SOUVENIR

53rd Shanti Swarup Bhatnagar Memorial Tournament (SSBMT) Indoor - First Zonal

30 August - 1 September 2025

Venue

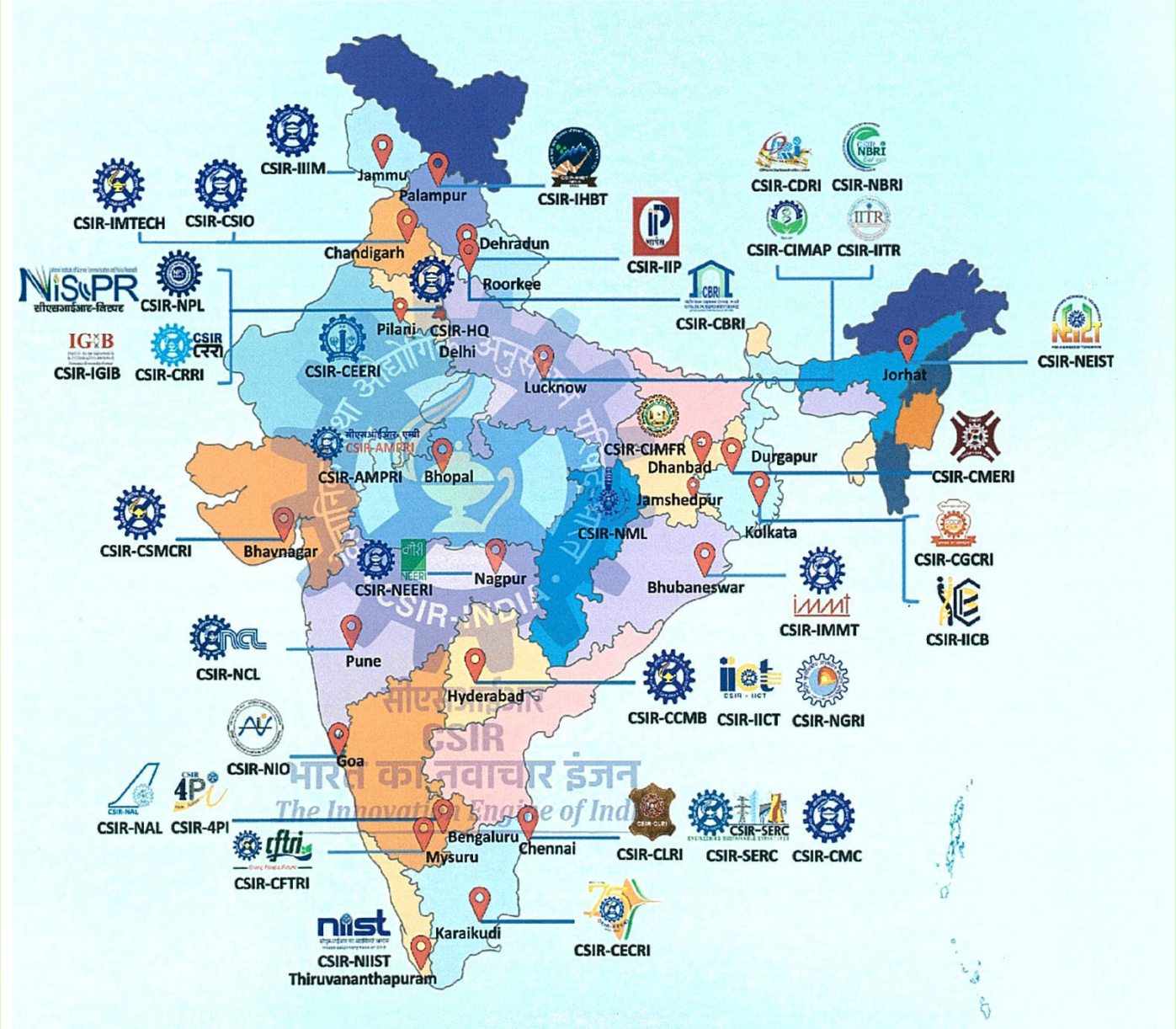
CSIR-Structural Engineering Research Centre, Chennai

Organized by

CSIR SPB
सीएसआईआर स्पोर्ट्स प्रमोशन बोर्ड
CSIR SPORTS PROMOTION BOARD

CSIR-SERC
ENGINEERING SUSTAINABLE STRUCTURES

CSIR MAP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Safe & Sustainable Habitat

केन्द्रीय इलेक्ट्रॉनिकी अभियांत्रिकी अनुसंधान संस्थान
स्था. 1953
शोधेन सिद्धि-सामर्थ्यं
CSIR-CEERI

imMt
Diamond Jubilee 1964-2023

CSIR - IICB

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यन्त्रमेवास्माकम् मन्त्रः

सी एस आई आर - केन्द्रीय औषधि अनुसंधान संस्थान, लखनऊ
Estd. 1951

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53rd Shanti Swarup Bhatnagar Memorial Tournament
Indoor - First Zonal

30 August - 1 September 2025

Organized by

CSIR-Sports Promotion Board
&
CSIR-Structural Engineering Research Centre, Chennai

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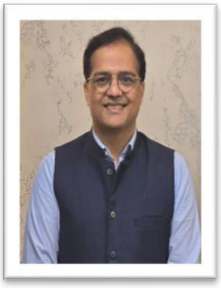
DG, CSIR and Patron CSIR-SPB

Dr R Pradeep Kumar
President, Director, CSIR-CBRI

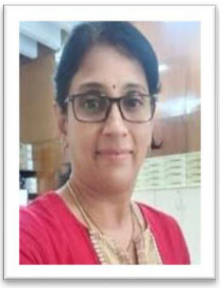
Shri Mahendra Kr. Gupta
Vice President (Ex-Off), JS (Admin)



Shri Chetan Prakash Jain
Member (Ex-Off), JS & FA

Dr Anuradha Madhukar
Secretary, CSIR-HQ

Sh. Manoj Kumar
Treasurer, CSIR-HQ



Dr K. Lakshmi
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Dr Venu G
Member, CSIR-NAL

Dr Upendra Sharma
Member, CSIR-IHBT

Dr V Venkata Ramana
Member, CSIR-IMTECH

Dr Himangsu K Bora
Member, CSIR-NEIST

Dr Rahul Kaushik
Member, CSIR-NIO

Dr Varsha R Ohalther
Member, CSIR-IICT

Shri Anish M Bhargav
Member, CSIR-NPL

Shri Sandeep Mavi
CSIR-HQ

A tribute to Dr. Shanti Swarup Bhatnagar

Dr. Shanti Swarup Bhatnagar was born in Shahpur, now in Pakistan, and faced significant challenges early in life, losing his father, Parmeshwari Sahai Bhatnagar, when he was just eight months old. He was raised by his maternal grandfather, an engineer, which sparked his interest in science and engineering. From a young age, Bhatnagar demonstrated a natural curiously, enjoying the construction of mechanical toys, electronic, and string telephones. He also inherited a passion for poetry, showcasing his talents with his Urdu one-act play, Karamati, which won first prize in a competition.

Bhatnagar played a crucial role in shaping India's science and technology landscape in the post-independence era, alongside prominent figures like Homi Jehangir Bhabha and Vikram Sarabhai. As the founder director of the Council of Scientific and Industrial Research (CSIR), he laid the groundwork for a robust research infrastructure that would benefit independent India for decades to come.

From 1919 to 1921, Bhatnagar pursued a DSc degree at the University of London, focusing on the surface tension of oils under the mentorship of Prof. E C. Donnan. Supported by a scholarship from the Dyal Singh Trust, he excelled in his studies. Upon returning to India in August 1921, he joined Banaras Hindu University (BHU) as a Professor of Chemistry. During his three years at BHU, he established a thriving school of physico-chemical research and contributed to the university's culture by writing its official song, the Kulgeet.

In 1924, Bhatnagar moved to Lahore, where he served as a University Professor of Physical Chemistry and the Director of the University Chemical Laboratories for 16 years. His work in applied and industrial chemistry was notable, including a pioneering project to convert bagasse (sugarcane waste) into cattle feed, commissioned by Sir Ganga Ram. His research on colloids gained international recognition,

and a consultancy project with Steel Brothers of London resulted in a significant grant that facilitated the establishment of the Department of Petroleum Research at Panjab University.

Alongside K.N. Mathur, Bhatnagar co-authored Physical Principles and Applications of Magneto Chemistry, a seminar text published by Macmillan, which was well-regarded in the scientific community. Bhatnagar's influence extended beyond academia; he held several prominent government positions, including Secretary to the Ministry of Education and later to the Ministry of Natural Resources and Scientific Research. He was instrumental in the founding of the Atomic Energy Commission and served as the Chairman of the University Grants Commission.

Bhatnagar received numerous accolades for his contributions to science. In 1936, he was honoured with the Order of the British Empire, followed by his knighthood in 1941. He became an Honorary Fellow of the Society of Chemical Industry in 1943 and was elected a Fellow of the Royal Society of London the same year. Various universities, including Oxford and Delhi, conferred honorary doctorates upon him, and he was awarded the Padma Vibhushan in 1954.

The CSIR, operational since September 26, 1942, benefitted significantly from Bhatnagar's vision, leading to the establishment of national laboratories that propelled scientific research in India. After his passing, the CSIR instituted the Shanti Swaroop Bhatnagar Award to honor distinguished scientists, and the Sports Promotion Board of CSIR commemorates his legacy by organizing annual sports events. Bhatnagar's enduring contributions to science and education have left an indelible mark on India's development.

About CSIR-Sports Promotion Board

Sports activities are recognized as universal form of overall personality development. It is also a form of the great expressions of the aspirations of a person to excel. Appreciating the impact of employee recreation in the development of leadership qualities, interaction and communication skills that are essential in providing effective service delivery, organizing sports events and creating recreational environment have become an integral part of the personnel policy of CSIR. Towards this objective, the early initiatives taken by a few of the CSIR Institutes/Laboratories specially those located in remote places like, Pilani, Bhavnagar, Karaikudi, Dhanbad, Jorhat, etc., to form staff clubs are highly laudable. The Institutes/Laboratories set up their staff clubs, as soon as they were established. However. organizing sports events at the agency level in CSIR commenced only in 1953 with the initiative of the CSIR Headquarters when it hosted a tournament for the staff of Delhi-based laboratories. This limited sports activity' continued for three years which was elevated to an All India level tournament in 1955.

In memory of the founder Director (now re-designated as Director General), Dr. Shanti Swaroop Bhatnagar, the Tournament was named as the Shanti Swaroop Bhatnagar Memorial Tournament (SSBMT) that enlarged the participation of all CSIR employees spread across the country. Initially, the tournaments were organized biannually having games such as Cricket, Volleyball, Tennis, Basketball, Table Tennis, Badminton, Chess, Carom and Bridge. The responsibility was then shouldered by the CSIR Headquarters Staff Club that used to organize the tournament in CSIR laboratories over a period of 7 to 8 days, every alternate year. The SSBMT held at the National Physical Laboratory (NPL) in 1956 could be termed as the first All India CSIR Tournament. Meanwhile, CSIR considered providing greater impetus to sports within the system.

An official platform was accordingly provided by forming the CSIR Sports Control Board (SCB) on the lines of those existed in the Railways, P&T, etc. Formalization of the CSIR Sports Control Board took place in March, 1980 with its registration as a Society under the Societies Registration Act XXI of 1860. In view of the objectives/ role of Sports Control Board, its nomenclature was changed to the Sports Promotion Board (SPB). The SSBMT received overwhelming response with huge participation of around 1000 players and officials at one time.

Some small Institutes/Laboratories with limited infrastructure experienced difficulties to host such mega events. It was therefore resolved to organize Zonals and Finals separately involving relatively lesser number of participants. All the 40 staff clubs were then clubbed to form four zones with the participation of around 200 participants in each zone. Top two successful teams in individual and team events of each game from these four zones then meet during the Finals. After employing various permutations and combinations over a period of time, the SSBMT came into being in its present form i.e. being organized every year, alternately for indoor and outdoor games. The present practice thus provides greater incentive to the best eight players/teams every year as they get an opportunity to play twice (at two different venues for zonals and for finals) during the same year.

The CSIR-SPB, in addition to the above tournaments, also organizes certain specialized tournaments, such as: Nayuydamma Memorial Cricket Tournament, Atma Ram Memorial Volleyball Tournament: Thacker Memorial Lawn Tennis Tournament: Hussain Zaheer Bridge Tournament: Sidhu Memorial Table Tennis Tournament: A.P. Mitra Memorial Badminton Tournament: and Anusandhan Basket Ball Tournament (alternate years).

सत्यमेव जयते

डॉ. (श्रीमती) एन. कलैसेल्वी
सचिव, वैज्ञानिक और औद्योगिक अनुसंधान विभाग
महानिदेशक, वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद्
Dr. (Mrs.) N. Kalaiselvi
Secretary, DSIR and Director General, CSIR

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CSIR
भारत का नवाचार इंजन
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Government of India
Ministry of Science and Technology
Department of Scientific & Industrial Research
Council of Scientific & Industrial Research

Message

I am delighted to learn that the 53rd SSBMT-INDOOR - Zonal-1 tournament is scheduled to be hosted by the CSIR-Structural Engineering Research Centre (CSIR-SERC), Chennai, from 30 August to 1 September 2025, under the guidance and patronage of the CSIR Sports Promotion Board (SPB). Hosting this event in the vibrant city of Chennai, known for its deep-rooted sporting tradition and warm hospitality, will undoubtedly provide an inspiring backdrop for this three-day celebration of indoor sports.

For decades, CSIR has recognized that sport is far more than just a recreational activity, it is a vital catalyst for holistic development, fostering discipline, strategic thinking, emotional resilience, and team spirit. Through the CSIR Sports Promotion Board, a strong culture of wellness has been cultivated across all laboratories, encouraging employees to maintain a healthy balance between intellectual pursuit and physical well-being, while also building lasting friendships that transcend institutional boundaries.

I extend my heartfelt congratulations to the Organising Committee of CSIR-SERC for taking up the mantle of hosting this prestigious event. To all the participating teams from laboratories across the country: may you compete in the true spirit of sportsmanship, challenge your personal limits, and carry home memories as valuable as any trophy.

Wishing you all an exhilarating, harmonious, and resoundingly successful championship!

N. Kalaiselvi

(N. Kalaiselvi)

20 August, 2025
New Delhi

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Safe and Sustainable Habitat

प्रो. आर. प्रदीप कुमार
निदेशक
Prof. R. Pradeep Kumar
Director

सीएसआईआर–केन्द्रीय भवन अनुसंधान संस्थान
रुड़की – 247 667 (भारत)
CSIR-Central Building Research Institute
(A Constituent Establishment of CSIR)
ROORKEE - 247 667 (INDIA)

MESSAGE

It gives me immense pleasure to learn that the 53rd Shanti Swarup Bhatnagar Memorial Tournament (SSBMT)–Zonal-1 (Indoor) is being organised by CSIR-Structural Engineering Research Centre (SERC), Chennai, during 30th August – 1st September 2025. The tournament will bring together CSIR staff from across the zone to compete in various indoor sports, including Badminton, Table Tennis, Chess, Carrom, and Bridge.

Instituted in memory of the illustrious founder of CSIR, Dr. Shanti Swarup Bhatnagar, the SSBMT has grown into a prestigious platform that fosters not only athletic excellence but also camaraderie, team spirit, and wellness among CSIR employees. Over the years, these tournaments have become a vital part of our organisational culture, reinforcing the bonds of fellowship across laboratories and nurturing a healthy work-life balance.

I am confident that this edition of the tournament will uphold the rich traditions of SSBMT while providing participants with an opportunity to display their sporting talents in a spirit of friendship and fair play.

On behalf of the CSIR-Sports Promotion Board, I convey my best wishes to the organizers for the successful conduct of the event and to all participants for an enjoyable and memorable tournament.

21/8/25

(R. Pradeep Kumar)
President, CSIR-SPB

महेन्द्र कुमार गुप्ता
MAHENDRA KUMAR GUPTA
संयुक्त सचिव
Joint Secretary

वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद्
अनुसंधान भवन, 2, रफी मार्ग, नई दिल्ली-110 001
COUNCIL OF SCIENTIFIC & INDUSTRIAL RESEARCH
Anusandhan Bhawan, 2, Rafi Marg, New Delhi-110001

Message

It gives me immense pleasure to extend my heartfelt congratulations to the team at CSIR-Structural Engineering Research Centre, Chennai, for organizing the 53rd Shanti Swaroop Bhatnagar Memorial (Indoor) Tournament – First Zonal, scheduled to be held from 30th August to 1st September 2025.

The Shanti Swaroop Bhatnagar Memorial Tournament stands as a testament to CSIR's enduring commitment to promoting sportsmanship, physical well-being, and camaraderie among its members. I am confident that this edition of the tournament will provide participants with a valuable platform to showcase their talent, build lasting friendships, and engage in healthy competition.

I extend my best wishes to the organizers and all participants for a successful and memorable tournament. May the event be marked by exceptional performances, true sportsmanship and a spirit of unity that inspires one and all.

May this tournament serve as yet another milestone in celebrating the talent, dedication, and spirit of fair play among CSIR staff.

Congratulations once again, and best wishes for the tournaments ahead!

11/8/2025
(Mahendra Kumar Gupta)

Message

It gives me immense pleasure to share this message on the occasion of the 53rd Shanti Swaroop Bhatnagar Memorial Tournament, Indoor (1st Zonal), being hosted by CSIR – SERC, Chennai, from August 30 –September 1, 2025.

CSIR is committed for supporting sports through the SSBMT which reflects CSIR's commitment to fostering a healthy, cohesive, and vibrant environment where sports play an important role. Through sports CSIR supports the importance of balancing the professional life with a healthy life. This is also a means to pay tribute to Sir Shanti Swaroop Bhatnagar, an outstanding scientist, visionary and leader, who envisioned the importance sports and initiated the sporting activities at CSIR.

The Shanti Swaroop Bhatnagar Tournament has now become an integral part of CSIR's culture, providing a platform that promotes camaraderie, teamwork, and a shared sense of belonging. Sports play a crucial role in nurturing the personality of an individual, contributing to both the physical and mental health of an individual. It is through sports that a number of life skills are learnt.

I am confident that the players of this tournament will display a true spirit of sportsmanship during the tournament. I hope that the players will cherish the memories created during this tournament forever.

