

No. DSIR/MS/2023/12
Government of India
Ministry of Science & Technology
Department of Science & Industrial Research

(Part-I Unclassified)

Subject: MONTHLY SUMMARY FOR THE CABINET (For the month of December 2023)

Major achievements during the month of December 2023

COUNCIL OF SCIENTIFIC & INDUSTRIAL RESEARCH (CSIR)

New Technologies/Processes Developed/Transferred

- **CSIR-CBRI**
Developed the following technologies:
 - Innovative Cool Roof Technology
 - Low Carbon Cement Concrete Composites using Sustainable Chemical Admixtures
- **CSIR-CFTRI**
 - Developed Cleaner process for biotechnological production of Spirulina
- **CSIR-NCL**
 - Developed a novel lab-scale process route for a herbicide halauxifen-methyl as part of CSIR's Agromission-II project (HCP49). Lab-scale process route for Abrocitinib was accomplished as a part of API-AHC CSIR Mission Project
- **CSIR-NIIST**
Developed the following technologies:
 - Process for colored terracotta tiles and Graphene from Graphite flakes
 - IR reflective Fe₂O₃- TiO₂ ceramic colorants for surface coatings
 - Vegan products as dairy alternatives

Collaborations/Agreements/MoUs Signed (National)

- **CSIR-CDRI**
 - Signed MoU between Sanjay Gandhi Post Graduate Institute of Medical Sciences, Lucknow and CSIR-CDRI, Lucknow to promote institutional linkage between CSIR-CDRI and SGPGIMS on 26-12-2023.
- **CSIR-CFTRI**
 - Signed MoU with Ramaiah University of Applied Sciences (RUAS), Bengaluru to mutually co-operate in Research & Development and sharing resources dated 10-12-23.
- **CSIR-CGCRI**
 - Signed MoU on Development of Winding Hotspot Monitoring system for transformers with M/s. Sensorzoid Private Limited, Kolkata dated 12-12-2023
- **CSIR-CLRI**
 - Technology on "Plant based leather-like material (Rice/Wheat Straw)" has been licenced to M/s Hrida Eco Materials LLP, Tamil Nadu on 20-12-2023
 - Signed agreement with M/s. Hrida Eco Materials LLP, Namakkal, Tamilnadu, in connection with transfer of the KNOWHOW on 'Plant based leather-like material from Rice/wheat straw' on 20-12-2023.

- Signed MoU with Department of Micro, Small & Medium Enterprises & Textiles, Kolkata in connection with Setting up of and operating a Skill Development Centre on 22-12-2023
- **CSIR-CMERI**
 - Signed IP Agreement with University of Oldenburg, Germany for executing Collaborative DST DAAD PPP Project titled ‘Jump to Contact Suppression during Force Spectroscopy Measurements inside a Scanning Electron Microscope: A Micro Robotic Approach’ on 04-12-2023
- **CSIR-IGIB**
 - Signed MoU with AIDS Healthcare Foundation, USA for Collaborative Research on Microlabs based clinico/genomics surveillance of female genital tuberculosis (FGTB) in Indian women towards genetic assay development signed on 05-12-2023
- **CSIR-IHBT**
 - Signed MoU with Indira Gandhi University, Meerpur-Rewari (Haryana) to collaborate research and teaching on 07-12-2023.
- **CSIR-IICT**
 - Signed MoU with GITAM Visakhapatnam to collaborate in teaching, research & training in thrust areas of Science & Technology on 06-12-2023.
 - Signed MoU with CCRUM (Central Council for Research in Unani Medicine) New Delhi, in undertaking collaboration, training and research in various scientific aspects related to USM (Unani System of Medicine) to develop and validate the Unani formulation(s) on 13-12-2023.
 - Signed Agreement with Hetero Drugs Limited for” Feasibility studies on the enzymatic process for the preparation of (S)-NBHP
- **CSIR-IIP**
 - Signed MoU with Pacific Industrial Development Corporation for Utilization of material for DME synthesis
- **CSIR-IITR**
 - Signed know-how transfer agreement on the “Portable Water Analysis Kit” with Cleanflow India Private Limited, Delhi and M/s Cleanflo India Private Limited, Delhi. at CSIR-IITR on 16-12-2023.
- **CSIR-NAL**
 - Collaboration Agreement signed with M/s. Sensohm Private Limited, Bengaluru for DST sponsored project on Tunnelling magnetoresistance (TMR) based current sensor for industry and automobile applications on 06-12-2023.
 - Memorandum of Collaboration signed with Bharat Heavy Electrical Limited, New Delhi for collaboration to pursue industrial application oriented research programmes in composite aero structure on 14-12-2023.
- **CSIR-NEIST**
 - Technology transferred to Department of Forestry & Biodiversity, Tripura University, Agartala for OP-12 Biofertilizer on 14-12-2023 and 15-12-2023.
 - Signed MoA between CSIR- NEIST & Numaligarh Refinery Limited for setting up of NRL -NEIST R&D Centre.
- **CSIR-NIIST**
 - The know-how technology transferred for the commercial production of Coconut neera syrup to M/s. Nutriwadi Natural Foods International Thrissur, Kerala, India on 18-12-2023.
 - Signed MoUs with M/s UNISON Consultancy Pvt. Ltd., Kochi to facilitate submission of a project proposal for a World Bank funded Skill Development Program initiated by Govt. of Kerala and to strengthen, promote and develop co-operations in the field of energy & environment, agriculture and allied sectors, water and waste water treatment, training & development, etc.
 - Signed an MoU with M/s KLF Nirmal Industries (P) Ltd, Trissur for “Development of Test Methodology to Estimate Residual Sulphur in Copra and Coconut Oil Samples”.

- Signed a Research Collaboration Agreement with M/S Manipal Institute of Technology, Manipal and Manipal School of Life Sciences, Manipal (MAHE) in the field of Design of Point-of-Care Diagnostic Materials, Platforms and Devices for Biomedical and Environmental Applications.
- **CSIR-NIO**
 - Signed MoU with Gandhi Institute of Technology and Management (Deemed University) To promote collaborative research, facilitate exchange of ideas, development of new knowledge and to enhance high quality research acumen 18-12-2023
- **CSIR-URDIP**
 - Signed MoU with KPIT Technologies Ltd., Pune to provide IP search and analysis services to their organization.

