Conducted popularization of Science Event on Testing of Food Adulteration during 3-4 Jan, 2023. 75 Students from 75 Schools adopted under CECRI@75 took part.
- Our Staff Members and AcSIR students visited to various schools on 10<sup>th</sup>, 19<sup>th</sup> & 21<sup>st</sup> Jan, 2023 and gave motivation lectures and practical demonstrations to ignite the passion for Science among students.
- Two days' Workshop by AcSIR Scholars for their societal project on "Solar Energy Materials" was conducted during 23-24, Jan., 2023. An elocution competition for students and prototype model competition for teachers were also conducted. More than 100 students and 25 teachers participated.
- Workshop on "Surface Engineering" for PG college students conducted on Jan 25. More than 50 students attended.
- A new series of talks on scientific talks (in Tamil) was initiated this year - Vigyana Vinthai programme in Alagappa University Community Radio [90.8 FM]. So far, 11 of our staff members have delivered their talks.

- **CSIR-CEERI**

- One Week SDP - Semiconductor High-Impact Learning Program (SHILP) organized for 12 students from GLA Mathura during 2-7 January, 2023.
- Under SDP Vigyan Gao Ki Aur program was organized 15 participants were participated in the event the concluding event was on 14th January, 2023.

- **CSIR-CFTRI**

- Conducted Hands on Training and Workshop on High End Mass Spectrometry based Lipidomics for Food & Biomedical Sciences during 16th to 20th January 2023 (20 participated)
- Six-month nutrition intervention program is in progress for 250 Severely Acute Malnourished (SAM) children of Nanjangud taluk in association with the Department of Women & Child Development, Govt. of Karnataka and M/s Juliant Bhartia Foundation.



- **CSIR-CIMFR**
  - An orientation session related to "ANSYS- Emerging Technology for the Minin Industries" was arranged on 19.01.2023
- **CSIR-CLRI**
  - Around 50 Students and 5 Faculty from Nadar Sarawathi College of Arts and Science, Theni (B.Sc. Chemistry and Biochemistry) visited CSIR-CLRI on 6th January 2023. The students interacted with CSIR-CLRI Scientists/staff from the departments of Biochemistry & Biotechnology, Polymer Science & Technology, Inorganic & Physical Chemistry, Leather Process Technology, Environmental Science Lab & Organic and Bioorganic Chemistry.
  - Around 10 students from the Department of Chemistry, Anna University, Guindy, visited CSIR-CLRI on 11th January 2023. The students interacted with the Scientists at NMR Lab.
  - Around 59 Students from UG/PG subject of Biochemistry, Chemistry and Microbiology, St. Peters Institute of higher learning and Research SPIHER, Avadi, Chennai, along with
  - Faculties visited CSIR-CLRI on 27th January 2023. The CSIR-CLRI Scientists interacted with students and explained the research activities and facilities.
- **CSIR-CMERI**
  - SDP on Plastic Waste Disposal and Fuel Recovery - Characterization through Gas Chromatography; Jan 09-11, 2023.
  - SERB High-End Workshop on AI & ML in Robotics; Jan 06-13, 2023.
  - SERB Workshop on AI & Data Science for Industrial Applications Jan 16-22, 2023.
  - SDP on Embedded System Design for Real Time Control and Monitoring; Jan 17-30, 2023
  - Participated IISF-2022, from 21-24 January 2023 at Bhopal. Demonstrated technologies to 168 no of students from 7 school of Madhya Pradesh.
  - Jigyasa Programme on Renewable energy is organized on 31.01.2023 for the students of Doaba Public School, Parowal, Ludhiana at CSIR-CMERI Centre for Excellence in Farm Machinery. 28 nos. of students and 2 no of teachers attended this programme.
- **CSIR-CRRI**
  - CSIR-CRRI conducted 3-day online customized training program on "Maintenance of Rural Roads – Road Asset Management and Budgeting" during January 03 – 05, 2023. The training program was inaugurated by Prof. Manoranjan Parida, Director, CSIR-CRRI and attended by 49 participants nominated / sponsored by NRIDA, Govt. of India.
  - CSIR-CRRI conducted 5-day customized training program on "Sustainable Construction practices and use of waste materials/by

products” during January 16 – 20, 2023. The training program was inaugurated by Prof. Manoranjan Parida, Director, CSIR-CRRI and attended by 08 participants nominated / sponsored by MoRTH, Govt. of India.