I am grateful to CSIR-SERC for hosting the 1st Zonal of the 53rd SSBMT. I extend my best wishes to all the teams.

With best wishes for a grand and memorable event.

AMadhukar

(Dr. Anuradha Madhukar)

Secretary, CSIR Sports Promotion Board

सी एस आई आर – संरचनात्मक अभियांत्रिकी अनुसंधान केन्द्र
(वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद्)
सी एस आई आर रोड़, तरमणी, चेन्नै - 600 113, भारत

CSIR – STRUCTURAL ENGINEERING RESEARCH CENTRE
(Council of Scientific & Industrial Research)
CSIR Road, Taramani, Chennai – 600 113, INDIA
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ENGINEERING SUSTAINABLE STRUCTURES

डॉ. (श्रीमती) एन. आनंदवल्ली
निदेशक

Dr. (Smt.) N. Anandavalli, PhD, FNAE, FIE, M.ASCE
Director

Message

This year, CSIR-Structural Engineering Research Centre (CSIR-SERC), Chennai is proud to host the Zonal Tournament from 30th August to 1st September 2025. As one of CSIR's premier institutes, CSIR-SERC is delighted to provide a platform where sports talent and team spirit from various regional CSIR labs converge and thrive.

Our CSIR (Council of Scientific and Industrial Research) is a leading scientific research organization committed to developing and transferring knowledge/technology. CSIR has also recognized and foresighted the importance of sport in a research organization and established the CSIR Sports Promotion Board (SPB), which regularly organizes the Shanti Swaroop Bhatnagar Memorial Tournaments (SSBMT) at our national laboratories/institutes to pay tribute to our CSIR's first Director General late Sir Shanti Swaroop Bhatnagar. The Shanti Swarup Bhatnagar Memorial Tournament (SSBMT), named in his honour, emphasizes the holistic development of CSIR personnel — fostering not only intellectual excellence but also physical fitness and mental resilience.

Beyond competition, the event aims to strengthen inter-laboratory relationships, encourage team building, and nurture a culture of wellness across the CSIR network. CSIR-SERC warmly welcomes all participants, officials, and guests, and looks forward to an exciting and spirited tournament that upholds the values of fair play, integrity, and mutual respect.

N. Anandavalli 19/8/2025

[N. Anandavalli]

दूरभाष / Phone : (का / O) +91-44-2254 2139 / 2254 9201 फैक्स / Fax : +91-44-2254 1508 / 2254 4802 / 2254 1973
ई-मेल / E-mail : director@serc.res.in / anandi@serc.res.in वेबसाइट / Website : http://www.serc.res.in

सीएसआईआर - केन्द्रीय चर्म अनुसंधान संस्थान
CSIR - CENTRAL LEATHER RESEARCH INSTITUTE
(वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद् Council of Scientific & Industrial Research)
अडयार Adyar, चेन्नई Chennai - 600 020, भारत INDIA.

डॉ. के. जे. श्रीराम, निदेशक
Dr. K.J. Sreeram, Dircotor

दूरभाष Phone : +91 44 2491 0897, 2491 0846
ई मेल E-mail : director@clri.res.in

D/08/2025

08th August 2025

Message for the Souvenir of SSBMT Zonal-1, 2025

Greetings from CSIR-CLRI !

It gives me immense pleasure to extend my warm greetings and best wishes on the occasion of our SSBMT Zonal 1 events. This much-anticipated gathering is not just a celebration of athleticism and competition—it is a reflection of the camaraderie, team spirit, and vibrant culture that define CSIR. We researchers need sharp focus, quick reflexes and strategic thinking, which I am sure the SSBT brings out in the participants. CSIR is a family, its strength is in its team forming abilities and SSBT helps this in a big way.

I would like to commend all the participants for their enthusiasm, the Director and team of SERC for their meticulous planning, and every supporter who has contributed to making this event a success. Your collective efforts transform a sporting event into a memorable experience.

Let us continue to champion wellness, teamwork, and a balanced lifestyle—on and off the field.

Wishing everyone an exciting and enjoyable event !

Yours Sincerely,

(Dr KJ Sreeram)

सीएसआईआर - केंद्रीय विद्युतरसायन अनुसंधान संस्थान
(वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद)
कारैकुडी – 630003, तमिलनाडु, भारत

CSIR–CENTRAL ELECTROCHEMICAL RESEARCH INSTITUTE
(Council of Scientific & Industrial Research)
Karaikudi – 630003, Tamil Nadu, India
Tel: 04565 – 227777, 227778, Fax: 04565 – 227779

डॉ. के. रमेशा
निदेशक
Dr. K. Ramesha
Director

MESSAGE

I am glad to note that CSIR-Structural Engineering Research Centre (SERC), Chennai is hosting the 53rd Shanti Swarup Bhatnagar Memorial Tournament (SSBMT) – Zonal-1 (Indoor) on behalf of the CSIR-Sports Promotion Board (SPB), New Delhi during August 30 – September 01, 2025. Congratulations to CSIR-SERC Organizing Team in shouldering this responsibility of conducting the Zonal-1 of 53rd SSBMT (Indoor)!

Sports not only keep one physically fit but also unite people and nations beyond the cultural differences and geographical borders. Sports inculcate the leadership, team spirit and healthy competition among the players, and this helps them to maintain the same in all walks of their lives. The Shanti Swaroop Bhatnagar Tournament and other tournaments of CSIR-Sports Promotion Board aim to bring out the sports skills and hidden talents among the CSIR staff members. The tournaments being conducted at All India level at different zones also provide an opportunity to CSIR staff members to meet and greet people, and to experience the different cultures and food of the regions.

My best wishes to each and every player participating in the 53rd SSBMT (Indoor) in demonstrating their sportsmanship and I wish the event to be a grand success.

K. Ramesha

August 11, 2025
Karaikudi

सीएसआईआर - संरचनात्मक अभियांत्रिकी अनुसंधान केन्द्र
CSIR - STRUCTURAL ENGINEERING RESEARCH CENTRE
(वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद)
(Council of Scientific & Industrial Research)
आई एस ओ ISO 9001:2015, प्रमाणीकृत Certified, डा.पे.सं. P.B. No. 8287
सी एस आई आर रोड CSIR Road, तरमणी Taramani, चेन्नै Chennai - 600 113. भारत INDIA

MESSAGE

It is with heartfelt enthusiasm and genuine pleasure that I welcome you to the 53rd Shanti Swarup Bhatnagar Memorial Tournament (Indoor) – First Zonal, hosted by CSIR-SERC from August 30 to September 1, 2025. We are especially honoured to host our esteemed colleagues from CSIR-4PI, CSIR-CECRI, CSIR-CIMAP, CSIR-IICB, CSIR-NAL, CSIR-NBRI, CSIR-NGRI, and CSIR-NISCPR. Your presence transforms this event from a simple competition into a vibrant celebration of unity, camaraderie, and collective spirit.

For the CSIR-SERC community, this tournament is a unique opportunity to experience the rich diversity and exceptional talent that exists within the broader CSIR family. I encourage everyone to make the most of this occasion, not only by participating or cheering from the side-lines but by building new relationships and strengthening bonds across institutions.

I extend my sincere gratitude to our dedicated organizing committee and the many volunteers whose tireless efforts have brought this event to life. To all participants: may you approach each game with passion, integrity, and true sportsmanship. The real success of this tournament will be measured not just by scores or victories, but by the connections made and the memories shared.

This commemorative souvenir marks a special moment, when we gathered not only as researchers and scientists but also as athletes and teammates. May it serve as a lasting reminder of the multifaceted excellence that defines the CSIR community. I would also like to extend my heartfelt thanks to the Director, CSIR, for the trust and opportunity to organize this grand event. My sincere appreciation also goes to all participating CSIR labs and companies who supported the event through their advertisements in this souvenir, as well as every individual who contributed their efforts to make this tournament a success.

In conclusion, I invite you all to embrace both the spirit of healthy competition and the sense of fellowship that this tournament inspires. Let us celebrate not only sporting achievements but the broader human spirit that connects our scientific endeavours with our athletic passions.

With warm regards and best wishes for a memorable and enriching tournament experience,

Dr.J Prabakar
Chief Scientist & Organizing Secretary
Vice President, Staff Club, CSIR-SERC

दूरभाष संख्या Phone Number :
बीकेएमडी BKMD : 2254 9145, 2254 9124
प्रशासन Administration : 2254 9100, 2254 9231
वित्त Accounts : 2254 9105, 2254 9107
क्रय Purchase : 2254 9108, 2254 4770

ई-मेल E-mail :
bkmd@serc.res.in
coa@serc.res.in
admoff@serc.res.in
finoff@serc.res.in
puroff@serc.res.in

सीएसआईआर - संरचनात्मक अभियांत्रिकी अनुसंधान केन्द्र
CSIR - STRUCTURAL ENGINEERING RESEARCH CENTRE
(वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद)
(Council of Scientific & Industrial Research)
आई एस ओ ISO 9001:2015, प्रमाणीकृत Certified, डा.पे.सं. P.B. No. 8287
सी एस आई आर रोड CSIR Road, तरमणी Taramani, चेन्नै Chennai - 600 113. भारत INDIA

Message

It gives me immense pleasure and enthusiasm to host the **First Zonal of the 53rd Shanti Swarup Bhatnagar Memorial Tournament (Indoor)** at **CSIR-SERC, Chennai**, during **30th August 2025 to 1st September 2025**. As Secretary of the Staff Club, CSIR-SERC, I wholeheartedly thank CSIR-SPB for entrusting us with this wonderful opportunity.

Sports has always symbolized fairness, equality, recognition of talent, acceptance of diverse abilities, and acknowledgement of efforts**.** CSIR, through CSIR-SPB, has consistently encouraged and nurtured the true spirit of sportsmanship. The ultimate aim is to keep the mind and body fit, active, and agile—leading to improved physical and mental well-being.

With its excellent infrastructure and warm sense of hospitality, CSIR-SERC regards this tournament as a celebration of indoor sports**.** Under the guidance of our Director, CSIR-SERC & President, Staff Club, CSIR-SERC**,** we are fully committed to ensuring a memorable and enriching experience for all participants from our eight sister laboratories of the CSIR family.

I extend a warm welcome to every participant to our campus for this prestigious event. My best wishes to all the teams, and I am confident that this tournament will ignite great zeal and camaraderie. The First Zonal of the 53rd SSBMT (Indoor) at CSIR-SERC will surely find a permanent place in the cherished memories of all players and participants.

Dr. K.Lakshmi,

Secretary, Staff club, CSIR-SERC
Member, CSIR-SPB

CSIR - STRUCTURAL ENGINEERING RESEARCH CENTRE

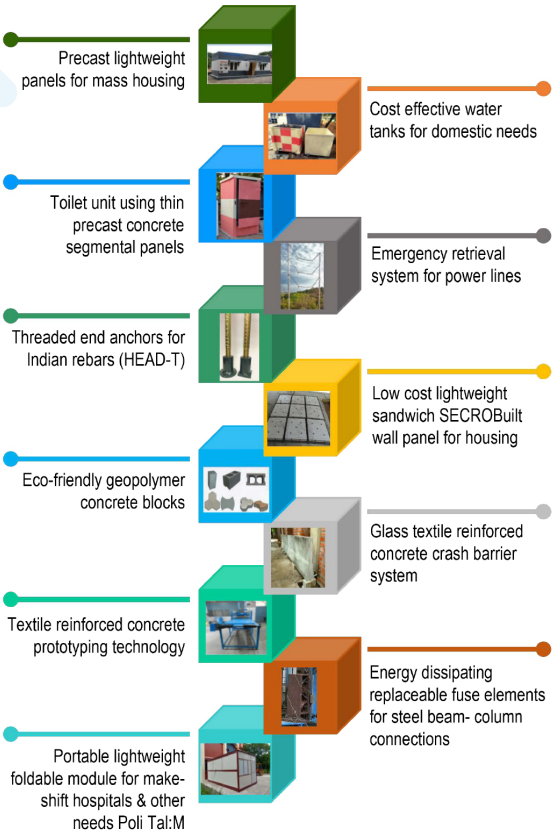
ABOUT US

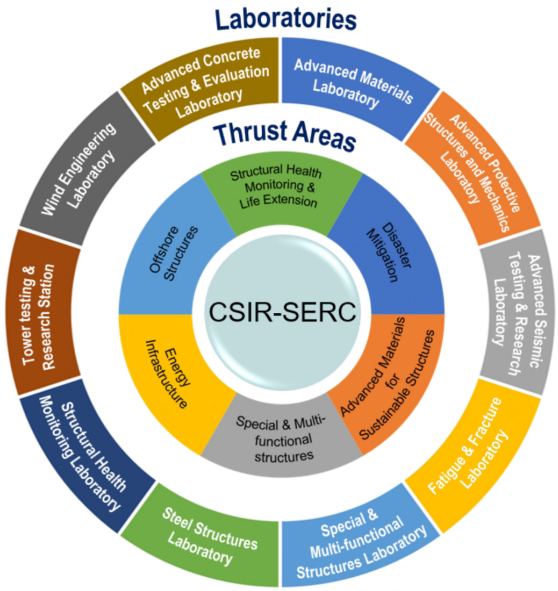
CSIR-Structural Engineering Research Centre (CSIR-SERC), Chennai, is one of the national laboratories under the Council of Scientific & Industrial Research (CSIR), India. CSIR-SERC has built-up excellent facilities and expertise for the analysis, design and testing of structures and structural components. Services of CSIR-SERC are being extensively used by the Central and State Governments and public and private sector undertakings. CSIR-SERC has developed several need based structural engineering technologies which benefits the industry and society at large. CSIR-SERC has been certified as ISO 9001:2015 quality institution.

VISION

To be a global leader in structural engineering by excelling in research in frontier and cutting edge areas, and by developing competitive technologies by embracing innovative inter- and trans- disciplinary approaches for the benefit of society and industry

TECHNOLOGIES FOR LICENSING





Journal of Structural Engineering (JoSE) - an international journal published bi-monthly from CSIR-SERC provides a medium for researchers and structural engineers in India and abroad to document, discuss, and debate current trends in design, research, development and contributions relating to all areas of structural engineering/ mechanics.

Consultancy Services Offered: CSIR-SERC is the most preferred resource centre for industry in our country for solving new challenges in structures of different sizes, shapes, geometry and purpose of use. CSIR-SERC provides high-end knowledge based service to industry, society and strategic sector and structural engineering solutions for pre- and post- disaster needs. The vast client base of CSIR-SERC includes industries from energy and power sector (transmission line and communication towers, nuclear/thermal power plants), construction industry (new materials, construction techniques, road and railway bridges, high-rise buildings/ structures), automobile sector, etc.

विरासत Legacy

1965-1984

संरचनात्मक डिजाइन में उन्नत सामग्री और नवाचार
Advanced Materials and Innovations in Structural Designs

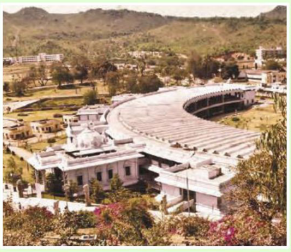
भारत की पहली फ्लाई ऐश बिल्डिंग
India's first Fly ash building

प्रीस्ट्रेस्ड कंक्रीट स्लीपर
Prestressed concrete sleepers

शीत विकृत सलाखें
Cold deformed bars

फेरोसीमेंट निर्माण
Ferrocement construction

मातृ मंदिर का विश्लेषण
Analysis of Matri Mandir



तिरूपति कतार परिसर
Tirupati queue complex

कैटेनरी छत प्रणाली Catenary roof system

बीकन टावर
Beacon tower

கட்டமைப்பு பொறியியல் ஆராய்ச்சி மையம்
सीएसआईआर - संरचनात्मक अभियांत्रिकी अनुसंधान केन्द्र
CSIR - STRUCTURAL ENGINEERING RESEARCH CENTRE

CSIR-SERC
ENGINEERING SUSTAINABLE STRUCTURES

विरासत Legacy

1985-2004

राष्ट्रीय क्षमता निर्माण और सामाजिक विकास
National Capacity Building and Societal Development

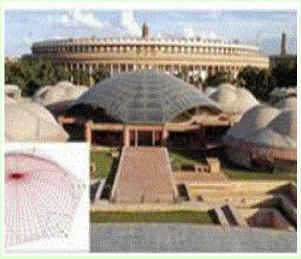
एचबीजे पाइपलाइन को लोयरिंग करना
Lowering of HBJ Pipeline

स्पेस ग्रिड छत संरचनाएं Space grid roof structures

टीजी फ़ाउंडेशन
TG Foundations

टॉवर परीक्षण अनुसंधान स्टेशन
Tower testing research station

चक्रवात आश्रय
Cyclone shelter



बुलबुला-प्रकार की गुंबद इकाई
Bubble-type dome unit

अंटार्कटिका में भारतीय स्टेशन
Indian station in Antarctica

अग्नि मिसाइल लांचर
Agni missile launcher

கட்டமைப்பு பொறியியல் ஆராய்ச்சி மையம்
सीएसआईआर - संरचनात्मक अभियांत्रिकी अनुसंधान केन्द्र
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CSIR-SERC
ENGINEERING SUSTAINABLE STRUCTURES

विरासत Legacy

2004-2017

अंतर्विषयक अनुसंधान और विकास
Interdisciplinary Research and Development

स्पेंट ईंधन टैंक पर भूकंपीय अध्ययन Seismic studies on spent fuel tank

गारा से भरा रेशेदार कंक्रीट
Slurry infiltrated fibrous concrete

रेलवे पुल
Railways bridges

वायुगतिकीय अध्ययन
Aerodynamic studies

रिमोट एसएचएम
Remote SHM

जी+7 स्केल वाली इमारत
G+7 scaled building

क्षैतिज अक्ष पवन टरबाइन
Horizontal axis wind turbine

बट वेल्ड रेल जोड़
Butt weld rail joints

கே எல் ஐ ஆர் - கட்டமைப்பு பொறியியல் ஆராய்ச்சி மையம்
सीएसआईआर - संरचनात्मक अभियांत्रिकी अनुसंधान केन्द्र
CSIR - STRUCTURAL ENGINEERING RESEARCH CENTRE

