

**CSIR-National Institute of Science
Communication and Policy Research
(CSIR-NIScPR)**

Connecting Science, Society & Industry

BIENNIAL REPORT 2021-2023



**CSIR-National Institute of Science Communication and
Policy Research (NIScPR)**

Council of Scientific & Industrial Research (CSIR)

Vigyan Sanchar Bhawan, Dr KS Krishnan Marg, New Delhi 110012 &
Vigyan Soochna Bhawan, 14, Satsang Vihar Marg, New Delhi 110067

www.niscpr.res.in

CSIR-NIScPR Biennial Report 2021-2023

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From the Director's Desk

The CSIR-National Institute of Science Communication and Policy Research (CSIR-NIScPR) emerged as an entity after a high-powered committee recommended the merger of two erstwhile CSIR institutes — CSIR-National Institute of Science, Technology & Development Studies (CSIR-NISTADS) and CSIR-National Institute of Science Communication and Information Resources (CSIR-NISCAIR).

The decision was taken so as to bring about a convergence of the individual strengths of the two institutes to form a new institute that could develop excellence in the field of science communication and science policy research as a policy think tank for the nation. It is heartening that the foundation stone of the new institute was laid by Dr Harsh Vardhan, the then Hon'ble Minister of S&T, on 14 January 2021. He emphasized in his address that the new entity will make an even larger impact on the global scientific arena in Science Technology & Innovation (STI) Policy Research and Communication.



During the Institute's first foundation day in January 2022, Union Minister of State (Independent Charge) for Science & Technology Dr Jitendra Singh emphasized that the newly created institute will work to network with S&T departments and conceptualize projects to promote science for exploring livelihood opportunities.

CSIR-NIScPR has decades of legacy in science communication as well as policy research that makes us confident and competent to play a pivotal role at all levels of science communication and policy research for CSIR as well as for stakeholders outside CSIR.

As the nodal organization, CSIR-NIScPR has undertaken a national initiative on 'Communicating India's Scientifically Validated Traditional Knowledge' (SVASTIK). Under SVASTIK, creative content on traditional knowledge is being disseminated through various platforms in different Indian Languages in areas like Mathematics, Astronomy, Architecture, Metallurgy, Water & Sustainable Agriculture, Energy, Ecology & Environment, and Indian Systems of Medicine.

CSIR-NIScPR is also facilitating an interactive platform accessible to S&T experts based in India and abroad through the Pravasi Bharatiya Academic and Scientific Sampark (PRABHASS) national digital portal.

CSIR-NIScPR has also been designated as the nodal laboratory to plan, conceptualize and promote Indian R&D breakthroughs through different media channels such as print, audio-video, digital, social media, and public engagement to propagate significant scientific developments from Indian scientific institutions in the national media and increase the scientific awareness of the country's citizens.

In keeping with the ethos of the Government of India's *Azadi ka Amrit Mahotsava*, CSIR-NIScPR's popular science magazines brought out collector's editions showcasing

Indian S&T progress after independence. CSIR-NIScPR's Hindi popular science magazine *Vigyan Pragati* received the National *Rajbhasha Kirti* Award (First position) of the Department of Official Language, Ministry of Home Affairs, Govt of India. The Institute's research journals also brought out special *Azadi ka Amrit Mahotsava* editions focusing on India's progress in specific S&T fields.

In science policy research, CSIR-NIScPR has registered its presence in important areas of national and global relevance like energy, food, traditional knowledge, sustainability, etc.

CSIR-NIScPR has established competency and is dedicated to Policy Advocacy on Techno-Socio-Economic issues identified by CSIR/Government of India and provides decision support in S&T design, development, and application in the context of national as well as global scenario. We provide evidence-based policy advocacy through studies for strengthening ST&I and entrepreneurial ecosystems, mapping research, and innovation networks. CSIR-NIScPR plays an important role in ST&I needs for National missions and provides road maps for sustainable development.

The Institute has developed a Technology Readiness Level (TRL) assessment framework. Based on the TRL framework, a total of 467 CSIR technologies were assessed and a *CSIR Compendium of Technologies 2021* was prepared for 313 technologies at TRL 6 and above. We are also working on the sectoral TRL framework for different institutions such as DSIR, NRDC, IITs, etc., conducting research, training, and guidance for TRL-based assessment and TRL accreditation.

CSIR-NIScPR actively collaborates with national and international institutions and organizations having similar objectives and goals for policy research on strategic global partnerships to strengthen the STI ecosystem, and address global challenges. CSIR-NIScPR works extensively on the socio-economic impact assessment of different CSIR technologies, consultancy studies, benchmarking studies, and assessment of the market potential of technologies.

CSIR-NIScPR also provides scientometrics and foresight studies, dissemination of rural technologies through UBA Network development focusing on a three-way approach – creating awareness about the technologies; capacity building of interested stakeholders like Self Help Groups, micro-enterprises/cottage industries from rural areas; and deployment of technologies for stakeholders.

CSIR-NIScPR is also a partner in the Hydrogen Mission project as part of the CSIR network project with Ministry of New and Renewable Energy. “State-wise Synthesis of Transport Emissions in India – Effectiveness of Bharat Stage Emission Standards (BSES) in Mitigating Emissions” was also studied. Under the study, a quantitative assessment of the emission standards in mitigating vehicular emissions in different Indian states was estimated for achievable emissions standards for future norms.

I am happy to present the first Biennial Report of the newly created institute – CSIR-National Institute of Science Communication and Policy Research (CSIR-NIScPR).



Prof. Ranjana Aggarwal

CSIR-NIScPR — A Legacy of Science Communication, Policy Research and S&T Studies

The CSIR-National Institute of Science Communication and Policy Research (CSIR-NIScPR) is among the youngest laboratories of the Council of Scientific and Industrial Research (CSIR). Established on 14 January 2021, its foundation was laid by Dr Harsh Vardhan, the then Hon'ble Union Minister of Science & Technology, Earth Sciences and Health & Family Welfare.