Collaborations/Agreements/MoUs Signed (International)

- **CSIR-CDRI**
 - A Sponsored Agreement executed between University of Bern, Switzerland w.r.t. Investigation of metal containing compound for antimicrobial activity on 18-12-2023

Patents Update

Patents Filed			Patents Granted			Patent Prosecutions	
India	Abroad* (Unique Patent Application)	Abroad (Multiple Countries) *	India	Abroad* (Unique Patent Application)	Abroad (Multiple Countries) *	India	Abroad*
17	15	18	52	05	05	41	122

* Data reported to IPU during December 2023 and may change later during national phase entries. The unique filed/ granted patent may appear in the next months also if it's corresponding application is filed/ granted in the respective months.

High impact S&T services offered

- **CSIR-CDRI**
 - **Common Research and Technology Development Hub (CRTDH):**
Provided product development services to two small enterprises and consultancy for new drug product development to one medium-sized enterprise in the Pharmaceuticals sector.
 - **Animal Facility Laboratory:**
The CPCSEA (Committee for the Purchase of Control and Supervision of Experimental Animals) approved experimental animals were supplied to outside research organizations for research purposes, including 209 Rats and 163 Mice.
 - **Sophisticated Analytical Instrument Facility:**
Provided service for analysis of samples by IR Spectroscopy, Elemental Analysis, Liquid Chromatography–Mass Spectrometry (LC-MS), Electrospray Ionization Mass Spectrometry (ESI-MS), NMR Spectroscopy-Bruker AvIII HD-300 [FT NMR], and NMR Spectroscopy-Bruker Advance400/AvIII HD-300 [FT NMR]. In December 2023, a total of 182 external samples were analyzed for 50 external users.
- **CSIR-CMERI**
 - Establishing Technology for Higher Yield of Critical Castings-CFFP, Haridwar.
- **CSIR-CRRI**
 - Recommendations for strengthening/ Resurfacing of Road in PWD Division West Road-1 using Traffic Volume and Benkelman Beam surveys for PWD, Delhi
 - Design of Thin White Topping (TWT)pavement in continuation with existing Nagpur-Amravati Road of NH-53 (Wadi Road) (from km 2+250 to 5+100 and km 8+360 to 10+300) in Nagpur City for Sawan Infra Projects Pvt. Ltd, Pune

- NDT Investigation of the Piers and Pier Caps of the 2-Lane Kosli ROB in lieu of Level Crossing No. 19 on Subhana Kosli Nahar Kanina Road on Hissar Bhatinda Railway Line Km 28/1/2 in Rewari District for Public Work Department (PWD), Haryana.
- Mix design of DBM with RAP for Ludhiana Rupnagar NH no 205 from Jn with NE 5 to Jn with NH 205 including Spur to Kharar with Ludhiana Bypass for Ceigall India Ltd.
- Quality Assessment of test tracks for Automotive and Weapon System testing Center at Combat Vehicle Research Development Establishment (CVRDE), DRDO, Chennai for Defense Research & Development Organization.
- **CSIR-IHBT**
 - Regenerative system for production of valerenic acid derivatives using Valeriana jatamansi adventitious roots.
 - Mass production of Siraitia grosvenorii—a natural sweetener and medicinal plant.
 - Diagnostic Marker for True Cinnamon Identification.
 - Technology for commercial production of formulation promoting cartilage health.
- **CSIR-IIIM**
 - Distributed 01, 1.5 and 03 lakh slips of lemongrass ckp 25 to cluster of 12, 10 and 15 farmers for an area of 6 acres at village (bhambhanpur, lakhimpur giri), (Rath, Dist. Mahoba, UP) and (Naura, MP) respectively.
- **CSIR-IIP**
 - Wax Crystallization study for commercial Deasphalted Oil received from a Refinery, initiated for Development of Micro Wax Technology. Samples analysed by GC for Fatty Acid Methyl Ester composition determination.
- **CSIR-IITR**
 - Third party monitoring of environmental parameters for 2 years at NTPC, Rihand.
- **CSIR-NAL**
 - Strength Testing of MLG at limit load as per Approved Qualification Test Schedule Report and Measurement Of Strains During Strength Testing 4 Nos - CVRDE Avadi, Chennai
 - Qualification Testing on Dual Fuel Scramjet Combustor with Test Fluids – VSSC, Thiruvananthapuram
- **CSIR-NCL**
 - Supplied industrially important microbial strains and allied services like genetic and biochemical identification of microorganisms
- **CSIR-NEERI**
 - Performance evaluation of Solvent recovery System of M/s Hetero SEZ Ltd. Nakkapali, Visakhapatnam, Andhra Pradesh.
 - Technical Review of the Feasibility Reports and Basic Engineering Reports for the proposed Upgradation of CETPs at Kolhapur.
 - High Rate Transpiration System for disposal of wastewater at M/s Japfa Comfeed India Pvt.Ltd. (JCIPL).
 - Feasibility Studies for Implementation of ZLD Concept for Higher Utilization of Treated Wastewater at M/s Manali Petrochemicals Ltd. (Plant-I & Plant-II) & Tamilnadu Petroproducts Ltd.
- **CSIR-NIIST**
 - Graphite flake is milled and graphene is produced and validated for developing high thermal conducting aluminium alloys.
 - Polymer aerogels developed from MAX phase nanolayered materials and validated for electronics applications.
- **CSIR-NML**
 - Study of Mold flux-liquid steel interaction using lifting hearth furnace to determine the limits of interfacial reaction reactivity for mold flux with different level of aluminum in liquid steel

Outreach Activities (Jigyasa, Skill Development, and others)