CSIR-SERC
ENGINEERING SUSTAINABLE STRUCTURES

विरासत Legacy

Since 2018

ज्ञान को प्रभाव में बदलना
Transforming Knowledge into Impact

तैरता अपतटीय बुनियादी ढाँचा Floating Offshore Infrastructure

3डी प्रिंटेड इमारत 3D Printed Building

सेक्रोबिल्ट मकान SECROBuilt House

नया पंबन पुल New Pamban Bridge

पोलावरम बाँध Polavaram Dam

लेस्ड स्टील कंक्रीट मिश्रित संरचना Laced Steel concrete Composite (LSCC)

सुवाह्य सुरक्षा कक्ष Portable Security Booth

पॉलीटैल मुड़ने योग्य आश्रय PoliTal Foldable Shelter

கட்டமைப்பு பொறியியல் ஆராய்ச்சி மையம்
सीएसआईआर - संरचनात्मक अभियांत्रिकी अनुसंधान केन्द्र
CSIR - STRUCTURAL ENGINEERING RESEARCH CENTRE

CSIR-SERC Staff Club

Dr. N. Anandavalli
President

Dr. J. Prabakar
Vice-President

Shri Lokanath Patnayak
Vice-President (Ex-officio)

Dr. K. Lakshmi
Secretary

Shri. B. Ravikumar
Joint Secretary

Ms. E. Surya
Treasurer

Smt. G. Nasima
Member

Shri. S. Viswanatha Manikandan
Member

Shri. N. Syed Ibrahim
Member

53rd Shanti Swaroop Bhatnagar Memorial Tournament
Indoor - First Zonal
Organizing Committee

Dr. N. Anandavalli, Director
Dr. S. Parivallal, Chief Scientist & Advisor (M)
Dr. J. Prabakar, Chief Scientist & Organizing Secretary
Dr. S. Maheswaran, Senior Principal Scientist
Dr. K. Lakshmi, Senior Principal Scientist
Mr. R.D. Sathish Kumar, Principal Technical Officer
Mr. P.Vasudevan, Senior Technical Officer
Mr. Loknath Patnayak, Administrative Officer
Mr. Anis Ahamed Pasha, Finance & Accounts Officer
Mr. E. Maheshkumar, Controller of Stores and Purchase

Accommodation & Hospitality

Convener / Co-convener:
Dr. S. Sundar Kumar, Principal Scientist

Members:
Mr. Kanishka Bhattacharya, Scientist
Ms. Renuka Darshyamkar, Scientist
Mr. S. Kanniah Sah,
Senior Technical Officer (3)
Mr. M.Vinothkumar,
Senior Technical Officer (1)
Mrs. E.Surya, Technical Officer
Mr. Viswanatha Manikandan, Technical Officer
Mr. T. Sathishkumar, Technician (2)
Mr. A. Karunakaran, Technician (2)
Mr. S. Balakrishnan, Technician (1)
Mr. S. Eswaran, Lab Attendant (2)
Mr. B. Ravi Kumar, Private Secretary

Catering/Refreshments

Convener / Co-convener:
Dr.P.Kamatchi, Chief Scientist

Members:
Dr. M. Saravanan, Principal Scientist
Dr. K. Senthilkumar, Senior Scientist
Mr. S. Srinivasan, Principal Technical Officer
Mr. S. Harishkumaran,
Senior Technical Officer (3)
Mr. S. Muraleeswaran,
Senior Technical Officer (2)
Mr. P. Subbash, Senior Technical Officer (1)
Dr. Asha G Nair, Hindi Officer
Ms. S.P. Kalaivani, Section Officer (G)
Mr. K. Nagaswami, Executive Engineer (E)

53rd Shanti Swaroop Bhatnagar Memorial Tournament
Indoor - First Zonal
Organizing Committee

Transport

Convener / Co-convener:
Dr. S. Vishnuvardhan, Senior Principal Scientist

Members:
Mr. A.K. Farvaze Ahmed, Principal Scientist
Mr. V. Thondamon, Scientist
Mr. G. Lakshmikanth, Technical Officer
Mr. Shaik Sadhiq, Technical Assistant
Mr. M. Elamaran, Technical Assistant
Mr. D. Deivaraj, Senior Technician (3)
Mr. K. Srinivasan, Technician (2)
Mr. V. Mahendran, Technician (2)
Ms. Sonu, Section Officer (F&A)
Mr. K. Jagannathan, Driver Gr.II (4)

Reception

Convener / Co-convener:
Dr. Srinivasa B.Ramisetti, Principal Scientist

Members:
Mr. J.C. Sunil, Senior Scientist
Mr. Nitin Khandelwal, Scientist
Ms. G. Nasima, Scientist
Mr. Viswanatha Manikandan, Technical Officer
Mr. N. Syed Ibrahim, Technician (2)

Souvenir

Convener / Co-convener:
Dr. P. Prabha, Principal Scientist

Members:
Dr. Prabhat Ranjan Prem, Principal Scientist
Dr. M. Keerthana, Principal. Scientist
Dr. S. Vijayalakshmi,
Principal Technical Officer
Ms. R. Lakshmi Poorna,
Senior Technical Officer (2)

Item Procurement

Convener / Co-convener:
Dr.R.Balagopal, Senior Principal Scientist

Members:
Mr. E. Ashokkumar, Senior Scientist
Mr. S. Balamurugan, Technician
Mr. S. Balakrishnan, Technician (2)
Mr. N. Suresh, Section Officer (S&P)
Ms. J. Umamaheswari,
Assistant Section Officer (F&A)
Mr. S.M. Yuvaraj, Junior Stenographer

Internet, Press and Audio/Video

Convener / Co-convener:
Mr. R.D. Sathish Kumar,
Principal Technical Officer

Members:
Dr. S. Vijayalakshmi,
Principal Technical Officer
Mr. G. Ananthakrishnan, Technical Officer
Ms. E. Surya, Technical Officer

53rd Shanti Swaroop Bhatnagar Memorial Tournament
Indoor - First Zonal
Organizing Committee

Tournament Registrations

Convener / Co-convener:

Dr. P.S. Ambily, Senior Principal Scientist

Members:

Mr. G. Ramesh Babu,
Senior Principal Scientist
Mr. Vimal Mohan, Principal Scientist
Dr. K.N. Lakshmikandhan, Principal Scientist
Mr. N.Manoj Kumar, Scientist
Ms. Renuka Dharshyamkar, Scientist
Mr. Allamraju Manikantha Sarath, Scientist
Mr. R.D. Sathishkumar,
Principal Technical Officer
Mr. M. Kumarappan,
Principal Technical Officer
Mr. S. Srinivasan, Principal Technical Officer
Mr. P. Vasudevan, Senior Technical Officer (2)
Mr. M. Elamaran, Technical Assistant
Mr. N. Baskaran, Sr. Technician (2)
Ms. K. Venkateswari, Private Secretary
Ms. S. Jagadhaprabha, Private Secretary
Mr. M.A. Kamsar Chinnappan,
Assistant Section Officer (G)
Ms. Monu, Assistant Section Officer (G)

Inauguration, Cultural and Felicitation

Convener / Co-convener:

Dr. T. Hemalatha, Principal Scientist

Members:

Dr. C. Bharathi Priya, Principal Scientist
Ms. N. Ramya, Senior Scientist
Dr. J. Venkatesan, Scientist
Ms. R. Lakshmi Poorna,
Senior Technical Officer (2)
Mr. M. Vinothkumar,
Senior Technical Officer (1)
Mr. B. Natarajan, Executive Engineer (E)
Mr. K. Rajkumar, Senior Technical Officer
Ms. K. Venkateswari, Private Secretary

Medical Aid

Convener / Co-convener:

Dr. S.R. Balasubramanian, Principal Scientist

Members:

Dr. K. Sivasubramanian,
Senior Principal Scientist
Mr. G. Ponnan, Senior Technician (3)
Ms. Megha, Assistant Section Officer (G)
Mr. S.M. Yuvaraj, Junior Stenographer

Sponsorships

Convener / Co-convener:

Dr. V.Srinivas, Chief Scientist

Members:

Dr. Amar Prakash, Senior Principal Scientist
Dr. B. Arun Sundaram, Principal Scientist
Mr. N. Suresh, Section Officer (S&P)
Mr. B. Ravi Kumar, Private Secretary

53rd Shanti Swaroop Bhatnagar Memorial Tournament
Indoor - First Zonal
Organizing Committee

Dispute Committee

Dr. J. Prabakar, Chief Scientist
Dr. S. Maheswaran, Senior Principal Scientist
Mr. Loknath Patnayak, Administrative Officer
Event Observers, SPB
Referees of the respective sports event

Karthikeyan Murali – Chief Guest for Inauguration

Karthikeyan Murali is a distinguished Chess Grandmaster with a FIDE rating of 2658, currently ranked 10th in India and 66th worldwide. He serves as Manager (Sports) at Indian Oil Corporation in Chennai's Southern region. His career highlights include a memorable victory over World No. 1 GM Magnus Carlsen at the Qatar Masters Chess 2023, earning recognition from India's Prime Minister.

Karthikeyan has been selected to represent India in the upcoming FIDE World Cup and Grand Swiss Tournament in 2025. His recent tournament successes include winning the Biel Masters 2025, Hoogeveen Open 2024, and IMAWEB Trophy 2023. A former World Champion in youth categories (U-12 in 2011 and U-16 in 2013), he has also claimed the Indian National Chess Championship twice (2015 and 2016). Karthikeyan has proudly represented India in multiple Chess Olympiads and was part of the Indian team that won World Championships in the World Youth Chess Olympiads of 2013 and 2014. His exceptional talent has been recognized through various awards, including the Vocational Excellence Award, Youth Excellence Award, and Sports Illustrated's Best Sportskid of the Year.

Vadivel Jayalakshmi – Guest of Honour for Inauguration

Vadivel Jayalakshmi has emerged as one of India's promising track athletes, specializing in sprint events. She is the first woman from Tamil Nadu who had been to Olympics. Jayalakshmi gained recognition when she claimed multiple medals at the National Inter-State Athletics Championships, demonstrating exceptional speed and technique in both 100m and 200m events. Her breakthrough performance came when she represented India at the Asian Athletics Championships, where she impressed observers with her explosive acceleration and determination. Olympian Vadivel Jayalakshmi won five gold medals in Manipur National Games that equalled the record of PT Usha.

Jayalakshmi has since become a regular member of India's 4x100m relay team, contributing to national records and podium finishes at various international competitions. Jayalakshmi's journey serves as inspiration for young female athletes across India, particularly those from smaller towns and rural backgrounds who aspire to excel in track and field. Beyond her athletic pursuits, she advocates for better sporting infrastructure and support systems for emerging talent in Indian athletics.

Robin Singh – Chief Guest for Valedictory Function

Robin Singh established himself as a valuable all-rounder for the Indian cricket team during the 1990s, bringing energy and versatility to the squad. Born in Trinidad but representing India internationally, he made his ODI debut in 1989 and quickly became known for his aggressive fielding, medium-pace bowling, and hard-hitting batting in the middle order.

Robin's athletic prowess on the field set new standards for Indian cricket, as he regularly executed diving catches and crucial run-outs that changed the momentum of matches. He played a significant role in India's ODI successes, including the memorable Sharjah Cup triumph in 1998 and the ICC Knockout Tournament in Kenya. Throughout his career spanning 136 ODIs, Robin contributed consistently with both bat and ball, often delivering in pressure situations when the team needed him most. After retiring from international cricket, he transitioned successfully into coaching, sharing his expertise with various IPL franchises and associate nations. His dual skills and unwavering commitment to fitness made him one of India's pioneering modern cricket professionals at a time when specialized training was just beginning to gain prominence. Robin's legacy lives on as a model for aspiring all-rounders who seek to contribute in multiple dimensions of the game rather than specializing in just one skill.

Program Schedule

29 August 2025	
3:00 PM	**Inaugural Ceremony & March Past** Venue: Vigyan Auditorium, CSIR-SERC
8.00 PM	**Dinner, Dining hall, CSIR-SERC**
30 August 2025	
8:00 AM - 5:00 PM	***Sports Events*** **Badminton and Table Tennis** Venue: Students Activity Centre (SAC), IIT Madras, Chennai **Carrom, Chess and Bridge** Venue: Training and Development Complex (TDC), CSIR-SERC
6:30 PM	**Cultural Programme** Venue: Vigyan Auditorium, CSIR-SERC
8:00 PM	**Dinner** Venue: Dining Hall, CSIR-SERC
31 August 2025	
8:00 AM - 5:00 PM	***Sports Events*** **Badminton and Table Tennis** Venue: SAC, IIT Madras, Chennai **Carrom, Chess and Bridge** Venue: TDC, CSIR-SERC
7:00 PM	**Camp Fire** Venue: CSIR-SERC Campus
8:00 PM	**Dinner** Venue: Dining Hall, CSIR-SERC
1 September 2025	
8:00 AM - 1:00 PM	***Sports Events*** **Badminton and Table Tennis** Venue: SAC, IIT Madras, Chennai **Carrom, Chess and Bridge** Venue: TDC, CSIR-SERC
3:00 PM	**Valedictory Ceremony** Venue: Vigyan Auditorium, CSIR-SERC
8:00 PM	**Dinner** Venue: CSIR-SERC Campus

PARTICIPATING LABS

1. CSIR-Fourth Paradigm Institute, Bengaluru
2. CSIR-Central Electrochemical Research Institute, Karaikudi
3. CSIR-Central Institute of Medicinal and Aromatic Plants, Lucknow
4. CSIR-Indian Institute of Chemical Biology, Kolkata
5. CSIR-National Aerospace Laboratories, Bengaluru
6. CSIR-National Botanical Research Institute, Lucknow
7. CSIR-National Geophysical Research Institute, Hyderabad
8. CSIR-National Institute of Science Communication and Policy Research

Participating Teams

CSIR-4PI, Bengaluru

Team Manager: Ms. Radha Ramani

BADMINTON

MEN

D.SURI BABU
AAKASH SINGH
TALIB HASAN ANSARI

WOMEN

PRANITA BARO
GOGULOTHU SRILATHA

TABLE TENNIS

MEN

VEERESH
N. KALIDHAS
P. DILEEP KUMAR

WOMEN

S.P NIRMALA BAI
RADHA RAMANI

CARROM

WOMEN

RADHA RAMANI
D.JITAKALA

CHESS

MEN

KANIKE RAGHAVENDRA
PRASAD BABU

Participating Teams

CSIR-CECRI, Karaikudi

Team Manager: Shri S. Krishnan

BADMINTON

MEN

BHARATHI MOHAN
T. ASHOK
S. KRISHNAN

WOMEN

P. SRIRAJA SUBHASRI
R. M. VIJAYALAKSHMI
R. MONIKA

TABLE TENNIS

MEN

T. ASHOK BALAMURUGAN
T. MATHANKUMAR
V.M. SHIVAPRASAD

WOMEN

D. SANGEETHA
A.S. HARIPRIYA ASOKAN
N. VANI

CARROM

MEN

K. VASANTHA RAJ
DEEPAK KUMAR PATTANAYAK

WOMEN

S. SHAILENDRA DEVI
P. NISHA

CHESS

MEN

M.LINGA PANDI

WOMEN

M. GOWRI

BRIDGE

K. MUTHURAMAN
TUMMALAPALLI SATYANARAYANA
MANE SHRIKANT SANJAY
G. VELMURUGAN
Y. NAGOORGANI

Participating Teams

CSIR-CIMAP, Lucknow

Team Manager: Dr. Suaib Luqman

BADMINTON

MEN

ASHWEEN D NANNAWARE
CHANDAN SINGH CHANOTIYA
MOHD DANISH HUSAIN

TABLE TENNIS

MEN

BHASKAR SHUKLA
AMIT MOHAN
KAUSHAL KISHORE

CARROM

MEN

SUAIB LUQMAN
JOSEPH M MASSEY

CHESS

MEN

KISHORE BABU

BANDAMARAVURI

Participating Teams

CSIR-IICB, Kolkata

Team Manager: Shri Vishal Agarwal

BADMINTON

MEN

CHANDER MOHAN
SHYAMAL NATH
MAINAK CHAKRABORTY

WOMEN

SILVIA BASU
SHEETAL

TABLE TENNIS

MEN

VISHAL AGARIVAL
ROUNAK ROY
RUPAM SAMANTA

CARROM

MEN

MANORANJAN ADHIKARY
M.D FARHAN QAMAR

CHESS

MEN

SANDEEP AGARWAL

Participating Teams

CSIR-NAL, Bengaluru

Team Manager: Shri Dheerendra Bahadur Singh

BADMINTON

MEN

S.J PUNITHA
P.V.R SAI KIRAN
M. DHANANJAYA

WOMEN

PALLAVI SINGH
U. SHASHIKALA
SANJEETIKA KUMARI

TABLE TENNIS

MEN

S. ARUN
JOHN PATRICK
DHEERENDRA BAHADUR SINGH

WOMEN

M.KALA
R.R VEENA
S.C UMA

CARROM

MEN

K.M RAMACHANDRA
M.D ANANDA

WOMEN

S. SHOBHA
B. VIJAYALAKSHMI

CHESS

MEN

G.M KAMALAKANNAN

WOMEN

M.NIRMALA SUBRAMANI

BRIDGE

GIRESH KUMAR SINGH
P. SIVA SUBBA RAO
SATISHA
M. RAGHAVENDRA SWAMY
BHUUTAPPA
DHANAVINAMANI

Participating Teams

CSIR-NBRI, Lucknow

Team Manager: Dr. Manoj Kumar Yadav

BADMINTON

MEN

A.K SHASANY
MANOJ KUMAR YADAV
SUMIT YADAV

WOMEN

SHRADDHA VAJPAYEE
ARSHI FATIMA

TABLE TENNIS

MEN

D.K. PURSHOTTAM
ABHISHEK NIRANJAN
V.K GUPTA

CARROM

MEN

KAMAL SRIVASTAVA
SAGAR KUMAR

CHESS

MEN

SHUBAM TANDON

BRIDGE

SURAJEET KUMAR
KRISHNA NAND MAURYA
PAWAN KUMAR
DILEEP SINGH
YOGESWAR PRASHAD SAHU

Participating Teams

CSIR-NGRI, Hyderabad

Team Manager: Shri Suman Kanti Roy

BADMINTON

MEN

RAJESH REKAPALLI
A.V SATYAKUMAR
M.D SATHEESH KUMAR

WOMEN

G. LAVANYA
P. AKHILA
SEEMA BEGUM

TABLE TENNIS

MEN

SUMAN KANTI ROY
(TEAM MANAGER)
S. DINESH KUMAR
T. DHANAKUMAR SINGH

WOMEN

K. RATNAMALA
K. RENUKA
S. APARNA

CARROM

MEN

M.D RAFIQE
SHAMSHODDIN ATTAR
G. SATYANARAYANA

WOMEN

L. MANJULA
K. SENA RANI

CHESS

MEN

SANTOSH KUMAR

BRIDGE

S. ANTON PETER RAJA
RATNAKAR R DHAKATE
B. KIRAN KUMAR
B. LAXMAN
M. KISHORE REDDY

Participating Teams

CSIR-NIScPR, New Delhi

Team Manager: Shri Mandeep Singh

BADMINTON

MEN

MOHD. RIZWAN (CAPT.)
ARVIND MEENA
CHANDRAN KUMAR

WOMEN

MONIKA JAGGI (CAPT.)
PUSPANJALI TRIPATHY

TABLE TENNIS

MEN

MANDEEP SINGH (CAPT.)
ANIL KUMAR
YATISH PANWAR

WOMEN

BHAVANA THAKUR (CAPT.)
RAJO DEVI
INDERJEET KAUR

CARROM

MEN

RAJIV KUMAR (CAPT.)
M. SUBRAMANI

WOMEN

PRAMILA MAJUMDAR (CAPT.)
SUSHILA BISHT

CHESS

MEN

GURPRASAD SINGH BAGGA

BRIDGE

NARESH (CAPTAIN)
MOHD. SHAKEEL AHMED
CHAND RAM
ABHINAV RAJ
B L MEENA

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Chennai: Gateway to South India's Cultural Heritage

Dr. P. Prabha, Principal Scientist, CSIR-SERC

Chennai, formerly known as Madras, is a vibrant metropolis on India's southeastern coast that seamlessly blends ancient traditions with modern development. As Tamil Nadu's capital city, Chennai offers visitors a rich tapestry of historical landmarks, religious sites, pristine beaches, and cultural experiences.

