



ISSN 0409-7467



# CSIR News

NEWSLETTER OF THE COUNCIL OF SCIENTIFIC & INDUSTRIAL RESEARCH

Volume 72 No. 12

website: <http://www.csir.res.in>

December 2022

## In The News

### CSIR Scientist wins National Award for Empowerment of Persons with Disabilities (Divyangjan)-2022



Hon'ble President of India, Smt. Draupadi Murmu, conferring the award to Dr Botre

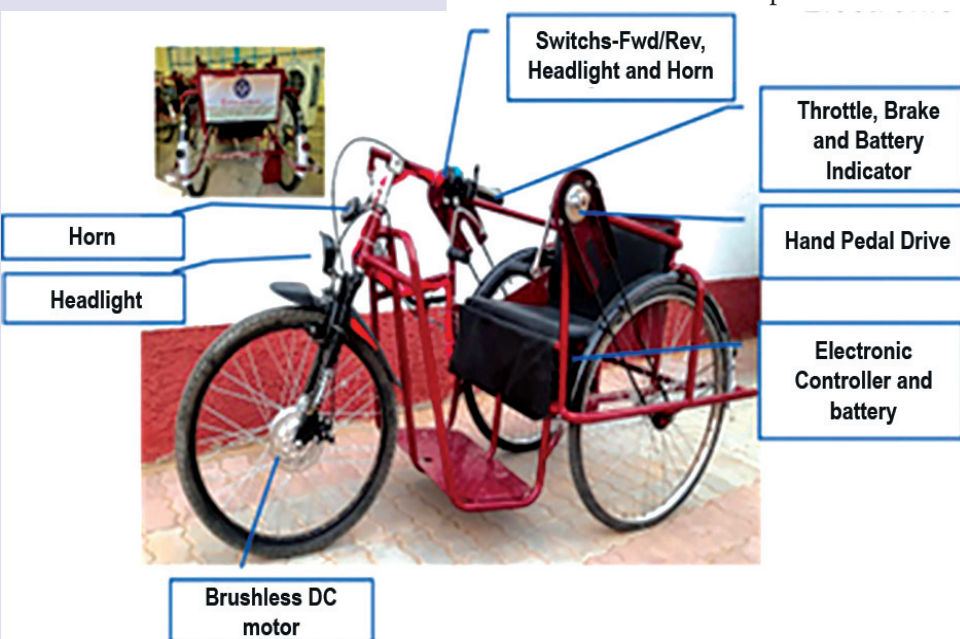
**Dr Bhausaheb** Ashok Botre, Principal Scientist, CSIR-CEERI was awarded the National Award 2022 on 3 December 2022 for his remarkable research work for the empowerment of Persons

with Disabilities. This award was presented to Dr Botre by Her Excellency President Smt. Draupadi Murmu at a grand function organised by the Ministry of Social Justice and

Empowerment at Vigyan Bhawan, New Delhi on the occasion of International Day of Disabled 2022 for the development of "E-assist trike" developed at CSIR-CEERI by his project team.

Dr Botre has been given this award for individual excellence in the year 2022 in the category "Best Research Innovation Product Development in the field of Empowerment of Persons with Disabilities". Social Justice and Empowerment Minister, Dr Virendra Kumar and Ministers of State Shri Ramdas Athawale and Smt. Pratima Bhaumik were present during the award ceremony. The President lauded Dr Botre and team CSIR-CEERI for this research and development work.

and hand paddling, i.e., this tricycle can be driven both electronically and manually. Apart from roads, it is also capable of working on flyovers and hilly areas. It has a maximum speed of 20 km/h in forward and a maximum speed of 7 km/h in reverse direction. Its field trials have also been successfully carried out and necessary improvements will be made according to the feedback received.



Electric-assisted tricycle

Dr P.C. Panchariya, Director, CSIR-CEERI extended hearty congratulations and best wishes to Dr Botre for this distinguished achievement.

The e-assist tricycle designed for the disabled includes an advanced electronic controller with 250W, 24V capacity, wheel hub BLDC motor, high precision brake circuit, and precisely controlled electronic power and speed. It is equipped with electronic power-controlled motor

The following projects were successfully carried out under different funding schemes of Govt of India for the indigenous technology development of the advanced electronic controller and motor for the E-assist Trike for Divyang people:

1. CSIR mission project titled "Advanced closed-loop control system to improve battery performance in E-assist Tricycle for outdoor mobility of differently-abled persons" project duration 2020–2023.
2. DST/SEED project titled "Design and development of power assistive hybrid e-trike for differently-abled persons in rural and urban regions of India", duration 2018–2021.
3. CSIR-CEERI in-house project "Development of 25 E-assist Tricycles as prototyping and batch processing" duration August 2021 December 2022.

