



CSIR, India: An Innovation Hub for Global Sustainable Development

Science Summit at the 77 United Nation General Assembly (SSUNGA77)

CSIR's Science Sessions

“CSIR, India: An Innovation Hub for Global Sustainable Development”

Science Summit at the 77 United Nation General Assembly

Date: 22 and 28 September 2022; Time: 1630 hrs to 1900 hrs (IST)



About the Organization: Council of Scientific and Industrial Research (CSIR), India

Council of Scientific & Industrial Research (CSIR), India, is the largest industrial R&D organization in India, under the Department of Scientific and Industrial Research (DSIR) of Ministry of Science and Technology, Government of India. CSIR, established in 1942 has 37 multidisciplinary R&D institutes located across India that are working in a wide spectrum of S&T fields from oceanography, geophysics, chemicals, drugs, genomics, biotechnology and nanotechnology to mining, aeronautics, instrumentation, environmental engineering and information technology. SCIMAGO Institutions Rankings 2022 has ranked CSIR, India **39th among 1745 Government institutions worldwide** with a “Research” rank of **186 among the 8084 ranked institutions globally**. CSIR, India lies in the 4th percentile in Research ratings among with World institutions and lies in the **2nd percentile in Research rating among the institutions in Asiatic region**.

The Network of laboratories are being manned by about 9000 highly skilled S&T manpower. Its need-based and industry-focused R&D and technology development, strength in basic and applied research, and the world-class R&D infrastructure have contributed immensely to India's prowess in S&T as measured by patents, publications and innovations.

CSIR has been contributing immensely to the industrial, societal and economic development and growth of India for eight decades now. CSIR has helped India overcome many challenges and crisis, from promoting self-sufficiency in the face of technology denials, to handling natural disasters such as earthquakes, floods, pandemic, through appropriate technological solutions.

CSIR has recently developed “CSIR@80: Vision & Strategy 2022 – New CSIR for New India” which envisions pursuing science that strives for global impact, the technology that enables innovation-driven industry and nurtures trans-disciplinary leadership thereby catalyzing inclusive economic development for the people of India.

CSIR has been immensely contributing to the UN Sustainable Development Goals. The Session on “**CSIR, India: An Innovation Hub for Global Sustainable Development**” will briefly present these contributions. These can be viewed at

Youtube

<https://www.youtube.com/csirindia1942>

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[CSIR, India | Facebook](#)

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https://twitter.com/csir_ind?lang=en



PROGRAM

Day 1: 22 September 2022; Time: 16:30 hrs to 19:00 hrs (IST)

Register : <https://ssunqa77.sched.com/event/1AjCL/ref-22537-csir-india-an-innovation-hub-for-global-sustainable-development>

| Sl. No. | Theme/Title | Topic & Speaker | Time, hrs | About the talk | Picture of the speaker | Profile of the Speaker | Email of the speaker |
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| Inaugural Session | Welcome and Introduction to the meeting | <i>Dr. Rama Swami Bansal, Head, ISTAD, CSIR</i> | 1630 | Welcome and Introduction to the scientific meeting titled "CSIR, India: An Innovation Hub for Global Sustainable Development". |  | Dr Rama Swami Bansal joined the Council of Scientific & Industrial Research (CSIR), Ministry of Science & Technology, Government of India in 1997. She is the Head of the International S&T Affairs Directorate (ISTAD) of the CSIR. She has been fostering S&T Cooperation of CSIR institutes with their partners abroad and has successfully launched several cooperation programmes. Dr Bansal is assisting Director General of CSIR in promoting specific international networking. She has a rich experience of nearly 30 years in management of International S&T Cooperation and Coordination of International Bilateral and Multilateral programmes. earlier at Department of Science & Technology, in CSIR and also as an S&T Counselor and Head of the Science & Technology Wing of the Embassy of India in Moscow, Russia during June 2011 to June 2015. | rsb@csir.res.in |
| | Overview of CSIR | <i>Dr. N. Kalaiselvi, Director General, CSIR</i> | 1635 | Inaugurating the meeting and sharing an Overview of CSIR to kick-start the deliberations. |  | Dr. (Mrs) N. Kalaiselvi assumed charge as Secretary, DSIR and Director General, CSIR, New Delhi on August 8, 2022. Dr. Kalaiselvi is the first women Director General of CSIR. Prior to taking over as Secretary, DSIR and DG, CSIR, she was working as Director, CSIR-Central Electrochemical Research Institute, Karaikudi. Dr. Kalaiselvi (born: February 5, 1967) obtained bachelor's degree in Chemistry from Government Arts College Tirunelveli, obtained her Post Graduate Degree in Chemistry from Government Arts College Coimbatore and did her PhD at Annamalai University, Chidambaram. | dg@csir.res.in |



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Dr. Kalaiselvi's research work of more than 25 years is primarily focused on electrochemical power systems and in particular, development of electrode materials, custom designed synthesis methods, optimization of reaction parameters and electrochemical evaluation of in-house prepared electrode materials for their suitability in energy storage device assembly.

Dr. Kalaiselvi has served as Nodal Scientist for project MULTIFUN [Multifunctional Electrodes and Electrolytes for Futuristic Technologies, sponsored by CSIR]. She played instrumental role in implementation of e-mobility in India. Dr. Kalaiselvi has more than 135 research papers and 6 patents to her credit. She is recipient of many prestigious awards including Most Inspiring Women Scientist Award.