- **CSIR-CBRI**
 - Conducted two days' Training Programme on "Building Construction Practices" commenced on 21-12-2023 under the aegis of CSIR Integrated Skill Initiative, 08 Border Security Force (BSF) officers participated.
 - Organized a curtain raiser one-day event on 'Science & Technology Public Outreach in Amrit Kaal' on 13-12-2023 as a prelude to 9th India International Science Festival (IISF)-2023, 150 students attended the event.
- **CSIR-CCMB**
 - Organized public lecture by Dr. Joby Joseph under IISF on 21-12-2023, publishing a popular science article - How to turn your pet into a monster: <https://scitales.ccmb.res.in/how-to-turn-your-pet-into-a-monster/>
 - Conducted Training program for medical Students Research was from (18-29)-12-2023, and 28 undergraduate Medical students from various Medical colleges (Pan India) participated.
- **CSIR-CDRI**
 - Organized Skill Development Program (Training/Dissertation) for students pursuing Postgraduate courses: 8 Participants
 - Organized Advance Training Program for the research scholars and R&D Institutions/Univ employees. / Industry etc.: 1 Participant
 - Organized Skill Development Program on Computational Approaches to Drug Design and Development: 10 Participants.
 - Organized the Student Scientist Connect program on 01-12-2023 for GCRG College of Pharmacy students, Bakshi ka Talab, Lucknow, UP.; 110 students and faculty actively participated.
 - Organized the Student Scientist Connect program on 06-12- 2023 and 08-12- 2023 on the occasion of IISF 2023 for the students of Kendriya Vidyalaya, IIT Kanpur, Kanpur, UP and Kendriya Vidyalaya, AFS, Memora, Lucknow, UP.; 96 and 62 students and faculty respectively actively participated.
 - Organized the Student Scientist Connect program on 14-12- 2023 on the Occasion of IISF 2023 for the students of five Schools: -
 - Kendriya Vidyalaya, IIM, Lucknow (U.P.).
 - Kendriya Vidyalaya, CRPF, Bijnour, Lucknow (U.P.).
 - Bakshi ka Talab Govt. inter College, Sitapur Road, Lucknow (U.P.).
 - Govt. Girls inter College, Barabanki (U.P.).
 - Pt. Deen Dayal Upadhyay Govt. Modern Inter College, jajaur, Sitapur (U.P.), 900 students and 50 faculty members from different schools actively participate.
 - Organized the Student Scientist Connect program on 19-12- 2023 as a fest event of the IISF 2023 for Sagar Public School, Gandhi Nagar, Bhopal (M.P.) students.; 24 number of students and faculty actively participated.
- **CSIR-CECRI**
 - Organized Five days Tailor-made Special Industry Oriented Refresher Course on "Lithium-ion battery: Materials to manufacturing" on 11-12-2023 to 15-12-2023; 15 participants.
 - Organized visit from Alagappa Govt. Polytechnic College, (Karaikudi) and Dept. of Chemistry, St. Mary's College, (Thoothukudi) on 01-12-2023; 80 Students and 14 faculties participated.
 - Organized visit from Kendriya Vidyalaya, Coimbatore on 08-12-2023; 109 Students and 04 faculties participated.
 - CSIR-CECRI staff and AcSIR scholars visited the following schools:
 - Nirmala MHSS, Ooty
 - N S Iyah Memorial Hr. Sec. School, Nilgiris
 - St. Joseph's HSS, Ooty on 09-12-2023; ; 146 Students and 08 faculties participated.

- **CSR-CEERI**
 - Organized visit for G.S.S.S.(Bhurasar ka Baas, Jhunjhunu) school and Technological Institute of Textile & Sciences, (Bhiwani, Haryana), 32 and 54 students respectively at CSIR-CEERI campus on 05-12-2023
 - Organized Technical Visit for Faculty Development program for BKBIET Pilani on 07-12-2023.
 - Organized visit for PM Shri School NVS Kajra, Jhunjhunu School, PM Shri School NVS Suratgarh, Shriganganagar - II School and Prince Eduhub, Sikar, School; 360, 139 and 96 Students respectively at CSIR-CEERI campus on (11-12-2023 to 15-12-2023).
 - Organized visit for CCS NIAM College, (Jaipur) and NERIST (North East Region Institute of Science and Technology), (Arunachal Pradesh), 15 and 20 students at CSIR-CEERI on 20-12-2023 and 21-12-2023.
 - Organized IISF 2023 Outreach program on 24-12-2023 at Jaipur, in gracious presence of Deputy CM of Rajasthan, Honourable Diya Kumari Ji.
 - Organized SDP for BKBIET, Shridhar University and Rakesh Academy, Pilani under NIAM (National Institute of Agricultural Marketing) Training Programme from 27-12-2023 to 29-12-2023: 30 College students participated.
- **CSIR-CFTRI**
 - Organized curtain raiser event of the IISF 2023 held in the Institute on 09-12-2023; 80 students and 4 teachers participated
 - Organized visit of Govt. School at Bylur, Chamarajanagar District on Janjatiya Gaurav Divas held on 20-12-2023; 176 students and 10 teachers participated.
 - Conducted two skill development programs 1) Fumigation, Prophylaxis and Pest Management techniques for Stored Food Commodities from 01-12-2023 to 15-12-2023; 44 participants.
 - Conducted hands on training program on vitamin profiling (HPLC / LCMS/MS) from 18-12-2023 to 20-12-2023; 16 participants.
- **CSIR-CIMAP**
 - Conducted training programme on Making Incense Sticks and Fragrant Cones under CSIR-Aroma Mission- III at Vishakhapattanam (Andhra Pradesh), Chandrika Devi Temple (Bakshi ka Talab, Lucknow) and Kashauni (Uttarakhand) was organized during (13-21)-12-2023 for 30, 43 and 36 participants respectively.
 - Conducted training programme on cultivation of medicinal and aromatic plants between 04-30 December, 2023; 146 farmers participated, sponsored by MSME (Govt. of India, New Delhi), ATMA (Maharashtra) and Aroma Mission-III.
- **CSIR-CIMFR**
 - Organized Five Days Skill Development Programme on “Analytical Chemistry and its Application on Soil and Water Analysis” during 11-12-2023 to 15-12-2023 under CSIR Integrated Skill Initiative.
 - Organized Skill-cum-Entrepreneurship Development Programme on “An IoT based Automation for Energy Efficient Mining System” during 04-12-2023 to 08-12-2023 under CSIR Integrated Skill Initiative.
 - Organized two Days Workshop on “DIY Basic Electronics and Artificial Intelligence and its role in Academic Excellence” during 19-12-2023 and 20-12-2023 at Jawahar Navodaya Vidyalaya, Koderma; 270 students participated.
 - Organized Students-Scientist Connect Program conducted on "Artificial Intelligence and its Role in Academic Excellence The Beginning of New Era"at Utkramit Uchh Vidyalaya Kashiyatand, Dhanbad on 22-12-2023; 81 students participated.
- **CSIR-CLRI**
 - Organized IISF 2023- Outreach Programme 14-12-2023; 340 school & college students from CLRI Kendria Vidyalaya, Alpha Arts & Science College, SRM Engineering College, Vaishnava College and Loyola College, Chennai participated.