- CSIR-CRRI conducted 3-day online customized training program on “Design of flexible and Rigid Pavement” during January 23 – 25, 2023. The training program was inaugurated by Dr. R.K. Garg, Chief Scientist, CSIR-CRRI and attended by 50 participants nominated / sponsored by NRIDA, Govt. of India.
- CSIR-CRRI organized Scientist-Student Interactive programme on January 11, 2023. The interactive programme was attended by 27 B.Tech. students and 3 teachers from Sipna College of Engineering & Technology, Amravati, Maharashtra.
- CSIR-CRRI organized another Scientist-Student Interactive programme on January 20, 2023. The interactive programme was attended by 26 B.Tech. students and 2 teachers from SCSET, Bennett University, Greater Noida, Uttar Pradesh.
- Customized Training Programme on "Sustainable construction practices and use of waste materials by products" for the Technical officers of MoRTH Projects for Ministry of Road Transport & Highways (MORTH)
- Two-day Skill Development on "Road Safety Awareness to the Teachers/Faculty of Higher Educational Institutes" Uttar Pradesh for Additional Transport Commissioner, (Road Safety Cell), Lucknow.
- Customized training Programme on 'conceptual training on Bridge and Foundation Design' for Madhya Pradesh Rural Road Development Authority, Bhopal
- Customized online Training Programme on various topics for the officials of NRIDA, New Delhi (Working under PMGSY Projects) for National Rural Infrastructure Development Agency (NRIDA), New Delhi
- Celebrated World Hindi Day on January 10, 2023 & various activities was organized from 9/1/23 to 13/1/23.
- **CSIR-CSIO**
  - On 3/01/2023 Jigyasa team visited Nagpur for 108th Indian Science Congress. The team connected with different school students and CSIR team and presented outreach programs and Virtual lab contents developed by CSIO JIGYASA.
  - On 18/01/2023 a lab visit & live demonstrations around 31 students of 10th class & 2 Teachers from GMSSS-16D, Chandigarh visited in iSense & ISTC Mechatronic Lab
  - Translation of Animation Videos to Hindi and Punjabi (04 Virtual Content Script translated)

- **CSIR-IHBT**

- 394 students and 28 teachers from 08 different, Public and Govt. schools of district Kangra of Himachal Pradesh visited CSIR-IHBT, Palampur on different dates (06,10,11,16,17,20,23 and 24 January, 2023)
- Skill Development Programme: Under CSIR-Integrated Skill Initiative programme, one person successfully trained 2 months Gardener Course (29.11.2022-24.01.2023).
- Organized 01 training program to the women farmers of Distt. Hamirpur under NRLM, Rural Development Department, Himachal Pradesh at CSIR-IHBT on 23-24th January, 2023 in which 28 women farmers participated.
- “Community Support to TB patients - Pradhan Mantri TB Mukh Bharat Abhiyaan program of the Ministry of Health and Family Welfare (MoHFW) under the ambitious National Strategic Plan intending to achieve eradication of TB by 2025 a ‘National Youth Day campaign workshop on Pradhan Mantri TB Mukh Bharat Abiyan’ has organized in the institute on 13.01.2023.
- Training of students (No. 05) under SERB-Vritika on “Application of medicinal plants in aquaculture industry for growth and control of fish diseases” as resource person from 16th-18th Jan, 2023 at CSIR-IHBT
- Training of students (No. 05) under SERB-Vritika on “Recent advances in nutrition and management practices in dairy farming and enhancement of knowledge and skill in commercial animal nutrition” as resource person from 16th -18th Jan, 2023 at CSIR-IHBT.

- **CSIR-IICT**

- Conducted JIGYASA programme at MJPTBCWREIS School of Excellence, Bhongir, Yadadri, Telangana on 3rd January 2023. Scientists presented models and demonstration kits to students in science areas of 'Mission Life', adulteration in foods, domestic and industrial water treatment, Mg/Graphite battery. Nearly 1000 students attended the program.
- Students meet Scientists: 9th Grade students of Genesis International School, Madinaguda, Hyderabad visited Membrane and Bioengineering laboratories on 3rd January.
- The Royal Society of Chemistry (RSC), India and CSIR-IICT, CSIR-CCMB, CSIR-NGRI organized a three-day residential Yusuf Hamied Chemistry Camp programme for grade 9 students from January 23-25, 2023. More than 75 students are participated from around 37 schools from nearby districts such as Ranga Reddy, Manchala, Somajiguda, Saroornagar, Charminar Mandal, Yadadri- Bhuvanagiri and Yadadri-Bhongir.