Day 1: Scientific Session: 1640 hrs -1900 hrs

Moderator - Dr. Ram Vishwakarma, Distinguished Scientist, CSIR

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| Overview of the Scientific Session | Dr. Ram Vishwakarma , Distinguished Scientist, CSIR | 1643 | Dr. Ram Vishwakarma would be Moderating and presenting the Overview of the Scientific Sessions. |  | <p>Ram Vishwakarma is with the Council of Scientific & Industrial Research (CSIR) as a Distinguished Scientist, after having served as the Director of CSIR-Indian Institute of Integrative Medicine, Jammu (2009-2020). Prior to joining CSIR, he served as a Vice-President & Head of Medicinal Chemistry at Piramal Healthcare, Mumbai (2005-2009), and Staff-Scientist at National Institute of Immunology, New Delhi (1993-2005). He did his Ph.D. (medicinal chemistry) from CSIR-CDRI, Lucknow and Post-doctoral (biosynthesis of Cynocobalamin / Vitamin B 12 and Hemoglobin) from the Cambridge University. He has core expertise in drug discovery, chemical-biology, glycobiology, preclinical/clinical development with over 350 original publications, 75 patents, and several IND drug candidates to his credit; conceptualized/contributed to societal / therapeutic / industry mission projects; received multiple recognitions including the election to the Fellowship of the National Academy of Sciences of India, and Sun-Pharma (Ranbaxy) Research Award for pharmaceutical sciences.</p> | ram.vishwakarma@csir.res.in |
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| 1. | Food and Nutrition and Botanical Innovations (No poverty, zero hunger - SDG 1,2) | 1. Food/Nutrition <i>Dr. Sridevi Annapurna Singh,</i> <i>Director,</i> <i>CSIR-CFTRI</i> | 1645 | <p>Nutrition is the main cause of disease and death globally. Impacts of malnutrition are huge, socially and medically affecting the quality of life as well as the country's economy. While undernutrition is a serious problem in low- and middle-income countries, overnutrition is also rising alarmingly, globally. Accessibility, availability and affordability coupled with lack of education, cultural inhibitions and cooking practices limit consumption of the right foods. Food production, processing, by-products generated and food wastes also contribute significantly to climate change. The Council of Scientific and Industrial Research (CSIR), under the Ministry of Science and Technology, is known for its cutting-edge scientific and technological research in diverse areas including food and nutrition. Several of its labs, situated across India, are working to provide cost-effective, sustainable technologies for alleviating undernutrition, obesity and related pathologies, micronutrient deficiencies and foods for targeted populations that are both shelf-stable and sensorily acceptable. Continuous innovations are being carried out by CSIR to improve digestibility, newer and underutilized grains and complementation of ingredients to overcome deficiencies of essential nutrients in traditional diets and study the impact of these foods.</p> |  | <p>Sridevi Annapurna Singh, is currently serving as Director, CSIR-Central Food Technological Research Institute. She has a Master degree in Food Technology and PhD in Food Science from the University of Mysore, Mysuru. She has over 3 decades of research experience working in the areas of supplementary foods for children, applications of enzymes for better digestibility, characterization and understanding the structure and function relationship of proteins and unravelling the mode of action of nutraceuticals. She has been focusing on alleviating malnutrition in the country through sourcing proteins from unconventional sources and underutilized grains and carrying out impact studies in association with women and child development departments of various state governments. Sridevi Annapurna Singh has published well-cited papers in peer-reviewed journals, has several patents-backed technologies in the area of protein ingredients and foods that have been commercialized, besides guiding PhD and masters students. She has been recently conferred the Karnataka State and Technology Academy fellowship. Earlier, she has been the recipient of DAAD and INF-Kraft fellowships She is a member in several national committees of DBT, DST and FSSAI.</p> | director@cftri.res.in sridevi@cftri.res.in |
| | | 2. Botanical Innovations <i>Dr. S.K. Barik,</i> <i>Director,</i> <i>CSIR-NBRI</i> | 1700 | <p>The talk will cover the advances in plant and agriculture S&Ts with focus on innovation and programmes undertaken by CSIR for improvement of farmers' income and entrepreneurship development in India. This would include achievements under Aroma Mission, Floriculture Mission, genome edited crops, transgenic cotton and trait-specific improvement in futuristic crops</p> |  | <p>Prof. SK Barik is the Director, CSIR-National Botanical Research Institute, Lucknow. He is also holding the additional charge of Director, CSIR-Indian Institute of Toxicology, Lucknow since 2020. As the Theme Director of Agriculture, Nutrition and Biotechnology theme of CSIR, he manages the R&D programme of 32 CSIR institutions working in this domain. He has more than 34 years of research experience in the fields of plant sciences, plant and microbial resources, agriculture, forestry, ecology & environment,</p> | director@nbri.res.in |