## Ladakh Lt Governor visits CCMB



Hon'ble Lt Governor of Ladakh, Shri R.K. Mathur in conversation with CCMB scientist on pashmina wool testing

The Hon'ble Lt Governor of Ladakh, Shri Radha Krishna Mathur visited CSIR-Centre for Cellular and Molecular Biology (CSIR-CCMB), Hyderabad, on 14 December 2022. During his visit, he visited some of the cutting-edge microscopy and genomics facilities at the institute. He learned about the research capabilities of CCMB and the various contributions the institute has made to society. This include DNA fingerprinting, wildlife conservation, improved rice varieties, and COVID-19 mitigation efforts across CSIR, in addition to the various training programmes and entrepreneurial ventures at CCMB.

A large part of the discussion was around how Pashmina wool, famed for its quality and obtained from Changthangi goats across Ladakh, especially Changthang, is often adulterated with

other forms of wool. CCMB is working to develop technologies to identify the animal origins of many kinds of wool sold in India. Shri Mathur suggested that the technologies should be certified and developed for site usage. He said this will be useful for domestic and international customers. He also assured of helping CCMB in procuring authentic samples of different kinds of wool from different parts of Ladakh, of goats of different ages.

CCMB Director, Dr Vinay K Nandicoori said, "We are working on finding a reliable and affordable technique to differentiate between different kinds of wool. Lt Governor's help in procuring appropriate and reliable sources of wool will be immensely valuable as testing standards for us."

Shri Radha Krishna Mathur assured of helping CCMB in procuring authentic samples of different kinds of wool from different parts of Ladakh, of goats of different ages.

## IoT-enabled Handheld Colposcope System for Cervix Condition Analysis and Cervical Cancer Screening



Technology being transferred to M/s Divine Meditech

India is among the top countries that reports the highest number of cervical cancer cases every year. Colposcopy is a medical procedure which needs to be carried out to diagnose cervix conditions and also to diagnose cervical cancer. Colposcope is an instrument that allows gynaecologists to perform colposcopy procedures. India imports a huge number of colposcope devices every year from different western countries.

The CSIR-CEERI team has now developed an indigenous IoT-enabled handheld colposcope system for cervix condition analysis and also for cervical cancer screening under the Make in India medical mission project sponsored by CSIR. The developed colposcope system is cost-effective and has state-of-the-art features like connectivity

to a smartphone-based app for quick data visualisation and analysis, cloud connectivity for direct communication between patients and doctors, software-based decision support to predict cervical cancer and on-device rechargeable battery support for continuous operation in rural camps. The developed system has been deployed at various hospitals for intensive testing and validation purpose.

The technology has been commercialised to M/s Divine Meditech, Noida on 7 October 2022 for mass production and also for launching this technology in the Indian market. The company will bring the indigenous Make in India technology into the market in the next 3-6 months.

## CDRI Scientist Dr Dipak Datta and team find new option to tackle Triple-Negative Breast Cancer (TNBC) metastasis

*Research findings would be helpful for targeted therapy of TNBC*

India is known as the Triple-Negative Breast Cancer (TNBC) capital of the world owing to its high incidence. TNBC is the deadliest amongst all breast cancer subtypes with few therapeutic options. This type of cancer is associated with early metastasis resulting in poor five-year survival rates.

Dr Dipak Datta's research group at CSIR-CDRI has recently published an article in a peer-reviewed international journal, *Nature Communications* 13, 7344 (2022), that uncovers new functions for epigenetic modulator EZH2 (Enhancer of Zeste homolog 2) in the spread (metastasis) of TNBC (An epigenetic modulator regulates whether a gene will be expressed or not). Using an inhibitor of EZH2, Tazemetostat, Dr Datta and the team have demonstrated a new and interesting mechanism for EZH2-mediated gene upregulation that can dictate TNBC progression. In contrast to its classical role in suppressing gene expression, the team found that EZH2 can mediate the overexpression of specific genes, promoting the spread of cancer from the breast to the liver and spleen in animal models of TNBC. These findings suggest a rationale for targeting TNBC with EZH2 inhibitors.

Considering annual incidence, breast cancer now ranks first among Indian women. It is a very heterogeneous disease with multiple subtypes. The

incidence of TNBC is higher (18-31%) in India compared to other regions of the world (8-15%). These figures are alarming. The high rate of TNBC in India is linked to several risk factors, the most important of which are lifestyle changes, obesity, a family history of the disease, a high mitotic index, and BRCA1 gene mutations. Another important aspect is that TNBC is more prevalent among younger women. It is very aggressive, and metastasises early with a high recurrence rate and poor five-year survival rates.