CSIR-NIScPR was established consequent to the merger of two institutes — CSIR-National Institute of Science, Technology and Development Studies (CSIR-NISTADS) and CSIR-National Institute of Science Communication and Information Resources (CSIR-NISCAIR). While CSIR-NISCAIR functioned in the area of science communication, CSIR-NISTADS dealt with policy research and studies at the interface of science & society. Both the institutes have had a rich legacy spanning several decades.

Genesis of CSIR-NISCAIR

When the CSIR was set up in 1942, among the major objectives of the Council were “the collection and dissemination of information” and “publication of scientific papers and journals”. During the first decade (1942-1951), this responsibility was discharged by two independent units, the offices of the *Dictionary of Indian Raw Materials and Economic Products*, and the *Journal of Scientific and Industrial Research*. In 1951, these two offices were merged into the Publications & Information Directorate (PID) with added responsibilities in the area of science communication.

With information becoming a valued commodity and science communication becoming a diverse and interdisciplinary area, PID went on to assume the mantle of a national institute in 1996 — the National Institute of Science Communication (NISCOM).

The Indian Scientific Documentation Centre (INSDOC), established in 1952, operated in the areas of information science and scientific documentation. In view of the overlapping areas of NISCOM and INSDOC, in 2002, the two institutes were merged into the National Institute of Science Communication and Information Resources (NISCAIR).

Genesis of CSIR-NISTADS

The roots of NISTADS go back to August 1973 when the Council of Scientific and Industrial Research (CSIR) set up at its headquarters a Centre for the Study of Science, Technology and Development. On 30 September 1980, the Governing Body of the CSIR approved the Centre as an autonomous Institute. Consequently, on 30 September 1980, the National Institute of Science, Technology and Development Studies was established. It was involved in the studies of various aspects of interaction among science, society and state and researching the interface among science, technology and society.

CSIR-NIScPR — The New Entity

Established on 14 January 2021 and sharing the historical legacy of CSIR-NISCAIR and CSIR-NISTADS, the CSIR-National Institute of Science Communication and Policy Research (CSIR-NIScPR) operates in the twin domains of science communication and policy research & studies.

CSIR-NIScPR is the largest institute engaged in science communication in the country. It brings out 15 peer-reviewed research journals covering major disciplines of science and technology ranging from physics to radio-physics, chemistry to chemical technology, experimental biology to biotechnology, and intellectual property rights to traditional knowledge. The Institute also takes science to the people through its three popular science magazines and well-illustrated low-priced books on topics ranging from cells and genes to computers and artificial



The then S&T Minister Dr Harsh Vardhan unveiling the foundation stone of CSIR-NIScPR. On the left is Dr Shekhar C Mande, the then DG-CSIR and on the right is Dr Ranjana Aggarwal the first Director of CSIR-NIScPR.