- **CSIR-IIIM**
  - As Part of IISF Curtain raiser event, one day exposure visit of Army Public School, Jammu Cantt and Govt. Higher Secondary School Jourian, was organized under JIGYASA program on 18th January, 2023). About 50 students and 3 teachers visited the labs and interacted with scientists.
  - Exposure visit of Students to Young Start up Expo. Young Start up Expo was organized by CSIR IIIM during 28-29 January, 2023. Under Jigyasa program various schools of KVS, Govt. Schools and BVM schools visited the Expo with great enthusiasm. 14 Science models were showcased by various schools.
- **CSIR-IIP**
  - Conducted Skill Development Training program on 'Analysis using Chromatography and Mass Spectrometry Techniques' on 30/01/2023.
  - Lecture delivered on "Fuel Oils" to Indian Navy Officers (RAQAS, Visakhapatnam) under the training program on "Analysis of Petroleum and Petroleum Products" at CSIR-IIP.
  - Participated and displayed "Improved Biomass Stove" and PNG burner at the "Agroforestry and Farm Forestry for sustainable land and Ecosystem Management Workshop" at ICFRE/FRI, Dehradun.
  - Participated in the Uttarakhand@25-Bodhisatva Vichar Shrinkhala on 9th January, 2023 at CM Camp Office, Dehradun.
  - Presented details on "Improved Jaggery Making Plant" and "PNG Burner" for the podcast episodes on CSIR-IIP technologies concerning Climate change for M/s. Climapreneur.
  - Participated for 6 days training programme on "Analysis of Petroleum and Petroleum Products" for Indian Navy Officers (RAQAS, Visakhapatnam) from 9 -14 January, 2023.
  - The students from Scindia Kanya Vidyalaya, Gwalior trained under Jigyasa program participated in Demonstration of IIP's Room Temperature Biodiesel process in the Mega Science Exhibition organized by Indian Science Congress 2023 at R.T.M. Nagpur University, Nagpur, Maharashtra, from 3-7 January 2023.
- **CSIR-IPU**
  - Provided Hands-on Practical Training to CSIR labs' IP Co-ordinators during 02-06 Jan 2023, 09-13 Jan 2023, 16-20 Jan 2023.
- **CSIR-NAL**
  - Vishwa Hindi Diwas Celebrations on 10.1.2023
- **CSIR-NIIST**
  - Director, CSIR NIIST, addresses school students during the curtain raiser program organized as part of India International Science Festival 2022.

- Director, CSIR-NIIST, delivered a talk on "My fascination with Science: A Transformative Journey" on the occasion of National Youth Day as well as starting Institute Seminar Series.
- Inauguration of World Hindi Day 2023 celebrations at NIIST.
- Eco-Campus Activity Phase II.
- **CSIR-NIO**
  - Underwater video transmission in near real-time from underwater archaeological site at Dwarka using ROV under Jigyasa program. Skill Training Course was conducted on "Water Quality Management for Sustainable Aquaculture' during 16-18 January 2023.
- **CSIR-NML**
  - Under Integrated Skill Initiative following programmes were conducted:
    - Hands on experiment on water splitting for green hydrogen production from 28<sup>th</sup> Dec.,22 to 27<sup>th</sup> Jan., 2023, (20 participated)
    - Innovative Product prototype making from 4<sup>th</sup> Jan., 2023 to 3<sup>rd</sup> Feb., 2023 (95 participated)
  - Conducted Virtual Lab Integration:
    - S.E. RLY Mixed High School, Jamshedpur visited on 10<sup>th</sup> Jan., 2023 (41 participated)
    - St. Jhoshep High School Golmuri visited on 12<sup>th</sup> Jan., 2023 (65 participated)
    - Buddha Academy School visited on 18<sup>th</sup> Jan., 2023 (48 participated)
- **CSIR-SERC**
  - Webinar on ""Condition Monitoring of Mechanical Systems"" was held on 11 January 2023 (50 Participated)