The presence of three different hormone/growth factor receptors (viz., Estrogen Receptor or ER, Progesterone Receptor or PR and Human Epidermal Growth Factor Receptor 2 or HER2) majorly determine breast cancer subtypes and treatment modalities. Anti-hormone/HER2 therapies work in most of such cases, however, there is another subtype, that lacks the overexpression of all three receptors, known as Triple Negative Breast Cancer or TNBC. TNBC is the deadliest among all breast cancer subtypes as conventional targeted therapies do not work. Further, rather, unfortunately, India is known to be the TNBC capital of the world due to its highest incidence.

Metastasis or tumour spread to distant organs is responsible for 90% of patient mortality and morbidity. TNBC metastasizes or spreads faster than other



Dr Dipak Datta's research group at CSIR-CDRI uncovers new functions for epigenetic modulator EZH2 (Enhancer of Zeste homolog 2) in the spread (metastasis) of TNBC (Triple-negative breast cancer).

The current study discovers one of the therapeutic vulnerabilities of TNBC which is the functional hyperactivation of epigenetic modulator EZH2 that regulates TNBC spread from the breast to the liver and spleen.

breast cancer subtypes resulting in a poor 5-year survival rate, following diagnosis. We do not know much about the molecular details of how TNBC metastasizes.

In this study, we set out to identify the molecular processes that are responsible for the spread of TNBC. Our studies reveal that hyperactivation of EZH2 is critical in the spread from the breast to the liver and spleen (peritoneal metastasis). Mechanistically, we have found that instead of the classical suppressive function, EZH2 functional activation can promote specific gene expression, like KRT14 to govern the TNBC peritoneal metastasis. Finally, we identify that the EZH2 inhibitor drug Tazemetostat (EPZ6438) can be a promising therapeutic option against the most aggressive TNBC, where targeted therapy is still an enigma.

Unlike other types of cancer for which therapies that specifically target the mutated pathways exist (targeted therapies), for TNBC, routine chemotherapy is the only treatment option. Such therapies are associated with a number of side effects such as tiredness, hair loss, anaemia etc. Moreover, in a majority of the cases, it fails to deliver long-term benefits to the patients. Therefore, there is a dire need for the discovery of a targeted therapy against this deadly breast cancer subtype.

The current study discovers one of the therapeutic vulnerabilities of TNBC which is the functional hyperactivation

of epigenetic modulator EZH2 that regulates TNBC spread from the breast to the liver and spleen. Therefore, inhibition of EZH2 function by FDA approved EZH2 inhibitor drug Tazemetostat (EPZ6438) could be a viable option to tackle TNBC metastasis in the clinic.

The major study findings are based on preclinical animal models of TNBC where researchers determine the spread of tumour cells from the primary tumour site to the distant secondary organs by using live animal imaging. Overall, cutting-edge and state-of-the-art biological techniques are used to draw the conclusions of the paper.

Understanding the therapeutic vulnerabilities of TNBC and the development of new targeted therapies against TNBC is the need of the hour considering its high Indian prevalence. Our study suggests a strong rationale for the development of EZH2 inhibitors as potential drug candidates to prevent metastasis in patients with TNBC. It also reiterates strongly that we need to find more ways to manage this deadly disease as the TNBC burden is rising in India as well as globally.

### Reference

Verma, A., Singh, A., Singh, M.P. et al. EZH2-H3K27me3 mediated KRT14 upregulation promotes TNBC peritoneal metastasis. *Nat Commun* 13, 7344 (2022). <https://doi.org/10.1038/s41467-022-35059-x>

## Successful Breeding of Mouse Deer

### *Discovering pheromones and postpartum estrus*

Mouse deer or Indian chevrotain plays a major role in the forest ecosystem as a seed disperser and forms important prey for many small and large carnivores. Though it is commonly found in

most forested areas, it has been listed in Schedule I and endangered in the Wildlife Protection Act (1972) due to frequent hunting for their bushmeat. A conservation breeding and species



recovery programme of mouse deer was initiated in 2010 by the Nehru Zoological Park in collaboration with the Laboratory for the Conservation of Endangered Species (LaCONES) at CSIR-Centre for Cellular and Molecular Biology (CSIR-CCMB), Hyderabad, with support from Central Zoo Authority. The programme started with 6 individuals (2 males and 4 females) and aimed to increase their numbers in captivity and reintroduce them into the wild.