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| | | | such as Cannabis, Opium Poppy and Amaranthus. Successful case studies of introduction of new crops such as Heeng, Saffron and fruit crops in novel areas will be presented. CSIR inventions in the areas of plant growth regulators, green molecules and microbial consortia for abating biotic and abiotic stresses for different crops will also be presented. Value addition innovations of crop produces and their transfer to industries will be presented to demonstrate the contribution of CSIR to entrepreneurship development in agriculture sector. | | and bio-product development for biomedical & healthcare interventions. He is a Fellow of The National Academy of Sciences, India, National Academy of Agricultural Sciences, Linnean Society of London, LEAD International, Rockefeller Foundation, USA, and International Society for Environmental Botanists. He has been conferred with Prof. R.N. Tandon Memorial Award and Biodiversity Lecture Award by The National Academy of Sciences, India, Dr. Brandis Award by Indian Forester, Prof. Birbal Sahani Medal by Indian Botanical Society | |
| Discussions & Q&A | | | 1715 | | | |
| 2. | Affordable Healthcare (SDG 3) | 1. Therapeutics <i>Dr. D. Srinivasa Reddy, Director, CSIR-IICT</i> | 1725 | The Indian pharmaceutical industry made significant impact across the globe over the past few decades and has been instrumental in supplying generic drugs to the global market. India supplies 20% of generic medicines in terms of volume and 60% of various vaccines and Antiretroviral (ARV) drugs. Indian pharma companies are continuously producing high quality, cost-competitive intermediates and API to both the domestic and international markets. All this was possible because of collaborative effort between the Council of Scientific and Industrial Research (CSIR) and indigenous private companies over the decades and paved the way for a revolution in the domestic pharmaceutical industry. Indian Institute of Chemical Technology (IICT), Hyderabad; National Chemical Laboratory (NCL), Pune and Central Drug Research Institute (CDRI), Lucknow - |  | Dr. D. Srinivasa Reddy, Director of CSIR-Indian Institute of Chemical Technology (CSIR-IICT) based in southern Indian city Hyderabad. He was trained as an organic chemist and gained experience in medicinal chemistry and drug discovery from pharmaceutical industry. Dr. Reddy is best known for his application oriented organic synthesis towards human wellbeing. His research interests are on total synthesis of biologically active natural products and medicinal chemistry using “silicon incorporation approach”. His research group at CSIR-NCL Pune accomplished total synthesis of more than 35 natural products with impressive biological properties. His group developed a cost-effective process route for drugs Ivacaftor (cystic fibrosis) and Lifitegrast (ophthalmic). One of the molecules (Licoglifozin) discovered by his team in industry is currently undergoing human clinical trials (Phase-II). Dr. Reddy is an author of >120 publications and an inventor in more than 35 patents. Over all, he brings experiences from both pharmaceutical industry and Govt national laboratories. |

ds.reddy@iict.res.in



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| | | | | Institute of Microbial Technology (IMT), Chandigarh of CSIR played major role for the growth of Indian pharma sector. I will be discussing about a few success stories and the way forward on affordable healthcare. | | | |
| | 2. Genomics & Diagnostics <i>Dr. Vinay K. Nandicoori, Director, CSIR-CCMB</i> | 1740 |  | I will be presenting CISR work on Genomics and Diagnostics with a focus on COVID-related diagnostics and genomics. CSIR was heavily involved in sequencing genomes of SARS-nCOV2 in collaboration with INSACOG to identify new variants that arise in India. In CSIR, we have developed two novel diagnostic methods for COVID. CSIR labs are also performing population-based genomics, such as looking at the genomes and microbiomes of the population in India. We are working actively on the breast cancer genome project. I will be discussing CSIR efforts in the above areas. | Dr. Vinay Nandicoori is well known Molecular Biologist who has contributed immensely to delineating the signalling networks in Mycobacterium tuberculosis, the causative agent of TB. He did his M.Sc in Biotechnology at Indian Institute of Technology, Bombay and Ph.D in Molecular and Cellular Biology from IISC, Bangalore. He was a Postdoc at Texas A & M University and University of Virginia before returning to India in 2004 to establish his research group at National Institute of Immunology, New Delhi. He has 75 research papers to his name in international journals of high repute. He holds the prestigious JC Bose fellowship. He is the recipient of several awards like the National Bioscience Award for Career Development and the NASI-Scopus Young Scientist Award. He is an elected fellow of all three Science Academies in India. | vinaykn@ccmb.res.in | |
| Discussions & Q&A | | | 1755 | | | | |
| 3. | Water and Life Below Water (SDG 6, 13, 14) | 1. Potable Water <i>Dr. Kannan Srinivasan, Director, CSIR-CSMCRI</i> | 1805 |  | There is the lack of adequate processes for producing sufficient quantities of potable drinking water in India, where growing population and industrialization limit the water supply and resources. Safe water for drinking and cooking uses is an essential component of effective policy for health protection. Affordable, scalable and easily deployable technology for providing safe drinking water for common masses is need of the hour. A number of CSIR laboratories have developed niche in water treatment technologies providing potable water over the years. The main societal impact would be towards achieving | Kannan Srinivasan, presently serving as Director, CSIR-Central Salt and Marine Chemicals Research Institute (CSIR-CSMCRI), one of the constituent laboratories of the Council of Scientific and Industrial Research (CSIR). Did Masters and PhD in Chemistry from IIT, Madras. Had a short post-doctoral stay at CSIR-NCL before joining as a Scientist at CSIR-CSMCRI. Has over three decades of experience in the field of heterogeneous catalysis for fine chemicals and bio-based chemicals. Has over 80+ research publications, 20+ patents, 8 PhDs, mentored several Masters students, several awards, and prestigious research fellowships like Humboldt, INSA-JSPS, Raman. Currently, he devotes his time in synergizing the skills and expertise of scientists of the institute in providing solutions of national relevance along the mandate of the | skannan@csmcri.res.in |



