

No. DSIR/MS/2022/12
Government of India
Ministry of Science & Technology
Department of Scientific & Industrial Research
MONTHLY SUMMARY FOR THE CABINET
(For the month of **December, 2022**
(Part-I Unclassified)

Major achievements during the month of December, 2022:

Council of Scientific & Industrial Research (CSIR)

New Technologies/Processes Developed/Transferred

- **CSIR-CECRI**
 - Developed the following process:
 - Electrochemical Preparation of 4-Aminophenol
 - UV Protective Polymer composite Material
 - 3D printable filament fabrication by melt extrusion
 - Graphene coated polymer material
- **CSIR-CEERI**
 - First fabless E-mode GaN HEMT with breakdown voltage > 650 V has been realized.
- **CSIR-CFTRI**
 - Technology for Online fortification of atta (whole wheat flour)/ maida (refined wheat flour) was transferred to M/s Fortify Health at Development Consortium, New Delhi;
 - Process preparation of beverage mix from malted ragiwas developed for M/s Aesthebio, Bengaluru.
- **CSIR-CSMCRI**
 - Developed a process for the recovery of bio-stimulants and biodegradable materials from the effluents of seaweeds processing
 - Bipolar membrane and its method of preparation thereof
 - Process for preparation of Liquid Seaweed Plant Bio-stimulant (LSPB) from brown algae – Sargassum was developed and transferred to Agastya Marine Private Limited, Bhavnagar, Gujarat
- **CSIR-IHBT**
 - Developed a Technology for artifacts making using dry flowers.
- **CSIR-NAL**
 - Improved Oxygen sensor for automobile application and its manufacturing thereof
 - Fiber Bragg Grating (FBG) Packaged Sensor Assembly for Railway Application and Installation Fixture thereof
 - License Agreement signed with M/s. Apollo Computing Laboratories (P) Ltd., Hyderabad for Radial Blower for Bi-Level Positive Airway Portable

System and for Multi Copter Drones (Quadcopter, Hexacopter & Octacopter) for Societal Applications on 12.12.2022.

- **CSIR-NIIST**

- Developed a process of manufacturing biodegradable tableware from agro waste for M/s B M Impex, Karnataka; M/s Eco-smart Solutions, Tamil Nadu & M/s SUNGOD Agfarms, Maharashtra.
- Onsite treatment of organic wastewater, and simultaneously recovering reuse quality water, bioenergy and organic manure (NOWA) to M/s TRIANGLE Chemicals, Ernakulam.

Collaborations/Agreements/MoUs Signed (National)

- **CSIR-CDRI**

- Sponsored Agreement executed with E-Spin Nanotech Private Limited, Kanpur on 08-12-2022 for “Bio-evaluation of novel handwash formulation.”
- Signed an MoU with Kerala State Drugs & Pharmaceuticals, Kerala on 13-12-2022 to promote institutional linkage to explore other avenues for possible collaboration.
- Signed an MoU with National Agri-Food Biotechnology Institute, Punjab on 16-12-2022 for “Development of Glycoconjugates based site directed fluorescent sensor for the detection of bacteria.”

- **CSIR-CFTRI**

- MoU was signed with Central Pulp & Paper Research Institute, Saharanpur on 20.12.2022 for fostering collaboration to promote research, development & innovation.

- **CSIR-CLRI**

- Consultancy agreement has been signed with M/s Fair Exports (India) Pvt Ltd, Mumbai towards preparation of environmental audit of their meat processing unit.
- Consultancy agreement has been signed with M/s. The Andhra Sugars Limited, Andhra Pradesh towards Quantitative Risk Assessment studies for their Chloro-Alkali facility.

- **CSIR-CSMCRI**

- Signed collaborative project agreement for Proof of concept and Feasibility studies on the development of seaweed based thin films for flexible packaging applications suitable for agro products with Agrocel Industries Private Limited, Kutch, Gujarat
- Signed Technical Services Project agreement “Environmental Impact Assessment and Environmental Management Plan (EIA/EMP)” for total ship solution project (Ship building/repairing/recycling) with Modest Infrastructure Pvt. Ltd., Bhavnagar, Gujarat

- **CSIR-IHBT**

- Signed MoU with Lovely Professional University, Jalandhar, Punjab for close cooperation in research and academic activities on 17.12.2022

- **CSIR-IICT**

- "Orientation cum Skill Enhancement training programme for M.Sc. (Chemistry) students from North Eastern States of India" (Under CSR), Sponsored by Cipla Foundation, Mumbai.