As part of the conservation breeding programme, Dr G. Umapathy's group at LaCONES-CCMB studied the reproductive behaviour of mouse deer in captivity. They discovered the occurrence of novel post-partum estrus (the phase where the animal is ready to mate). They found that the female mouse deer shows estrus and mates within 4-6 hr of delivery. This is the shortest post-partum estrus observed so far among large mammals. This finding led to a further study on understanding the reproductive physiology of the mouse deer using non-invasive methods. While analysing the hormone profiles, they discovered 16-androstenes sex pheromones (androsthenone and androstanol) in mouse deer which have been previously reported to play a major role in the reproduction of pigs. The scientists examined the molecular

characteristics of these pheromones, their synthesis pathway and their functions in mouse deer reproduction.

"We found that pheromone levels were significantly elevated in the female mouse deers during delivery, post-partum estrus and mating. We also found a positive correlation between pheromones and estrogens one week prior to post-partum estrus and mating. These findings suggest these pheromones play a role in the reproduction of mouse deer by bringing opposite sexes together for mating in the wild as they live solitary life. Our findings have already helped in the breeding of mouse deer at Nehru Zoological park but will also help other Indian zoos and elsewhere," said Dr Umapathy.

These findings were recently published in the journal *Cells*.

### Reference

Kumar, V.; Manu, S.; Caroline, K.; Sekhar, A.; Mamta, S.-K.; Sandeep, M.; Wasimuddin; Senthilkumaran, B.; Umapathy, G. Discovery of 16-Androstenes (Androstenone and Androstenol), Their Synthesis Pathway, and Possible Role in Reproduction of Mouse Deer (*Moschiola indica*). *Cells* 2022, 11, 3837. <https://doi.org/10.3390/cells11233837>

<https://www.mdpi.com/2073-4409/11/23/3837>

The findings have already helped in the breeding of mouse deer at Nehru Zoological park but will also help other Indian zoos and elsewhere, said Dr Umapathy.

## CSIR-NIScPR in association with ICMR Organises Contact Session on Health Communication



A glimpse of the Inaugural function of the Contact Session on Health Communication organised by CSIR-NIScPR in association with ICMR (R-L): Dr Rajni Kant, Scientist-G, ICMR, Prof. Ranjana Aggarwal, Director, CSIR-NIScPR & Dr Manish Mohan Gore, Scientist, CSIR-NIScPR

“If scientists don’t communicate, non-experts will start communicating and then the cloud of misinformation and disinformation would emerge,” said Prof. Ranjana Aggarwal, Director, CSIR-NIScPR (CSIR-National Institute of Science Communication & Policy Research), New Delhi, during the inauguration of the ‘Contact Session on Health Communication’ organised by CSIR-NIScPR in association with ICMR (Indian Council of Medical Research) on 16 November 2022.

She further said, “It is essential to encourage our scientists to get

involved in the significant job of science communication. We learnt a lot of lessons from the COVID-19 pandemic in the recent past and we saw how science communication played a very crucial role to eradicate unscientific notions during those days of uncertainty.” The programme was attended by 30 scientists from various laboratories of ICMR.

Dr Rajni Kant, Scientist-G & Director, ICMR-Regional Medical Research Centre, Gorakhpur, was the Guest of Honour of the programme. During the inaugural function, Dr Kant said that these are ‘Super 30’ scientists



Participating scientists of ICMR attending the Contact Session at CSIR-NIScPR

from ICMR laboratories and I am sure they will become proficient science communicators after this course of science communication. He further said that ICMR has initiated such a course on Health Communication for the first time and it is the need of the hour.

In the first Technical Session at CSIR-NIScPR, four experts delivered lectures on various topics of concern. Shri R.S. Jayasomu, Chief Scientist, CSIR-NIScPR delivered a lecture on “Research Communication vs. Science Communication: Need of the Hour”. This was followed by a talk by Dr Y. Madhavi, Chief Scientist, CSIR-NIScPR on “Health Communication in Post COVID Era”. Dr Manish Mohan Gore, Scientist, CSIR-NIScPR presented his talk on “Popular Science Writing for Different Media”. Shri Ashwani Brahmi, Principal Technical Officer, CSIR-NIScPR, discussed the know-how of production and printing in science communication with the participating scientists of ICMR.

After the first technical session, all the participants visited the scientific facilities of CSIR-NIScPR such as printing machines, AyurVatika of medicinal plants and the Herbarium of raw materials based on plants, animals and minerals.



During the second Technical Session, three experts delivered lectures. Senior Science Communicator and Photo journalist Shri Pallav Bagla interacted with participants on “Clever ways of communicating science”. Dr Paramananda Barman, Scientist, CSIR-NIScPR, presented his talk on “SVASTIK and its Media Coverage Insights” focused on the scientific validation of Indian traditional knowledge. Later, Dr Meher Wan, Scientist, CSIR-NIScPR, delivered his talk on “How to communicate your research to the general public”.