Historical Marvels

Fort St. George (Rajaji Salai, Chennai 600009), established in 1644 by the British East India Company, stands as Chennai's oldest colonial structure and the birthplace of modern Chennai. Today, it houses the Tamil Nadu Legislative Assembly and a museum showcasing colonial artifacts, weapons, and paintings from the British era. From CSIR-SERC Taramani: Approximately 16 km (40-50 minutes by car). Take Old Mahabalipuram Road (OMR) to Santhome High Road, then proceed north via Kamarajar Salai.

San Thome Basilica (Santhome High Road, Mylapore, Chennai 600004), built over the tomb of St. Thomas the Apostle, is a stunning neo-Gothic cathedral dating back to the 16th century. Its brilliant white façade and soaring spires make it one of Chennai's most recognizable landmarks. From CSIR-SERC Taramani: Approximately 10 km (25-30 minutes by car). Take Taramani Link Road to Rajiv Gandhi Salai, then proceed to Santhome High Road via Mandaveli.

Vivekananda House (Ice House, Triplicane, Chennai 600005), a striking red-brick building, served as a temporary residence for Swami Vivekananda when he returned from the West. Now a museum, it contains exhibits on the swami's life and teachings along with a meditation hall. From CSIR-SERC Taramani: Approximately 12 km (35-40 minutes by car). Take Taramani Link Road to Rajiv Gandhi Salai, then head to Triplicane via Santhome High Road.

Theosophical Society (Adyar, Chennai 600020) headquarters offers peaceful gardens and a library housing rare manuscripts. Founded in 1882, this spiritual campus contains a 450-year-old banyan tree and welcomes visitors seeking tranquility. From CSIR-SERC Taramani: Approximately 5 km (15 minutes by car). Take Taramani Link Road to LB Road in Adyar.

Beach Escapes

Marina Beach (Kamarajar Salai, Triplicane, Chennai 600005), the second-longest urban beach in the world, stretches over 13 kilometers along the Bay of Bengal. At dawn, this bustling shoreline comes alive with joggers, food vendors, and locals enjoying the sea breeze. From CSIR-SERC Taramani: Approximately 13 km (35-45 minutes by car). Take Taramani Link Road to Rajiv Gandhi Salai, then proceed via Santhome High Road to Kamarajar Salai.

Elliot's Beach (Besant Nagar, Chennai 600090), locally known as Besant Nagar Beach or "Bessie," offers a more relaxed alternative to Marina. The area surrounding this beach has transformed into a trendy neighborhood with cafes and restaurants. From CSIR-SERC Taramani: Approximately 7 km (20 minutes by car). Take Taramani Link Road to LB Road, then proceed to Besant Nagar via 4th Main Road.

Covelong Beach (Kovalam, ECR Road, Chennai 603112), about 40 kilometers south of Chennai, is ideal for water sports enthusiasts with opportunities for surfing, windsurfing, and kayaking. From CSIR-SERC Taramani: Approximately 27 km (50-60 minutes by car). Take Old Mahabalipuram Road (OMR) south, then connect to East Coast Road (ECR) heading toward Mamallapuram.

Nettukuppam Beach (Ennore, Chennai 600057), on the northern outskirts, remains relatively undiscovered by tourists, offering pristine shores and authentic fishing village experiences. From CSIR-SERC Taramani: Approximately 30 km (75-90 minutes by car). Take Inner Ring Road northward, connect to NH5, then proceed to Ennore via Thiruvottiyur High Road.

Architectural Wonders

Kapaleeshwarar Temple (Mylapore, Chennai 600004), dedicated to Lord Shiva, exemplifies classic Dravidian architecture with its colorful 37-meter gopuram (tower). From CSIR-SERC Taramani: Approximately 10 km (30 minutes by car). Take Taramani Link Road to Rajiv Gandhi Salai, then head to Mylapore via Mandaveli.

Government Museum and National Art Gallery (Pantheon Road, Egmore, Chennai 600008), housed in the stunning Indo-Saracenic Pantheon Complex, contains one of India's finest collections of bronze sculptures. From CSIR-SERC Taramani: Approximately 14 km (40-45 minutes by car). Take Taramani Link Road to Sardar Patel Road, then proceed via Mount Road to Egmore.

Parthasarathy Temple (Triplicane High Road, Triplicane, Chennai 600005), dedicated to Lord Krishna, dates back to the 8th century Pallava period. From CSIR-SERC Taramani: Approximately 13 km (35-45 minutes by car). Take Taramani Link Road to Rajiv Gandhi Salai, then proceed to Triplicane via Santhome High Road and Kamarajar Salai.

Vadapalani Murugan Temple (Vadapalani, Chennai 600026), dedicated to Lord Murugan, attracts thousands of devotees daily, especially those from the film industry. From CSIR-SERC Taramani: Approximately 15 km (45-55 minutes by car). Take Taramani Link Road to Inner Ring Road, then proceed to Vadapalani via 100 Feet Road.

Cultural Hubs

Kalakshetra Foundation (Kalakshetra Road, Thiruvanmiyur, Chennai 600041), established in 1936, is a premier institution preserving classical dance, music, and crafts. From CSIR-SERC Taramani: Approximately 4 km (10-15 minutes by car). Take Taramani Link Road south to Thiruvanmiyur, then proceed to Kalakshetra Road.

Dakshinachitra (East Coast Road, Muttukadu, Chennai 603112), a living museum south of Chennai, showcases the architectural heritage of South India through reconstructed traditional homes. From CSIR-SERC Taramani: Approximately 20 km (40-50 minutes by car). Take Old Mahabalipuram Road (OMR) south, then connect to East Coast Road (ECR) toward Mamallapuram.

Music Academy (TTK Road, Alwarpet, Chennai 600018) stands as the epicenter of Carnatic music, hosting the prestigious December Music Festival. From CSIR-SERC Taramani: Approximately 12 km (35-40 minutes by car). Take Taramani Link Road to Sardar Patel Road, then proceed to Alwarpet via Royapettah High Road.

Cholamandal Artists' Village (Injambakkam, Chennai 600115), established in 1966, is India's largest self-supporting artists' commune. From CSIR-SERC Taramani: Approximately 13 km (30-35 minutes by car). Take Old Mahabalipuram Road (OMR) south, then connect to East Coast Road (ECR) toward Injambakkam.

Egmore Museum Theatre (Pantheon Road, Egmore, Chennai 600008), built in 1896, is one of the oldest European-style theaters in Asia. From CSIR-SERC Taramani: Approximately 14 km (40-45 minutes by car). Adjacent to the Government Museum in Egmore.

Modern Attractions

VGP Universal Kingdom (East Coast Road, Injambakkam, Chennai 600041) combines an amusement park and water park for family entertainment. From CSIR-SERC Taramani: Approximately 14 km (30-35 minutes by car). Take Old Mahabalipuram Road (OMR) south, then connect to East Coast Road (ECR) toward Injambakkam.

Phoenix Marketcity (Velachery Main Road, Indira Gandhi Nagar, Chennai 600042) represents Chennai's contemporary face with international brands and entertainment options. From CSIR-SERC Taramani: Approximately 5 km (15 minutes by car). Take Taramani Link Road to Velachery Main Road.

Express Avenue (Whites Road, Royapettah, Chennai 600014) is a premium shopping mall with global cuisine options. From CSIR-SERC Taramani: Approximately 12 km (35-40 minutes by car). Take Taramani Link Road to Sardar Patel Road, then proceed to Royapettah via Anna Salai.

MGM Dizzee World (East Coast Road, Muttukadu, Chennai 603112) offers over 70 rides and attractions. From CSIR-SERC Taramani: Approximately 25 km (45-55 minutes by car). Take Old Mahabalipuram Road (OMR) south, then connect to East Coast Road (ECR) toward Mamallapuram.

Birla Planetarium (Gandhi Mandapam Road, Kotturpuram, Chennai 600025) presents immersive astronomical shows. From CSIR-SERC Taramani: Approximately 8 km (25 minutes by car). Take Taramani Link Road to Sardar Patel Road, then proceed to Kotturpuram via Gandhi Mandapam Road.

Chennai Rail Museum (Integral Coach Factory, Perambur, Chennai 600023) showcases vintage locomotives, coaches, and the evolution of Indian Railways. From CSIR-SERC Taramani: Approximately 18 km (50-60 minutes by car). Take Inner Ring Road northward, then proceed to Perambur via Perambur High Road.

Natural Retreats

Guindy National Park (Guindy, Chennai 600025), one of India's smallest national parks located within city limits. From CSIR-SERC Taramani: Approximately 8 km (25 minutes by car). Take Taramani Link Road to Sardar Patel Road, then proceed to Guindy.

Arignar Anna Zoological Park (Vandalur, Chennai 600048), spanning 602 hectares, is one of South Asia's largest zoos. From CSIR-SERC Taramani: Approximately 27 km (60-70 minutes by car). Take Old Mahabalipuram Road (OMR) to GST Road, then proceed south to Vandalur.

Pallikaranai Marsh (Pallikaranai, Chennai 600100), one of the last remaining natural wetlands in Chennai. From CSIR-SERC Taramani: Approximately 8 km (20 minutes by car). Take Velachery Main Road toward Pallikaranai.

Nanmangalam Reserve Forest (Medavakkam Main Road, Nanmangalam, Chennai 600117) offers hiking trails through dry deciduous woodland. From CSIR-SERC Taramani: Approximately 12 km (30-35 minutes by car). Take Velachery Main Road toward Medavakkam, then proceed to Nanmangalam.

Pulicat Lake (Pulicat, Tamil Nadu 601206), about 60 kilometers north of Chennai, is India's second-largest brackish water lagoon. From CSIR-SERC Taramani: Approximately 60 km (90-120 minutes by car). Take Inner Ring Road northward, connect to NH5, then proceed north toward Pulicat via Ponneri.

Culinary Experiences

Mylapore neighborhood (Chennai 600004), with its traditional eateries serving authentic South Indian tiffin items. From CSIR-SERC Taramani: Approximately 10 km (30 minutes by car). Take Taramani Link Road to Rajiv Gandhi Salai, then head to Mylapore via Mandaveli.

T. Nagar (Chennai 600017) is famous for street food stalls offering everything from chaat to fresh sugarcane juice. From CSIR-SERC Taramani: Approximately 13 km (40-45 minutes by car). Take Taramani Link Road to Sardar Patel Road, then proceed to T. Nagar via Mount Road and North Usman Road.

ECR Food Street has emerged as a culinary destination with seafood restaurants and themed cafes. From CSIR-SERC Taramani: Approximately 10-15 km (25-35 minutes by car). Take Old Mahabalipuram Road (OMR) south, then connect to East Coast Road (ECR).

Climate and Temperature Profile

Chennai has a tropical climate with relatively little seasonal variation in temperatures, though it experiences distinct wet and dry seasons.

Annual Temperature Overview:

- Average annual temperature: 28-30°C (82-86°F)
- Average maximum temperature: 31-35°C (88-95°F)
- Average minimum temperature: 21-26°C (70-79°F)

Seasonal Temperature Breakdown:

Southwest Monsoon (June-September):

- Brings occasional rainfall but not the city's primary rainy season
- Daytime temperatures: 32-35°C (90-95°F)
- Nighttime temperatures: 24-27°C (75-81°F)
- Remains hot and humid with brief respites during rainfall

Practical Tips

The best time to visit Chennai is between November and February when temperatures are more moderate. From CSIR-SERC Taramani, most destinations are accessible by:

• Metro: The nearest metro station to CSIR-SERC is Taramani (Blue Line), approximately 1.5 km away. The Chennai Metro connects key areas of the city.

• Bus: Several MTC (Metropolitan Transport Corporation) bus routes operate from Taramani, connecting to major parts of Chennai.

• Auto-rickshaws and Taxis: Readily available near CSIR-SERC and can be booked through ride-hailing apps like Ola and Uber.

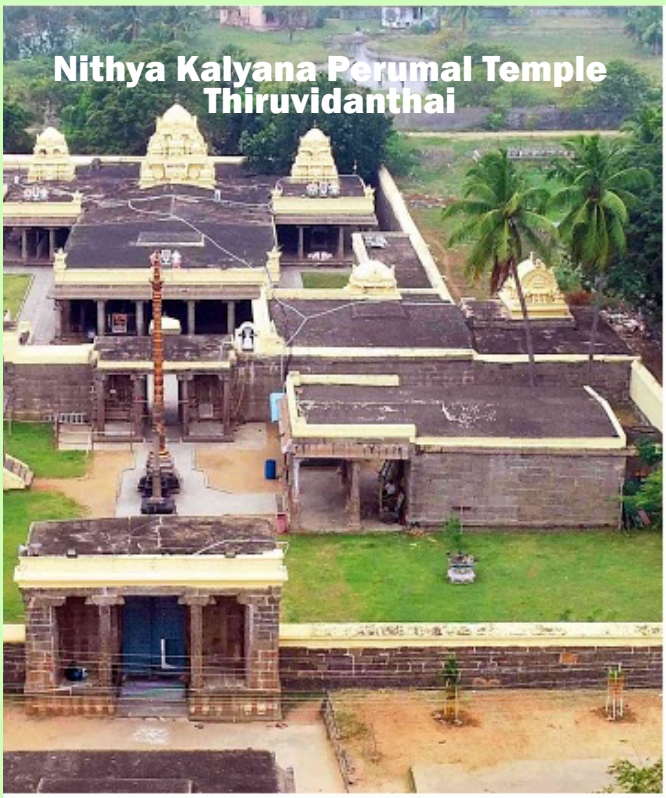
• Car Rental: Consider hiring a car with driver for a day to cover multiple attractions, especially those along the East Coast Road or in different parts of the city.

Chennai International Airport (MAA) is located about 15 km from CSIR-SERC Taramani (approximately 30-40 minutes by car), accessible via Rajiv Gandhi Salai and GST Road.

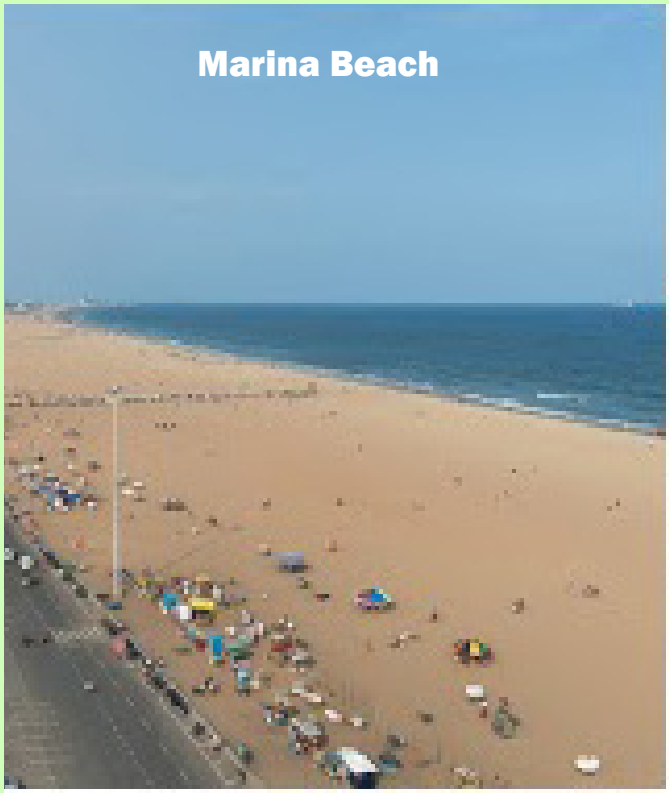
While exploring Chennai's cultural sites, modest dress is recommended, especially when visiting temples. During summer months (March-June), plan outdoor activities during early morning or evening hours to avoid the intense heat.

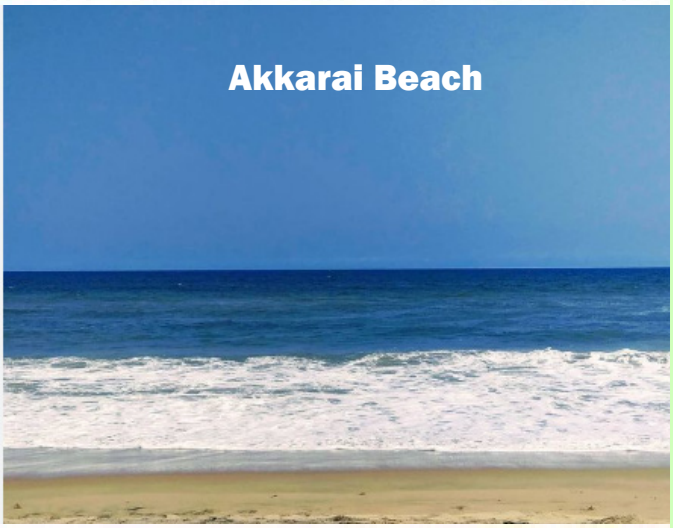
Chennai's unique blend of traditional Tamil culture, colonial heritage, and modern developments offers visitors a multifaceted experience of South India's dynamic spirit and rich history.