- Signed MoU with Gujarat State Biotechnology Mission (GSBTM), Gujarat for Skill Development Training Programme on “Animal Cell Culture Techniques” for Graduates and Post Graduate Students in Biotechnology / Life Sciences.
- Structure elucidation of Semaglutide API, formulation and associated reference drugs by NMR for Aurobindo Pharma.
- Characterization of Glucagon API and Injection samples for Slayback Pharma.
- ¹³C Solid state NMR studies of API and placebo samples for Viatrix company.
- **CSIR-IIP**
 - MoU was signed with Tata Projects Limited (TPL) to explore working together for a potential collaboration on Single Reactor HEFA Technology for Drop-in liquid Sustainable aviation and Automotive Fuel (DILSAAF) and also other areas such as:
 - Vacuum swing adsorption process for the up-gradation of raw biogas to pipeline quality bio-methane
 - Room Temperature Biodiesel Process
 - Conversion of Waste Plastics to Fuels and Petrochemicals
 - Valorization of Tea and Coffee waste
 - EV Retrofit
- **CSIR-NBRI**
 - MoU was signed with Sambalpur University, Burla, Orissa for joint research and academic activities on 14.12.2022.
- **CSIR-NEERI**
 - Signed MoU with Western Coalfields Limited (WCL), Nagpur to carry out comprehensive risk assessment of diesel particulate matter in the mining area.
- **CSIR-NGRI**
 - Signed MoU with Geological Survey of India (GSI) on 01.12.2022 for Conducting Ground Gravity and Magnetic survey, Processing and Technical report
- **CSIR-NIIST**
 - Agreement with Madras Diabetes research Foundation (MDRF), Chennai for GI study of value-added products.
 - Technology for the early detection of cancer from blood sample using SERS (surface enhanced Raman spectroscopy) and artificial intelligence - a novel technique - Tata Elxsi Limited, Karnataka
 - Installing a sustainable bioenergy-based model effluent treatment plant for desiccated coconut industries - Shri Anoop M A and M/s Galaxy Environ, Ernakulam
 - Testing and validation of composites & prototypes - Reliance Industries Limited, Mumbai
 - Outsourcing of Indigenous Development of Aluminum Silicon carbide Metal matrix Composites for M/s. Aeronautical Development Establishment, DRDO, Ministry of Defence, Bangalore
 - Feasibility studies on the recovery of Nickel and by products (phosphorous and Sulphur) from Spent Electroless Nickel solution &

Feasibility studies on the recovery of Palladium, Platinum, Rhodium from Catalytic converter and recovery of Li, Co, Mn and Si from spent Li ion batteries. sulphur) from Spent Electroless Nickel Solution - M/s.Enviro Metals Recyclers Pvt Ltd, Tamil Nadu
Bacterial Exopolysaccharide 200 gm dry powder - M/s.Himedia Laboratories Pvt Ltd

- Onsite treatment of organic wastewater, and simultaneously recovering reuse quality water, bioenergy and organic manure (NOWA) - TRIANGLE Chemicals, Ernakulam

- **CSIR-SERC**

- Umbrella Memorandum of Understanding (MoU) was signed with Amrita School of Engineering for the projects "Sustainable Construction Materials and Technologies and Disaster Mitigation" on 12 December 2022.
- Memorandum of Understanding (MoU) was signed with EQUINOCT-Community Sourced Modelling Solution LLP,Kochi for "Co-Creating Climate Resilience and Risk Reduction Plans for Coastal Areas of India in a Phased Manner" on 20 December 2022

- **CSIR-URDIP**

- MoU signed with KPIT Technologies Ltd. Pune for providing IP services to their organization.

Collaborations/Agreements/MoUs Signed (International)

- **CSIR-IICT**

- Performed collaborative work with International Centre for Diffraction Data (ICDD), USA on "X-ray Diffraction Patterns of Mixed-Valent Manganites and High Entropy Oxides",

Patents Filed		Patents Granted		Patent Prosecutions	
India	Abroad*	India	Abroad*	India	Abroad*
21	18	16	05	32	160

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

High impact S&T services offered

- **CSIR-CDRI**

- Common Research and Technology Development Hub (CRTDH):
 - Provided analytical services, technology assessment services, or consultancy/assistance in regulatory filings [New Drug Applications (NDAs)/Investigational New Drug (IND) Applications] in India and the European Union to three MSME in the Pharmaceuticals sector.
- Animal Facility Laboratory:
 - The CPCSEA (Committee for the Purchase of Control and Supervision of Experimental Animals) approved experimental

- animals (total no. 254) were supplied to outside research organizations for research purpose.
- Sophisticated Analytical Instrument Facility:
 - Provided service for analysis of sample by IR (Infrared), Mass, NMR (Nuclear Magnetic Resonance) and EM (Electron Microscopy)
 - **CSIR-CMERI**
 - Indian Metals & Ferro Alloys Ltd., Sukinda, DistJaipur, Odisha for "Checking & vetting of Designs (15 Nos) and Drawing (32 Nos) of different structural componants of 100TPH crusher and screening plant at MMC".
 - **CSIR-CRRI**
 - Mix design of BC with Highly Modified Asphalt (HiMA) for Jaipur-Mahua, Rajasthan for Cube Highways and Transport Asset Advisors Pvt. Ltd.
 - Improvement plan of Kalindikunj Intersection of Delhi Noida road and Agra Canal Road near Okhla Barrage, New Delhi in view of traffic problems for Head Works Division, New Delhi
 - Evaluation of Road Stabilization Chemical Qingdao-Road Stabilizer (Liquid) for sub-base and Base courses for Novvapave Bitumen India Pvt. Ltd., New Delhi.
 - Technical Audit of Indore Gujarat Sections of NH-47 in MP State for National Highway Authority of India (NHAI) , New Delhi
 - Stabilization of soil using slaked and un-slaked lime for the optimum CBR Determination for Public Work Department (PWD), Uttar Pradesh
 - Vetting of the Report titled "Airbags are risky if seatbelts are not worn" for International Road Federation, New Delhi
 - Advising the department in adopting full depth reclamation (FDR) technology for the suitable roads and giving Mix design and pavement design for selected R&B roads in Andhra Pradesh for Road and building department, Govt of AndhraPradesh
 - Structural Investigation of the Distressed ROB at the ch 307 on the Uchit Expressway on NH-76 for Uchit Expressway Pvt. Ltd. (UEPL), Rajasthan
 - **CSIR-IHBT**
 - Institute scientist prepared Critical Climate Resilient & Biodiversity Rich Landscapes (CCR&BRL) map of Chamba forest circle under Himachal Pradesh Forest Ecosystem Climate Proofing (KFW) Project of HP forest department, Chamba.
 - **CSIR-IIP**
 - Testing and Evaluation of FRHF sample for M/s Sterlite Lubricants, Ahmadabad, Gujrat conducted. The testing and evaluation was done for the Auto-ignition Temperature, Flame Propagation and Temperature Pressure Spray Ignition of the sample.
 - Testing and Evaluation Commercial LPG Swirl Burner conducted for M/s Jalpaiguri Technologies Private Limited for thermal efficiency and emissions.