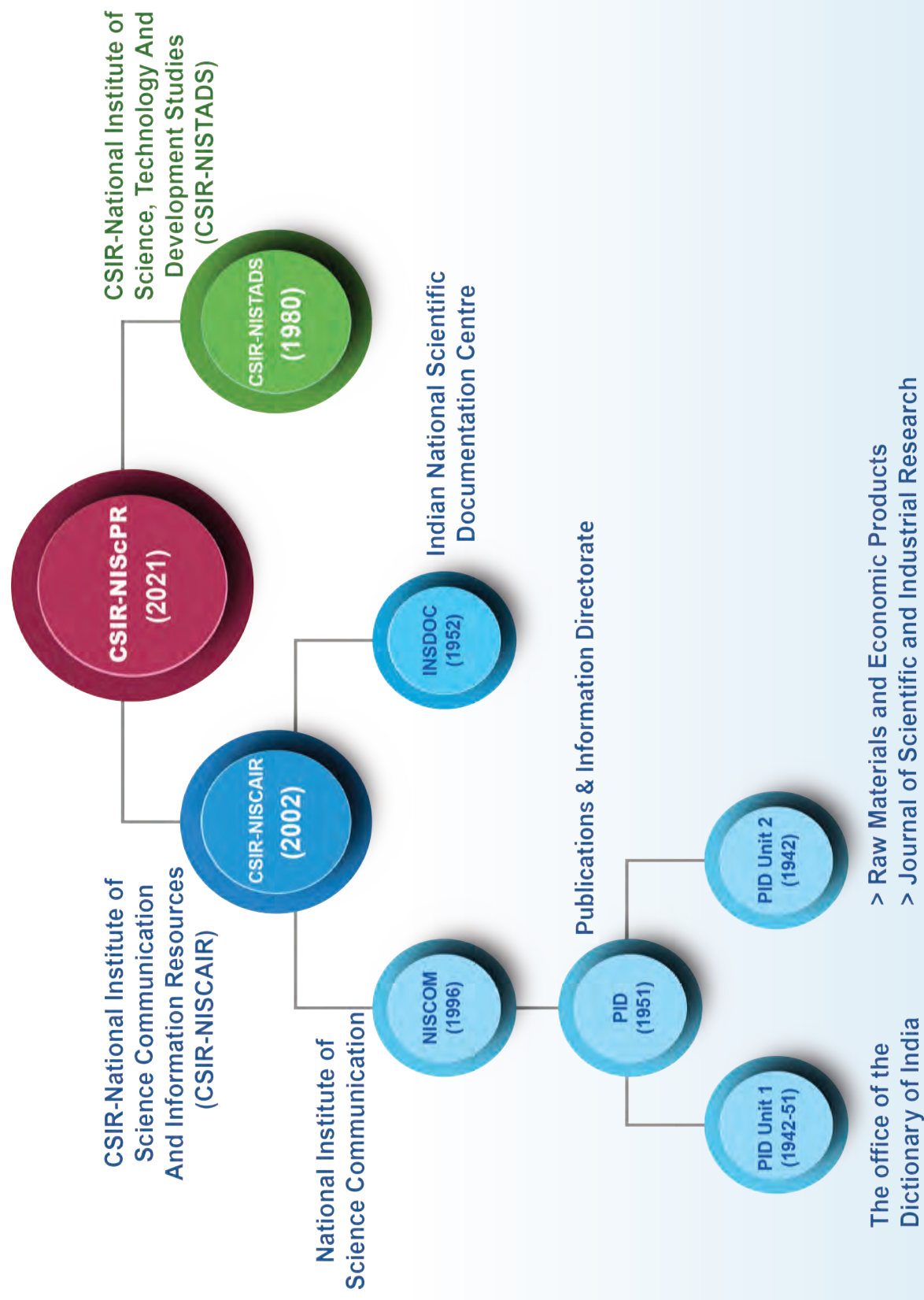


Dr Jitendra Singh, Hon'ble S&T Minister, was the Chief Guest during the first foundation day of CSIR-NIScPR

intelligence, from atom and materials to space technology and stars. CSIR-NIScPR's monumental encyclopaedic series, *The Wealth of India*, covers India's raw material resources — plants, animals and minerals.

CSIR-NIScPR is also positioning itself as a think tank of CSIR on policy research, S&T studies and advocacy in areas including the science-technology-innovation ecosystem; energy interventions for sustainable development; agriculture and sustainable rural development; inclusive health; global governance and science diplomacy; science communication studies, etc. The Institute intends to undertake policy advocacy on techno-socio-economic issues identified by CSIR or the Government of India and provide decision support in S&T design, development, and application in the context of National as well as the Global scenario.

CSIR-National Institute of Science Communication and Policy Research (CSIR-NIScPR)



CSIR-NIScPR

National Institute of Science Communication
and Policy Research, New Delhi

Vision

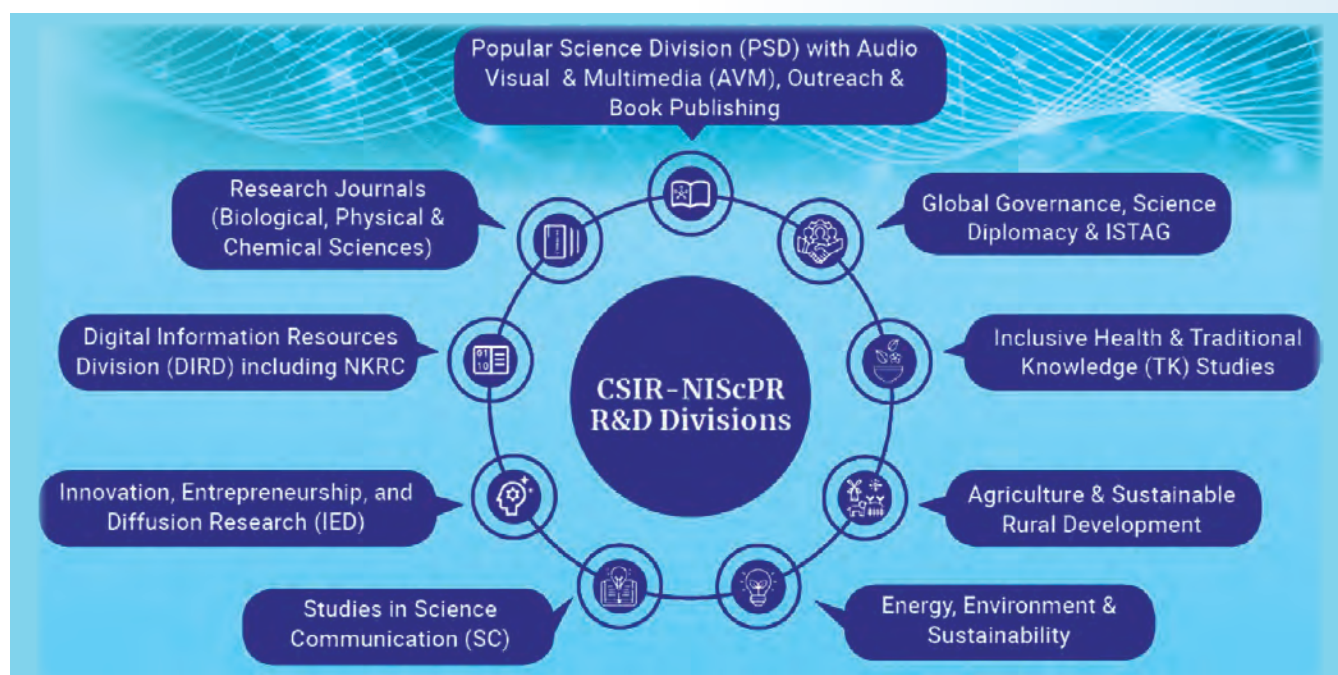
To become a globally respected Think tank and resource center for understanding Science, Technology & Innovation (ST&I) Policy Research and Science Communication

To promote Science, Technology & Innovation (ST&I) policy studies and science communication among diverse stakeholders and act as a bridge at the interface of science, technology, industry and society