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| | | <p>sustainable water systems, particularly with reference to achieving sufficient amounts of potable water in align with national mission programs on water and UN Sustainable Development Goal 6.</p> | | <p>institute that dovetails on marine chemicals, marine biology & marine environment and in the process enable the dreams of the scientists.</p> | |
| <p>2. Waste Water Management <i>Dr. Atul Vaidya, Director, CSIR-NEERI</i></p> | <p>1820</p> | <p>The United Nations Sustainable Development Goal (SDG) 6: 'Clean Water and Sanitation' - targets and seeks to ensure access to clean water and sanitation for all. While significant progress has been made towards attaining the goal, but still the developing countries are lagging due to various emerging problems and challenges such as rapid increase in population, depleting available water resources due to over exploitation and pollution from point and non-point sources, which has put tremendous pressure on per capita water availability. Further, the impacts of other factors like mis-management, climate change- fluctuations in precipitation, in adequate related laws & regulations etc. has only aggravated the problem. There can't be any single point universally acceptable solution to water and wastewater problem due to region specific challenges, and therefore collaborative efforts are needed for initiating, adopting and developing effective water management strategies (BMP and BAP) which includes effective laws and regulation along with the use of modern and latest technologies with focus on Conservation and management of water resources with emphasis to be laid on water productivity- recycle, reuse and recover; minimization of water wastage and losses; developing alternative processes targeting towards reduction in water usage and wastewater generation, which needs to be adopted at every level. Although, the challenges are huge, it can be overcome with effective coordination between different stakes holders and adopting novel</p> |  | <p>Dr. Atul Vaidya did B. Tech. in Chemical Engineering from Laxminarayan Institute of Technology (LIT), Nagpur and M. Tech. in Chemical Engineering from IIT-Bombay. He obtained Ph.D. in Chemical Engineering from RTM Nagpur University. At present, Dr. Vaidya is Director of the CSIR-National Environmental Engineering Research Institute (CSIR-NEERI). Earlier, he was Chief Scientist and Head of Chemical and Hazardous Waste Management Division, CSIR-NEERI. He has over 34 years of research experience in environmental science and engineering, especially in waste management. Dr. Vaidya has extensively worked on various aspects of waste management, including characterization, treatment, reuse and recycle, impacts on the environment, Green House Gas (GHG) emissions and environmentally sound practices, such as waste minimization, clean technology, circular economy. He is also actively working for Stockholm convention, UNFCCC and Minimata convention. He also has experience in biotechnology and technology demonstration. He has implemented effective technological options for environmentally sound management of hazardous wastes at various industries in the country. Dr. Vaidya has facilitated decision-making across the country through his basic and translational interdisciplinary research on various environmental issues. His contributions in national and international environmental policies have been noteworthy. He has published many research papers in national and international journals.</p> | <p>director@neeri.res.in; an_vaidya@neeri.res.in</p> |



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| <p>3. Impact of Climate Change on Indian Ocean <i>Dr. Sunil Kumar Singh, Director, CSIR-NIO</i></p> | <p>1835 In a climate change regime, the response of the oceanic processes needs to be monitored for making the earth system more resilient. Owing to its geographical location, i.e. landlocked from three sides, the response of the northern Indian Ocean to climate change is found to be quite significant compared to the rest of the ocean basins. For example, The rate of warming in the tropical Indian Ocean is the highest, ~0.15 °C per decade. With about one-eighth of the global ocean surface, it contributes one-fourth of the ocean heat content. The increasing heat content along with CO2 increase is impacting the productivity of the ocean, its ecosystem, fisheries, monsoon characteristics, droughts, floods, HABs, tropical cyclones and sea-level changes. It is altering the oxygen content and the biogeochemistry of the Indian Ocean. The talk will summarise the efforts made by the researchers to understand the impact of climate change on ecosystem dynamics, monsoon, regional sea level change, productivity etc.</p> |  | <p>Prof. Sunil Kumar Singh completed his Graduation and Master's from Banaras Hindu University, Varanasi and Ph.D. from Physical Research Laboratory, Ahmedabad. He was a Post-Doctoral Fellow at CRPG-CNRS, Nancy, France for three years. He served at Physical Research Laboratory in various capacities including Reader, Associate Professor, and Professor and moved to CSIR-National Institute of Oceanography, Goa in June 2017 as the Director.</p> <p>Prof. Singh is an elemental and isotope geochemist and has played a significant role in studying the low-temperature elemental and isotope geochemistry of the Himalayan rivers and the Indian Ocean. His research has helped widen the understanding of the evolution of the Himalaya and its role in modulating the long-term global climate. Prof. Singh's present research interests are Biogeochemistry of Trace Elements and Isotopes in the Indian and Southern Oceans and the Indian Estuaries; Low temperature elemental and isotope geochemistry; Erosion and weathering studies in the Indian River Systems; and Long-term carbon cycle. Currently, he is leading the GEOTRACES – INDIA, a programme to unravel the importance of micro-nutrients in controlling ocean productivity, marine ecology and global climate change.</p> <p>He is a recipient of the Shanti Swarup Bhatnagar award for his contributions to Earth, Atmosphere, Ocean and Planetary Sciences in 2016. He received the National Geosciences Award, 2012 and the Eminent Mass Spectrometrists Award, 2015. He was awarded Honorary Doctorate in Engineering from the National Institute of Technology, Goa. Ministry of Earth Sciences awarded him the National Ocean Sciences Award in 2021. He is an elected fellow of all the three science academies in India: the National Academy of Sciences, India, Allahabad; the Indian National Science Academy, Delhi and the Indian Academy of Sciences, Bengaluru. He has been selected by DST as one of 75 scientists below the age 50 years shaping today's India</p> | <p>sunil@nio.org</p> |