- Performed the testing of "Investigation on Characteristic Properties of Grease" sponsored by M/s. Tide Water Oil Co. (India) Ltd. Chennai
- 2.2 Kg of Toluene Insoluble Free (TIF) Coal Tar feed prepared to make high softening point -Petroleum coal tar Hybrid Pitch in the Project " Development of Coal Tar -Petroleum Hybrid Pitch "; Sponsored by Tata Steel Limited.
- **CSIR-IITR**
 - Multi-centric study of exposure and health effects of pesticides (Rs. 4.5 lakh)
- **CSIR-NAL**
 - Testing of combustor at NAL high enthalpy test facility - DRDL
- **CSIR-NCL**
 - Supplied around 900 industrially important cultures and identification services to pharma, biotech and academic organizations
- **CSIR-NEERI**
 - Follow up Flora Fauna study to assess the impact of backfilling of ash in Gorbi mines at NTPC VSTPP.
 - Mapping of Biodiversity study at Vindhyachal super thermal power station, Vidhyanagar (M.P).
 - Feasibility studies for implementation of a common Effluent treatment plant for metal finisher units in satpur and ambad industrial area at MIDC Nashik.
 - Quantitative benefits mapping and assessment of reclamation activities in open cast mines of singaroni collieries Co Ltd Telangana.
 - Environmental Audit of JVR OC Mine Sathupalli; Kistaram OCP Sathupali and PK OCP Manuguru of SCCL.
- **CSIR-SERC**
 - Load test on chain arrangement of spillway and saddle gate of Sathanur Dam - Water Resource Department (WRD), Pennaiyar Basin Division, Tiruvannamalai
 - Engineering Assessment of Free-Span for Vortex-Induced Vibrations - GAIL (India) Limited, Mumbai
 - Investigations on structural adequacy of the selected super-structure spans BR No.-11 in HJP-BCA section of Sonepur Division East Central Railway, Patna
 - Investigation on the vibration problem in cooling tower cell no: #9 at NSPCL, Durgapur PP-2

Outreach Activities (Jigyasa, Skill Development, and others)

- **CSIR-AMPRI**
 - 6th National Science Teachers Workshop 2022 held on 12-13 December 2022
- **CSIR-CBRI**
 - Organized two-days Skill Development & Capacity Building Programme for PWD Uttarakhand on 'Landslide Risk Mitigation' during December 22-23, 2022 to familiarize the latest techniques on landslide risk reduction by understanding the landslide characterization, hazard

risk mapping, geotechnical investigations, instrumentation & monitoring, early warning system & control measures. (26 engineers participated).

- **CSIR-CDRI**

- Student-Scientist Connect Program was organized for the students of:
 - Radha Krishna College of Pharmacy, Kanpur, UP on 5th December 2022,(55 students and 05 staff participated)
 - Vimala Institute of Pharmacy, Kanpur, UP. on 9th December 2022. (60 students and 07 staff participated).
 - Qadar Ahmad Khan College of Pharmacy, Kakpri, Lucknow, UP. on 28th December 2022. (55 students and 05 staff participated)

- **CSIR-CECRI**

- Skill Development Group conducted the Training Programme:
 - Four-days Skill Development Training Program conducted on “Biosensor: Design and application” from 19.12.2022to22.12.2022 (51 participated).
 - Three-days Faculty Development Training Program conducted on "Advanced Materials for Energy Conversion and Storage: Fundamentals to Device Fabrication" from 19.12.2022 to 21.12.2022 (36 nos. participated)
- 20 students and 2 lecturers from Thiruvalluvar college of Engineering and Technology, Vandavasi were visited ECPS division for e-mobility perspective and 110 students and 4 teachers from Jeevana school, Madurai were visited our CMP, ECPS, EPE, EMF divisions on 9th Dec., 2022.
- Nobel day celebration 2022 was organized by CSIR-CECRI Jigyasa [Six experts delivered their lectures about 2022 Nobel prize winning works.] on 12.12.2022. 25 school students, 40 B.Tech I year students, AcSIR students, staff and 58 college students participated the event. A quiz programme was conducted and prizes were distributed by the eminent speakers.

- **CSIR-CEERI**

- OrganizedOne-week Faculty Development course on THz spectroscopy and Imaging from 19-24, Dec. 2022.
- Scientist-Student connect program was organized on 20th Dec., 2022(120 students participated).

- **CSIR-CFTRI**

- Student-scientist connect program was conducted on 7.12.2022 to the students of KendriyaVidyalaya, Mysuru, Mandya, Chamarajanagar, RBI which was attended by 100 students and 8 teachers;
- Jigyasa team visited PrayogaInstitute, Bengaluru on 9th, 16th and 21st December 2022 for demonstration on food adulteration which was attended by 306 students and 15 teachers.