Mission

Mandate

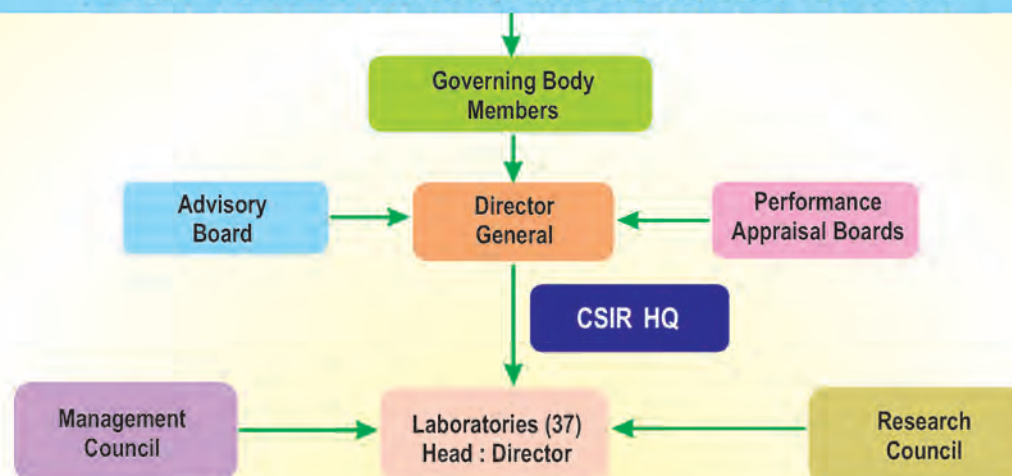
- ◆ To provide evidence based policy advocacy on Techno-Socio-Economic issues identified by CSIR/Government and other stakeholders
- ◆ To identify ST&I needs for National missions and create road maps for Sustainable Development
- ◆ To establish a repository of data, information, road-maps and policy documents related to science, technology and innovation activities in India as well as the world and create a digital resource centre for the Nation
- ◆ To provide linkages of communication among the scientific community in the form of research journals in different areas of ST&I
- ◆ To disseminate ST&I information to society
- ◆ To harness information technology for science communication and publication
- ◆ To act as a facilitator in furthering the economic, social, industrial, scientific and commercial development by providing timely access to relevant and accurate information
- ◆ To collaborate with national and international Institutions and organizations with objectives and goals similar to those of CSIR-NIScPR



CSIR-NIScPR Organisational Structure

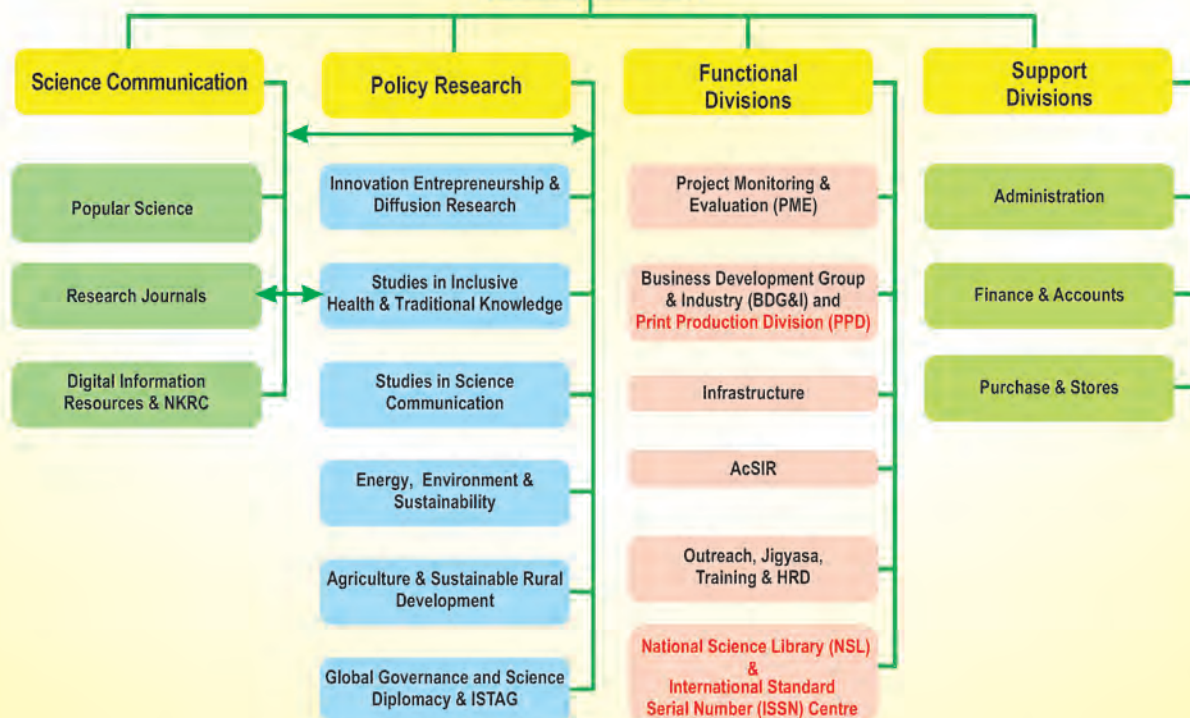
SOCIETY

President: Hon'ble Prime Minister
Vice President: Hon'ble Minister of S&T



CSIR-NIScPR

Director



Research Council



Chairperson

Prof. BN Jagatap
Department of Physics, Indian
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भारतीय प्रौद्योगिकी संस्थान (आईआईटी-बॉम्बे)
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External Member

प्रो. के जी सुरेश
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(टाटा इंस्टीट्यूट ऑफ फंडामेंटल रिसर्च)
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Dr JP Joorel

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Advisor & Scientist G
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(DST), Technology Bhawan, New
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जलवायु परिवर्तन कार्यक्रम
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Dr Subhra Priyadarshini

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Dr Sridevi Annapurna Singh

Director
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डॉ. श्रीदेवी अन्नपूर्णा सिंह

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Director, CSIR NIScPR



Dr Ranjana Aggarwal
Director, CSIR-NIScPR

डॉ. रंजना अग्रवाल
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Head PME, Member Secretary

डॉ. नरेश कुमार
प्रमुख वैज्ञानिक सीएसआईआर- एनआईएससीपीआर

Dr Naresh Kumar
Chief Scientist
CSIR-NIScPR



Management Council



Chairperson

Dr Ranjana Aggarwal
Director
CSIR-NIScPR

डॉ. रंजना अग्रवाल
निदेशक
सीएसआईआर-एनआईएससीपीआर

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निदेशक
सीएसआईआर-एएमपीआरआई, भोपाल