### Major Conferences, Seminar/Webinars, Workshops organized

- **CSIR-Hqrs**
  - CSIR participated in the **Pride of India Mega Expo** of the 108<sup>th</sup> Indian Science Congress (ISC) held at RTM Nagpur University, Nagpur, Maharashtra during 3-7 January, 2023. All CSIR Labs participated in the Mega Expo with display of their technologies in the CSIR Pavilion. CSIR Pavilion bagged '**Exhibitor of the Year**' Award during the event.
  - CSIR participated in the **Mega S&T Expo** of the India International Science Festival, (IISF-2022) held at MANIT, Bhopal, Madhya Pradesh, during 21-24 January, 2023. participated. All CSIR Labs participated in the **Mega S&T Expo** with display of their technologies. CSIR Pavilion won the '**Best Pavilion in the Expo**' Award during the event.
  - CSIR launched its "**One Week One Lab**" (**OWOL**) **Campaign**, in which during each week one CSIR lab will be showcasing its exclusive innovations & technological breakthroughs to the stakeholders. The OWOL campaign was launched with a Curtain Raiser program held on 6<sup>th</sup> January, 2023 at India Habitat Centre, New Delhi, inaugurated by

Hon'ble Minister of State (I/C) S&T, Dr Jitendra Singh. The first lab to initiate the campaign was CSIR-CBRI, followed by CSIR-CIMAP, CSIR-NIO and others in line.

- **CSIR-4PI**
  - Training Program on Greenhouse Gases (GHG): Estimation, Measurement and Modelling under CSIR-Integrated Skill Initiative Program held during 9th-12th Jan 2023).
  - The CSIR-4PI along with CSIR-NAL and CSIR-IGIB conducted an awareness program on Phenome India CSIR-Cohort during 18<sup>th</sup> - 19<sup>th</sup> Jan 2023 under PI-CHECK (Phenome India-CSIR Health Cohort Knowledgebase) project.
- **CSIR-AMPRI**
  - CSIR- AMPRI, Bhopal was Principal Coordinating Agency for the event "Artisans Technology Village Vocal for Local" under India International Science Festival (IISF) 2022 organized at Maulana Azad National Institute of Technology (MANIT), Bhopal from 21-24 January 2023. This event "Artisans Technology Village Vocal for Local" comprises of
    - four days Expo displaying various art forms from across India, 21-24 January 2023 and
    - Conference to promote scientific interaction between artists and the scientific fraternity, 22-23 January 2023.
- **CSIR-CBRI**
  - One week, One Lab CSIR-CBRI:
    - The One Week, One Lab programme of CSIR-CBRI was inaugurated on 6<sup>th</sup> Jan., 2023 by Dr. Jitendra Singh, which continued from 6 to 13 January 2023. Dr Singh also unveiled logos of One Week, One Lab programme of CSIR and CSIR-CBRI. This was followed by the release of video films and YouTube channel of CSIR-CBRI. The Hon'ble Minister also inaugurated an Exhibition and released Proceedings of a Workshop on "Innovative and Sustainable Construction Materials & Technologies (ISCMT-2023)".
- **CSIR-CCMB**
  - A group of around 20 trainee IAS Officers from UPSC 2022 batch visited our premises on January 24, 2023 as a part of their training curriculum
- **CSIR-CDRI**
  - Lecture series and workshop on small molecule drug discovery has been organized from January to March 2023. The first lecture was organized on 18th January. Dr. Jeremy Burrows, VP and Head, Discovery of MMV, Geneva, delivered lecture on "Introduction to drug discovery-1"