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| Discussions & Q&A | | 1850 | | | | |
| Vote of Thanks <i>Dr Anand Mohit, Principal Scientist, ISTAD, CSIR</i> | | 1858 | Formal Vote of Thanks to the Speakers and Audience would be presented |  | <p>Dr. Anand Mohit did his B. Tech in Chemical Engineering and Information Technology (Dual Degree) from VIT, Vellore and earned his M. Tech. in Advanced Petroleum Science and Technology and Ph.D degree in Engineering for his work on "Hydroprocessing Route to Renewable Transportation Fuels" from CSIR-Indian Institute of Petroleum (CSIR-IIP), AcSIR. Dr Anand joined CSIR-IIP, as a Scientist in 2011 and worked for developing technologies for renewable ground and aviation fuels for civilian and strategic sectors. In 2020 he joined International S&T Affairs Directorate, CSIR-HQs as a Principal Scientist where he is coordinating specific Bilateral and Multilateral S&T Cooperation programmes of CSIR. He has several peer-reviewed publications and 7 granted patents. His work lead to the development of BIS-Indian standard on Alternate Jet fuel (IS 17081:2019); CSIR's Bio-Aviation Fuel Technology and the award of CSIR-Technology Innovation Award 2021 for developing Single step process to make Sustainable Aviation Fuel (SAF) from Non-edible and used cooking oil and successful demonstration Flights by Spice Jet and Airforce, Gol using Bio-Aviation Fuels.</p> | anandm@csir.res.in |

Day 2: 28 September 2022; Time: 16:30 hrs to 19:00 hrs (IST)

Register: <https://ssunga77.sched.com/event/1A1E2/ref-28555-csir-india-an-innovation-hub-for-global-sustainable-development>

| Sl. No. | Theme/Title | Topic & Speaker | Time, hrs |
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Day 2: Scientific Session: 1630 hrs -1900 hrs
Moderator - Dr. Suddhasatwa Basu, Director CSIR-IMMT



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| <p>Overview of the Scientific Session</p> | <p>Dr. Suddhasatwa Basu, Director, CSIR-IMMT</p> | <p>1630</p> | <p>Dr. Suddhasatwa Basu would be Moderating and presenting the Overview of the Scientific Sessions</p> |  | <p>Prof. Suddhasatwa Basu completed Ph.D/MS in Chemical Engineering from Indian Institute of Science, Bangalore. Prior to taking over as the Director of CSIR-Institute of Minerals & Materials Technology, Bhubaneswar, he was Professor and Head of Chemical Engineering Department, IIT Delhi. At present, he is also the Director (additional charge) of CSIR-Central Institute of Mining and Fuel Research, Dhanbad. He has vast work experience on development of materials for energy conversion and storage devices, e.g., Fuel Cells, Supercapacitor and Battery, Electrolyser for Hydrogen generation by Water Splitting and CO₂ Reduction to Organics. He has published more than 235 articles in high impact journals with H-index 40, 13 patents and 2 technologies transferred to various industries. He is a Fellow of National Academy of Science of India, Indian National Academy of Engineering, Royal Society of Chemistry UK and received Herdillia Award, Dr A. V. Rama Rao Foundation's Research Award. He is listed among top 2% percentages of most influential scientists of world by the Stanford University in 2020. He is Editor/Assoc Editor/Ed Board member of several international journals published by Willey, Springer, Oxford Press and ACS.</p> | <p>sbasu@immt.res.in</p> |
| <p>4.</p> | <p>Sustainability – Energy, Environment, Cities, Communities (SDG 7,11,13)</p> | <p>1. Energy Solutions <i>Dr. Ashish Lele, Director, CSIR-NCL</i></p> | <p>1635 In the COP-26 meeting last year, the Hon'ble PM of India made five significant promises coined as the "Panchamrit", which summarizes the country's contributions to climate action over the next 10-15 years leading to achieving net zero emissions target by 2070. While India has already made spectacular progress in increasing its RE installed capacity, the Gol has also launching new ambitious programs such as the National Green Hydrogen Mission and E-Mobility Mission which will ensure deep decarbonisation of industry and mobility sectors. CSIR forecasted the emergence of these critical areas nearly two decades ago and conceived large S&T programs that are fully aligned with the Gol's major initiatives. In this talk I will highlight a few of CSIR's success stories in developing indigenous, globally benchmarked and</p> |  | <p>Dr. Ashish Lele, took over the charge as the Director of CSIR-National Chemical Laboratory, Pune on April 2022. Initially Dr. Lele was Senior VP & Head, Advanced Materials and Alternative Energy Group at Reliance Industries Ltd. Dr. Lele completed his Chemical Engineering graduation from the Department of Chemical Technology (ICT), University of Bombay, in 1988. He obtained Ph.D. in Chemical Engineering from the University of Delaware, USA in 1993. He joined CSIR-NCL in 1993 as a scientist and set up a research group on the rheology of complex fluids, polymer dynamics, and polymer processing. He led many industry-sponsored research projects at the laboratory and carried out several product development activities. He led the efforts for developing PEM fuel cell technology in a consortium of three other CSIR laboratories and three Indian industries. Dr. Lele has authored 75 research papers in international peer-reviewed journals and 6 patents. He has supervised 17 Ph.D. theses. Dr. Lele has been the recipient of the Shanti Swarop</p> | <p>ak.lele@ncl.res.in</p> |