- Organized Training programme on “Leather Processing” at CSIR-CLRI Regional Centre Kanpur on 18-12-2023 for six weeks.
- **CSIR-CMERI**
 - Organized 5th batch of 3-Day Skill Development Training Programme on “Plastic Waste Disposal & Fuel Recovery- Characterization Through Gas Chromatography” from 20-12-2023 to 22-12-2023; 30 students participated.
 - Organized Skill Development Programme on Integrated Municipal Solid & Liquid Waste Management System in association with M/s Ecosafe Zero Waste Solutions Private Limited, Patna, Bihar from 06-12-2023 to 15-12-2023; 14 participants.
 - Organized Skill Development Programme for Durgapur Women's College on "Water quality parameters & effect on health" on 14-12-2023; 30 girl students & 6 nos. of teachers participated.
 - Organized 20th batch of Skill Development Training Programme on “Analytical Techniques and Instrumentation for Water Quality Assessment” from 05-12-2023 to 07-12-2023; 31 students participated.
 - Organized ‘One Day Outreach Event’ under the banner of “India International Science Festival (IISF)-2023” on 21-12-2023.
- **CSIR-CRRI**
 - Conducted 5-day Regular training program on “Quality Assurance, Health Assessment & Rehabilitation of Bridges” during December 11-12-2023 to 15-12-2023; 17 participants.
 - Conducted 5-day Regular training program on “Design, Construction and Quality Control in Flexible Pavements” during 18-12-2023 to 22-12-2023; 18 participants.
 - Conducted one day Student Scientist Connect interactive programme for the students of Kendriya Vidyalaya Andrews Ganj, Delhi as part of CRRI's 20-12-2023.
- **CSIR-IGIB**
 - Organized IISF curtain raiser for KV Andrews Ganj and Sunshine Society, NGO on 15-12-2023; 90 students and 8 teachers from visited the Mathura Road campus
- **CSIR-IHBT**
 - Organized induction training programme on 08-12-2023; 53 forest guards (34th batch) of Himachal Pradesh Forest Department coordinated by HP Forest Academy, Sundernagar, Himachal Pradesh, participated.
 - Organized training for Head Quarter 39 mountain division, Holata Military Cant., Palampur, Himachal Pradesh on remote sensing satellite image interpretation and various latest software used for remote sensing and GIS analysis on 22-12-2023; 13 Indian Army Soldiers participated.
 - Organized Interactive awareness program organized under the outreach activity of the project ‘Phenome India- CSIR Health Cohort Knowledgebase (PI-Check/CSIR Cohort) on 15.12.2023.
 - Organized one day visits of 16 different schools of Distt. Kangra and Mandi of Himachal Pradesh viz. KV, Dharamshala, KV Yol, Govt. Sr. Sec. School, Passu, Kandi, Gander, Dharamshala, Upper Lambagaon, Sehorpain, Ghallour, Kaned, Atyala Dai, Garli, Dagoh, Tangroti, Urla and Thaltukod visited the Institute on different dates during the month respectively; 741 students and 75 teachers participated.
 - Conducted Student Scientist Connect Outreach Activity was at JNV Sarol on 16.12.2023; 450 students and 25 teachers.
 - Conducted Science Outreach Programme: "India International Science Festival (IISF) 2023 for GSSS, Kachhiari, GHS, Ghallore and Neugal Public SSS, Bhawarna, Distt. Kangra on 15.12.2023; 126 students with 13 faculty members participated.
 - Organized visit of SCERT Delhi and MCM DAV College Kangra (H.P.) on 08-12-2023 and 22-12-2023; 108 students and 05 faculties participated.
- **CSIR-IICB**
 - Organized an outreach activity for the ‘IISF-2023’ on 15-12-2023.
 - Organized a skill development program on GCMS, LCMS, HPLC, Separation Techniques, Protein X-ray Crystallography, Cryo-EM, Advanced Bioinformatics, Flow Cytometry, RT