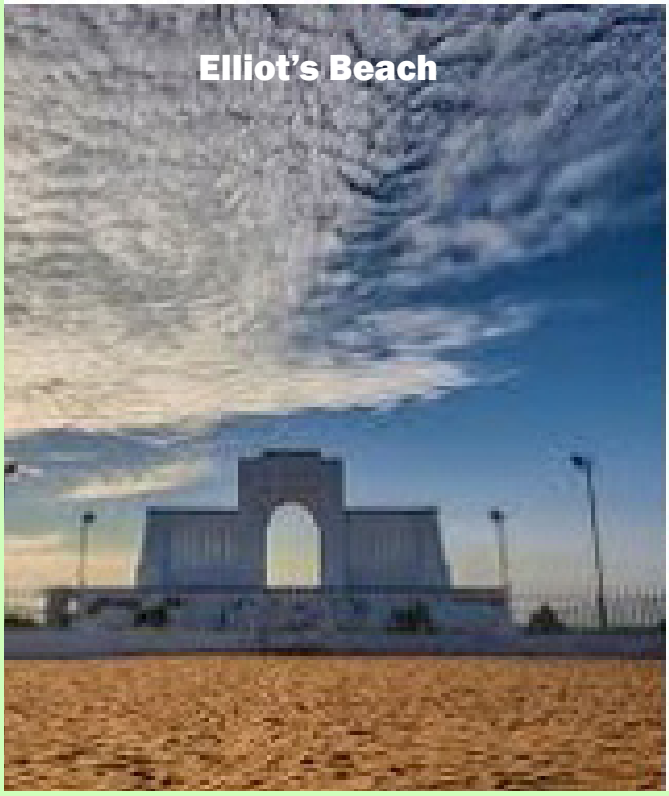
Famous Temples in Chennai



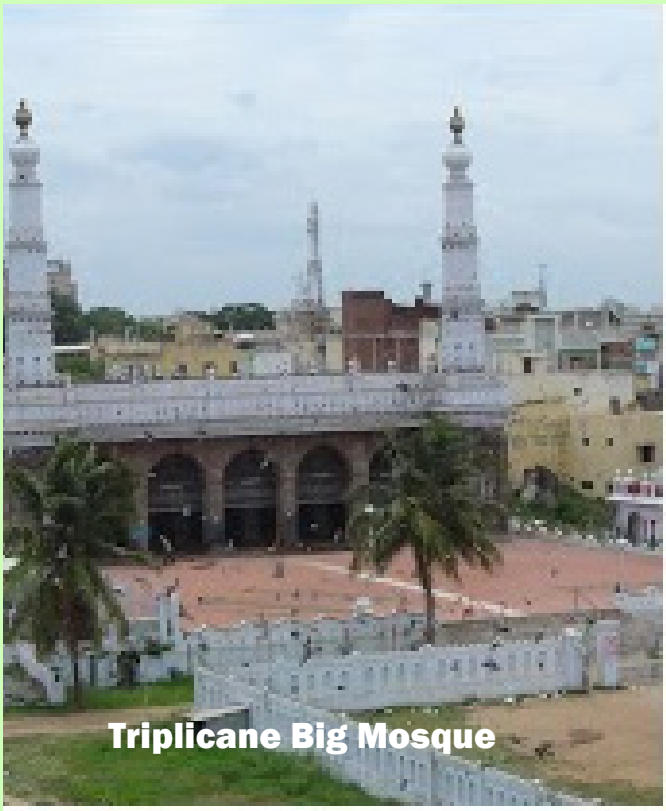
Popular beaches in Chennai

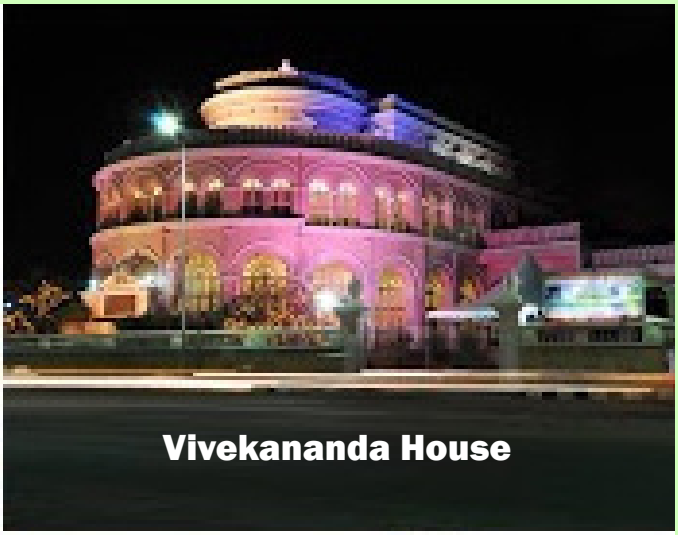




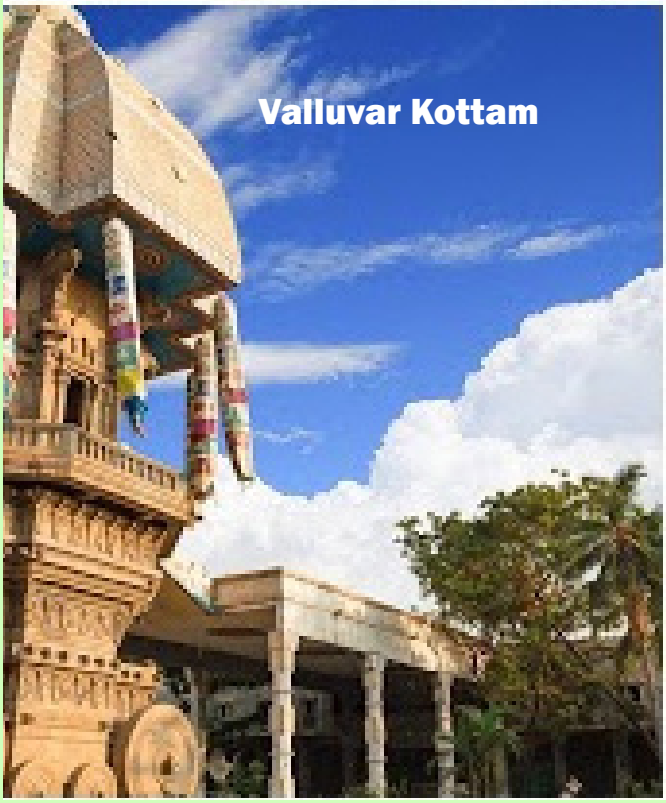


Popular places in Chennai


Triplicane Big Mosque


Vivekananda House


Santhome Cathedral Basilica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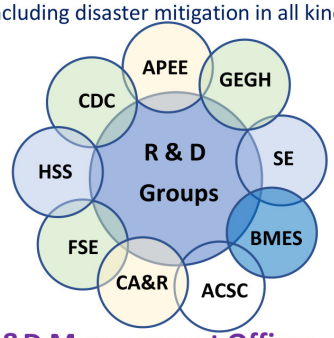

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Technologies with Societal Impact 20+

No. of total Technologies 105+

सी.एस.आई.आर. - केंद्रीय भवन अनुसंधान संस्थान, रुड़की

विज्ञान एवं प्रौद्योगिकी मंत्रालय, भारत सरकार

CSIR – Central Building Research Institute, Roorkee

Ministry of Science and Technology, Government of India

https://www.facebook.com/csircbri/, https://txitter.com/CSIR_CBRI
Email: director@cbri.res.in, Webpage: www.cbri.res.in

INNOVATE | DEVELOP | DELIVER

सीएसआईआर
CSIR
भारत का नवाचार इंजन
The Innovation Engine of India

CSIR - Central Electronics Engineering Research Institute
Pilani, Rajasthan, India

Serving the country since 1953 through

- Technology Development
- Sponsored/Contract R&D
- Consultancy
- Skill Development

IN THE AREAS OF

Electronic Instrumentation
- Advanced Information Technologies Group
- Integrated Circuits and Systems Group

Microwave/Vacuum Devices
- Vacuum Electron Devices Group
- High-Power Microwave Systems Group
- High-Frequency Devices and Systems Group

Semiconductor Devices & Smart Sensors
- Semiconductor Sensors and Micro-Systems Group
- Semiconductor Process Technology Group

Some of the Devices and Technologies Developed

- Accelerometer, Diamond Detectors, Sensor Interface Circuits, Gas Sensor Platform, Low Temperature Co-fired Ceramic Technology based Circuits, MEMS Hotplate, Silicon Carbide Schottky Diode Detectors, MEMS Ultrasonic Transducers, MEMS Acoustic Sensors, Selective Ion Sensors, Biosensors, ISFET based PH Sensor, Hybrid Microcircuits (HMCs) for SROSS and INSAT series of Satellites, Re-configurable System Design, Application Specific Instruction-set Processor Design, 16/32-bit Microprocessor Design, P-MOSFET Gamma-ray Dosimeter, Piezoresistive Pressure Sensor, Capacitive Pressure Sensor, InP-InGaAs based PIN Photo Detectors, 980nm Pump Laser Diode, C-band High-power GaAs MESFETs and Amplifiers

- 140 W Ku-band Space TWT, 2.6 MW Magnetron for LINAC, Mercury-free VUV/UV Plasma Source, Pseudospark Switches, Cathode System (MTRDC), Software Packages, Related Infrastructure & Technologies, High-power Microwave Window Technology, Long-life Dispenser Cathodes, 40 kV 3 kA Thyratron, 25 kV 1 kA Thyratron, Design and Technology Development for Gyrotron Devices, 6 MW Pulse 24 kW Average Power S-Band Klystron, 5 MW Pulsed S-band Klystron, 6 Ghz 20 W Helix TWT, 60 W Space TWT, S-band 30 W Helix TWT, Broadband 40 W Mini Helix TWT, C-band 75 kW CC-TWT, 3 MW Pulsed S-Band Magnetron, 2 MW S-band Tunable Pulsed Magnetron, S-band 1 MW Magnetron, S-band 500 kW Magnetron, S-band 400 W Carcinotron

- Ksheer Tester, Ksheer Scanner, Grid-compatible Inverters, 5 kW Solar-power Drive for Pumps, RO Water Plant Automation, Specialised Power Supplies and Pulse Power Systems for High Power Microwave Tubes, Sensor Networks, Wired and Wireless Communication Network for Underground Mines, Electronic Tongue, Electronic Nose, NIR-based Instrumentation for Chemometrics, Electronic Instrumentation for Fresh Water Acqua-culture and RO Systems, Machine Vision Systems for Bakeries and Steel Mills, Machine Vision Systems for On-line Sorting and Grading of Fruit, Monitoring and Control System for Paper and Pulp Industry, Process Control Instrumentation for Sugar Industry, Withering Controls for Tea Processing, Converters/PWM Actuators, High-power ac and dc Drives

Academic Programmes Offered

- The institute conducts post graduate and research programmes under the aegis of AcSIR in Advanced Electronic Systems, Advanced Semiconductor Electronics, and High Power Microwave Devices and Systems Engineering.
- Skill Development Programmes for Students and Working Professionals
- ME/M Tech project work and doctoral thesis work for highly motivated university students in all the above areas of electronics

For Further Details, Please Contact

Director, CSIR - Central Electronics Engineering Research Institute, Pilani (Rajasthan) 333 031
Tel: 91+1596-242111 Fax: 91+1596-242393 E-mail: director@ceeri.res.in www.ceeri.res.in

CSIR-INSTITUTE OF MINERALS AND MATERIALS TECHNOLOGY

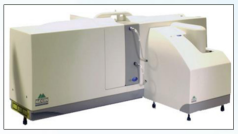
Council of Scientific and Industrial Research
Bhubaneswar-751013, INDIA

CORE AREA COMPETENCY

- Material characterization
- Mineral beneficiation, pelletisation and agglomeration
- Extraction of metals from ores, sludge and scraps
- Plasma processing of materials
- Nanomaterials, bio materials and energy materials
- Coatings, thin films, alloys, composites
- Green technology for industrial waste management
- Drinking water filtration and wastewater recycling
- Environmental impact assessment
- CFD/DEM modelling and simulation

Constructed wetland for waste water treatment

XPS

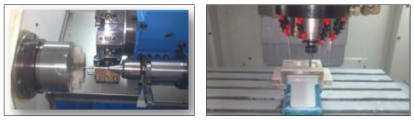


Particle Size Analyzer

High Concentration Slurry Transportation

INDUSTRY INTERFACE

- Technology development for mineral, material, metallurgical and chemical industries
- Contract research and consultancy for process optimization
- TEFR and Basic engineering packages in core area
- Testing of water quality and components in ores, rocks, soils, slags, and processed products
- Skill development



CNC Turning & Milling Machines

FACILITIES

- Mineral processing pilot plant
- SOPs for extraction of materials from industrial wastes
- Coal characterization
- Processing of natural gemstones for value addition
- State-of-the art analytical equipments for characterization of ores, minerals & materials
- Commercial scale production facility for fly ash and red mud building materials
- Mechanical workshop for design and fabrication
- Biomass operated cook stoves and testing lab
- Technology validation

Fly Ash & Red Mud Bricks

EPMA

XRD

Plasma Spray Coating

Column Flotation Unit

Hydrogen Plasma Reactor

TEM

X-ray Micro CT

Microwave Plasma Reactor

Scanning Electron Microscope

CONTACT US

Director, CSIR-Institute of Minerals & Materials Technology
Bhubaneswar – 751013
Phone: 0674-2379401; Email: dir@immt.res.in
URL: www.immt.res.in

ISO/IEC 17025:2005
NABL Accrediated

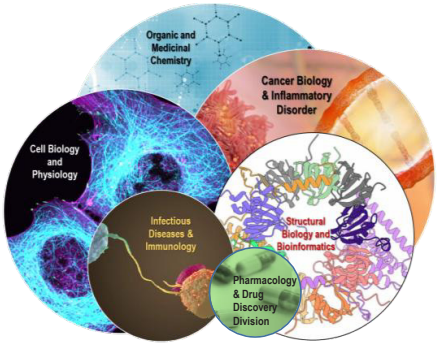
Inspiring minds
for a **Greener Planet**

CSIR-Indian Institute of Chemical Biology

4, Raja S. C. Mullick Road, Kolkata - 700 032

CSIR-Indian Institute of Chemical Biology (IICB), originally established as the Indian Institute of Medical Research in 1935, later became a part of the Council of Scientific & Industrial Research (CSIR). The institute was founded with the noble mission of eradicating cholera, culminating in the development of an oral cholera vaccine. The institute operates through six research divisions and is spread across two campuses, at Jadavpur and Salt Lake, in Kolkata, with excellent infrastructure for pioneering research and innovation.

Major Divisions and Thrust Areas:

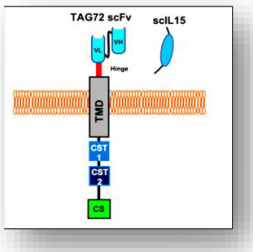


Generating Knowledge Globally:

- Average Published Papers / Year > 170
- H-index: 112
- Total citation: 1,05,217 (without self-citations)
- Average Impact Factor > 5.3

Transforming Knowledge into Wealth (IP):

- Patent filed / Year > 4
- Patent Granted / Year > 4



Development and pre-clinical validation of CAR-T constructs targeting ovarian cancer

Ph.D. Programme being offered:

CSIR-Indian Institute of Chemical Biology, Kolkata offers Ph.D. Programme through AcSIR, Jadavpur University and Calcutta Universities in the following areas:

- Cancer Biology & Therapeutics (Hematological & Solid Cancer)
- Drug Discovery & Development, API & KSM
- Immunology
- Metabolic Disorders (Cardiovascular Diseases, Diabetes, Lung Diseases)
- Neurodegenerative disease and Neurogenesis
- Organic & Medicinal Chemistry
- Phytopharmaceuticals
- Transcriptional misregulation in human diseases
- Viral and Parasitic Diseases (Leishmania, Malaria)

Outreach activities:

CSIR-IICB connects with society through its flagship outreach initiatives - the CSIR-Jigyasa Programme and the CSIR-Integrated Skill Initiative Programme.

Potential Technologies Developed Recently:

- Novel Thermostable insulin formulation
- Potent TLR9-selective and TLR9 and 7 dual antagonists for Autoimmune diseases
- Novel amphotericin B liposomal formulation against Leishmania and fungi.
- Novel Process for Manufacturing TROPISETRON
- Rapid Tests (Kit) for Diagnosis of Human and Canine Visceral Leishmaniasis (VL) and Post Kala-azar Dermal Leishmaniasis (PKDL)
- An easy-to-use point-of-care system for RNA-based detection of Dengue
- Diagnostic Kit for detection of Rheumatic Heart Disease
- Improved process for the manufacture of Tilorone and its salts
- Novel paramomycin liposomal formulation against Leishmania
- 'Indian MistleToe' Therapy for Management of Cancer
- Management of Prostate Hyperplasia/Urinary disorders (Prostalyn^{R} being commercialised)
- Organelle Specific Fluorescent probes for live cell imaging

Rapid Diagnostic Kits for Leishmaniasis

Rapid Diagnostic Kits for RHD

Hemostatic Pad for rapid blood clotting

Prostalyn^{R}

Medha Plus

Contact: Director, CSIR-IICB, Kolkata,
Phone: 033-24995700 (Pilot No.), 033-24995701 (Director), Email: director@iicb.res.in, **Website: https://iicb.res.in**

Mahabalipuram - a UNESCO World Heritage Site

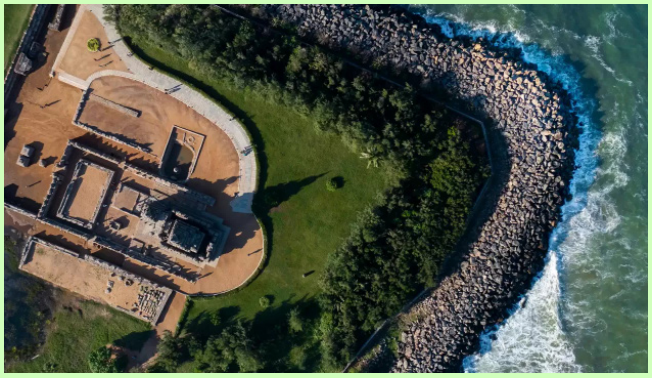
Ms. R Lakshmi Poorna, Senior Technical Officer (2), CSIR-SERC

The Group of Monuments at Mahabalipuram is a collection of 7th and 8th century CE religious monuments in the coastal resort town of Mahabalipuram, about 60 kilometres southwest of Chennai. Ancient temples that reflect the glory of erstwhile kingdoms, pristine beaches that emanate matchless natural beauty, rich cultural heritage that welcomes you with warmth – Mahabalipuram is in many ways the splendidly vibrant destination you will love to visit many times. Once ruled by the Pallavas, famed for their excellent architecture and sculptures, Mahabalipuram will leave a lasting impression on you, even years after your visit.