- Second talk of his lecture series was organized on 25 January 2023 at CSIR CDRI. Dr Jeremy Burrows delivered talk on the topic, "Introduction to drug discover-2"
- **CSIR-CFTRI**
  - A lecture on "Phenome India: CSIR Health Cohort Knowledge base" was delivered by Dr. Shantanu Sengupta, Chief Scientist, CSIR-IGIB on 17th January 2023.
- **CSIR-CGCRI**
  - Distinguished Scientist Lecture Series titled, " Materials issues in designing Thermoelectric materials for device", Speaker: Prof. Kamanio Chattopadhyay, SERB Distinguished Fellow Department of Materials Engineering Indian Institute of Science, Bangalore on 24-01-2023 at MN Saha Auditorium, CSIR-CGCRI, Kolkata.
- **CSIR-CLRI**
  - An international training workshop on "Emerging Trends in Materials, Design, Innovation and Intelligent Manufacturing of Footwear and Leather Products in Developing Countries" was jointly organized with Centre for Science and Technology of the Non-Aligned and Other Developing Countries (NAM S&T Centre) during 30-31 January 2023. About 12 speakers from NAM countries and speakers from Industry and Institutes were part of the programme. The Co-sponsors for the event are Indian Leather Technologists' Association - Southern Region, and CSIR-CLRI LERIG Trust.
- **CSIR-CSIO**
  - A webinar on "Medical device regulation policies in India: Special focus on R&D perspective" was organized.
- **CSIR-HRDC**
  - Awareness Programme on Gender Sensitization and Sexual Harassment of Women at Workplace: Prevention, Prohibition and Redressal on 27 January 2023.
- **CSIR-IIIM**
  - Organized two-Days Young Startup Conclave at Govt. Degree College Kathua on 28th & 29th January 2023. The mega event first of its kind in Kathua was inaugurated by Dr. Jitendra Singh, Hon'ble Minister of State (I/C) for S&T.
- **CSIR-NIIST**
  - Inauguration of Entrepreneurship Practice workshop in Food Processing titled "Agri Produces Value Addition - Opportunities and Challenges". CSIR - NIIST is conducting this in collaboration with Kerala Institute for Entrepreneurship Development (KIED), Department of Industries and Commerce, Government of Kerala.

- **CSIR-CFTRI**
  - Dr. Jitendra Singh, Hon'ble Minister of State (I/C) S&T commemorated the **International Year on Millets** with a special program titled **CSIR Innovations on Millets** organised by CSIR-CFTRI on 30<sup>th</sup> Jan., 2023 along with the Exhibition and released the Desktop Calendar 2023 on Millets. The program was held at the Auditorium of CSIR-NPL, New Delhi.
- **CSIR-URDIP**
  - Conducted "Hands on IP training" to IP coordinators from CSIR labs at CSIR-IPU, New Delhi on 4, 11-12 & 18-19 January 2023 as part of Hands-on Practical Training to CSIR Personnel 2022-23.

#### **Visit of high-level dignitaries to the Institute/Laboratory**

- **CSIR-CFTRI**
  - Shri Surya Pratap Sahi, Minister of Agriculture, Govt. of Uttar Pradesh, Shri Baldev Singh Aulakh, Minister of Agriculture (MoS), Govt. of Uttar Pradesh and Shri Dinesh Pratap Singh, Minister of Horticulture, Govt. of Uttar Pradesh visited the Institute on 20.01.2023.
- **CSIR-CLRI**
  - Mr. Rajeev Singh Thakur, Additional Secretary, DPIIT visited on 13th January 2023. Director, CSIR-CLRI updated the status of various DPIIT projects viz. IFLDP/IDLS/CETP/ Footwear Sizing to Additional Secretary, DPIIT.
  - Dr. Amitava Bandopadhyay, Director General, Centre for Science & Technology of the Non-Aligned and Other Developing Countries (NAM S&T Centre), New Delhi, Shri P.R. Aqeel Ahmed, Chairman, Leather Sector Skill Council, Chennai, Shri N.R. Jagannathan, President, ILTA (Southern Region), Chennai visited CSIR-CLRI for the inaugural session of NAM workshop organized during 30-31 January 2023.
- **CSIR-CRRI**
  - Prof. S.K. Khanna, Former Chairman, AICTE visited CSIR-CRRI on January 09, 2023. He served CSIR-CRRI as Chairman of Research Council of the Institute during 1993-97. It's a proud moment for CSIR-CRRI that a visionary like Prof. S.K. Khanna visited the institute.
  - DG, NCCBM and other officials visit CSIR-CRRI on 24/01/2023 for a meeting to discuss probable collaborations between the two institutes.
- **CSIR-CSIO**
  - Brig. Saurabh Bhatnagar, Commander 474, Engineer Brigade visited on Jan 13, 2023.
- **CSIR-NAL**
  - Shri S Somanath, Secretary, DoS & Chairman, ISRO Visited on 19.1.2023
- **CSIR-NIO**
  - Shri Somanath S, Secretary, Dept of Space, Chairman, ISRO and Space Commission, Bengaluru.