- Workshop on "Egg-based value-added products - Processing, packaging and preservation" in hybrid mode was organized on 9.12.2022 which was attended by 48 participants (16 offline and 32 online).
- Nutrition intervention program was organized for 250 Severely Acute Malnourished (SAM) children of Nanjangud taluk in association with Department of Women & Child Development, Govt. of Karnataka and M/s Jubilant Bhartia Foundation.
- **CSIR-CLRI**
 - B.E Mechanical Engineering Students from Rajalakshmi Institute of Technology, Chennai visited on 07 December 2022. The students interacted with Scientists/staff at different Labs, Engineering Services Department – Glass Blowing Section, Shoe & Product Design Centre / GAIT Analysis Lab, Polymer Science & Technology/3D Printing, Knowledge Portfolio Management Department/ Artificial Intelligence & Machine Learning.
- **CSIR-CMERI**
 - Conducted following Skill Development Programme (SDP):
 - SDP on Renewable Energy Systems during 06-09 Dec., 2022.
 - "Plastic Waste Disposal and Fuel Recovery - Characterization through Gas Chromatography" during 07-09 Dec., 2022.
 - "Estimation, billing and quality checking of Civil works" during 19-23 Dec., 2022.
 - Lecture on "Basics of Aerodynamics" followed by site visit was organized on 9th Dec., 2022 for the students of Amrita Vidyalayam,
 - Lecture on "Basics of Energy and its application, Human Sensors and Robot " followed by interactive quiz and site visit was organized on 15th Dec., 2022 for the students of Amlajorah High School, Rajbandh.
 - On Jigyasa 2.0 was organized for the students of DCM, Ludhiana. 31 students along with 5 teachers attended the programme. The topic of the programme was on "Renewable energy resources" and the name of the school DCM school Ludhiana: 23.12.2022
 - Webinar on present scenario of IOT and its applications under 6th National Science teacher workshop was conducted on 12th Dec., 2022. Teachers from KVS Bhopal, Raipur, Chhattisgarh and state government school Bhopal and nearby place attended the programme.
 - Outreach programme under jigyasa 2.0 was organized on 19th Dec., 2022 for the students of KV(Andal) with the demonstration of technologies with models related with Mechanized Drain cleaning Equipment, Water purification filter for arsenic present in ground water, Solar Chullah and solar tree.
- **CSIR-CRRI**
 - Conducted five days training program on "Design of Bridge Structures & Foundation" during December 19 – 23, 2022. (19 participants).

- Organized Scientist-Student Interactive programme under Jigyasaprogramme on December 19, 2022. The interactive programme was attended by 55 students and 5 teachers from Kendriya Vidyalaya School, Noida.
- **CSIR-CSIO**
 - Organized a lecture and quiz competition on “Eminent scientists / personalities who have contributed in the field of Maths and Science” for:
 - Government High School Sector 38 D, Chandigarh on 1/12/2022.(70 students participated).
 - Government High School Sector-41 D Badheri Chandigarh on 07/12/2022. (80 students participated).
 - In collaboration with "The Environment Society of India" conducted Project Presentation on 13.12.2022 for 30th State Children's Science Congress. 90 students & 50 teachers from 30 schools participated.
- **CSIR-CSMCRI**
 - Organized the skill development training program on "Seaweed Cultivation and Processing Technology - Mandapam" in the month of the December (66 Participated)
 - Under CSIR Skill Initiative two batches (III and IV phase) of Training Programme on “Seaweed cultivation and its processing” was organized during 07-12.2022 to 09-12-2022 and 14-12-2022 to 16-12-2022 respectively. (36 & 30 participated respectively)
 - Organized a presentation on PMMSY scheme to participants of CSIR integrative skill initiate program on 16.12.2022.
 - जिज्ञासाकार्यक्रमकेअंतर्गत, डाप्रतापबापट, प्रधानवैज्ञानिकएवंभूपेंद्रकुमारमरकाम, वरिष्ठवैज्ञानिकने, दिनांक16 -17 दिसंबर2022 कोक्षेत्रीयविज्ञानकेंद्र - भावनगरकेसभागारमेएकव्याख्यानदिया।यहव्याख्यान, राष्ट्रीयऊर्जादिनमनानेहेतू, क्षेत्रीयविज्ञानकेंद्र-भावनगरद्वाराआयोजितकियागयाथा।
- **CSIR-IHBT**
 - Organized a one-day demonstration cum exposure visit program for “Regional Level Science Congress” being conducted by Navodaya Vidyalaya Samiti, Chandigarh Region on 08.12.2022. In this program 97 students and 50 teachers from 50 different schools of different states (Himachal Pradesh, Chandigarh, Punjab, Jammu & Kashmir and Ladakh) participated. Apart from these 678 students and 39 teachers from 08 different Kendriya Vidyalaya, Public and Govt. schools from three districts (Mandi, Hamirpur and Kangra) of Himachal Pradesh visited CSIR-IHBT, Palampur on 01,09,20 & 23 December, 2022. In addition, 82 students and 07 faculty members from Punjab and Karnataka Colleges/Universities/Institutes visited CSIR-IHBT, Palampur during 02 to 16 Dec., 2022.
 - Two programs were conducted for BSc Agriculture students from Banaras Hindu University (BHU), Uttar Pradesh. The first batch (04

days) of 24 students attended the program from 20-23 December, 2022. The second batch (05 days) of 12 students started from 26.12.2022.

- **CSIR-IICT**

- In association with Gujarat State Biotechnology Mission (GSBTM), Govt of Gujarat organized a Skill Development Program on “Animal Cell Culture Techniques” for a period of 06 weeks from 21st Nov to 30th Dec 2022.
- Conducted OPCW sponsored two-week course on “Analytical Skills Development Course-2022” on 16th December, 2022. 18 international participants from 15 countries (Algeria, Brazil, Botswana, Burkina Faso, Cameroon, Iraq, Malawi, Malaysia, Morocco, Namibia, Nigeria, Seachelles, Syrian Arab Republic, Thailand, Uganda) participated.
- Conducting a Sponsored (Cipla Foundation, Mumbai) programme on "Orientation cum Skill Enhancement Training Program for MSc Chemistry Students from North Eastern States of India" at CSIR-IICT from 19th Dec 2022 to 18thMar 2023 under Corporate Social Responsibility (CSR).
- One month Train the Trainers program was inaugurated on 19th Dec., 2022 on “Modern methods of Chemical Analysis including Spectroscopic & Chromatographic methods of Analysis”. Twenty Group B officers covering Assistant Chemical Examiners (3) and Chemical Assistants (17) from eleven CRCL laboratories of India participated. It covers both theory and practical aspects of different analytical methods of analysis.