Shore Temple

Arjuna's Penance

Five Rathas



Mahabalipuram Beach

Krishna's Butterball

Tiger Cave Temple

How to Reach
By Road from Chennai

Via East Coast Road (ECR):
The East Coast Road is the most popular and scenic route from Chennai to Mahabalipuram. Running parallel to the Bay of Bengal, this highway offers stunning coastal views and a smooth driving experience. The distance is approximately 60 kilometers, and the journey takes about 1.5 hours by car or taxi. This scenic route not only saves time but also offers beautiful coastal views and the flexibility to stop at attractions like the Crocodile Bank, Covelong Beach, and Dakshina Chitra along the way. Starting early in the morning ensures a smoother ride and gives you more time to explore Mahabalipuram's historic monuments and beaches. Plenty of rental taxis are available from Chennai to Mahabalipuram.

Via Old Mahabalipuram Road (OMR):
The Old Mahabalipuram Road, also called Rajiv Gandhi Salai, is another route to reach the town. While OMR serves as an IT corridor and can get crowded during peak hours, it eventually connects to ECR. Travel time on this route ranges from 1.5 to 2 hours, depending on traffic.

State-Run Buses:
The Tamil Nadu State Transport Corporation operates regular buses between Chennai and Mahabalipuram. Most buses depart from Chennai Mofussil Bus Terminus or Thiruvanmiyur Bus Depot. The journey takes approximately 2 to 2.5 hours and is an affordable option for
budget-conscious travelers.

Shopping in Mahabalipuram

Shopping in Mahabalipuram is a fantastic experience to buy some exquisite souvenirs. As a sculpture city, Mahabalipuram is famous for its stone and wooden sculptures of various gods and goddesses. Moreover, seashells, jewelry, decorative items and handicrafts are also in vogue while shopping in the town. Beautiful statues made up of granite stone and wood, soapstones, seashell items and exclusive South Indian handicrafts are popular here. You can buy exclusive handicrafts from government emporiums in Mahabalipuram.

CSIR-CENTRE FOR CELLULAR AND MOLECULAR BIOLOGY

CSIR-CCMB

A constituent laboratory of CSIR to carry out research in frontier and multidisciplinary areas of modern biology, and seek potential applications

ADVANCED FACILITIES

- Advanced microscopy and imaging facility (confocal, SEM, TEM, AFM-Raman); NMR (600 MHz) microimaging and high-resolution spectroscopy; X-ray crystallography & FACS
- Genome engineering and transgenic facility for several model systems
- Medical biotechnology facility, biosafety levels 2 & 3 labs, bioinformatics cluster, nanotechnology facility
- iHUB - CSIR-CCMB's Innovation Centre to facilitate entrepreneurial activities in healthcare and biotechnology

CURRENT AREAS OF RESEARCH

- Cell & Molecular Biology
- Genetics, Chromatin Biology, Genomics & Bioinformatics
- Developmental Biology
- Protein Structure & Function
- Biology of Macromolecules
- Biology of Infection
- Conservation Biology & Ecology

FROM LABS TO SOCIETY

- DNA fingerprinting technology for quicker and reliable identification of individuals
- Universal primer technology facilitates identification of animal species & helps in wildlife protection and conservation
- Improved Samba Mahsuri rice variety for developing better crop varieties without genetic engineering
- DNA based diagnostic kits for quick identification of genetic disorders & microbes causing eye infections
- COVID-19 mitigation

Contact: Dr Vinay K Nandicoori, Director, CSIR-CCMB
email: director@ccmb.res.in
Visit us at www.ccmb.res.in

Council of Scientific and Industrial Research

FOURTH PARADIGM INSTITUTE

WIND TUNNEL ROAD, BENGALURU -37

BIG DATA RESEARCH AND SUPERCOMPUTING DIVISION (BRSD)

CSIR centralized computational facility hosted at CSIR-4PI with peak performance of 4.2 PetaFLOPS

Cyber Security Dynamics: Observation and Analysis

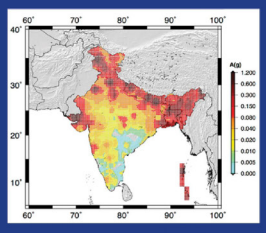
"CSIR 4PI = DATA ± SCIENCE"

Dr. Gopal Krishna Patra

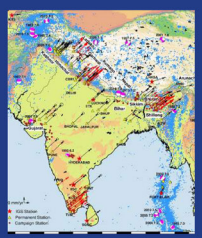
Director, CSIR-4PI

CSIR 4PI is a young and vibrant organisation committed to promote data driven translational research in CSIR labs with an aim to be the ONE STOP destination for all Data Science, AI, ML, DL and Cyber Infrastructure needs of CSIR. Further, in the coming years, we aspire to attain the leadership as an institute of excellence in Data Sciences that the country can look upon to solve problems of societal and strategic importance.

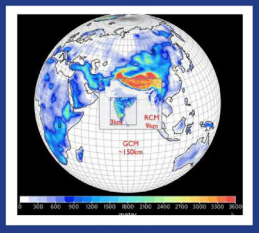
INTERDISCIPLINARY DATA RESEARCH DIVISION (IDRD)



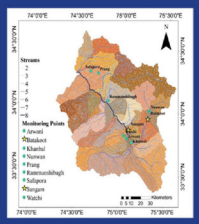
The first ever Deterministic Seismic Hazard map for the country has been produced by us in 2003 and later revised in 2017



The permanent and campaign mode stations ITRF2014 velocities with uncertainites (1996-2022) in Indian sub-continent along with the IGS stations



Regional Climate Model (RCM) orography (shaded in km) nested in Global Climate Model (GCM)



Integrated System dynamical model for Sustainable water Management over Upper Jhelum and Kosi river basins of Indian Himalaya. National Mission on Himalayan Studies (NMHS)

CSIR-Central Mechanical Engineering Research Institute, Durgapur : 713209

Mechanized Drain Cleaning System

- High pressure jetting system with recycled water
- Post cleaning inspection unit

Integrated Solid Waste Disposal System

- Integrated & mechanized segregation system for biodegradable & non biodegradable waste

Mob Control Vehicle (MCV)

- 7.5 ton pay load capacity
- Troop carrying capacity : 8+2
- Indigenous strategic technology

Electric Tractor (E-Tractor)

- Suitable for low & marginal farmer
- 2- 2.5 hrs. continuous field operations.
- Operation Speed : upto 30 kmph

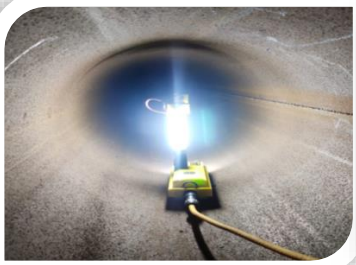
Contact Details :
Email : bdg@cmeri.res.in
Web: www.cmeri.res.in
Ph. : +91-97480 22917,
+91-9434330540

Farm Machinery Training and Testing Center

- Approved Farm Machinery Testing Centre
- Commercial & Confidential tests are available

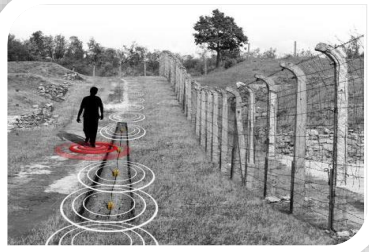
Metal Additive Manufacturing

- Laser-based Direct Energy Deposition (L-DED)
- Accuracy: 1µm (Min. inc.), X,Y Z Axes: 50 µm/m



Boiler Header Inspection Robot

- Encoded data transmission between the robotic system & control unit
- SMD-based circuitries



Sensor Suite for Perimeter Surveillance

- Accurate ML based Classification of Intrusion
- Fused Response from Multi-level Intrusion Detection

सी एस आई आर - भारतीय पेट्रोलियम संस्थान
CSIR- Indian Institute of Petroleum

14 अप्रैल, 1960 को स्थापित सीएसआईआर–भारतीय पेट्रोलियम संस्थान (भापेसं) एक वैश्विक मान्यता प्राप्त तथा आईएसओ 9001रू 2008 प्रमाणित अनुसंधान एवं विकास संगठन है, जो राष्ट्रीय और अंतर्राष्ट्रीय उद्योगों को अभिनव प्रौद्योगिकियां और तकनीकी सहायता प्रदान करता है। सीएसआईआर–भापेसं अपस्ट्रीम फ्लो, डाउनस्ट्रीम हाइड्रोकार्बन क्षेत्र और सम्बंधित उद्योगों के बहु–विषयक अनुसंधान में विशेषज्ञ है, जिसमें प्रक्रम और उत्पाद विकास (प्रयोगशाला से पायलट स्तर), प्रक्रम अनुकूलन, उन्नयन (स्केल–अप) और तकनीकी–आर्थिक व्यवहार्यता अध्ययन आदि सम्मिलित हैं। इसके प्रमुख कार्यक्षेत्रों में पेट्रोलियम शोधन, उत्प्रेरक प्रक्रम, विलायक निष्कर्षण, अधिशोषण, मेम्ब्रेन और उत्पाद अभिलक्षणन शामिल हैं। संस्थान के नवीनतम प्रयास पेट्रोलियम स्ट्रीम्स के जैव–प्रसंस्करण, वैकल्पिक ईंधन और विशिष्ट रसायन पर केंद्रित हैं। इस संस्थान ने उद्योगों को कई प्रौद्योगिकियां सफलतापूर्वक हस्तांतरित की हैं। भारत में लगभग हर रिफाइनरी में सीएसआईआर–भापेसं की लाइसेंस प्राप्त प्रौद्योगिकी प्रयोग की जा रही है। संस्थान ने बीआईएस मानकों के अनुसार पेट्रोलियम उत्पादों के लिए मूल्यांकन तकनीकों का विकास किया है तथा यह अनुबंध अनुसंधान एवं तकनीकी सेवाओं के लिए सतत वैश्विक साझेदार है। 2,100 से अधिक प्रकाशनों और 300 पेटेंट के साथ, इस संस्थान को सीएसआईआर प्रौद्योगिकी पुरस्कार और स्वदेशी प्रौद्योगिकी के वाणिज्यीकरण के लिए राष्ट्रीय पुरस्कार जैसे प्रतिष्ठित पुरस्कार प्राप्त हो चुके हैं। यह संस्थान ऊर्जा क्षेत्र के लिए निरंतर विशेष प्रशिक्षण तथा कौशल विकास कार्यक्रम आयोजित करता है।

प्रमुख कार्यक्षेत्र

- ☐ उन्नत पृथक्करण प्रक्रम रू आसवन, विलायक निष्कर्षण, अधिशोषण, अवशोषण, मेम्ब्रेन पृथक्करण
- ☐ उत्प्रेरक और रूपांतरण प्रक्रम
- ☐ नवीकरणीय ईंधन, ट्राइबोलाजी और स्नेहक
- ☐ औद्योगिक तथा घरेलू दहन
- ☐ पेट्रोरसायन प्रक्रम
- ☐ जैवउत्प्रेरण
- ☐ अपशिष्ट का पुनरूपयोग
- ☐ एडिटिव एवं विशिष्ट रसायन
- ☐ कच्चे तेल का मूल्यांकन एवं पाइपलाइन प्रवाह
- ☐ रिफायनरी हाइड्रोकार्बन स्ट्रीम्स तथा पेट्रोलियम उत्पाद अभिलक्षणन
- ☐ अंतर्दहन(आईसी) इंजन उत्सर्जन और वैकल्पिक ईंधन अध्ययन
- ☐ CO_2 उपयोग तथा पेट्रोरसायन
- ☐ पिंच विश्लेषण
- ☐ आणविक प्रतिरूपण तथा अनुरूपण

हाल ही में हस्तांतरित मुख्य प्रौद्योगिकियाँ

- ☐ वैक्स वितैलन प्रौद्योगिकी, नुमालीगढ़ रिफाइनरी, असम
- ☐ बेंजीन पुनरू प्रापण इकाई (बीआरयू), रिलायंस इंडस्ट्रीज लि., जामनगर
- ☐ एल पी जी स्वीटनिंग उत्प्रेरक 'थाक्सकैट ईएस'(10 भारतीय तथा 2 विदेशी रिफाइनरियां)
- ☐ विस्ब्रेकिंग विद सोकर इंटरनल टेक्नॉलॉजी, हल्दिया रिफाइनरी
- ☐ उन्नत पीएनजी चूल्हे
- ☐ द्वि– ईंधन जेनसेट प्रौद्योगिकी

वाणिज्यीकरण हेतु तैयार प्रौद्योगिकियाँ

- ☐ यूएस–ग्रेड गैसोलीन और उच्च शुद्धता–बेंजीन का एक साथ उत्पादन
- ☐ पैराफीन और सूक्ष्मक्रिस्टलीय मोम (वैक्स) के लिए मोम वितैलन प्रौद्योगिकी
- ☐ 'थाक्सकैट ईएस$^{प्लस}$'रू एक नया एलपीजी स्वीटनिंग उत्प्रेरक
- ☐ नवीकरणीय बायोमीथेन के लिए उन्नत वीएसए (AVSAR™)
- ☐ सोकर इंटरनल विस्ब्रेकिंग प्रौद्योगिकी
- ☐ पौधों से प्राप्त तेलों तथा पशुओं से प्राप्त वसा से संवहनीय विमानन ईंधन हेतु एकल चरण प्रक्रम
- ☐ सामान्य तापमान बायोडीजल के उत्पादन के लिए प्रौद्योगिकी
- ☐ डीजल जेनसेट को द्वि–ईंधन मोड में परिवर्तित करने हेतु प्रौद्योगिकी
- ☐ घरों में पाइप्ड प्राकृतिक गैस (पीएनजी) पर खाना पकाने हेतु नवीन ईंधन कुशल बर्नर
- ☐ उन्नत बायोमास चूल्हा प्रौद्योगिकी
- ☐ पर्यावरण – अनुकूल और ऊर्जा दक्ष गुड़ संयंत्र के लिए प्रौद्योगिकी
- ☐ बायोजेनिक ईंधन उत्पादन हेतु पिरूल – ब्रिकेटिंग
- ☐ जैव–व्युत्पन्न रसायन और उत्पाद
- ☐ अपशिष्ट स्नेहकों (स्पेंट ल्यूब आयल्स) का पुन: परिष्करण और रंग स्थिरीकरण
- ☐ अपशिष्ट प्लास्टिक से ईंधन और रसायन के लिए प्रौद्योगिकी
- ☐ CO_2 से मेथनॉल
- ☐ तिपहिया डीजल ऑटो के इलेक्ट्रिक ऑटो में रूपांतरण (रेट्रो–फिटमेंट) के लिए EV किट
- ☐ पर्यावरणीय ऑडिट

प्रशिक्षण कार्यक्रम तथा कौशल विकास

- ☐ नवीन पेट्रोलियम रिफाइनिंग प्रौद्योगिकियां
- ☐ सीबीजी तथा फ्लेक्स ईंधन इंजन / वाहन के क्षेत्र में उभरते रुझान।
- ☐ इलेक्ट्रिक मोबिलिटी तथा उन्नत ऑटोमोटिव प्रौद्योगिकी
- ☐ ऑटोमोटिव अनुप्रयोग के लिए वैकल्पिक ईंधन
- ☐ वाहन उत्सर्जन और नियंत्रण
- ☐ न्यून कार्बन प्रौद्योगिकियां और कार्बन संग्रह (CCUS)
- ☐ वैकल्पिक ऊर्जा, जैव ऊर्जा तथा हरित हाइड्रोजन
- ☐ पेट्रोरसायन, पॉलिमर और कच्चे तेल से रसायन
- ☐ पेट्रोलियम तथा संबद्ध उत्पादों का विश्लेषण
- ☐ सीएफआर इंजिन (RON/MON/Cetane Number) प्रचालन तथा देखभाल
- ☐ विभिन्न विश्लेषणात्मक तकनीको पर कौशल विकास कार्यक्रम





सी एस आई आर – भारतीय पेट्रोलियम संस्थान
मोहकमपुर, देहरादून – 248005, उत्तराखंड
वेबसाइट :https://www.iip.res.in, दूरभाष: + 91-135-2525709

Scimago Overall Institute Ranking (2024) - 17

Publications (2024) - 252 (AIF - 5.85)

Technologies Transferred (Till 2024) - 94

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Accredited by

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- Microbial Infections
- Viral Infections
- Parasitic Infections
- Neurological Disorders
- Metabolic Disorders
- Musculoskeletal Health Disorders
- Cancer
- Reproductive Health

Vision

To drive discovery and development of cutting edge and affordable healthcare technologies

Mission

Discovery and development of therapeutics for nationally important diseases with global impact, understanding fundamental disease biology and training future drug researchers

Achievement Since Inception

- 13 New Drugs Discovered and Developed
- 6 Diagnostics
- > 80 Process Technologies
- > 12,000 Research Publications
- > 456 Patents Filed Abroad
- > 586 Patents filed in India
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- > 2,000 Sponsored Trainings
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- S016-1348 (Anti-cancer) Smac mimetic
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- Picroliv (NAFLD)
- NMITLI-118 AF1 (Anti-stroke)
- Chebulinic acid enriched fraction for BPH
- 1703F003 4-HIL (Anti PCOS)

Cost effective Generics
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- Nintedanib
- Nitazoxanide
- Centhaquin
- Niclosamide
- Centbucridine

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Badminton - The Fastest Racket Sport

Shri M. Elamaran, Technical Assistant, CSIR-SERC

Badminton's origins trace back over 2,000 years to games in Greece, China, and India. The modern version was introduced in England in 1873 at Badminton House. It became an official Olympic sport in 1992 and is now played worldwide in singles and doubles formats. The shuttlecock, made of 16 goose or duck feathers and weighing just 4.74–5.50 g, can travel at speeds exceeding 490 km/h, demanding lightning reflexes, agility, and precision from players.