## COVID related developments/research

- **CSIR-CCMB**
  - 10 clinical samples and 188 waste water samples have been analysed.
  - Transgenic Mouse Models Establish a Protective Role of Type 1 IFN Response in SARS-CoV-2 infection-related Immunopathology.
- **CSIR-IHBT**
  - Coordination of sampling relocation for Kangra district and transfer of remaining RT-PCR kits.
  - A multi-target inhibitor against SARS-CoV-2, we evaluated 43 molecules from a plant. Active constituent was identified as a potential candidate due to its consistent interaction energy with all target proteins compared to other molecules. The stability of the complexes was determined using Molecular Dynamics simulations with different targets of SARS-CoV-2. The targeted constituent also demonstrated better binding free energies with all target proteins, which was superior to the currently published literature based on in-silico studies. The in-silico analysis conducted in this study opens the avenue for experimental validation and producing a multi-target inhibitor to combat SARS-CoV-2.
- **CSIR-IIP**
  - Additional compressor, vacuum pump, voltage stabilizer and rotary equipment switch over system have been installed in 107 PVSA MO2 production units (30 m<sup>3</sup>/h MO2 throughput) at different Govt. hospitals across India under the PMCARES funding through CSIR-IIP empaneled vendors under the ageis of DRDO.
  - Coordination and development of PI-CheCK (HCP-0047) with CSIR-IGIB (nodal lab) and other 36 sister labs.
  - Total of 198 samples received at the testing center, all the samples were tested and reported. No positive Covid-Case reported.

## Details of events celebrated to mark India@75 or *Azadi Ki Amrit Mahotsav* / 75 Years of Indian Independence

- **CSIR-CECRI**
  - In commemoration of our Nation's 75th Year of Independence, Azadi Ka Amrit Mahotsav and CSIR-CECRI@75, CSIR-CECRI in association with SAEST is organizing a monthly Lecture Series on 'Electrochemical Science and Technologies: A Path Forward to Sustainable Society'. Following Lectures organized during Jan. 2023:
    - Dr. S.V. Eswaran, Former Head, Department of Chemistry and Dean, St. Stephen's College (University of Delhi) delivered lecture on "Value Added Products from Soil, Coal and Municipal City Solid Waste" [Jan 9].
    - Dr. K. Jeganathan, Professor & Head, Department of Physics and Director, Center for Nanoscience and Nanotechnology, Bharathidasan University, Tiruchirappalli delivered a lecture on "III-Nitride Semiconductor Nanostructures and their applications" [Jan 11].

- Prof. S. Vignesh, Assistant Professor, Department of Chemistry and Biochemistry, University of Mississippi, USA delivered a lecture on “Single-entity electrochemistry” [Jan 12].
- **CSIR-CLRI**
  - Siddha Day was celebrated on 9<sup>th</sup> January 2023 at CSIR-CLRI PoP TKDL Unit. Welcome Speech was delivered by Dr. Viswajanani Sattigeri, Head, CSIR-TKDL Unit, New Delhi and Dr. K. J. Sreeram, Director, CSIR-CLRI, Chennai.
  - Speech on the topic “Siddha Diet and Nutrition for a Healthy Life” was delivered by Dr. V. Banumathi, Former Director, National Institute of Siddha.
  - Talk on “Siddha - Integrative Medicine Approach” was delivered by Dr. Arul Amuthan, Senior Lecturer, Dept. of Pharmacology, Melaka Manipal Medical College.
- **CSIR-IICT**
  - As a part of Azadi ka Amrit Mahotsav lecture series, following lectures were delivered at CSIR-IICT on:
    - Five point understanding of Climate Change and its Corrective Action on 19<sup>th</sup> January 2023 by Prof Chetan Singh Solanki, IIT, Mumbai (Energy Swaraj Foundation)
    - Discovery of Hepatitis C NS5A Replication Complex Inhibitors (RCI) 19<sup>th</sup> January 2023 by: Dr. T. Jagadeeswar Reddy, Research officer, Institute for Research in Immunology and Cancer, University of Montreal, Montreal, CANADA
    - "Discovery of Potent, Orally Bioavailable Nonpeptide Cathepsin S Inhibitor Lacking Interactions with Catalytic Cysteine" by: Dr. P. K. Jadhav, Sr. Vice President, Medicinal Chemistry, Enveda Biosciences, Carlsbad, California.
    - "Scientific Hindi Lecture " was organized on "Eco-friendly Polymer Materials, Coatings and Energy Devices" topic on the Occasion of World Hindi Day January 10<sup>th</sup> 2023.
    - Design and Synthesis of Super Messenger RNA on 23<sup>rd</sup> January 2023  
by Prof. Hiroshi Abe, Department of Chemistry, Graduate School of Science, Nagoya University, Japan.
    - Chemosynthetic Livers: Predict, Prepare and Prove the Structure, Activity and Toxicity of Drug Metabolites on 23<sup>rd</sup> January.
- **CSIR-CRRI**
  - CSIR-CRRI observed “34th Road Safety Week” during January 11-17, 2023. As part of this occasion, a pledge was taken by staff members of the Institute on January 11, 2023 and various expert talks / lectures were given by distinguished guests viz. Prof. Rahul Goel, TRIPP, IIT Delhi; Prof. Chandra Bhatt, Department of Civil, Architectural and