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| | | competitive technologies in collaboration with Indian industry partners. | | Bhatnagar Award in Engineering Sciences in 2006, Infosys prize in Engineering and Computer Science in 2012 and, the ICT Distinguished Alumnus award in 2013. Other recognitions include CSIR Young Scientist Award (1994), INSA Young Scientist Award (1996), ICT Young Scientist Award (2003). He is a fellow Indian National Science Academy, Indian Academy of Sciences, and Indian National Academy of Engineering. | |
| 2. Air Transportation- An Enabler for Economic Growth <i>Dr. Abhay Pashilkar, Director, CSIR-NAL</i> | 1652 | India is one of the fastest growing aviation market. It has been registering about 10% CAGR growth rate since the past more than a decade. This talk will explain how Government policies have set in motion this explosion in the aviation sector. The proposals and initiatives undertaken by the CSIR-National Aerospace Laboratories in the research, design and development of civil aircraft will be highlighted. Finally, the importance of the civil aviation sector to the economy of a country will be discussed. |  | Dr Abhay Anant Pashilkar has taken over as Director CSIR-NAL since September 2022. He joined the Flight Mechanics & Control Division, National Aerospace Laboratories after his M.E. from the Indian Institute of Science (IISc), Bangalore, in 1993 and B.Tech(Hons) from IIT Kharagpur both in Aerospace Engineering. Since 1993, he has worked on national projects like the LCA and SARAS. He has a Ph.D from the IISc in 2002. Pashilkar was with the NTU, Singapore for his post-doctoral fellowship from 2003 till 2005. Pashilkar was the Group Head, Flight Simulation in the division from 2008 till 2016 and its Deputy Head from 2014 till 2021. From 2018 he was heading the Systems Engineering Division of NAL and was the Program Director for Civil Aircraft Programs at CSIR-NAL. He is a recipient of the 1997 NAL Young Scientist Award, 2001 CSIR Young Scientist Award and the 2003 INAE Young Engineer Award. He coordinated the "Mirage Upgrade Project for Final Operating Clearance" which received the CSIR Technology Shield for 2019 from the Honorable President of India. He has guided 5 PhD's and has over 30 papers in National and International Journals. His areas of research include: flight dynamics modelling and simulation, parameter estimation, flight control and human factors in aviation. | director@nal.res.in |
| 3. Environmental Social Governance – An Example | 1709 | Indian Leather Sector have evolved over the years from a mere exporter of raw and semi-finished leather to value added products. The tanning industry spread in four regions of the country has started embracing cleaner technologies for addressing environmental issues. The industry at Tamil Nadu is practicing zero liquid discharge of |  | Dr B Chandrasekaran is a Leather Technologist. After his PhD in Leather Technology, he had joined CSIR-Central Leather Research Institute as a Senior Scientist in 1991. He served as the Director of the Institute during 2016-19. He is currently as CSIR-Distinguished Scientist at CSIR-CLRI. He had his career spanning in the areas of cleaner processing, Leather products design and development, Institutional networking, Strengthening Academy, | bchandrau@clri.res.in |



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| | | <p>of Leather Sector <i>Dr. B. Chandrasekaran, Distinguished Scientist, CSIR</i></p> | | <p>tannery effluents since early 2000. Regional specific cleaner technologies aiming for greener process methodologies have been developed by CSIR-CLRI and implemented over a period. CSIR-CLRI currently holds a range of eco-friendly chemicals, processes and waste management technologies for effective implementation by the Indian tanning industry.</p> <p>In the areas of leather products and foot wear, development of competencies in the areas of new design, productivity and additional employment opportunities have been witnessed over the years. Economy of scope rather than economy of scale model seem to have paid dividends. Leather product sector now employs more than 80% women workers resulting in societal empowerment.</p> | | <p>Research and Industry partnerships and International Consultancy in Organisational Development and Excellence.</p> <p>He had been the project lead from CSIR-CLRI for DPIIT, GoI programme for the Integrated Development of Leather Sector as a National Monitoring Unit as well as the Implementing Agency. His significant accomplishments are Coordinating CSIR's largest International Consultancy assignment in Ethiopia, namely, Twinning Programme for Leather Industry Development Institute with a project outlay of 5.5 million US\$ from 2012. He was also instrumental in bringing the Metal Industry Development Institute for signing a similar Twinning Agreement with 5 other CSIR Laboratories in 2018</p> | <p>bchandrau@gmail.com</p> |
| Discussions & Q&A | | | 1726 | | | | |
| 5. | <p>Industry and Infrastructure – Materials for Global Society (SDG 8,9,12)</p> | <p>1. Materials (non-conventional / secondary resources) and Applications <i>Dr. Indranil Chatteraj, Director, CSIR-NML</i></p> | 1736 | <p>Materials for global sustenance" The CSIR innovations in materials encompassing metals, alloys, composites, ceramics and other advanced materials will be elaborated. Sustainable metals processing and extractions will be discussed, with emphasis on CSIR developed protocols. The applications, wherever the same has been developed at CSIR will be presented. Techniques in reducing carbon footprints during material extraction and manufacturing vide CSIR processes will be discussed.</p> |  | <p>Dr. Indranil Chatteraj is the Director of CSIR- National Metallurgical Laboratory, based out of Jamshedpur, India. He holds a Bachelor of Technology from IIT Kanpur, India (1985) in Metallurgical Engineering and a Master of Science followed by Doctors of Philosophy in Metallurgical Engineering from the Ohio State University, USA (1987, 1991). He is also the Theme director of the CSIR theme "Mining, Minerals, Metals & Materials", guiding and coordinating efforts of the 37 CSIR Institutes in this domain. Dr. Chatteraj is a recipient of several prestigious awards and fellowships namely the Fellow of Indian National Academy of Engineers, November 2017; "Meritorius contribution in research & education" by National Association of Corrosion Engineers – India, 2014; "Metallurgist of the Year" Award (for Metal Sciences) by Ministry of Steel, Govt. of India, 2011; Discussion Leader on Hydrogen in Structural Metals at the Gordon Research Conference, Italy, 2009; "Corrosion Awareness Award" by National</p> | <p>ichatt@nmlindia.org</p> |