- **CSIR-IIIM**

- Two-days exposure visit of Govt. Schools of UT of J&K (Samba and Jammu districts) was organized under JIGYASA program from 12-13 December, 2022. Around 908 students and 100 teachers from various schools visited the labs and interacted with scientists.
- Two-days distribution and awareness programmewere conducted at F/S Pulwama on among beneficiaries of SHG's of National Rural Livelihood Mission, Pulwama and Shopian and farmers of various districts of Kashmir Division wherein lavender rooted plants were distributed among the beneficiaries.
- Plantation drive of medicinal and aromatic plants was jointly organized by Department of Chemistry, Islamic University of Science and Technology (IUST), Awantipora and Field Station, Pulwama of CSIR - Indian Institute of Integrative Medicine, Jammu at the “Medicinal and Aromatic Plants Park” Campus-II of the University under the theme “Skill and Entrepreneurship development through the cultivation of high value medicinal and aromatic plants”

- Celebrated 12th tree talk foundation day- “MAP’s & CSIR AROMA MISSION PHASE–II awareness interaction” on 19 December, 2022 at Jammu.
- One Day Skill Development Program on “Intellectual Property Rights and scope for Agri-Startups” was organized on 22nd December 2022 at CSIR-IIIM, Jammu.
- **CSIR-IIP**
 - Under the ‘Jigyasa’ program a lab visits for students (40 no.) of different government schools of Uttarakhand region is planned to organize on 30 Dec 2022 at CSIR-IIP for the Lab Demonstration and training during Four Days Training Programme (5 to 8 Dec., 2022) for the Operators of NRL.
 - Participated for the Lab Demonstration and visit during 12 to 23 Dec., 2022 on Petroleum Refining Technology for IOCL Chemical Engr’s.
 - Participated for the Lab Demonstration and visit during seven days (19 to 27 Dec., 2022) on “Training on Analytical methods for fuel adulteration and technology” for trainee from Tanzania Bureau of Standards.
- **CSIR-IITR**
 - Undergraduate science students from Shia Post Graduate College and Integral University, Lucknow visited on December 9, 2022 at CSIR-IIITR and interacted with Director and research staff. They also experienced on advances in the research lab for pursuing R&D in the interface of chemicals and biological science.
 - Two-days workshop on “Gold Nanoparticles: Synthesis and Toxicity analysis using in-vitro cell viability assays” was organized under the CSIR-Integrative Skill Initiative Programme during December 15- 16, 2022.
 - Workshop on “Essential Techniques and Biosafety in microbiology research laboratory” was organized under the CSIR-Integrative Skill Initiative Programme during December 01 - 02, 2022
- **CSIR-IPU**
 - Provided Hands-on Practical Training to CSIR labs' IP Co-ordinators from 05 to 09 Dec 2022, 12 to 16 Dec 2022 and 19 to 23 Dec 2022.
- **CSIR-NAL**
 - Student Science Contact Programme organized on 04-12-2022
 - AERO FEST event organized for School Student from 16 states of India participated during 22-24 Dec., 2022
- **CSIR-NBRI**
 - Organized a two-day Annual Chrysanthemum & Coleus Show during 10-11 Dec., 2022. Total number of 72 exhibitors participated in the show with a total of 569 exhibits. The show attracted large number of general publics including farmers, flower lovers and entrepreneurs.
 - Organized a Lecture on “A Role of the Urban Forest in Mitigation Air Pollution and Climate Changes issues”. (85 students, principal and 06 teachers participated).

- Skill Development Programmes on Quality Analysts for Herbal Industry and Phytochemical Analysis Technician was conducted during 19-30 Dec. 2022; and 3. Improved Composting on 27 Dec. 2022.
- **CSIR-NEERI**
 - Skill Development Programm for “Fire safety and associated Safety Drill”.
- **CSIR-NIIST**
 - Conducted Skill Development training program on "Food Processing and Analysis" for B.Voc Food Processing students of Lourdes Matha Institute of Hotel Management and Catering Technology Institute
 - Planting of saplings as part of Eco-Campus Activity at CSIR NIIST – A CSR initiative by TATA ELXSI
 - Conducted training program for Vocational Higher Secondary School Teachers on “Lab Technician-Research and Quality Control” under the Samagra Shiksha Kerala Project, Government of Kerala
 - Jointly organized with Navodaya Vidyalaya Samiti, Hyderabad region - Regional Children’s Science Congress 2022 (RCSC-2022) from 28-11-2022 to 2-12-2022 at CSIR-NIIST, Thiruvananthapuram.
- **CSIR-NML**
 - Under Jigyasa program, around 60 students from Vidya Niketan school and 40 students of Xavier school of East singhbum, Jharkhand visited CSIR-NML and interacted with scientists of NML
- **CSIR-SERC**
 - Conducted following Advanced Courses (through online mode) on:
 - "Seismic Damage Mitigation of Structures (SDMS-2022)" during 07-09 December 2022. (10 Participated)
 - "Wind Loads and Effects on Structures (WiLES-2022)" during 14-16 December 2022. (40 Participated)
 - Organized Student-Scientist Connect program “Exploring Science” on 5 Dec., 2022, as a part of CSIR JIGYASA – Tamil Nadu STEM Initiative. 100 students and 15+ teachers from Kanchipuram, Ranipet, Villupuram, and Kallakurichi districts participated.