Environmental Engineering, University of Texas, Austin and Shri S.S. Yadav, Special Commissioner, Delhi Traffic Police.

- **CSIR-NIO**

- Scientific lecture was conducted under Azadi ka Amrit Mahotsav celebrations.

## **DEPARTMENTAL ACTIVITIES**

DSIR's mandate is to promote Industrial Research and Development besides technology promotion, development and utilization. In order to promote and nurture Research and Development in the country, Industrial R&D Promotion Programme of the department gives recognition and registration to in-house R&D units of industries, not for profit Scientific and Industrial Research Organizations (SIROs), Public Funded Research Institutions (PFRIs) and periodically renews these recognition / registration under the respective Government Notifications (as amended from time to time), by virtue of which these organizations are able to obtain Customs duty exemptions and Weighted tax deductions on R&D by Industry (under section 35(2AB) of IT Act). This scheme helps in encouraging industrial R&D in the country.

### **Industrial R&D Promotion Programme**

#### **Recognition/ Registration and renewal of In-house R&D in Industry**

- 17 in-house R&D units of industries were granted recognition and 17 were granted registration certificates.
- 04 in-house R&D units of industries were granted renewal of recognition and 04 were granted renewal of registration certificates.

### **Scientific and Industrial Research Organisation (SIROs)**

#### **Recognition/ Registration and renewal of SIROs**

- 11 SIROs were granted recognition and 06 were granted registration certificates.

### **Public Funded Research Institution (PFRIs)**

#### **Registration and Renewal of PFRIs**

- 02 PFRIs were granted renewal of registration certificates.

DSIR Central Sector scheme 'Industrial Research and Development (IRD)' comprise of the four sub-schemes i.e (i) Promoting Innovations in Individuals, Start-ups and MSMEs (PRISM), wherein financial assistance is extended to independent innovators for converting innovative ideas into demonstrable working models / prototypes / processes that may take the form of new or improved products, processes, or services; and assist them to become incubatees / techno-entrepreneurs, (ii) Patent Acquisition and Collaborative Research and Technology Development (PACE), wherein support shall be provided to industries and institutions for development and demonstration of innovative technologies,(iii)Building Industrial R&D and Common

Research Facilities (BIRD), wherein support shall be provided for creation of Common Research and Technology Development Hubs for use by entrepreneurs and industries and (iv) Access to Knowledge for Technology Development and Dissemination (A2K+) wherein studies and conferences in up-coming areas of industrial research shall be taken up besides undertaking a Technology Development and Utilization Programme for Women (TDUPW).

### **Promoting Innovations in Individuals, Start-ups and MSMEs (PRISM) :**

Six new projects were awarded and three projects were successfully completed during January 2023.

### **Scheme CRTDH:**

CSIR-IMMT Bhubaneswar organized the “Curtain Raiser Ceremony” for One Week One Lab initiative on 24th January, 2023 at its institute wherein the Secretary, DSIR, Govt. of India and Director General, CSIR inaugurated the program. During this program, CRTDH exhibition was organized to showcase CRTDH activities along with MSME stakeholders.