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| | | | | | <p>Association of Corrosion Engineers – India Section, 2008; CSIR-DAAD Fellowship in 2002, to IFW, Dresden, Germany; “Young Scientist Award” in Engineering Sciences from CSIR, 1997;. He has also authored / co-authored more than 100 papers in Journals and Proceedings and has delivered more than 40 invited talks. He is a holder of 3 Copyrights and a Patent; has guided 5 Ph.Ds and 5 M.Techs and has carried out more than 60 research projects and programmes at National and International level.</p> |
| <p>2. Infrastructure <i>Dr. N. Anandavalli, Director, CSIR-SERC</i></p> | 1753 | |  | <p>Dr. N. Anandavalli is presently the Director, CSIR - Structural Engineering Research Centre, Chennai. She completed her graduation from University of Madras in 1991 with University first rank and won "The Rao Bahadur S.Subbarayachariyar Gold Medal". She received Ministry of Human Resources Scholarship for pursuing her post graduate studies at PSG College of Technology, Coimbatore (1991-1993), where she was ranked first. She received the CSIR-JRF and SRF fellowship during 1993 - 1996. After working for a brief period in design consultancy firms, she joined CSIR-SERC as Scientist in 1998.</p> <p>Her research interests include blast response behaviour of structures, computational methods, sustainable materials and multi-scale modelling of composite materials.</p> <p>She has one US patent and Indian patent granted on 'Laced Composite System' based on her work. She is Member of BIS committee - CED 39 - 39.2 (sub) - Blast Resistant Design of Structures and BIS committee - CED 38 Special Structures Sectional Committee. She has mentored many graduate and post-graduate students from various engineering colleges and universities. She is guiding few Ph. D. students for their doctoral work.</p> <p>In addition to her role as Director, CSIR-SERC, she is the co-ordinating director for CSIR Madras Complex consisting of regional units of 5 CSIR laboratories. She is also leading the Civil, Infrastructure and Engineering Theme of CSIR as the Theme Director and functioning as the Director of Engineering Coordination of CSIR. She has been nominated as a member to the Planning Board of Bharathidasan University and Syndicate member of Madras University.</p> | <p>director@serc.res.in</p> |



| Discussions & Q&A | | 1811 | | | | |
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| Concluding Session | <p>Moderator – Dr. K.J. Sreeram, Director, CSIR-CLRI</p> <p>Panel</p> <ol style="list-style-type: none"> Dr Ram Vishwakarma, Distinguished Scientist, CSIR Dr. Suddhasatwa Basu, Director, CSIR-IMMT Dr. V. M. Tiwari, Director, CSIR-NGRI Mr. Declan Kirrane (TBC), Chair SSUNGA77 Dr. Dhananjay | 1821 | Dr. K.J. Sreeram, would be moderating the session discussing about |  | <p>Moderator – Dr. K.J. Sreeram, Director, CSIR-CLRI</p> <p>A leather technologist by training, Dr KJ Sreeram specialises in sustainable manufacturing and alignment of leather industry to SDG. He is currently the Director of CSIR-CLRI with additional charge of CSIR-CECRI. He is also theme Director of CSIR-Chemicals (including leather) and Petrochemicals. Dr Sreeram has made important contributions to the Green Chemistry of Chromium, that has opened up new paths for better industrial management of this metal ion at the global level. These contributions have led to his becoming the first researcher with a degree in leather technology from Anna University to receive the CSIR Young Scientist Award in 2004. Dr Sreeram has also contributed immensely to the development of environmentally benign and cool pigments from rare earth metal ions, as a replacement to the pigments based on toxic metal ions such as chromium, lead, mercury etc. He is also credited with commercially successful technologies for the avoidance of formaldehyde in tanning agents. During the last five years, in order to exploit the advantages of nanoscience for developing materials with unique applications, Dr Sreeram has developed a range of functionalized metal and metal oxide nanoparticles with potential applications in crosslinking of proteins, a work which led his being recognized by the International Union of Leather Technologists and Chemists Societies, with the International Union of Research Award. In his role as the Director of CSIR-CLRI, he is also the Chairman of the CHD-17 of the Bureau of Indian Standards and member of the Council of Administration, SITRA Coimbatore and the Governing Council of FDDI.</p> <p>PANEL</p> <p>Dr. Ram Vishwakarma, Distinguished Scientist, CSIR</p> <p>Prof. Ram Vishwakarma is with the Council of Scientific & Industrial Research (CSIR) as a Distinguished Scientist, after having served as the Director of CSIR-Indian Institute of Integrative Medicine, Jammu (2009-2020). Prior to joining CSIR, he served as</p> | <p>kjsreeram@clri.res.in</p> |
| | | | | |  | <p>ram.vishwakarma@csir.res.in</p> |