- PCR, Clinical Biochemistry, and Molecular Cloning, from 28-11-2023 to 11-12-2023; 11 participants.
- CSIR-IICB participated at the CSIR exhibition stall in the Global Bio-India Technology-related exhibition at Bharat Mandapam, Pragati Maidan, New Delhi, during December 4-6, 2023.
 - **CSIR-IICT**
 - Conducted one day outreach program as a part of “IISF-2023”, at Rammanapeta Govt. High school, Yadadri Bhuvanagiri district, Telangana state on 16-12-2023.
 - Conducted Finishing School Training under CSIR Integrated Skill Initiative on Advanced Synthetic Organic Chemistry to the PG Students in Chemistry from 07-12-2023 to 04-12-2023; 20 trainees participated.
 - **CSIR-IIIM**
 - Organized training cum lavender distribution program, Demonstration of some molecular biology techniques for the visiting school children on the occasion of CSIR-IIIM Foundation day; 700 school students participated.
 - **CSIR-IIP**
 - Organized one-day “IISF’s 2023 Science Outreach” program under “Jigyasa 2.0” for the students of IX to XII class from different government schools on 12-12-2023.
 - Organized an awareness program on Climate change & climate clock distribution for the students of KV-IIP and KV-OLF on 15-12-2023; 30 participants.
 - **CSIR-IITR**
 - Organized Outreach Programme for “IISF-2023” on 21-12-2023.
 - **CSIR-NAL**
 - Organized visit of students from Global Academy of Technology on 04-12-2023.
 - Organized visit of RVCE and KV, NAL as Outreach activity for IISF 2023 on 15-12-2023.
 - Organized lecture by Prof Radhakant Padhi, IISc on “Air Traffic Management in Airspace (ATMA) in India”
 - Conducted 3 day residential programme, Aerofest 2023 for students from 14 states from 21-12-2023 to 23-12-2023
 - **CSIR-NBRI**
 - Organized a Student-Scientist interactive session for PM SHRI Kendriya Vidyalaya, IIT Kanpur, on 06-12-2023; 151 students and 09 teachers participated.
 - Organized visit of PM SHRI Kendriya Vidyalaya, AFS, BKT on 13-12-2023; 100 students and 06 teachers participated.
 - Organized a Student-Scientist interactive session for PM SHRI Kendriya Vidyalaya, Balrampur, on 18-12-2023; 36 students and 04 teachers participated.
 - Organized skill development program on Phytochemical Analysis Technician and Quality Control for the Herbal Industry on 07-12-2023 to 19-12-2023; 33 PG students participated.
 - Organized skill development program on Soil and Water Testing Lab Analyst on 19-12-2023 to 23-12-2023; 15 participants.
 - Organized an Outreach Programme for #IISF2023 today at Banthara Research Centre. Under CSIR-Jigyasa scheme more than 100 students from KV GomtiNagar were participated.
 - **CSIR-NEERI**
 - Organized Skill Training program on Water safety/ Security Plan from 19-12-2023 to 20-12-2023.
 - **CSIR-NGRI**
 - Organized Skill Initiative program on the following:
 - Groundwater Quality Monitoring and Assessment from 07-12-2023 to 16-12-2023.
 - Geophysical Methods for Groundwater Exploration from 18-12-2023 to 22-12-2023.
 - Seismology - Theory, Practice and Applications from 18-12-2023 to 29-12-2023.

- **CSIR-NEIST**
 - Organized Outreach Programme for India International Science Festival – 2023 on 26-12-2023.
- **CSIR-NIIST**
 - Organized visit of Students from Chinmaya Vidhyalaya as part of Jigyasa program.
 - Organized Outreach Programme for India International Science Festival – 2023 in association with Swadeshi Science Movement Kerala (Kerala Chapter of Vijnana Bharati) for School Students on 06-12-2023.
- **CSIR-NML**
 - Organized Outreach Programme: Virtual Lab Integration for "IISF"23-24 on 18-12-2023, 30 students participated
 - Organized training programme on Video & Animation Making, 3D Printing & Basic Computer for DST Women Technology Park Project from 13-11-2023 to 29-01-24; 28 college student participated.
 - Organized training programme on Office Management and Entrepreneurship Skill from 13-11-2023 to 12-05-24; 26 women of rural area participated.

Major Conferences, Seminar/Webinars, Workshops organized

- **CSIR Headquarters**
 - CSIR participated in the Rise in India, held Ghaziabad, U.P. during 21-12-2023 to 23-12-2023.
 - Hon'ble Minister of State (I/C) Science & Technology; Dr Jitendra Singh presented the CSIR Young Scientist Awards & GN Ramachandran Medal for the year 2022 on 28-12-2023, and also launched CSIR Student Alumni Portal.
 - Council of Scientific and Industrial Research's (CSIR's) Year End Review 2023 published by Press Information Bureau (PIB).
<https://pib.gov.in/PressReleasePage.aspx?PRID=1991616>
- **CSIR-CBRI**
 - Organized Indian Geotechnical Conference (IGC - 2023) jointly with IIT Roorkee from 14-16 December 2023; 1000 participants.
- **CSIR-CCMB**
 - Organized INSA 89th Anniversary General Meeting 6-8 December 2023; 260 INSA fellows participated.
 - Organized AMR Frontline Workshop by CCMB and The Rockefeller Foundation on 11-12-2023. (<https://data.ccmb.res.in/apsi/outreach/>).
- **CSIR-CFTRI**
 - Organized 9th International Food Convention from 07-12-2023 to 10-12-2023 inaugurated by DG, CSIR.
- **CSIR-CGCRI**
 - International Conference on Exploring The Emerging World of Ceramics and Glass 2023 held on 19-12-2023 to 21-12-2023.
- **CSIR-CIMAP**
 - Organized one-day seminar of CSIR-CIMAP Students at CRC Purara, Bageswar at 21-12-2023.
- **CSIR-CLRI**
 - Organized a Lecture on 'Contemporary Cyber Security Issues and Mitigation Approach' which was delivered by Shri Gopinath S, Senior Principal Scientist & Head, National Knowledge Network, Tamil Nadu on 21-12-2023.
 - Organized a Stress Management and Personal Development Program facilitated by Shri Mathimaaran T on 22-12-2023.