At the end of the programme, Dr Enna Dogra and Dr Priya, Scientists

of ICMR coordinated the feedback and takeaway session. Dr Manish Mohan Gore, Scientist, CSIR-NIScPR, proposed the vote of thanks.

CSIR-NIScPR is one of the constituent laboratories of CSIR with the two key mandates of STI-based policy studies research and science

communication. NIScPR brings out 16 peer-reviewed open access journals in various prominent disciplines of S&T. Besides, also publishes three popular science magazines — *Science Reporter* (in English), *Vigyan Pragati* (in Hindi) and *Science ki Duniya* (in Urdu).

## International Knowledge Sharing Workshop Coordinated by CSIR-HRDC



“International Knowledge Sharing was jointly organised during 14-15 Workshop on Cross-border Innovation, November 2022 by CSIR & DSIR, Acceleration and Challenges in Ministry of Science & Technology, International Transfer of Technologies” India in association with Asian



and Pacific Centre for Transfer of Technology (APCTT) of the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP). CSIR-HRDC coordinated the workshop on behalf of CSIR at the CSIR Science Centre, Lodhi Road, New Delhi.

Of 350 participants registered for the programme, 36 were international participants from 17 countries — Bangladesh, Cambodia, Iran (Islamic Republic of), Indonesia, Jordan, Lebanon, Malaysia, Nepal, Pakistan, Philippines, Republic of Korea, Sri Lanka, Thailand, Trinidad & Tobago, Uzbekistan who joined both online & offline. Around 70 participants joined physically.

Panellists were from International Organisations including FAO, ILRI, ISA, DWIH, UKRI, and RIS; Indian National Organisations like CSIR, IITD, and SPMVV, Government departments including Office of PSA, MoE Innovation Cell, Public sectors like NRDC, Industries such as International Tractors, IOCL, TATA Power Company Limited, Ankur seeds and Mahyco Pvt. Ltd.; Innovation eco-system partners like Research Parks, Incubation Centres, and Start-ups.

The Workshop was inaugurated online by Dr N. Kalaiselvi, Director General, CSIR & Secretary, DSIR. Dr Parvinder Maini, Scientific Secretary, Office of Principal Scientific Advisor, Govt of India; Shri Surinder Pal Singh, JS, DSIR, Dr Ajay Mathur, DG, International Solar Alliances, Dr Katja Lasch, Director, DAAD Regional Office and DWIH, New Delhi; Ms Rebecca Fairbairn, Head of Science and Innovation, UK Research & Innovation (UKRI), UK Government; Dr Habibar Rahman, International Livestock Research Institute (ILRI) Regional Representative, South Asia; Prof. Jamuna Duvvuru, Vice Chancellor, Sri Padmavati Mahila University, Tirupati, Dr Bhaskar Balakrishnan, Former Ambassador of India & Science Diplomacy Fellow, Research and Information System for Developing Countries (RIS), New Delhi, Dr Preeti Soni, Head of APCTT-ESCAP, Dr Rama Swami Bansal, Head of CSIR-International S&T Affairs Directorate (ISTAD) and Dr R.K. Sinha, Head of CSIR-HRDC also graced the occasion in person.

CSIR has been instrumental in developing technologies and transferring them to the industry.

## Training Programme on Groundwater Exploration Techniques at CSIR-NGRI



CSIR-NGRI, Hyderabad organised a training programme on Groundwater Exploration Techniques (GET) during 10-21 October 2022 which was attended by 15 participants. The course was coordinated by Dr Ratnakar Dhakate and Dr Tanvi Arora. During the course, Data Acquisition, Processing and Interpretation of Control Source Methods including Electrical Method [Vertical Electrical Sounding (VES), Electrical Resistivity

Tomography (ERT), Self-Potential (SP)], Natural Source Methods including Electromagnetic Method (EM) and Ground Penetrating Radar (GPR) were taught in detail.

Fieldwork was conducted during the training programme at Maulana Azad National Urdu University (MANUU), Hyderabad campus for carrying out geophysical investigation for groundwater exploration.

## CSIR-NIScPR Celebrates Communal Harmony Week and Flag Day 2022

*Special talk on “Conflicts and Resolutions, Indian Experiences”.*



Shri RKS Roshan, CoA, CSIR-NIScPR, delivering a talk on ‘Conflicts & Resolutions’;  
Shri HJ Khan, Chief Scientist chaired the session

CSIR-National Institute of Science Communication & Policy Research (CSIR-NIScPR), New Delhi celebrated the Communal Harmony Campaign Week which started on 19 November 2022 and culminated with the Flag Day on 25 November 2022. CSIR-NIScPR organised various activities to celebrate the event.