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Tiary,
Science
Counsellor,
Embassy of
India, USA
(TBC)
6. Dr. Rama
Swami
Bansal,
Head,
ISTAD,
CSIR



a Vice-President & Head of Medicinal Chemistry at Piramal Healthcare, Mumbai (2005-2009), and Staff-Scientist at National Institute of Immunology, New Delhi (1993-2005). He did his Ph.D. (medicinal chemistry) from CSIR-CDRI, Lucknow and Post-doctoral (biosynthesis of Cynocobalamin / Vitamin B 12 and Hemoglobin) from the Cambridge University. He has core expertise in drug discovery, chemical-biology, glycobiology, preclinical/clinical development with over 350 original publications, 75 patents, and several IND drug candidates to his credit; conceptualized/contributed to societal / therapeutic / industry mission projects; received multiple recognitions including the election to the Fellowship of the National Academy of Sciences of India, and Sun-Pharma (Ranbaxy) Research Award for pharmaceutical sciences.

Dr. Suddhasatwa Basu, Director, CSIR-IMMT

Prof. Suddhasatwa Basu completed Ph.D/MS in Chemical Engineering from Indian Institute of Science, Bangalore. Prior to taking over as the Director of CSIR-Institute of Minerals & Materials Technology, Bhubaneswar, he was Professor and Head of Chemical Engineering Department, IIT Delhi. At present, he is also the Director (additional charge) of CSIR-Central Institute of Mining and Fuel Research, Dhanbad. He has vast work experience on development of materials for energy conversion and storage devices, e.g., Fuel Cells, Supercapacitor and Battery, Electrolyser for Hydrogen generation by Water Splitting and CO₂ Reduction to Organics. He has published more than 235 articles in high impact journals with H-index 40, 13 patents and 2 technologies transferred to various industries. He is a Fellow of National Academy of Science of India, Indian National Academy of Engineering, Royal Society of Chemistry UK and received Herdillia Award, Dr A. V. Rama Rao Foundation's Research Award. He is listed among top 2% percentages of most influential scientists of world by the Stanford University in 2020. He is Editor/Assoc Editor/Ed Board member of several international journals published by Willey, Springer, Oxford Press and ACS.

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Dr. V. M. Tiwari, Director, CSIR-NGRI

Dr. Virendra M. Tiwari obtained his post-graduate degree in Geophysics from Banaras Hindu University (BHU), Varanasi. He took up a scientific career at CSIR-National Geophysical Research Institute (CSIR-NGRI), after receiving a PhD in Geophysics from NGRI-BHU. He has worked as Post-Doctoral Researcher at the IGP, Paris, France and LAGOS-CNES, Toulouse, France and as Visiting Scientist at the GEOMAR/CU Kiel, Germany and CU, Boulder, USA.

His academic excellence has been recognized by National Merit Scholarship; ONGC-AEG Best Thesis Award; Young Scientist Awards from INSA, CSIR, UP S&T; Krishnan Gold Medal by IGU, National Mineral Award by Ministry of Mines, GoI, to name a few. With well recognized scientific contributions, Dr Tiwari is an elected Fellow of the Indian National Science Academy, National Academy of Sciences India, Indian Academy of Sciences and Telangana Academy of Sciences. He is a recipient of the SERB J C Bose Fellowship. He is also a member of several national and international committees.

His research focuses on deciphering the mass distribution and mass transport related to the geophysical phenomenon on surface and at depth in the Earth. Besides well cited research papers in leading journals; he has contributed significantly to the important R&D projects for the groundwater and the Oil and Mineral Industries in India.

virendra.m.tiwari@gmail.com

*Mr. Declan Kirrane (TBC), Chair SSUNGA77
PR to UN (TBC)*

Dr. Dhananjay Tiwary, Science Counsellor, Embassy of India, USA (TBC)



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Dr. Rama Swami Bansal, Head, ISTAD, CSIR

Dr. Rama Swami Bansal joined the Council of Scientific & Industrial Research (CSIR), Ministry of Science & Technology, Government of India in 1997. She is the Head of the International S&T Affairs Directorate (ISTAD) of the CSIR. She has been fostering S&T Cooperation of CSIR institutes with their partners abroad and has successfully launched several cooperation programmes. Dr Bansal is assisting Director General of CSIR in promoting specific international networking. She has a rich experience of nearly 30 years in management of International S&T Cooperation and Coordination of International Bilateral and Multilateral programmes. earlier at Department of Science & Technology, in CSIR and also as an S&T Counselor and Head of the Science & Technology Wing of the Embassy of India in Moscow, Russia during June 2011 to June 2015.

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