- **CSIR-CMERI**
 - Organized IEEE Distinguished Lecture by Prof. Bikash Pal, Imperial College of London & Fellow Royal Academy of Engineering, UK on 21-12-2023
- **CSIR-CRRI**
 - Organized the workshop on "Workshop on Noise Mapping, Hotspot Identification and Mitigation Measures" in association with Goa State Pollution control board on 21-12-2023 at Goa.
- **CSIR-HRDC**
 - Workshop on Gender Sensitization and Sexual Harassment of Women at Workplace: Prevention, Prohibition and Redressal on 15-12-2023 and 21-12-2023.
- **CSIR-IGIB**
 - Organized unique health program: Phenome India - CSIR Health Cohort Knowledgebase (CSIR - Cohort) -- for CSIR employees and pensioners along with their spouses from 07-12-2023 to 11-12-2023.
 - Organized one-day symposium on "Droplets and Condensates in Biological Systems" on 11-12-2023
- **CSIR-IHBT**
 - Organized a Stakeholders meet on Food Processing and value addition on 29.12.23
- **CSIR-IICB**
 - Organized "Radiation Awareness and GIC-I usage safety Program 2023" at the Jadavpur campus from 07-12-2023 and 08-12-2023.
 - Organized sensitization workshop on 'Sexual Harassment at Workplace Prevention Week' on 08-12-2023.
- **CSIR-IIP**
 - Organized a two-day Science and Engineering Research Board (SERB) - Scientific Social Responsibility (SSR)workshop during 21-12-2023 and 22-12-2023.
 - Organized Workshop on " Awareness on Used Cooking oil and its health hazards" at Corbett Area, Ram Nagar, Uttarakhand on 16-12-2023
- **CSIR-IITR**
 - Organized a 03-day workshop on "Principles and Applications of Liquid Chromatography-Tandem Mass Spectroscopy(LC-MS/MS) Towards Emerging Contaminants Analysis-Batch 2" under the CSIR-Integrative Skill Initiative Programme from 04-12-2023 to 06-12-2023.
- **CSIR-NEERI**
 - Organized Workshop on "Water Resource Management in the Changing World" on 01-12-2023.
- **CSIR-NBRI**
 - Organized a two-day Chrysanthemum & Coleus – 2023 show during 09-12-2023 & 10-12-2023 at the Central Lawn, Botanic Garden.
 - Organized three-day National Conference on Recent Trends & Challenges in Green chemistry, Pollution control and Climate change [GPCC-2023] with National Environmental Science Academy (NESA) during December 14-12-2023 to 16-12-2023.
- **CSIR-NEIST**
 - Organized one-day Symposium on Modeling and Machine Learning Approaches in Chemoinformatics & Drug Discovery held on 27-12-2023
- **CSIR-NIIST**
 - Organized an Industry Connect Meeting in areas of Environmental Technologies and Agroprocessing Technologies with M/s UNISON Consultancy Pvt. Ltd., Kochi, Kerala. Organized Industry Connect meeting on Novel Building Materials was successfully conducted.

Visit of high-level dignitaries to the Institute/Laboratory

- **CSIR-CFTRI**
 - Shri S. Somnath, Chairman, Space Commission & Secretary DOS, Govt. of India visited the Institute and addressed the staff on 07-12-2023.
- **CSIR-CRRI**
 - Sh. Sanjay Murthy, IAS, Secretary, Deptt. of Higher Education and Member of CSIR Society, Govt. of India visited CSIR-CRRI on December 22-12-2023 to interact with scientists of the Institute.
- **CSIR-CSIO**
 - Prof. Geoffrey R. Mitchell, Vice-Director, Centre for Rapid and Sustainable Product Development, Polytechnic Institute of Leiria (PIL), Portugal visited CSIO.
 - Prof. Subhasis Chaudhuri, IIT Bombay Director visited CSIO.
- **CSIR-IHBT**
 - Millet man of Himachal Pradesh, Padmashri Nek Ram Sharma on 29-12-2023.
- **CSIR-IICB**
 - Dr. Didier Raboisson, the Attaché for Scientific Cooperation at the Embassy of France in India, and Mr. Aymeric Voquang, Project Manager for Scientific and University Cooperation, visited on 05-12-2023 to explore potential research collaborations between India and France.
- **CSIR-IITR**
 - Dr. Rama Dwivedi, Adjunct Associate Professor of Medicine in the George Washington University School of Medicine & Senior Pharmacologist/ Toxicologist at the Center for Drug Evaluation and Research (CDER), USA visited on 22-12-2023 and delivered a lecture on “How USFDA Approves the Drug Products”
- **CSIR-NAL**
 - Visit of Air Marshal Vibhas Pande, AVSM, VSM, AOC-in-C and team
- **CSIR-NBRI**
 - Dr. Himanshu Pathak, Secretary, DARE and DG, ICAR visited during 10-12-2023.
- **CSIR-NIO**
 - The Ambassador of France in India H.E. Mr. Thierry MATHOU visited on 15-12-2023.
- **CSIR-NML**
 - Dr. R. Saravanabhavan, Adviser, Niti Aayog, along with Dr. N.C.Murmu (Director, CSIR-NML), Dr. Ramanuj Narayan (Director, CSIR-IMMT), Dr. D.K.Singh (BARC), Dr. Sanjay Kumar (NML), along with industrial partners viz., NALCO (Dr. Partha Bandhyopadhyay, Mr. Vinod Verma); HINDALCO (Dr. Sagar Pandit); Vedanta (Dr. B. Kiran Kumar) visited during Niti Aayog Meet on Red Mud Recycling hosted at NML on 12-12-2023.

COVID related developments/research

- **CSIR-CCMB**
 - Environmental surveillance for SARS-CoV2 and other pathogens is ongoing. Increase of the SARS-Cov2 titers was noted in sewage samples in December 23
- **CSIR-IGIB**
 - Evaluating T cell responses in patients with Covid 19 or with vaccination. The analysis is ongoing.
- **CSIR-NCL**
 - Wastewater based epidemiology based monitoring of SARS CoV2 in Pune city identified JN.1 traces in 4th week of Nov 2023 samples.
 - Working on CSIR's Antiviral's Mission Project (HCP41). Synthesized 10 novel chemical entities (NCE) based on GC-14 (Mpro Inhibitor), and submitted to the nodal lab CSIR-IICT, Hyderabad. Biological activity screening is under progress.

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

- **CSIR-CCMB**
 - Marathon for Staff and students on 09-12-2023
 - 2.3rd Janjatiya Gaurav Divas 12-12-2023"
- **CSIR-HRDG**
 - AKAM banners, posters and website links were updated on the CSIR-HRDG & SSBPrize Website, HRDG social media handles Facebook and Twitter.
- **CSIR-IIIM**
 - Celebrated 83rd IIIM foundation day.
- **CSIR-NEERI**
 - Organized "Science and Technology Public Outreach in Amrit Kaal" on 11-12-2023.