Dr Avanish Kumar Srivastava
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Shri Hasan Jawaid Khan
Chief Scientist
CSIR-NIScPR

श्री हसन जावेद खान
मुख्य वैज्ञानिक
सीएसआईआर-एनआईएससीपीआर

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प्रधान वैज्ञानिक

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Principal Scientist
CSIR-NIScPR



Member



Dr Vinayak
Senior Scientist
CSIR-NIScPR

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वरिष्ठ वैज्ञानिक

Member

डॉ. अरविंद मीणा
वैज्ञानिक

Dr Arvind Meena
Scientist
CSIR-NIScPR



Member



Shri Ashwani Brahmi
Principal Technical
Officer, CSIR-NIScPR

श्री अश्विनी ब्राह्मी
प्रधान तकनीकी अधिकारी

Member

डॉ. नरेश कुमार
मुख्य वैज्ञानिक एवं प्रमुख पीएमई

Dr Naresh Kumar
Chief Scientist &
Head PME, CSIR-NIScPR



Member

COFA/F&AO, CSIR-
NIScPR

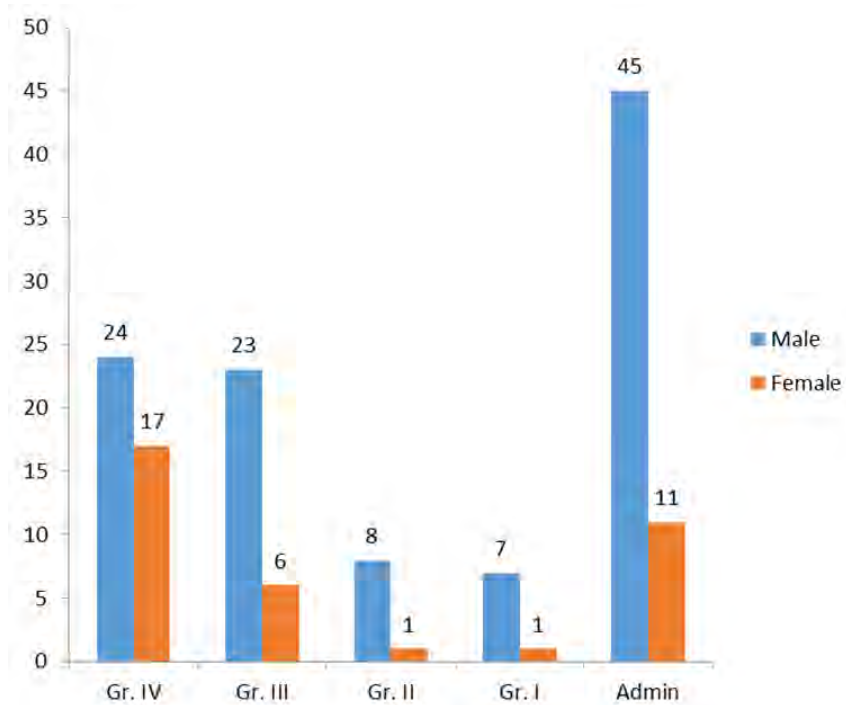
सीओएफए/एफएंडएओ

Member Secretary

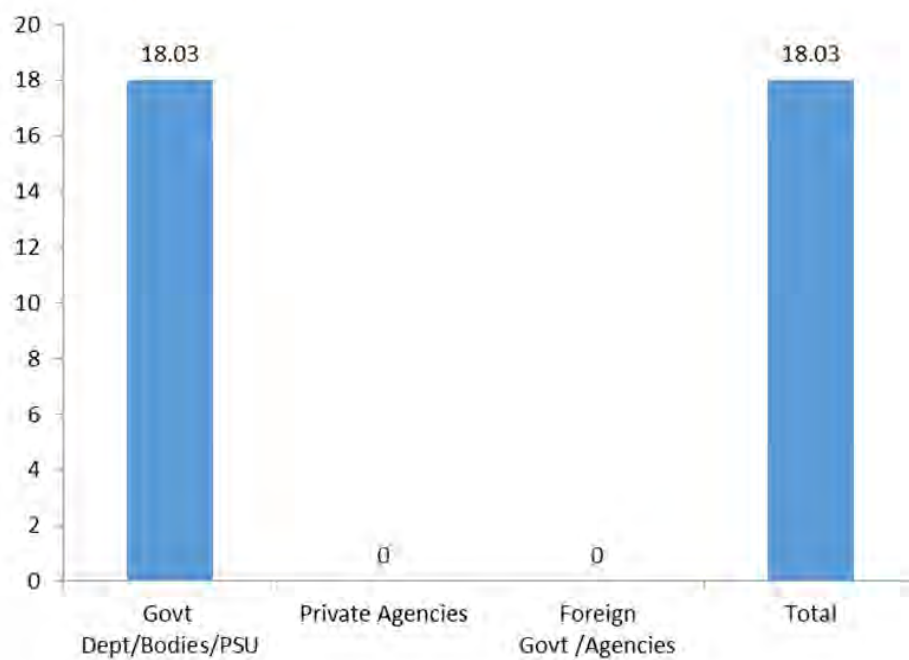
एओ/सीओए

AO/COA, CSIR-NIScPR

Manpower Position (As on 31.03.2023)



External Cash Flow (2021-2023) (Rs in Lakhs)



CSIR-NIScPR Manpower as on 01.03.2023

Director Dr Ranjana Aggarwal

Chief Scientist

2. Mr Hasan Jawaid Khan
3. Dr Sujit Bhattacharya
4. Mr RS Jayasomu
5. Ms Neelu Srivastava
6. Dr Naresh Kumar
7. Dr G Mahesh
8. Mr Mukesh A Pund
9. Dr Y Madhavi