Second review meeting of Project Guidance cum Review Committee (PGRC) for DSIR-Common Research and Technology Development Hub (CRTDH) set up at Delhi Pharmaceutical Sciences & Research University, New Delhi (DPSRU) in the area of Affordable Health was held in virtual mode. The CRTDH in collaboration with Centre for Precision Medicine and Pharmacy (DPSRU, New Delhi) organized National Conference on “Opportunities for MSME’s from Drug Discovery to Formulation Development” from 11th-14th January 2023.

### **A2K+ Studies: Knowledge Dissemination Program:**

Project Guidance Cum Review Committee (PGRC) meetings were held to review the financial and technical progress of following studies :

- I. “Machine Learning in Mechanics: Current Status and Future Prospects” supported to Indian Institute of Technology, Tirupati (IIT-TP).
- II. “Readiness and Interest of Indian Refineries for Adopting AI/ML Technology for Operations” supported to Rajiv Gandhi Institute of Petroleum Technology (RGIPT), UP.
- III. “Readiness and Interest of Organizations for Adopting Emerging Technologies like AI and ML” supported to All India Management Association (AIMA), New Delhi.
- IV. “Artificial Intelligence Based Load Forecasting Models for Load Dispatch Centers in India” supported to Symbiosis Institute of Digital and Telecom Management (SIDTM), Pune.

- V. “Techno-Commercial Assessment of TRL-6 and above Technologies developed in India in Academia, Research Labs and Industry” supported to FIIT, New Delhi.

A Study entitled “An Assessment Study of the Commercialization of Already Developed Technologies of the Public Funded Research Institutes Established In Madhya Pradesh” conducted by Rabindranath Tagore University, Raisen (RTU) has been completed.

A study on “Application of effective digital technologies for managing municipal waste in smart cities: A case of Andhra Pradesh” has been supported to Indian Institute of Management, Visakhapatnam(IIM-V).

### **A2K+ Technology Development and Utilization Programme for Women (TDUPW):**

- A new project entitled “Empowerment of Rural Women through Capacity Building Training in Food Processing Sector” by The Gandhigram Rural Institute, Tamilnadu has been supported .
- A Technical Advisory Committee (TAC) meeting was convened to review the financial & technical progress of the following projects –
  - i. ‘Creating sustainable livelihood opportunities to the tribal women of Kuchai Block, Saraikel District, Jharkhand by establishing a Skill Satellite Centre’ by Deepak Foundation, Vadodara for Skill Satellite Centre project.
  - ii. ‘Women Empowerment through Silkworm Culture in Tribal Dominated Mayurbhanj District of Odisha’ by Mayurbhanj Biological Research (MBR), Baripada, Odisha.
- 238 Women Beneficiaries have been trained under the various ongoing TDUPW projects aiming at women empowerment through technology deployment and dissemination.

### **PUBLIC SECTOR ENTERPRISES**

#### **Central Electronics Limited (CEL)**

CEL is an enterprise under DSIR having an objective to commercially exploit the indigenous technologies developed by National Labs and R&D institutions in the country. CEL has developed a number of products for the first time in the country through its own R&D efforts and it continues to emphasize its leading role in the area of solar photovoltaic systems, electronic gadgets for Railway and other strategic electronic equipment/components among others.

- The company manufactured electronic components/systems/SPV products worth Rs. 2382.13 Lakhs during January, 2023.
- Sale of items worth Rs.1407.71 Lakhs was realized during January, 2023.

### **National Research Development Corporation (NRDC)**

NRDC continues to lay emphasis on broadening and strengthening the technology resource base by nurturing long term relationships with R&D institutions as well as universities, technical organizations, industries and also individual inventors.

- NRDC has been assigned two technologies by NIOT, Chennai and one technology by IIT (Ropar). NRDC has licensed technologies on 'Mechanical Components of Met Ocean Buoy System (Types –I and Types –II)' to M/s GRP Industries (Madras) during January, 2023
- NRDC has collected premia of Rs. 3.00 Lakhs and royalty of Rs. 4.45 Lakhs from respective technologies during January, 2023.

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