During the Communal Harmony Week, posters for awareness were displayed on both the campuses of CSIR-NIScPR. Besides, a special talk on “Conflicts and Resolutions, Indian Experiences” was also delivered by Shri R.K.S. Roushan, Controller of Administration, CSIR-NIScPR, on 24 November 2022.

He enlightened the audience with information about the various conflicts in India from historical times till those of the present with the ways they have been resolved. Shri Hasan Jawed Khan, Chief Scientist, CSIR-NIScPR, Chaired the session.

The programme began with a brief by Shri Anil Kumar, Technical Assistant, CSIR-NIScPR on the National Foundation for Communal Harmony (NFCH) and ended with a vote of thanks by Shri Rajiv Kumar, Assistant Section Officer, CSIR-NIScPR. Several staff members and students of the Academy of Scientific and Innovative Research (AcSIR) attended the programme which was also streamed online via MS Teams.

## Birth Centenary Celebrations of Prof. G.S. Ramaswamy



The Birth Centenary of Prof. G.S. Ramaswamy was celebrated with great enthusiasm on 3 October 2022, at the CSIR Campus in Taramani, Chennai, by CSIR-Structural Engineering Research Centre (CSIR-SERC).

The Birth Centenary function was presided over by Dr N. Anandavalli, Director, CSIR-SERC and Coordinating Director, CMC. A customary shawl was presented by Dr J. Rajasankar, Chief Scientist, to the chief guest of the day, Shri Zacharia George, Former Scientist, CSIR-SERC and Principal Structural Consultant, M/s. Pithavadian and

Partners. Also the guest of honour, Dr S. Rajasekaran was welcomed customarily by Dr G.S. Palani, Chief Scientist.

In her address, Dr Anandavalli welcomed the invitees and all the attendees, especially from neighbouring organisations such as Dr Narayanan, Dr Goswami, Dr C.V.R. Murthy, and Professor Sekar retired scientists of CSIR-SERC. She then welcomed the first woman Director General of CSIR & Secretary DSIR, Dr N. Kalaiselvi who could not attend the celebrations due to previous engagements.



Further in her talk, the Director pointed out that civil engineering is all about planning, teamwork, experience and preparing for the unexpected. Structural engineering is the art of using materials that have properties widely which can only be estimated to build a real structure that can only be approximately analyzed to withstand forces that are not accurately known. Also, structural engineering deals with the application of scientific knowledge to develop and improve infrastructures such as buildings, bridges, roads, railways and common utilities. Therefore, the role of a structural engineer exists in

every walk of life and infrastructure is the backbone of any nation and thus should be environmentally friendly and economical.

She also welcomed Shri Vasanth the nephew of Dr G.S.Ramaswamy as a representative member of Dr Ramaswamy's family. Dr Anandavalli then briefly talked about the far-sighted vision of Dr Ramaswamy which led to the establishment of CSIR-SERC as a national laboratory on 10 June 1965. She then touched upon the path taken by Dr Ramaswamy from his education to his professional achievements. Dr Anandavalli also highlighted the

Dr N. Kalaiselvi in her virtual address highlighted the example set by Dr Ramaswamy as a legendary leader in pursuing his passion for research and writing even to his days. She drew parallels of his work to John B. Goodenough, a world-class physicist and chemist and stressed that the work and passion of such legends should serve as an example for all.

passion of Dr Ramaswamy for the design and analysis of funicular shells, stating that “you could not separate GSR and shells”. The work done by Dr Ramaswamy culminated in him authoring several books and the accolades received, she said, were commendable.

Next Dr Ramaswamy’s contribution towards grip bars along with Shri Zacharia was highlighted, the technology which was later commercialised by TATA Iron and Steel company. Dr Anandavalli stated that Dr Ramaswamy was also responsible for the establishment of many testing facilities on this campus, such as TTRS, FFL, etc., which is a result of his far-sightedness. She then read the felicitation messages sent by Professor Prem Krishna, Dr Bhandari and Dr Nagesh R. Iyer for the inaugural function of the yearlong birth centenary celebrations of Dr G.S. Ramaswamy.

A special message was sent by Dr Kalaiselvi for the occasion which was broadcast virtually. Dr N. Kalaiselvi, Director General, CSIR and Secretary DSIR’s virtual address highlighted the example set by Dr Ramaswamy as a legendary leader in pursuing his passion for research and writing even to his days. She drew parallels of his work to John B. Goodenough, a world-class physicist and chemist who is credited for the identification and initial development of the first lithium-ion (Li-ion) batteries and later on a new, ultra-efficient, low-cost battery that uses sodium or lithium-coated glass electrolyte at the age of 94. She stressed that the work and passion of such legends should serve as an example for all.