Major Conferences, Seminar/Webinars, Workshops organized

- **CSIR-CDRI**
 - Conclave of MSME, Regulators and Academics was organized on 16th December 2022, by DSIR-CRTDH at CSIR-CDRI.
- **CSIR-CECRI**
 - ‘National Workshop on Corrosion Science and Corrosion Control’ was jointly organized with National Corrosion Council of India at Arasu College of Arts and Science for Women on 21st Dec 2022 to disseminate basics of corrosion, monitoring and mitigation methods through talks and hands on training to UG and PG students.
- **CSIR-CLRI**
 - Lecture on “Deciphering molecular mediators of hemophilic joint disease and development of intra-articular gene therapy” was organized on 27 December 2022 at CSIR-CLRI.

- **CSIR-CSMCRI**
 - Delivered the expert lecture by Prof. Prof. S. Sivaram, IISER, Pune on "Materials Criticality in Low Carbon Energy Technologies: Emerging Challenges in Sustainability" on 13.12.2022.
 - Delivered the expert by Dr Anant Patel, Bielefeld University of Applied Sciences, Germany on "Formulation of living cells for agricultural and biotechnical applications" on 19.12.2022
- **CSIR-HRDC**
 - Conducted Programme on Excellence in Leadership during 08/12/2022 to 09/12/2022
- **CSIR-IHBT**
 - Organized a training program on "Quality Control, Standardization and Botanical Studies of Electrohomeopathic Drugs" from December 21-22 Dec.,2022. Thirteen Electrohomeopathic doctors participated in this program. The program was sponsored by the participated doctors.
 - Conducted a two-days training-cum-exposure visit program on "Crop diversification (medicinal, aromatic, floriculture, spice crops etc.)" during December 12-13 Dec., 2022. 24 farmers of Distt. Reasi, Jammu & Kashmir participated. These farmers were apprised about CSIR-Aroma and Floriculture Mission activities, stevia and cinnamon cultivation, dehydration of flowers, shitake mushroom, formulation of incense cones, and food processing technology.
- **CSIR-IIIM**
 - International conference on Emerging Trends in Biosciences and Chemical Technology-2022 (ETBCT-2022) was jointly organized with *Biotech Research Society, India* (BRSI) from 3-5th December, 2022. Special Sessions IX on 'Natural Products and Green Chemistry' and session X on 'Plant and Animal Sciences' were organized at CSIR-IIIM on 5th December, 2022, during which 26 oral and 17 posters were presented along with four invited talks and plenary lecture. It is noteworthy that CSIR-IIIM students won five best oral/poster awards under various themes during the conference
- **CSIR-IIP**
 - Tel Urja chakram workshop on " Biofuel cropping and Business opportunities in Uttarakhand" was organized on 20th Dec 2022 in IMT,Kashipur.
- **CSIR-NBRI**
 - A two-days workshop on Cycad Biology was organized at the Botanic Garden of CSIR-NBRI, Lucknow on 19-20 December 2022 as part of the SERB Scientific Social Responsibility. Twenty-five (25) faculty from nearby colleges and universities of Lucknow and adjoining districts, participated in this workshop.
- **CSIR-NEERI**
 - Organized workshop on Systematic Management of Asset Data for Nagpur City.
- **CSIR-NIIST**

- Two-days National Seminar on Recent Trends in Disease Prevention and Health Management (NS-DPHM-2022) was organized during 14-15 December 2022 at CSIR-NIIST in association with Kerala Academy of Sciences (KAS), Trivandrum
- TIFAC-DSIR-NIIST jointly organized a workshop on TRL6 and its applications for technology assessment held at CSIR-NIIST on 21/12/2022
- **CSIR-NIO**
 - INSA Annual Meeting 2022 hosted by CSIR-NIO RC Visakhapatnam.
- **CSIR-NML**
 - Indian Institute of Metals (IIM) Jamshedpur Chapter, in association with Tata Steel Ltd, CSIR-National Metallurgical Laboratory and NIT Jamshedpur organized an International Conference on "Corrosion and Coating (i3C)" during December 7-8, 2022 at CSIR-NML. (250 participated)
 - Organized a workshop on Matlab application by the representative from MathWorks on 13/12/2022.
- **CSIR-URDIP**
 - "Hands on IP training" to IP coordinators from CSIR labs was organized on 7-8, 14 & 20 December 2022.
 - Conducted an online session on "Freedom to Operate Analysis" under "Only One Theme" Awareness Campaign on Innovation Management organized by Venture Centre, Pune on 20th December 2022.

Visit of high-level dignitaries to the Institute/Laboratory

- **CSIR-CIMFR**
 - Dr. Warren John Bruckard and Dr. Nawshdul Haque from CSIRO, Australia visited CSIR-CIMFR, Dhanbad laboratory and discussed in detail with the HORG and HOS of the institute for exploring the possibilities for collaboration of Joint Research work along with program for the Indian students perusing Ph.D programs in ACSIR program.
 - Dr. Abhijit Mukherjee, Dean International South Asia, John Curtin Distinguished Prof., School of Civil and Mechanical Engineering & Director, Curtin-India Academy, Curtin University, Australia visited CSIR-CIMFR, Dhanbad.
- **CSIR-CLRI**
 - Mr. Kaspar Meyer, Science Counsellor, German Embassy, New Delhi and Ms. Michaela Kuchler, Consulate General of the Federal Republic of Germany, Chennai, visited CSIR-CLRI on 02 December 2022 to overview the works carried out for Indo-German projects funded by Indo-German Science and Technology Centre (IGSTC).
- **CSIR-CRRI**
 - Prof. Prashant Kumar, University of Surrey, United Kingdom visited to CSIR-CRRI on December 22, 2022 to explore R&D collaborations and delivered a lecture on "Air we breathe, Covid-19 & Beyond"
 - Professor Askar, L.N. Gumilyov Eurasian National University Saint Petersburg State University of Architecture and Civil Engineering (SPBGASU) From Kazakhstan delivered lecture on "The Experience of