Senior Principal Scientist

10. Mr CB Singh
11. Mr SB Burde
12. Dr Vipin Kumar
13. Dr L Pulamte
14. Ms Charu Verma
15. Dr N Majumdar
16. Dr Yogesh Suman
17. Mr Sandhya M Wakdikar
18. Dr Tarakanta Jana
19. Dr Kanika Malik

Principal Scientist

20. Mr JB Gandhi
21. Dr Madhulika Bhati
22. Mr Manoj Kumar
23. Dr Suman Ray

24. Dr Kasturi Mandal
25. Mr Avinash Prasad Kshitij
26. Dr Monika Jaggi
27. Dr Charu Lata
28. Ms Pramila Majumdar

Senior Scientist

29. Dr Vinayak
30. Dr Puspanjali Tripathy
31. Dr NK Prasanna Kumari
32. Dr Shivnarayan Nishad
33. Ms Sonali Nagar

Scientist

34. Dr L Sandhiya
35. Dr Arvind Meena
36. Dr Manish Mohan Gore
37. Ms Meetali Bharti
38. Dr Meher Wan
39. Dr Narendra Kumar Sahoo
40. Dr Paramananda Barman
41. Dr Dinesh Tolu Velip

Principal Technical Officer

42. Mr Anil Kumar Srivastava
43. Dr Parveen Sharma
44. Mr AK Bhardwaj

45. Dr Suresh Kumar
46. Mr Kashmiri Lal
47. Mr AK Brahmi
48. Mr Narendra Pal

Senior Technical Officer

49. Mr GK Mandal
50. Mr Ram Avtar Meena
51. Mr Suresh Prasad
52. Ms Manju D Choudhry
53. Mr Yatish Panwar
54. Mr MS Ansari
55. Dr Anil Kumar
56. Mr Mandeep Singh

Technical Officer

57. Mr Arun Unyal
58. Ms Swarnalata Upadhyay
59. Mr Gurbarsad Singh Bagga
60. Mr Pawan Kumar

Technical Assistant

61. Mr Abhinav Raj
62. Ms Monika Sharma
63. Mr Anil Kumar
64. Mr Md Shakeel Ahmed

65. Ms Shubhada Kapil
66. Mr Chand Mohammad
67. Ms Kirti Bansal
68. Mr Hashim Ali
69. Mr Abhay Kumar Mishra
70. Mr Chandran Kumar

Senior Technician (2)

71. Mr RK Nagarwal
72. Mr Sunil Dutt

Senior Technician (1)

73. Mr Rajinder Sharma

Technician (2)

74. Mr Khem Chand

Technician (1)

75. Mr Manish Kumar
76. Ms Neelam Xalxo Pradhan
77. Mr Naresh
78. Mr Manender Singh
79. Mr Anuj Singh

Lab Assistants

80. Mr Om Prakash Aswani
81. Mr Prem Singh-III
82. Mr Madan Kumar
83. Mr Ram Suphal
84. Mr Murli Dhar

Lab Attendant (2)

85. Mr Arjun Singh Rawat

Lab Attendant (1)

86. Mr Sukhbir Singh
87. Ms Dimple

**Controller of
Administration**

88. Mr RKS Roshan

Administrative Officer

89. Mr Pankaj Goswami

Section Officers

90. Ms Vandana Srivastava
91. Ms Bhavana Thakur
92. Mr Rajiv Kumar Chopra
93. Mr Anil Kumar

Assistant Section Officers

94. Mr Manish Kumar Mehta
95. Mr Pretesh Kumar
96. Mr Prashant Kumar
97. Mr Rajiv Kumar
98. Ms Rajo Devi
99. Mr Pranjal Dhar Divedi
100. Mr Vinod Kumar

SSA (G)

101. Mr Raj Prakash
102. Mr Chand Ram
103. Mr Dinesh Kumar
Sharma

JSA (G)

104. Mr Rajnath

Stores & Purchase Officer

105. Mr Ravi Garg

Section Officers (S&P)

106. Mr Kailash Parewa
107. Ms Veena Jain

SSA (S&P)

108. Mr Sharabjeet Singh

**Controller of Finance
& Accounts**

109. Mr Ajay Kumar

Section Officers (F&A)

110. Mr Alok Kumar
111. Mr Tilak Raj

SSA (F&A)

112. Mr Narendra Singh

Principal Private Secretaries

113. Mr Harpal Singh

Private Secretaries

114. Mr Mohan Lal
115. Mr Ved Prakash
116. Mr Pukhraj

Senior Stenographer

117. Ms Sunita Arora
118. Ms Inderjeet Kaur
119. Ms Shalini Bhatnagar
120. Ms Krishna

Hindi Officer

121. Mr Virpal Singh

Senior Translator

122. Ms Meenakshi Gaur

Junior Translator

123. Mr Anirudha Tiwari

Driver

124. Mr Surinder Prasad

Clerk

125. Mr SK Tyagi

MTS

126. Mr Om Prakash

127. Mr Krishan Kumar

128. Mr Kamrul

129. Mr Ram Harak

130. Mr Raju

131. Mr Ramanand Yadav

132. Ms Sushila Bist

133. Mr Mohit

134. Ms Asha Devi

135. Mr Ajay Kumar

136. Mr Ashok Kumar

137. Mr Ramesh Kumar

Bearer

138. Mr Vidyadhar Tiwari

139. Mr K Muthuswamy

140. Mr Amar Singh Rawat

141. Mr Pratap Singh Negi

Wash Boy

142. Mr Sonu Chakraborty

143. Mr Nathu Ram

144. Mr M Subramani

1

Communicating Science Empowering Society



RESEARCH JOURNALS

Among the primary mandates of CSIR-NIScPR is providing a platform for the scientific community, especially Indian scientists, to publish their research papers. The institute has been making this possible through its 15 research journals of international repute, across the major disciplines of science and technology. Some of the key highlights of CSIR-NIScPR journals are:

- 1. Editorial Boards:** Editorial Boards comprising leading S&T experts from India and abroad.
- 2. Refereeing:** Peer-reviewed papers published.
- 3. Platinum Open Access:** Free access to full-text of articles; no article processing fee for authors.
- 4. Publication with DOIs:** Digital object identifiers (DOIs) assigned to published manuscripts.