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 (PFRI) 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 (IRDPP)

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

- 28 in-house R&D units of industries were granted Renewal of Recognition and 28 were granted renewal of Registration certificates.

Scientific and Industrial Organization (SIRO)

- 27 SIROs were granted Renewal of Recognition and 19 were granted Renewal of Registration Certificates.

Public Funded Research Institutes(PFRI)

- 16 PFRI were granted renewal of Registration certificates.

Fiscal Incentives for Scientific Research u/s 35(2AB) of IT Act 1961

- 2 in-house R&D units of industries were granted Approval and 5 in-house R&D units of industries were granted Extension of Approval in Form 3 CM u/s 35(2AB) of IT Act 1961.
- 13 Reports in Form 3 CL certifying R&D expenditures of Rs 721.59 Crores were issued to CCIT (E) for benefits u/s 35(2AB) of IT Act 1961.

Asian and Pacific Centre for Transfer of Technology (APCTT):

- International Conference on Green Technologies for Climate Action and Resilience was held on 5th December 2023 at Tashkent, Uzbekistan. Senior Scientist of DSIR and CSIR-NIIST attended the conference. The Conference brought together about 135 participants from

APCTT Governing Council Members and other member States of ESCAP. The Conference deliberated the advantages of green technologies such as economic opportunities, jobs, resource conservation, public health and wellbeing, and harmonious balance between economic development and environmental protection. Also, Green technologies offer promising solutions for critical infrastructure such as transportation, water, power, and communication. Countries could start investing in green technologies to make their systems resilient to future disruptions.

- The 19th Session of the Governing Council of APCTT was held on 6th - 7th December 2023 at Tashkent, Uzbekistan. Shri Surinder Pal Singh, Joint Secretary, DSIR and Dr. Vipin Chandra Shukla, Scientist-G, DSIR attended the meeting virtually and in person respectively on behalf of India. The session was attended by the representatives from 9 members of the Governing Council: Bangladesh, China, India, the Islamic Republic of Iran, Philippines, Republic of Korea, Russian Federation, Thailand, and the Republic of Uzbekistan. In addition, the representatives of Nepal, Malaysia and Viet Nam (online) attended as observers. APCTT presented its report on the activities on capacity building, and technology cooperation and transfer for sustainable development. Member countries highlighted their technology and innovation related priorities, areas for potential cooperation, and concrete proposals for regional events, projects and activities for consideration of the Centre during the period 2024. The “India Country Report” was presented by Shri Surinder Pal Singh, Joint Secretary, DSIR during the session.

DSIR Central Sector scheme ‘Industrial Research and Development (IRD)’ comprises 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 (CRTDH) 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)

Five innovation projects namely Development of polymeric microneedle device for the targeted delivery of therapeutics to the posterior segment of eye ; Automated Personalised Public Transport ; Redesign of the Traditional Handloom ; Affordable Prosthetic Hand for Transradial Amputees with Adaptive Grasp and Pinch Capabilities and Farm waste to Green Charcoal for power generation were reviewed during the period. One project namely Building Zinc Gel Battery for e-rickshaws was successfully completed during the period.

Patent Acquisition and Collaborative Research and Technology Development (PACE):

The 8th Technical Advisory Committee (TAC) Meeting to assess and screen the project proposals was held on 12th December 2023. The Meeting was chaired by Dr. N. Kalaiselvi, Secretary, DSIR. TAC Experts/ Non-Official Experts, DSIR Officers and Industry Representatives were present in the Meeting. The TAC recommended two project proposals entitled (i) “Development of High Performance Synthetic Elastomeric Compounds for use in LPG & Allied Industry” by Devashish Polymers Private Limited, Mumbai and (ii) “Unlocking Sustainable Energy: Scaling-up and Pilot Trial of Enhanced Microbial Methane Production from Agricultural Residue using Anaerobic Fungi” by GPS Renewables

Private Limited, Bangalore in Collaboration with Maharashtra Association for Cultivation of Science (MACS) – Agharkar Research Institute (ARI), Pune for funding under the program.

A2K+: Studies

- The second Project Guidance cum Review Committee (PGRC) meeting was conducted on 6th December, 2023 to review technical and financial progress of the study entitled “Techno-Commercial Assessment of TRL-6 & above Technologies developed in India in Academia, Research Labs & Industry” Supported to International Centre for Clean Water (ICCW), IIT Madras Research Park, Taramani Chennai. PGRC was chaired by Scientist ‘G’ & Head A2K+ Studies and attended by DSIR officials, Expert members of PGRC from other academic institute and research institute.
- The second Project Guidance cum Review Committee (PGRC) was conducted on 14th December, 2023 to review the technical & financial progress of the study entitled “Developing a framework for assessing innovation readiness, research intensity and technology resilience of firms” supported to ABV-Indian Institute of Information Technology and Management, Gwalior. PGRC was chaired by Scientist-G & Head, A2K+ Studies and attended by DSIR officials, Expert members of PGRC from other academic institute and research institute.
- The second Project Guidance cum Review Committee (PGRC) was conducted on 18th December, 2023 to review the technical & financial progress of the study entitled “Smart Waste Management - Development of cost effective technology- study on Development of high strength and durable material which can be used as a Construction material by recycling the waste plastic” supported to Rajiv Gandhi University of Knowledge Technologies, Basar. PGRC was chaired by Scientist-G & Head, A2K+ Studies and attended by DSIR officials, Expert members of PGRC from other academic institute and research institute.
- The second Project Guidance cum Review Committee (PGRC) meeting was conducted on 19th December, 2023 to review technical and financial progress of the study entitled “Machine learning in Mechanics: Current status and future prospects” Supported to IIT, Tirupati. PGRC was chaired by Scientist ‘G’ & Head A2K+ Studies and attended by DSIR officials, Expert members of PGRC from other academic institute and research institute.
- The second Project Guidance cum Review Committee (PGRC) meeting was conducted on 19th December 2023 to review technical and financial progress of the study entitled “Artificial intelligence based load forecasting models for load dispatch centers in India” Supported to Symbiosis Institute of Digital and Telecom Management (SIDTM), Pune. PGRC was chaired by Scientist ‘G’ & Head A2K+ Studies and attended by DSIR officials, Expert members of PGRC from other academic institute and research institute.