The standard court measures 13.40 m in length, with narrower side-lines for singles and full width for doubles. The net stands 1.55 m high at the posts and 1.524 m at the centre. Lightweight rackets (70–100 g) and strategic play make badminton a thrilling spectacle, especially in nations like China, Indonesia, Malaysia, Denmark, and India. Legends such as Lin Dan, Lee Chong Wei, PV Sindhu, and Viktor Axelsen continue to inspire millions to take up this dynamic, fast-paced sport.

Origin and History of Badminton

The Roots

Badminton's earliest form can be traced back over 2,000 years to ancient games played in Greece, China, and India.

- The modern version of the game began in 1873 at the Duke of Beaufort's estate, Badminton House in Gloucestershire, England — which gave the sport its name.
- In 1877, the first official rules were drawn up by the Bath Badminton Club in England.

International Development

- The International Badminton Federation (IBF) was formed in 1934 with founding members from England, Scotland, Wales, Canada, Denmark, France, Ireland, and the Netherlands.
- Badminton made its Olympic debut as a demonstration sport in 1972 (Munich) and became an official Olympic sport in 1992 (Barcelona).

Understanding the Game

Basic Concept

- Badminton is played using a racket to hit a shuttlecock (or "birdie") across a net.
- It can be played in singles (1 vs 1) or doubles (2 vs 2).

Court and Scoring

•The court is rectangular:
Singles: Narrower playing area (44 ft X 17 ft).
Doubles: Wider side-lines (44 ft X 20 ft).
• Matches are played best of three games to 21 points (rally point system — every rally result in a point).
• A side must win by at least 2 points, unless the score reaches 29–29; then the first to 30 wins.

Shuttlecock

• Made of 16 overlapping feathers (usually goose or duck) fixed in a cork base, or from synthetic materials, weighing between 4.74 and 5.50 grams for recreational play.
• Travels at incredible speeds — world records exceed 490 km/h, making badminton the fastest racket sport.

Significance and Popularity

• Badminton is the national sport of Indonesia and highly popular in countries like China, Malaysia, Denmark, and India.
• It requires speed, agility, stamina, and tactical skill.
• International stars like Lin Dan, Lee Chong Wei, PV Sindhu, Carolina Marin, and Viktor Axelsen have inspired millions.

THE ORIGIN AND HISTORY OF BADMINTON

ORIGIN AND HISTORY

2,000+ YEARS

Ancient games played in Greece, China, and India

1873 BADMINTON HOUSE

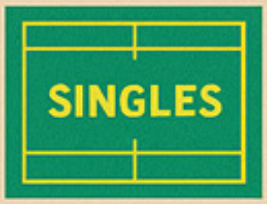
Modern version began at Duke of Beaufort's estate

UNDERSTANDING THE GAME

BASIC CONCEPT

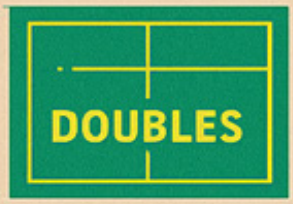
Racket to hit the shuttlecock across a net

COURT AND SCORING



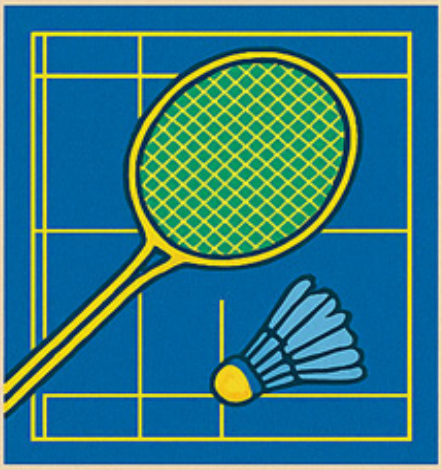
Rectangular court

Matches best of three games to 21 points



Fron to back

games to 21 points



SHUTTLECOCK

16 overlapping feathers, or synthetic materials

SIGNIFICANCE AND POPULARITY

- National sport of Indonesia
- Popularity in China, Malaysia, Denmark and India
- Speed, agility, stamina, and tactical skill
- International stars Lin Dan, Lee Choog Wei, PV Sindhu, Carolina Marin

CSIR-Central Glass & Ceramic Research Institute

(https://www.cgcri.res.in/)

CGCRI Technology Compendium 2024

CGCRI Profile

Mission

To position CSIR-CGCRI as a world-leading institute in Ceramics, Glass and advanced materials, while accelerating innovation in transformative technologies to deliver positive economic and societal impact for India

Core competencies

Vision

I ➡ INSPIRING
Next generation scientists/ technologists

D ➡ DELIVERING
To the Nation

E ➡ ENGAGING
With key stakeholders

A ➡ ADMINISTRATION
Facilitating Excellence in Science, Technology and Innovation

Alignment with Sustainable Development Goals

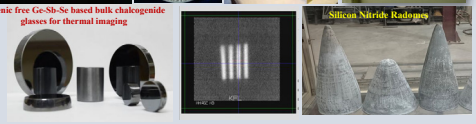
Alignment with National Missions

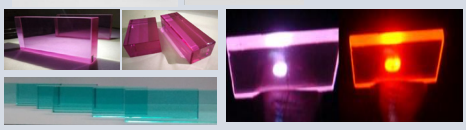
Niche Technologies catering to National needs

Strategic

Radiation Shielding Window (RSW) Glass and Specialty Glass beads

Arsenic free Ge-Sb-Se based bulk chalcogenide glasses for thermal imaging





Nd: Laser Glass Blocks and Cladding glass for strategic applications

Industry

Solid Oxide anode stacked Fuel cells

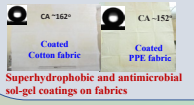
522W CW laser using Yb-doped 20/400 (LMA)

Nanosecond Pulse Fiber Laser

Moisture Sensor

Intelligent railway pantograph for condition monitoring

Sol-gel based antireflection Coatings for solar panels



Superhydrophobic and antimicrobial sol-gel coatings on fabrics

MgO-C Refractory (Vizag Steel Plant)

Healthcare

Hydroxyapatite-based orbital implants

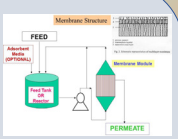
Calcium Phosphate Based Cements and Granules

Hydroxyapatite-coated implants

Ceramic (Al_2O_3 and ZTA) based hip prosthesis

Societal

Membrane filtration plants deployed in West Bengal and Bihar



Ceramic Membrane technology for Groundwater/ Wastewater purification

Training and skill development programs of CGCRI Extension Centres, located at Khurja (Uttar Pradesh) and Naroda (Gujarat)

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Table Tennis - Art of Precision and Time

Smt. S. Jagadhaprabha, Private Secretary, CSIR-SERC

1. टेबल टेनिस, जिसे पिंग पोंग के नाम से भी जाना जाता है, एक ऐसा खेल है जो बिजली-सी तेज़ प्रतिक्रिया, रणनीतिक सोच और सटीक तकनीक का अद्भुत संगम है।

   Table tennis, also known as ping pong, is a sport that combines lightning-fast reflexes, strategic thinking, and precise technique.

2. मूलतः , यह खेल गति और सटीकता का अद्वितीय मिश्रण है।

   At its essence, table tennis is a game of precision and speed.

3. 40 मिलीमीटर की गेंद 2.74 मीटर लंबी मेज़ पर अत्यधिक गति से आगे-पीछे दौड़ती है और खिलाड़ियों की तकनीकी दक्षता से इसमें अक्सर अप्रत्याशित स्पिन भी देखने को मिलता है।

   A 40-millimeter ball zips back and forth across a 2.74-meter table at incredible velocities, often spinning unpredictably due to the technical mastery of the players.

4. इस खेल का सबसे रोचक पहलू इसकी रणनीतिक गंभीरता है।

   One of the most intriguing aspects of table tennis is its strategic depth.

5. शारीरिक कौशल जितना आवश्यक है, मानसिक दृढ़ता और विश्लेषण भी उतना ही महत्त्वपूर्ण है।

   While physical skill is crucial, the psychological element is equally important.

6. खिलाड़ियों को लगातार अपने प्रतिद्वंद्वी की शैली का विश्लेषण करना होता है, अपनी रणनीति में बदलाव लाना होता है और दबाव में भी शांत बने रहना पड़ता है।

Players must continuously analyze their opponent's style, adjust their tactics, and stay composed under pressure.

7. इसलिए इसे अक्सर "तेज़ गति वाली शतरंज" कहा जाता है।

It is often referred to as "chess at light speed."

8. टेबल टेनिस केवल मनोरंजन का माध्यम नहीं — बल्कि यह एक प्रतिस्पर्धात्मक, तकनीकी और अत्यधिक रणनीतिक खेल है, जिसमें असाधारण प्रतिक्रिया, चपलता और मानसिक अनुशासन की आवश्यकता होती है।

Table tennis is not just a recreational pastime — it is a competitive, technical, and intensely strategic game that demands exceptional reflexes, agility, and mental discipline.

9. **19**वीं सदी के उत्तरार्ध में इंग्लैंड में एक इनडोर मनोरंजन के रूप में शुरू हुआ यह खेल आज एक वैश्विक खेल बन चुका है, जो **200** से अधिक देशों में खेला जाता है और **1988** से ओलंपिक खेलों में भी शामिल है।

Originating in the late 19th century as an indoor pastime in England, table tennis has grown into a worldwide phenomenon, played in over 200 countries and officially included in the Olympic Games since 1988.

10. हर अंक एक समन्वय और प्रतिक्रिया की प्रतिस्पर्धा बन जाता है, जहाँ खिलाड़ी को प्रतिद्वंदी की चाल को पढ़ने और त्वरित प्रतिक्रिया देने के लिए केवल कुछ क्षण ही मिलते हैं।

Each point becomes a contest of reflexes and coordination, where a player has just fraction of a second to read the opponent's move and respond effectively.

11. यह खेल न केवल शारीरिक चुस्ती की माँग करता है, बल्कि असाधारण मानसिक एकाग्रता की भी आवश्यकता होती है।

It is a sport that demands not only physical agility but also extraordinary mental focus.

12. टेबल टेनिस ने कई महान खिलाड़ियों को जन्म दिया है जिन्होंने इस खेल को नई ऊँचाइयों तक पहुँचाया है। स्वीडन के जान-ओवे वाल्डनर और चीन के मा लोंग जैसे खिलाड़ी अपनी कुशलता, निरंतरता और खेलभावना के कारण दुनियाभर में प्रसिद्ध हुए हैं। इनके योगदान ने लाखों युवाओं को प्रेरित किया है और इस खेल की लोकप्रियता को अंतरराष्ट्रीय स्तर पर बढ़ाया है।

Over the years, table tennis has produced some legendary athletes who have elevated the sport to new heights. Icons such as Jan-Ove Waldner of Sweden and China's Ma Long have captivated audiences with their skill, consistency, and sportsmanship. Their achievements have inspired millions of young players and contributed to the growing popularity of the sport on the international stage.

13. निष्कर्षतः, टेबल टेनिस केवल एक खेल नहीं, बल्कि विज्ञान, कला और भावना का अद्वितीय संगम है। यह दर्शाता है कि छोटे से छोटे प्रयास — यदि सटीकता और जुनून के साथ किए जाएं — तो बड़ा प्रभाव डाल सकते हैं।

In conclusion, table tennis is more than just a sport. It is a **fusion of science, art, and emotion**. It is a reflection of how small things — when handled with precision and passion — can make a **big impact**.

14. प्रतियोगिता से परे, टेबल टेनिस हमें जीवन के जरूरी मूल्य भी सिखाता है: अनुशासन, धैर्य, सम्मान और दृढ़ता।

Beyond competition, table tennis instills values that are essential in life: discipline, patience, respect, and resilience.

15. एक स्पिन या एक शॉट को साधने के लिए की गई घंटों की मेहनत, जीत और हार के अनुभव – ये सभी व्यक्तित्व निर्माण में सहायक होते हैं।

The hours of practice, the struggle to master a single spin or shot, and the experience of both victory and defeat help build character.

16. यह खेल हमें सिखाता है कि कैसे केंद्रित रहना है, चुनौतियों का सामना कैसे करना है और असफलताओं के बावजूद कैसे आगे बढ़ते रहना है।

It teaches us to remain focused, adapt to challenges, and persevere through setbacks.

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CSIR-CECRI undertakes several R&D projects in collaboration with laboratories and private companies within and outside India and also assists Indian industries by conducting surveys and undertaking sponsored consultancy projects. CSIR-CECRI has developed and transferred several technologies to industrial and strategic sectors. Lithium-ion battery electrode materials and its fabrication, supercapacitors, fuel cells, redox flow battery, CO_2 adsorption under flue gas condition, CO_2 utilization to value-added products like adipic acid, oxalic acid, polyurethane etc., Mg extraction technology, solar powered PEM electrolyser to generate green hydrogen, electrowinning of rare earth metals and alloys, extraction of metals from secondary sources, trivalent hard chromium, thermal barrier coatings and specialized anticorrosive coatings, etc., are among the significant recent technologies of CSIR-CECRI.

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For further details:

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- टॉक्सिकोइंफॉर्मेटिक्स एवं औद्योगिक अनुसंधान
- प्रणाली विषविज्ञान एवं स्वास्थ्य आपदा मूल्यांकन

उद्योग और स्टार्टअप के लिए आर एंड डी साझेदारी
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- जल गुणवत्ता मूल्यांकन और निगरानी
- विश्लेषणात्मक सेवाएं
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- रसायनों/उत्पादों के बारे में जानकारी
- कम्प्यूटेशनल भविष्य कहनेवाला विषाक्तता मूल्यांकन

मान्यताएं
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- पोर्टेबल जल विश्लेषण किट
- पर्यावरण और मानव स्वास्थ्य के लिए मोबाइल प्रयोगशाला
- सरसों के तेल में आर्जीमोन की त्वरित जांच के लिए एओ किट
- मक्खन पीले रंग का पता लगाने के लिए एमओ जांच, एक मिलावटी, खाद्य तेलों में

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Carrom Board

Smt. K. Venkateswari, Private Secretary, CSIR-SERC

Carrom is a tabletop game in which players flick discs, attempting to knock them to the corners of the board, in a similar fashion to billiards, but players use their fingers to strike a “striker” disc and pocket smaller discs into corner pockets. Carrom can be played by two (singles) or four players (doubles).

Origin & History

The game originated in India, likely during the 18th century, though its precise beginnings are not definitively documented. While some believe it was invented by a Maharaja, it’s more probable that he adapted existing street games. The game’s popularity spread throughout India, particularly among the middle class in the 20th century, and has since spread to other parts of South and Southeast Asia. It gained popularity in the 20th century and has spread to other parts of the world.

The International Carrom Federation (ICF) was formed in the year 1988 in Chennai, India. The formal rules for the Indian version of the game were published in 1988. In the same year the ICF officially codified the rules.

Here’s a more detailed explanation of Carrom Board Game:

Carrom Board – An equipment

The game is played on a square wooden board with pockets at each corner. Players use a larger, heavier disc called a “striker” to hit the smaller carrom men.

The black carrom men are worth 1, 5, or 10 point(s) and the white ones are worth 2, 10, or 20 points (depending on exact game variant).

The queen is assigned 5 or 50 points. As in the above two variants, it must have a carrom man pocketed after it.

To win, a player must receive all the carrom men on the board.

Rules and Strategy

Players aim to pocket all their carrom men (either black or white) before their opponent does. They also need to pocket the red “queen” piece and cover it with their own piece. The objective is to pocket all of one’s own carrom men before the opponent. The red ‘queen’ is the most valuable piece, but it must be ‘covered’ by pocketing one’s own carrom man immediately after pocketing the queen to gain points. The game involves various shots and strategies, including straight shots, rebound shots, cut shots, and defensive play.

Gameplay

Players take turns striking the striker to pocket their carrom men. The striker must be flicked from the baseline, and players can only strike from their side of the board.

Fouls and Penalties

Fouls can result in penalties, such as returning a piece to the center of the board.

Scoring

At the end of the game, the winner scores points based on the number of opponent's pieces remaining on the board.

Delightful facts about Carrom

"Gully Carrom" rules and family fun: Many people have fond memories of childhood summers spent playing carrom with their own simplified "gully" rules, where the focus was purely on having fun with family and friends rather than strictly adhering to formal regulations.

The "Queen" can be a tricky monarch: Pocketing the red Queen and then failing to cover it with one of your own carrom men is a common occurrence, often leading to groans and exasperated laughter around the board as the Queen is returned to the center.

Benefits

Playing carrom offers numerous benefits, including improving hand-eye coordination, boosting concentration, enhancing cognitive skills, reducing stress, and promoting social interaction. It's a game that encourages patience, discipline, and strategic thinking.

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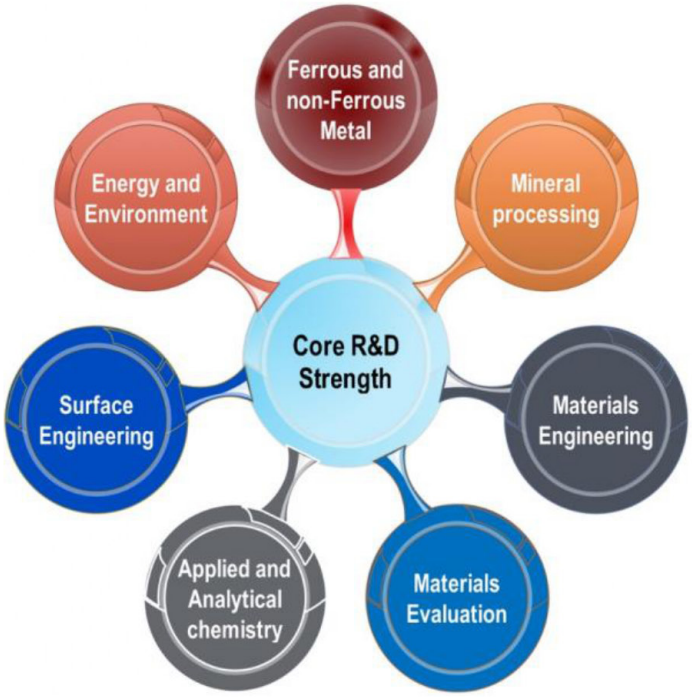

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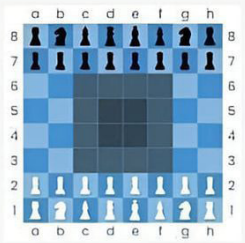
Instrumentation & Technologies

CHESS TIPS FOR BEGINNERS

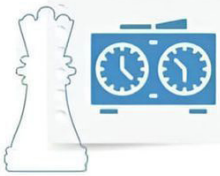
Are you learning to play chess? Do you want to improve your chances of winning your games? You're in the right place! Here are the 8 best chess strategy tips for beginners.