Table 1: JCR (IF)/SJR/CiteScore/h-index/NAAS (as on 31 March 2023)

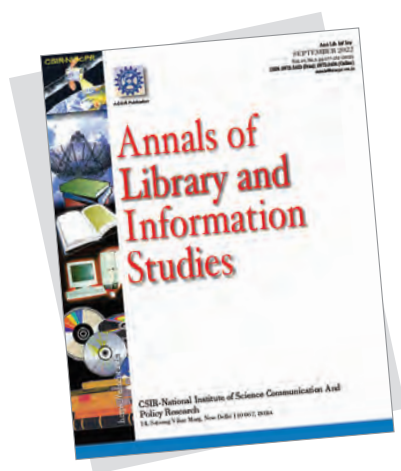
Journal	JCR (IF) (2022)	Scopus Cite Score (2021)	SJR (2022)
<i>Indian Journal of Biochemistry & Biophysics (IJBB)</i>	1.476	2.4	0.219
<i>Indian Journal of Traditional Knowledge (IJTK)</i>	1.091	1.6	0.312
<i>Indian Journal of Experimental Biology (IJEB)</i>	0.944	-	-
<i>Indian Journal of Pure & Applied Physics (IJPAP)</i>	0.846	1.5	0.171
<i>Indian Journal of Fibre & Textile Research (IJFTR)</i>	0.825	1.1	0.224
<i>Indian Journal of Engineering & Material Sciences (IJEMS)</i>	0.615	1.1	0.245
<i>Indian Journal of Chemical Technology (IJCT)</i>	0.760	1.0	0.162
<i>Journal of Scientific & Industrial Research (JSIR)</i>	0.555	1.4	0.163
<i>Indian Journal of Geo-Marine Sciences (IJMS)</i>	0.553	1.1	0.235
<i>Journal of Intellectual Property Rights (JIPR)</i>	0.343	0.4	0.192
<i>Indian Journal of Natural Products and Resources (IJNPR)</i>	0	0.8	0.191
<i>Annals of Library and Information Sciences (ALIS)</i>	-	1.4	0.231
<i>Indian Journal of Chemistry Sec B (Organic Chemistry Including Medicinal Chemistry) (IJC-B) (till December 2021)</i>	0.456	0.7	0.138
<i>Indian Journal of Chemistry Sec A (Inorganic Bio-Inorganic Physical Theoretical Analytical Chemistry) (IJC-A) (till December 2021)</i>	0.412	1.1	0.156
<i>Indian Journal of Biotechnology (IJBT) (till December 2021)</i>	0.324	1.0	0.142
<i>Indian Journal of Radio and Space Physics (IJRSP) (till December 2021)</i>	-	0.1	0.109

Annals of Library and Information Studies

- ❖ Abbreviation: ANN LIB INF STU
- ❖ Periodicity: Quarterly
- ❖ ISSN: 0972-5423
- ❖ e-ISSN: 0975-2404
- ❖ E-mail: annals@niscpr.res.in

Submission Portal Link: <https://or.niscpr.res.in/index.php/ALIS>

NOPR Link: <https://nopr.niscpr.res.in/handle/123456789/66>



Started in 1954 as *Annals of Library Science*, the journal's title was expanded to *Annals of Library Science and Documentation* in 1964 symbolising the widening scope of the journal. Renamed as *Annals of Library and Information Studies* in 2001, the journal publishes articles on documentation and information science, information systems, bibliometrics, scientometrics, informetrics, education and training and other related areas.

Abstracted/Indexed in: Libr Inf Sci Abstr, Libr Inf Sci Tech Abstr and Indian Libr Inf Sci Abstr.

Indian Journal of Biochemistry & Biophysics (IJBB)

- ❖ Abbreviation: Indian J Biochem Biophys
- ❖ Periodicity: Bi-Monthly
- ❖ ISSN: 0301-1208
- ❖ e-ISSN: 0975-0959
- ❖ CODEN: IJBBBQ
- ❖ E-mail: ijbb@niscpr.res.in

Submission Portal Link: <https://or.niscpr.res.in/index.php/IJBB>

NOPR Link: <https://nopr.niscpr.res.in/handle/123456789/34>



Started in 1964, this journal publishes original research articles in areas related to biomolecules; biomolecular recognition, gene-cloning & genetic engineering; drug targeting & drug design; genetic diseases; immunochemistry; ageing; viral assembly and structure; biotechnology (agriculture, animal husbandry, environment, industry, microbiology, medicine, bio-informatics & socio-legal and ethical aspects).

Abstracted/Indexed in: Academia, AYUSH Research Portal (<http://ayushportal.nic.in>), Biochem Biophys Index, Biological Abstracts, BIOSIS previews, Catalogue (National Library of Australia), Chem Abstr, CABI Abstr, DOAJ, Essential Science Indicators, Hathi Trust Digital Library, i-Focus, i-Journals, OA Text, Sci Cit Index Expanded, Trop Dis Bull, US Natl Lib Medicine, and World Cat.