Dr J. Rajasankar, Chief Scientist & Head, SHRDD, introduced the chief guest, Shri Zacharia George to the audience. Shri Zacharia George, in his talk, touched upon his work and collaboration under Prof. G.S. Ramaswamy and Professor GSR’s passion

for shell structures. He further elaborated on some of the projects that were carried out by him under the guidance of Prof GSR such as the Ambala military housing project for 1500 houses, temple structures, the patented grip bar work, etc. He reiterated that when “it comes to design and construction you have to be specific to the region in which you are not only country but the region”. Also, he said that “you can adopt any material to any specification of any country but when it comes to the question of design and construction you have to follow the Indian code..., particularly the structures section”. He concluded by briefly talking about his work at CSIR-SERC and other organisations.

Dr G.S. Palani, Chief Scientist, introduced the guest of honour, Prof. S. Rajasekaran, former Professor of Civil Engineering, PSG College of Technology, Coimbatore. Prof. S. Rajasekaran in his Birth Centenary address declared that Professor G.S. Ramaswamy was “the greatest engineer cum scientist cum administrator” and he was proud to have been associated with him. He spoke briefly about the work and interactions he had with Professor GSR and other notable scientists from the field of civil and structural engineering such as Clough, Penzien, Timoshenko, etc. Finally, he stated that he would like to see at least or more than 2% of scientists from CSIR-SERC among the high-ranking structural engineers of the world.

Names of octogenarian members of CSIR-SERC and CMC were read out as they could not make it to the function. Dr Anandavalli then presented mementoes to the chief guest and guest of honour.

Dr K. Sathish Kumar, Chief Scientist & Head, BKMD, proposed a vote of thanks at the end of the function.

## Dr N. Kalaiselvi, DG, CSIR, virtually Inaugurates Badminton Court at CSIR-NGRI



वै.औ.अ.प. राष्ट्रीय भूभौतिकीय अनुसंधान संस्थान  
बैडमिंटन कोर्ट (काठ) का उद्घाटन

**डॉ. एन. कलैसेल्वी**

महानिदेशक, वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद् और  
सचिव, वैज्ञानिक तथा औद्योगिक अनुसंधान विभाग

द्वारा 04 नवंबर 2022 को किया गया

डॉ.वी.म. तिवारी  
निदेशक

**CSIR-National Geophysical Research Institute**  
Badminton Court (Wooden)

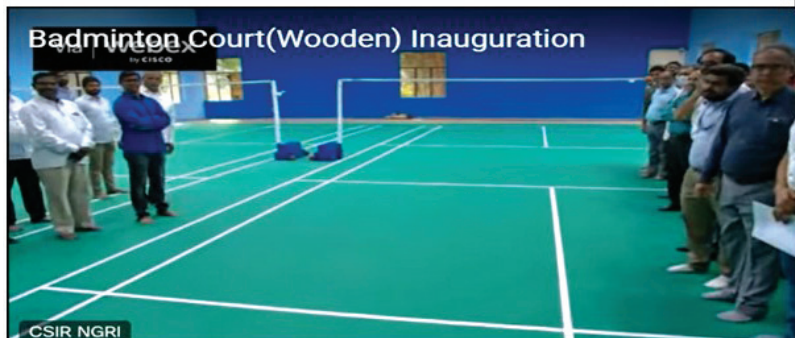
Inaugurated by

**Dr. N. Kalaiselvi**

Director General, Council of Scientific and Industrial Research and  
Secretary, Department of Scientific and Industrial Research, New Delhi

On 4th November, 2022

Dr.V. M. Tiwari  
Director



Dr N. Kalaiselvi, DG CSIR and Secretary, DSIR, Government of India, on 04 November 2022 virtually inaugurated a modern and safer wooden badminton court, made as per the Badminton Association of India standards, at CSIR-National Geophysical Research Institute (CSIR-NGRI), Hyderabad.

Addressing the CSIR-NGRI staff on this occasion, Dr Kalaiselvi stressed that a healthy body leads to a healthy mind which leads to creative thinking, much needed for the furtherance of science and technology. She

informed that to promote the health and wellness of its staff, CSIR always encourages sports activities in all its constituent laboratories/institutions through the Sports Promotion Board (SPB). SPB regularly organises the major competitive sports event, the Shanti Swaroop Bhatnagar Memorial Tournament (SSBMT).

Dr Kalaiselvi lauded the NGRI badminton team for being winners of the SSBMT Badminton event in 2011 and runners-up in 2011. She expressed the hope that this new facility will inculcate sportsmanship

spirit among the NGRI and the CSIR staff as well. This will also encourage the Government mission of Fit India.

Earlier, the Director of CSIR-NGRI, Dr V.M. Tiwari apprised Dr Kalaiselvi about various activities and efforts towards the healthy life of the staff members.