Geotechnical Construction and Testing of Piling Foundations of Megastructures on Problematical Soil Ground of Kazakhstan" on 19.12.2022

- **CSIR-IITR**

- Dr. Prabodh Halde, Head (Regulatory) of Marico India Ltd. & President, Association of Food Scientists and Technologists (India), Mumbai accompanied with Dr Shilpa Vora, Chief Technical Officer, Maricovisited CSIR-IITR, Lucknow.

- **CSIR-NAL**

- Shri. Harsh K Jain, Ambassador of India to Ukraine visited on 26-12-2022

- **CSIR-NGRI**

- Talk by Prof. Satyam Priyadarshy Chief Data Scientist, DG (DGH) on 02.12.2022.
- Dr. Kalachand Sen, Director, Wadia Institute of Himalayan Geology deliver an expert lecture on "Climate Change and Fossil Fuels: Impacts, Challenges and Plausible Mitigations" on 28.12.2022.

COVID related developments/research

- **CSIR-IHBT**

- Coordination of sampling relocation for Kangra district and transfer of remaining RT-PCR kits and sending samples for sequencing purpose.

- **CSIR-IIP**

- Additional compressor, vacuum pump, voltage stabilizer and rotary equipment switch over system have been installed in ~95 PVSA MO2 production units (30 m3/h MO2 throughput) at different Govt. hospitals across India under the PMCARES funding through CSIR-IIP empaneled vendors under the ageis of DRDO.

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

- **CSIR-CECRI**

- As a part of 75th Foundation Year celebrations, CSIR-CECRI under Jigyasa Programme, celebrated the 'Nobel Day 2022' on 12th December, 2022 by having invited lectures on the six Nobel Prizes of this year.
- In commemoration of 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'.
- Prof. Dr. Joseph Ajay Pathakamuri, Research Scientist and Professor of Biology, Franciscan University of Steubenville delivered the lecture on "Insights into corona virus Biology" on 16th December, 2022

- **CSIR-CEERI**
 - Dr. Amarjit Singh Lecture series has been started on 20th December, 2022. The first lecture was delivered by Shri Sanjeev Kumar, Sr Scientist, CSIR-CEERI has delivered lecture on Diamond Detectors.
- **CSIR-CLRI**
 - The Greater Chennai Corporation under the aegis of Swachh Bharat mission conducted awareness campaign for segregation of trash in both office and residential area of CSIR-CLRI. Officials from GCC visited CSIR - CLRI staff quarters and demonstrated the segregation of Trash.
- **CSIR-CSMCRI**
 - Celebrated the National Mathematics Day by organizing a webinar "What should a student learn from the life of Ramanujan?" under CSIR-Jigyasa program by Dr. Rajesh Kumar Thakur, SCERT, New Delhi on 22.12.2022.
 - Organized the Induction program on 20th Dec 2022 for all newly joined PA-I, II, III, Dissertation Student, RA, and Scientist.
- **CSIR-IICT**
 - Organized, as a part of Azadi Ka Amrit Mahotsav Lecture Series, a lecture titled- "Architecting Cloud Native Intelligent Digital Platforms" delivered by Sri. Rajeev Sharma, Chief Technology Officer, Grid Dynamics, New York, US on 5th December 2022.
- **CSIR-NBRI**
 - 75 unique varieties of Chrysanthemum germplasm were also displayed to commemorate the Azadi ka Amrut Mahotsav theme of Government of India. A separate counter has been also set up to inform about the Floriculture Mission for flower growers/entrepreneurs/farmers to enquire about floriculture related issues/problems from NBRI experts

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**

- 19 in-house R&D units of industries were granted renewal of recognition and 24 were granted renewal of registration certificates.

**Scientific and Industrial Research Organisation (SIROs)
Recognition/ Registration and renewal of SIROs**

- 10 SIROs were granted renewal of recognition and 05 were granted renewal of registration certificates.

**Public Funded Research Institution (PFRIs)
Registration and Renewal of PFRIs**

- 03 PFRIs were granted registration certificates.
- 06 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) :

Three new projects were awarded and two projects were successfully completed during December 2022.

Scheme CRTDH:

Seventh Meeting of the Technical Advisory Committee (TAC) of PACE scheme was held on 14thDecember 2022 online through a virtual platform.

A2K+ Studies: Knowledge Dissemination Program:

First meeting of Project Guidance Cum Review Committee (PGRC) was held to review the financial and technical progress of study ‘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.

A2K+ Events:

A Technical Advisory Committee (TAC) meeting was convened under A2K+ Events program and 07 proposals were taken for consideration of TAC, out of which one proposal was recommended for partial financial support towards organizing the Conference.