1 CONTROL THE CENTER OF THE BOARD



The closer your pieces are to the center, the more squares they control.

2 DEVELOP YOUR PIECES QUICKLY



Move your pieces to more active squares as quickly as you can. Knights and bishops should be moved before rooks and your queen.

3 ONLY MOVE EACH PIECE ONCE IN THE OPENING

Think about the best square for each piece and move it there in one go. Don't waste moves.

4 CASTLE EARLY

Get your king to safety by castling early. This move also brings your rook closer to the center of the board.

5 DON'T MOVE YOUR QUEEN TOO EARLY

Moving your queen into the center early allows your opponent to gain time by attacking it. Develop your other pieces first.

6 CONNECT YOUR ROOKS AND PLACE THEM ON OPEN FILES

Your rooks are connected when they protect each other. Place them on files with no pawns in front of them to unleash their power.

7 THINK CAREFULLY BEFORE MOVING PAWNS - YOU CAN'T MOVE THEM BACK

Will you be able to protect the pawn? Does it do a good job of gaining space?

8 IMPROVE OR EXCHANGE YOUR WORST PIECE

Which of your pieces is doing the least? Can you get it to a better square or swap it for one of your opponent's pieces?

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Shri R.D. Sathish Kumar, Principal Technical Officer, CSIR-SERC

By Shri R.D. Sathish Kumar, Principal Technical Officer

பிரிட்ஜ்: (Bridge) என்பது வெறும் விளையாட்டு அல்ல - விளையாட்டில் ஒரு அறிவியல், நட்பில் ஒரு நுணுக்கம்.

பிரிட்ஜ் (Bridge) என்பது உலகளவில் பரவலாக விளையாடப்படும் ஒரு அறிவுத்திறன் மிக்க சீட்டு விளையாட்டாகும். இது சர்வதேச ஒலிம்பிக் குழுவால் அங்கீகாரம் அளிக்கப்பட்ட ஒரு மிக அற்புதமான விளையாட்டு. இந்த விளையாட்டை உலகம் முழுவதிலும் கோடிக்கணக்கானோர் ரசித்து விளையாடுகிறார்கள். இது மற்ற எந்த சீட்டு விளையாட்டுக்கும் கிடைக்காத அளவில் சமூகத்தால் ஏற்றுக்கொள்ளப்பட்ட ஒரு முக்கியமான விளையாட்டாக கருதப்படுகிறது. பிரிட்ஜ் சிந்தனையை தூண்டும், மிகுந்த மகிழ்ச்சியை தரக்கூடிய மிகச்சிறந்த விளையாட்டு ஆகும். சமூக உறவுகளை வலுப்படுத்தும் ஒரு வகையாகவும் பார்க்கப்படுகிறது. இது உலக பிரிட்ஜ் சம்மேளனம் (World Bridge Federation) மூலம் கையாளப்படும் ஒரு போட்டி விளையாட்டாகும். ஒரு சீட்டு கட்டுடன் நான்கு பேர் கலந்து விளையாடும் விளையாட்டு.

பிரிட்ஜ் என்பது, ஒரு பொழுதுபோக்காக மட்டும் விளையாடப்படும் சீட்டு விளையாட்டு அல்ல. இது கீழ்கண்ட முக்கிய அம்சங்களை உள்ளடக்கியது:

மனத் திறன் மற்றும் சாமர்த்தியமான உத்திகள்

பிரிட்ஜ் விளையாட்டு, அதன் சிக்கலான ஏல முறைகள் மற்றும் விளையாட்டு உத்திகள் மூலம் அறியப்படுகிறது. இந்த விளையாட்டில் வீரர்கள் தங்கள் கையிலுள்ள அட்டைகளை மதிப்பீடு செய்ய, எதிரியின் நகர்வுகளை கணிக்க, பூரணமில்லாத தகவல்களின் அடிப்படையில் முடிவெடுக்க கற்றுக்கொள்ள வேண்டியுள்ளதால் அவர்களின் திட்டமிடல் (Strategy), தர்க்கம் (Logic), அனுமானம் (Deduction) ஆகிய பண்புகள் வளர்கின்றது. விளையாடும் ஒவ்வொருவரும் தொடர்ந்து கற்றுக்கொண்டு, புதிய சூழ்நிலைகளுக்கு ஏற்ப தங்களுடைய உத்திகளை மாற்றி அமைக்க மேம்படுத்த வேண்டியுள்ளதால் வயதானவர்களின் மூளைத்திறனில் வீழ்ச்சியைத் தடுக்க பிரிட்ஜ் விளையாட்டு மிகவும் உதவுவதாக ஆய்வுகள் தெரிவிக்கின்றன.

சமூக உறவுகள் – கூட்டணிப் பண்புகள்

பிரிட்ஜ் என்பது நான்கு பேர் கலந்து விளையாடும், ஒத்துழைப்பு தேவைப்படும் கூட்டணி விளையாட்டு. ஆட்ட இணையர் இருவரும் தங்களுக்கிடையே சிறந்த புரிதலுடன் செயல்பட வேண்டும்.

வெற்றிக்கு, நெருக்கமான தொடர்பு மற்றும் ஒத்துழைப்பு அவசியம். இதனால் து சமூக உறவுகளை வலுப்படுத்தும். மேலும் பிரிட்ஜ் கிளப்புகள் மற்றும் போட்டிகள் மூலம் அதே விருப்பங்கள் கொண்டோருடன் புதிய நட்புகள், சமூகத் தொடர்புகள் உருவாகின்றன.

போட்டித் தன்மை

இந்த விளையாட்டில் மிக முக்கியமான அம்சமாக இதில் பங்கேற்கும் அனைவரும் அதே கையை (same hand), அதாவது ஒவ்வொரு அணியும் ஒரே சீட்டு அட்டை தொகுப்புகளை கொண்டு விளையாடுகிறார்கள்.

இதனால் விளையாட்டு உத்தி மற்றும் திறமை மட்டும் மதிப்பீடு செய்யப்படும். அதாவது, அதிர்ஷ்டம் குறைக்கப்பட்டு, உண்மையான திறமையே பரிசோதிக்கப்படும். இதுவே பிரிட்ஜ் விளையாட்டை மதி நுட்பம் மிக்க மெய்மையான போட்டி விளையாட்டாக உயர்த்துகிறது. திறமையே வெற்றியை தீர்மானிக்கிறது.

எனவே, பிரிட்ஜ் என்பது ஒரு சாதாரண விளையாட்டு மட்டுமல்ல, அறிவியல் + உறவியல் + உத்தி ஆகிய மூன்று முக்கியமான கூறுகளை ஒருங்கிணைக்கும் ஒரு அறிவுத்திறன் விளையாட்டாகும்.

விளையாட்டு அமைப்பு:

நான்கு வீரர்கள் – இரு கூட்டணிகளாக விளையாட வேண்டும், கூட்டணி இணைகள் வடக்கு - தெற்காகவும், கிழக்கு - மேற்காகவும் (North-South, East-West) எதிர் எதிரே அமரவேண்டும்.

இடம்	வீரர்	கூட்டணி
North (வடக்கு)	வீரர் 1	A கூட்டணி
East (கிழக்கு)	வீரர் 2	B கூட்டணி
South (தெற்கு)	வீரர் 3	A கூட்டணி
West (மேற்கு)	வீரர் 4	B கூட்டணி

மொத்தம் 52 அட்டைகள் (Joker இல்லாமல்) கொண்ட ஒரு சீட்டு கட்டில் ஒவ்வொரு வீரருக்கும் 13 அட்டைகள் வழங்கப்படும். இணைகள் சேர்ந்து எதிர் அணியை வெல்ல திட்டமிட வேண்டும்.

அட்டைகள் ஒழுங்கு:

அட்டைகள் நான்கு வகை சின்னங்களாகும்:

- ♠ ஸ்பேடு (Spade)
- ♥ ஹார்ட் (Heart)
- ♦ டைமண்ட் (Diamond)
- ♣ கிளப் (Club)

ஒவ்வொரு வகையிலும் 13 அட்டைகள்: A, K, Q, J, 10 முதல் 2 வரை.

விளையாட்டு கட்டங்கள்

பிரிட்ஜ் விளையாட்டு மூன்று முக்கியமான கட்டங்களை கொண்டது:

(1) Bidding (ஏலம்): அதாவது ஒவ்வொருவரும் தங்களிடம் உள்ள அட்டைகளை வைத்து எதிர் அணியை விட எத்தனை அதிகமான தந்திரங்களை (tricks) வெல்ல முடியும் என மதிப்பீடு செய்து ஏலம் கோறல். இந்த நடைமுறையில் எந்த ஒருவருடைய கையில் உள்ள சீட்டுகளும் பிறருக்கு தெரியாது. இது ஒப்பந்தம் (contract) எனப்படுகிறது.

(2) Play (விளையாட்டு): ஏலத்தில் வென்ற கூட்டணி, அந்த ஒப்பந்தப்படி விளையாட வேண்டும். ஏலத்தில் வென்றவர் வெற்றிகோருபவர் (Declarer) ஆகிறார். அவரது கூட்டணி இணை செயலற்றவர் (Dummy) ஆகிறார். எதிரணியினர் எதிர் போட்டியாளர்கள் ஆகின்றனர்.

(3) Scoring (மதிப்பீடு): வென்றவர் சில நிலைகளில் புள்ளிகள் (points) பெற்றுக்கொள்கிறார். துல்லியமான உத்தி, திட்டமிடல் ஆகியவை வெற்றிக்கு முக்கியமானவை.

நுணுக்கங்கள் மற்றும் உத்திகள்

• கையில் உள்ள சீட்டுக்களின் பலத்தை மதிப்பிடுதல் (Hand Strength Evaluation) ஒவ்வொரு அட்டைக்கும் மதிப்பீடு உள்ளது (A=4, K=3, Q=2, J=1).

• புலப்படுத்துதல் (Communication) கூட்டணியில் தங்கள் உத்திகளை தாராளமாக தெரிவிக்க முடியாது. அதற்காக bidding system பயன்படுத்தப்படுகிறது.

• துருப்பு தொகுப்பு (டிரம்ப் சூட்டை) ஏலத்தில் குறிப்பிட்ட சீட்டு வகை மட்டும் அதிக மதிப்புள்ள வகை ஆக மாறும்.

• Finesse: எதிரியிடம் உச்ச மதிப்புள்ள அட்டை இருப்பதை கணித்து, அதன் கீழ் சிறந்த அட்டையை ஆடும் உத்தி.

விளையாட்டு முறையியல்:

இதற்காக மணிக்காட்டுத் திசையில் (Clockwise), டீலரிடம் இருந்து தொடங்கி ஒவ்வொரு வீரரும் ஏலம் கோருவார்கள். ஒவ்வொரு ஏலமும் ஒரு எண்ணையும், சீட்டின் வகையையோ (♠ ♥ ♦ ♣) அல்லது நோ-டிரம்ப் (NT) என்பதையோ குறிப்பிடும். உதாரணம்: 1♥, 2♣, 3NT. குறைந்தபட்சம் 6 ட்ரிக்ஸ் + ஏல எண்ணிக்கை (e.g., 2♠ = 8 ட்ரிக்ஸ்) வெல்லவேண்டும். பிட்டிங்கில் "Pass", "Double", "Redouble" என்ற சொற்களும் முக்கியம். Pass என்றால் ஏலம் ஏதும் கோரவில்லை என்று பொருள்.

ஏல வகைகள்:

Opening Bid – ஒரு வீரர் பிட் தொடங்கும் முதல் முறையில் தரும் பிட்.

Overcall – எதிர்பார்க்கப்படும் கூட்டணிக்கு பதிலளிக்கும் பிட்.

Support Bid – கூட்டணியாளரின் பிட்-ஐ ஆதரிக்கும் பிட்.

No-Trump Bid – எந்த suits-யும் டிரம்ப் ஆகாது என்ற பிட்.

மூன்று வீரர்கள் தொடர்ந்து "Pass" சொன்னால், கடைசியாகக் கூறிய ஏலம் ஒப்பந்தமாக இருக்கும்.

அதன்படி அந்த கூட்டணி அந்த டிரிக்குகளை, குறிப்பிடப்பட்ட டிரம்ப் அல்லது நோ-டிரம்ப் அடிப்படையில் வெல்ல முயலும்.

எதிரணியிலிருந்த ஒருவர் முதல் அட்டை (first lead) போடுவார். பிறகு, அனைவரும் அந்த அட்டை வகையை (suit) பின்பற்ற வேண்டும். ஒருவரிடம் அந்த வகை சீட்டு இல்லையெனில், துருப்பு அட்டையை (Trump card) (அதிக மதிப்புடைய suit) போடலாம். மற்ற அனைத்து வகை சீட்டுகளில் உள்ள உயர் எண்ணிக்கை கொண்ட சீட்டுக்களை விட குறைந்த எண்ணாக உள்ள துருப்பு சீட்டு அதிக மதிப்புடையதாகும். எனவே துருப்பு சீட்டை இறங்கியவர் அந்த trickகை தட்டி பறிக்கிறார்.

இப்படி மொத்தம் 13 தந்திரங்களை வெல்ல வேண்டும். ஒப்பந்தத்தில் கோரியபடி அல்லது அதற்கு மேலான தந்திரங்களை வென்ற அணி அந்த சுற்றை வென்றதாக கொள்ளப்படும். இப்படியாக பல சுற்றுகள் விளையாடவேண்டும்.

SCORING – மதிப்பீடு

ஒப்பந்தம் பூர்த்தி செய்தால்தான் புள்ளிகள்.

பிரிட்ஜ் (Bridge) விளையாட்டில் மதிப்பீடு என்பது ஒப்பந்த வெற்றியை அடிப்படையாகக் கொண்டு வழங்கப்படும் புள்ளிகளின் தொகுப்பாகும். ஒப்பந்தம் வெற்றிகரமாக நிறைவேற்றப்படும்போது, சீட்டு (suit) வகை மற்றும் வென்ற ட்ரிக்களின் எண்ணிக்கையின் அடிப்படையில் ஒப்பந்த மதிப்பெண்கள் வழங்கப்படும். முக்கியமான வகைகள் (♥, ♠) மற்றும் நோ-டிரம்ப் (NT) ஒப்பந்தங்களுக்கு அதிக மதிப்பெண்கள் வழங்கப்படுகின்றன.

வெற்றிகரமான ஒப்பந்தங்களுக்கு போனஸ் புள்ளிகள் (Game Bonus, Slam Bonus) வழங்கப்படும். கூடுதலாக வென்ற ட்ரிக்குகளுக்கு (Overtricks) தனிப்பட்ட மதிப்பீடு வழங்கப்படுகிறது. மாற்றாக, ஒப்பந்தம் தோல்வியடைந்தால், தோல்வி ட்ரிக்குகள் அடிப்படையில் அபராத புள்ளிகள் வகுக்கப்படும். Double/Redouble ஆகியவை புள்ளிகளில் பெரும் மாற்றத்தை ஏற்படுத்துகின்றன.

மொத்தமாக, பிரிட்ஜ் மதிப்பீடு என்பது விநோதமான கணக்கீடுகளின் கலவை, அதை புரிந்துகொள்வது ஒவ்வொரு வீரரின் அணியின் வெற்றிக்கும் முக்கியமானது.

- பிரிட்ஜ் விளையாட்டில் சிறந்த வீரராக மாற, **அடிப்படை மதிப்பீடு**, **துல்லியமான Bidding**, **நேர்மையான Declarer Planning** ஆகியவை அவசியம்.

பிரிட்ஜ் ஒரு அறிவுத் திறனை மேம்படுத்தும், மக்களிடையே உறவுகளை வலுப்படுத்தும், திட்டமிடல் மற்றும் ஒத்துழைப்பு கற்றுத் தரும் விளையாட்டாகும். இந்நவீன டிஜிட்டல் யுகத்திலும், இந்த பாரம்பரிய சீட்டு விளையாட்டிற்கு ஒரு தனிச்சிறப்பும் இடமும் இருப்பது குறிப்பிடத்தக்கது. மாணவர்களும் பெரியோர்களும் மனமுவந்து இந்த விளையாட்டை கற்றுக்கொண்டு விளையாடினால், அது அறிவு மற்றும் உறவுகளுக்கு ஒரு சொத்தாக மாறும்.

सीएसआईआर- एम्प्री
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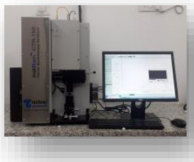
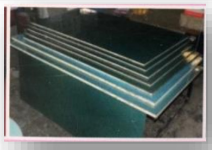
TECHNOLOGIES AVAILABLE

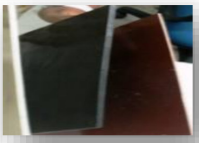
Radiation shielding tiles



Raman Spectrometer



HP Composites

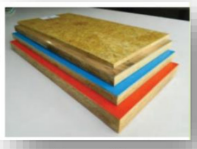


Radiation Shielding Panels

Bamboo Composites

Al Foam Casting

Al Foam Core Sandwich Panel



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For details, please contact:
Dr. Thallada Bhaskar
Director

Tel: +91- 755-2457105,
Email: director.ampri@csir.res.in
Website: www.ampri.res.in

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The Director, CSIR-National Aerospace Laboratories
PB 1779, Kodihalli, Bengaluru - 560 017, India. Tel : 91-080-25270584, 25265579
www.nal.res.in