Dr ASSRS Prasad, PTO (Retd) and a long-serving member of the NGRI badminton team explained the technical details of the newly created courts. The programme concluded with a formal vote of thank offered by Dr Vineet Gahalaut, Chief Scientist and Chairman, Works Committee of CSIR-NGRI.

#### Awards & Honours

### **Prof Sunil Kumar Singh, Director CSIR-NIO awarded the Lifetime Achievement Award of the Indian Society of Applied Geochemists (ISAG)**



Prof. Sunil Kumar Singh, Director, CSIR-National Institute of Oceanography, (CSIR-NIO), Goa, has been conferred the Lifetime Achievement Award of the Indian Society of Applied Geochemists (ISAG), in recognition of his contributions to Earth Sciences in general

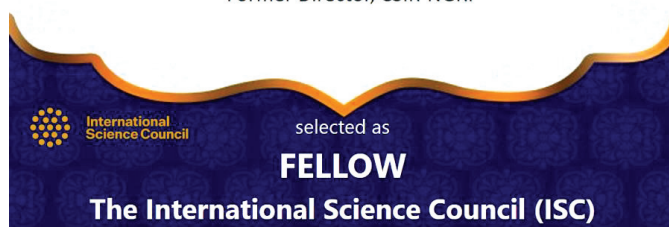
and applied Geochemistry in particular. The award was presented on 3 November 2022 at the 26th Annual General Body Meeting held at the Department of Applied Geochemistry, University College of Science, Osmania University, Hyderabad.

# Former CSIR-NGRI Director Selected as Fellow ISC

## Congratulations



**Prof. Harsh K. Gupta**  
Former Director, CSIR-NGRI



Prof. Harsh K. Gupta Former Director at the CSIR-National Geophysical Research Institute (CSIR-NGRI), Hyderabad, has been selected as a Fellow of the prestigious “The International Science Council (ISC)”, in recognition of his outstanding contributions to promoting science as a global public good.

The Fellowship is the highest honour that can be conferred on an individual by the ISC to support its vital mission to bring science to society and help address urgent societal problems — such as climate change mitigation and adaptation, water, energy, and food security, as well as urgent transformations required in the research itself. The selection was announced by the President, ISC, Sir Peter Gluckman on 5 December 2022 during the 2022 World Science Forum at Cape Town, South Africa.

Prof. Gupta is an eminent Indian Earth scientist known for his pioneering work on discovering an enormously thick crust of ~70 km below the Himalayas and Tibet Plateau region. He characterised reservoir-triggered earthquakes and developed criteria to discriminate them from normal earthquakes. He is also the recipient of several prominent recognitions, notable among them being, the Shanti Swarup Bhatnagar Prize for Science and Technology, Padma Shri, elected Foreign member to the Russian Academy of Sciences, NASI Platinum Jubilee Scientist, Lifetime Excellence Award by the Ministry of Earth Sciences, Government of India. Prof. Gupta is the first so far and the only scientist from the developing world to be awarded Waldo E. Smith Medal by the American Geophysical Union. He is also the second from Asia, the only other awardee being from Japan.



The Fellowship is the highest honour that can be conferred on an individual by the ISC to support its vital mission to bring science to society and help address urgent societal problems.



Marching Towards Amrit Kaal with Science, Technology and Innovation



 22-23 January 2023



**Venue**

Maulana Azad National Institute of Technology,  
Bhopal

### Highlights

- ▶ Panel Discussions
- ▶ Keynote Lectures
- ▶ Scicom Research Presentations
- ▶ Interactions with Science Authors
- ▶ Vigyan Kavi Sammelan
- ▶ National Short Play Video Competition
- ▶ National Blog Writing Competition
- ▶ On-the-Spot Drawing/Painting Competition



For details, please visit  
[www.scienceindiafest.org](http://www.scienceindiafest.org)



### Printed and Published by

Mukesh Pund on behalf of CSIR-National Institute of Science Communication and Policy Research  
Dr K.S. Krishnan Marg, New Delhi -110 012 and printed at NISCPR Press

Dr K.S. Krishnan Marg, New Delhi -110 012

Editor: Hasan Jawaid Khan; Assistant Editor: Sonali Nagar

Design: Abhinav Raj; Production: Ashwani Kumar Brahmi

Phone: 25848702; Fax: 25847062; E-mail: [hjk@niscpr.res.in](mailto:hjk@niscpr.res.in)

Website: <http://www.niscpr.res.in>

Please direct all Subscription-related queries to:

Sales & Distribution Officer, NISCPR; E-mail: [sales@niscpr.res.in](mailto:sales@niscpr.res.in); Phone: 25843359

Annual Subscription: ₹500; Single Copy: ₹50.00

RN 4512/57