A2K+: Events

- Conference on "Emerging Trends and Innovation in Biotechnology" was organised on 30.11.2023 at Mar Athanasios College for Advanced Studies, Tiruvalla, Kerala under A2K+ Events of DSIR. The event provided the platform for addressing national challenges, fostering collaborations, promoting knowledge transfer, driving economic growth and developing policies. The objectives of the conference was to serve as a platform for the global dissemination of cutting-edge knowledge, facilitating the exchange of ideas, networking and Awareness: About 200 participants from faculty, research scholars, student and others participated in the conference.
- 8th International Conference on "Sustainable Energy and Environmental Challenges" was held from December 4th – 6th December, 2023, by the Malaviya National Institute of Technology

Jaipur. The conference was inaugurated on December 4th, 2023 by Dr. G. Satheesh Reddy, President, Aeronautical Society of India and Scientific Adviser to Raksha Mantri, Dr. V. K. Saraswat, Member of NITI Aayog, Prof. Avinash Kumar Agarwal, Chairman, ISEES, Prof. Ashok Pandey, General Chair, VIII SEEC and Prof. Dilip Sharma, Conference Chair, VIII SEEC. The function was presided over by Prof. N. P. Padhy, Director, MNIT Jaipur. The conference concluded with suggestions for sustainable development. The Valedictory session was chaired by Dr. Nalin Singhal, Chairman BHEL on December 6th, 2023.

- International Conference entitled “Ninth International and 30th All India Manufacturing Technology, Design, and Research (AIMTDR-2023) Conference was held from 8th to 10th December 2023” by Mechanical Engineering Department at IIT BHU, Varanasi. A total of 355 participants registered for paper presentations. Moreover, 29 invited lectures, 12 keynote lectures and 2 memorial lectures were organized successfully in AIMTDR 2023. In addition to this, 6 industry talks were organized and a separate session for industry experts was held. Around 20 stalls from different industries were present at AIMTDR 2023 showcasing their cutting-edge technologies.
- “SPSI-MACRO 2023 (17th International Conference on Polymer Science & Technology)” was organized by IIT Guwahati at IIT Guwahati Campus from 10th – 13th December, 2023. Over 600 participants and more than 260 speakers including well-known delegates from academia & industry, distinguished scientists, professors, post-doctoral fellows, scholars and young scientists from India, USA, UK, Nepal, Saudi Arabia, Thailand, Australia, Taiwan, Canada, Ireland, Japan, Sweden, Belgium and Germany. Twenty-eight parallel sessions featured 20 Awards cum Plenary lectures, 100 Invited Lectures, 30 Keynote Lectures and 112 Oral Presentations covering various themes such as Advanced Polymer Synthesis, Polymer Rheology & Processing, Polymer Nanostructures & Nano Composites, Functional & Smart Biomaterials, polymers for biomedical applications, Biodegradable Polymers, polymers in Energy applications.

A2K+ - TDUPW

- First meeting of Project Review Committee (PRC) was held on 1st December 2023 to review the financial and technical progress of project entitled “Recycling for Conservation of Environment” undertaken by BITS Pilani under A2K+ TDUPW.
- Second meeting of Project Review Committee (PRC) was held on 21st December 2023 to review the financial and technical progress of project entitled “Women Empowerment through Silkworm Culture in Tribal Dominated Mayurbhanj District, Baripada, Odisha” undertaken by Mayubanj Biological Research (MBR), Baripada, Odisha under A2K+ TDUPW program.
- First meeting of Project Review Committee (PRC) was held on 22nd December 2023 to review the financial and technical progress of project entitled “Development of Women Entrepreneurs in Different Sericulture Sectors: Available Technological Strategies to develop a Cluster-Scale Sustainable Training for Women Empowerment in and around Virudhunagar District” undertaken by Kalasalingam Academy of Research and Education, Krishnankoil, TN under A2K+ TDUPW program.

147 Women Beneficiaries have been trained under the various ongoing TDUPW projects aiming 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 through its own R&D efforts and 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. 3408.23 lakhs during the month of December.
- Sale of electronic components/systems/SPV products worth Rs. 3003.50 lakhs was realized during the month of December.

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, universities as well as industry.

The Corporation licensed following six technologies to industries:

- Poshan: a multi-nutrient formulation for correcting the nutrient deficiencies in mulberry to M/s. NUECARE AGROVET PRIVATE LIMITED and M/s. Rainbow agro vet seri technologies private limited
- Labex to M/s Happy Enterprises
- ANKUSH (A new silkworm bed disinfectant) to M/s. R V Seri Agro Vet
- Amruth - an eco-friendly formulation for control of silkworm grasserie and flacherie diseases to M/s. Rainbow Agro Vet Seri Technologies Private Ltd
- Poshan: a multi-nutrient formulation for correcting the nutrient deficiencies in mulberry to M/s. Rainbow agro vet seri technologies private limited.
- Vijetha supplement powder (silkworm bed disinfectant) to M/s. Healthline private limited
- Development & characterisation of wrinkle resistant and high drape silk fabrics to M/s Rmkv Silks Pvt. Ltd.

The corporation signed 1 MoU with CSIR-NIScPR for providing IP portfolio management and technology commercialization services:

The corporation collected a premium of Rs 16.50 Lakhs towards licensing of technologies to industries during the month.

NRDC celebrated its 70th foundation day on 29.12.23. Dr. (Mrs) N. Kalaiselvi, Secretary, DSIR & Director General, CSIR was chief guest. The event included inauguration of "Technology Readiness Level Assessment" facility; Launch of NRDC Payment Gateway – a step towards Digital India Campaign; Launch of NRDCs You tube Channel and launch of NRDCs Corporate video & Millet video