Some of the **DSIR Supported Events** during December, 2022 are as below:

1. **International Conference on Recent & Future Trends in Smart Electronics System & Manufacturing**”was organized by Symbiosis Institute of Technology, Pune from 01.12.2022 to 03.12.2022. The conference aimed in creating awareness about latest trends and scope in the field of smart electronics manufacturing technology. Further it addressed the need of fostering research & innovation in both academic institutes and Industries resulting in strengthening of technology development and competitiveness in Smart Electronics System & Manufacturing. Also forged strong collaborative research network of industry, academics and consultancy and research organization to march ahead with newer technologies.
2. **“International conference on Biotechnology sustainable Bioresources & Bioeconomy”** was held from 07.12.2022 to 11.12.2022 which was organized by Indian Institute of Technology, Guwahati. The conference brought together students, researchers, scientists from North-East Academic Institutes, parts of India & Overseas. Also participants were from Private Institutions and Research Organizations and Entrepreneurs. It also effectively addressed & disseminated information on Biotechnology, Bioresources & Bioeconomy of North-East India among Scientific Community, Universities, Industries and Provided an overview of different Applications. The conference sensitized about the importance of sustainable Bioresources and also the necessity of having a local centre for building local organizations catering to the needs of North-East.
3. **“National Conference on Business Sustainability and SDGs”** was organized by PHD Chamber of Commerce & Industry (PHDCCI), Delhion 09.12.2022 at PHD House, New Delhi. The Conference provided a leading platform for the researchers and industry stakeholders to interact and discuss the need and urgency to adopt sustainability and SDG`s in business models. It also created awareness among various business owners, investors and other stakeholders through case study pertaining to sustainability and SDGs in Indian context. Further discussion was carried out on the regulatory frameworks on the sustainability landscape for India and across the globe and various initiatives taken by central, state governments and authorities in fostering sustainability. Methods to help in

fostering innovative ideas for stakeholders through deliberations, experiences and ideas, by successful players and policy makers were successfully carried out. It fostered collaboration between different societal, environmental and economic players for facilitating sustainable development.

4. National Conference on **“Hydrogen Energy & Fuel Cells: A Vision for our Future MSME`s”** was held on 09.12.2022 which was organized by Anand Engineering College, Keetham Agra. The conference created awareness about the significance of Hydrogen Energy and Technical Sessions deliberated, discussed possibilities of sustainable Future Energy (Special Focus on Hydrogen Energy). A Brainstorming Technical Session addressed on reducing the production cost of fuel cell systems to be used in transport applications, while increasing their lifetime to levels competitive with conventional technologies. The conference explored possibilities in increasing the electrical efficiency and the durability of the different fuel cells used for power production, while reducing costs, to levels competitive with conventional technologies. A roadmap was drawn to increase the energy efficiency of production of hydrogen mainly from water electrolysis and renewable sources while reducing operating and capital costs, so that the combined system of the hydrogen production and the conversion using the fuel cell system is competitive with the alternative available in the marketplace. Also it was demonstrated on a large scale the feasibility of using hydrogen to support integration of renewable energy sources into the energy systems, including through its use as a competitive energy storage medium for electricity produced from renewable energy sources.
5. **“8th International Congress on Computational Mechanics and Simulation (ICCMS 2022)”** was held from 09.12.2022 to 11.12.2022. Which was organized by Indian Institute of Technology (IIT) Indore, Indore. The conference was planned to create a stage for sharing the latest advancements in computational research, new ideas and exchanging the new simulation techniques for complex physical phenomenon. Further ICCMS 2022 provided an effective platform for inspiring international and interdisciplinary exchange at the forefront of Computational Mechanics.
6. **“III International Conference on Advancements in Automation, Robotics & Sensing (ICAARS-2022)”** was held from 09.12.2022 to 12.12.2022. Which was organized by Department of Robotics, & Automation Engineering, PSG College of Technology, Peelamedu Coimbatore, TamilNadu. The conference on Advancements in Automation, Robotics & Sensing (ICAARS 2022) brought together leading academic scientists, researchers and research scholars to exchange and share their experiences and research results about all aspects of Robotics, Automation and Sensing. It also provided the premier interdisciplinary forum for researchers, practitioners and educators to present and discuss the most recent innovations, trends, and concerns, practical challenges encountered and the solutions adopted. It also covered topics to foster institutional capacity and to enhance existing knowledge in the field of robotics. The ultimate aim of the conference was to bring advances in technology to India and establish India as a

supplier in global scale. The conference hosted in India was structured to provide many opportunities for participants from all over the world to form professional networks and to learn through active participation.

7. **VII International Conference on Sustainable Energy and Environmental Challenges (SEEC)**” was organized by Department of Chemistry, Indian Institute of Technology (BHU), Varanasi, from 16.12.2022 to 18.12.2022. This conference aimed towards promoting research and outreach programs in India and Abroad through scientific deliberations like technical presentations, keynote addresses, panel discussions, oral and poster presentations. The conference brought together engineers, scientists, researchers, students, managers, and other professionals to address and discuss emerging sustainable energy and environmental issues. This conference covered the important research areas related to energy, the environment, and biotechnology, which benefitted the researchers, academicians, students and Industry. The participation of faculty and researchers from different IITs, NITs, and other reputed institutes of India and abroad provided an interactive platform for the students and faculty members. Around 300+ national participants and 50+ participation from abroad participated in the event.

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

- A Technical Advisory Committee (TAC) meeting was convened under TDUPW/A2K+ program and three proposals for empowering women through technology interventions were recommended for financial support and two proposals for establishing Skill Satellite Centre aiming to benefit rural women with the help of technology and tools in handicraft and food processing sector were recommended.
- 254 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.2145.05 Lakhs during December, 2022.
- Sale of items worth Rs.2143.23 Lakhs was realized during December, 2022.

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 Kumaun University, Nanital and one technology by NITTE University, Udapi. NRDC has licensed one technology on 'Saline Water Lantern' to NIOT, Chennai during December 2022.
- NRDC has collected premia of Rs.0.2 Lakhs and royalty of Rs.0.65 Lakhs from respective technologies during December, 2022.