IJBB Special Issues

“Molecular Diagnostics and Therapeutics” Guest Editor & Editorial Board Member: Prof. Subir Kumar Das, WBUHS, West Bengal, India	April 2020
“Covid-19: Disease Progression, Impact & Comorbidity” Guest Editor & Editorial Board Member: Prof. Subir Kumar Das, WBUHS, West Bengal, India	December 2020

“Recent Advances in Biotechnology and Biochemistry” Guest Editor: Dr JS Eswari, NIT, Raipur, India	April 2021
“Electron Microscopy in Biomedical Sciences” Guest Editor: Dr Subhash Chandra Yadav and Prof. Tapas C Nag, AIIMS, New Delhi	August 2021
“Recent Advances in Science and Technology” Guest Editor: Prof. Diwakar Tiwari, Mizoram University, Mizoram	December 2021
“Nanomedicine: Biomolecules for Human Health (NBHH-2021)” Guest Editor: Prof. Vibha Singh Chauhan, Prof. Anita Kamra Verma & Dr Renu Kathpalia, KMC, New Delhi	April 2022
“Human Health in Indian Context”	May 2022
“Nanoparticles: Emerging Trends in Human Health and Environment”	December 2022
“Recent Advances in Nano Medical Sciences (RANMS-2022)” Guest Editor: Prof. Anita Kamra Verma, in association with the Institute of Nano Medical Sciences (INMS), Institution of Eminence (IoE), University of Delhi, and Kirori Mal College, New Delhi	December 2022
“Deciphering the impact of Polycystic ovarian syndrome and other diseases)” Guest Editor: Dr S Ramaswamy, JSS College of Pharmacy, Tamil Nadu	February 2023

Indian Journal of Chemistry

- ❖ Abbreviation: *Indian J Chem*
- ❖ Periodicity: Monthly
- ❖ ISSN: 0019-5103
- ❖ e-ISSN: 2583-1321
- ❖ CODEN: IEMSEW
- ❖ E-mail: indjchem@niscpr.res.in

Submission Portal Link: <https://or.niscpr.res.in/index.php/IJC>

NOPR Link: <https://nopr.niscpr.res.in/handle/123456789/58776>



Started in 1963, *Indian Journal of Chemistry* was bifurcated into two independent journals, Sections A and B, in 1976. *Indian Journal of Chemistry, Sec A* (IJC-A) published papers from the fields of inorganic, bio-inorganic chemistry, theoretical and analytical chemistry whereas *Indian Journal of Chemistry, Sec B* (IJC-B) published papers from organic and medicinal chemistry. From January 2022 onwards, IJC-A has been merged with IJC-B and the combined entity is now published as the monthly journal, *Indian Journal of Chemistry*.

The journal publishes papers in synthetic and structural inorganic chemistry, bio-inorganic chemistry, solid-state chemistry, quantum chemistry, nuclear chemistry, polymers, catalysis and analytical chemistry, enzymes in organic synthesis, synthesis of fullerenes, metal-catalyzed asymmetric reactions, bioactive plant products and combinatorial chemistry.

Abstracted/Indexed in: Anal Abstr, Biol Abstr, Cadscan, Ind Chem, Ceram Abstr, Chem Abstr, Chem Inf, Curr Chem Reac, Curr Contents, Indian Sci Abstr, Lead Abstr, Metal Abstr, Nutr Abstr, Sci Abstr, Sci Cit Index, World Alumin Abstr, World Text Abstr, Zincscan, DOAJ.

Indian Journal of Chemical Technology (IJCT)

- ❖ Abbreviation: *Indian J Chem Technol*
- ❖ Periodicity: Bi-Monthly
- ❖ ISSN: 0971-457X
- ❖ e-ISSN: 0975-0991
- ❖ CODEN: ICHT
- ❖ E-mail: ijct@niscpr.res.in

Submission Portal Link: <https://or.niscpr.res.in/index.php/IJCT>

NOPR Link: <https://nopr.niscpr.res.in/handle/123456789/55>



Started in 1994, *Indian Journal of Chemical Technology* has established itself as the leading journal in the exciting field of chemical engineering and technology including areas related to Chemical Engineering, Catalysis, Leather Processing, Polymerization, Membrane Separation, Pharmaceuticals and Drugs, Agrochemicals, Reaction Engineering, Biochemical Engineering, Petroleum Technology, Corrosion & Metallurgy and Applied Chemistry.

Abstracted/Indexed in: Chem Abstr, Curr Contents, Sci-Search, Res Alert, Eng Index, Indian Sci Abstr, NCI Curr Contents, ARAI Automotive Abstr, Cambridge Sci Abstr, INSPEC, PASCAL, DOAJ and Sci Cit Index.

IJCT Special Issues

“Advances in Chemistry with specific reference to Catalysis, Sensors and Energy materials” Guest Editor: Prof. E Murugan, Head, Department of Physical Chemistry, University of Madras, Chennai	September 2021
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“Contemporary Research on Functional Materials for Catalysis, Energy conversion, Sensors, Drug delivery and Anti-cancer studies”

Guest Editor: Prof. E Murugan, Head, Department of Physical Chemistry, University of Madras, Chennai

November 2022

Indian Journal of Engineering & Materials Sciences (IJEMS)

- ❖ Abbreviation: *Indian J Eng Mater Sci*
- ❖ Periodicity: Bi-Monthly
- ❖ ISSN: 0971-4588
- ❖ CODEN: IEMSEW
- ❖ E-mail: ijems@niscpr.res.in



Submission Portal Link: <https://or.niscpr.res.in/index.php/IJEMS>

NOPR Link: <https://nopr.niscpr.res.in/handle/123456789/36>

Started in 1994, *IJEMS* publishes papers in aerospace engineering, mechanical engineering, metallurgical engineering, electrical/electronic engineering, civil engineering, fluid mechanics, instrumentation, and materials science.

Abstracted/Indexed in: Journal Citation Report (JCR), Web of Science, SCOPUS, Appl Mech Rev, Chem Abstr, Curr Contents, Eng Ind, Metal Abstr, Cambridge Sci Abstr, INSPEC, PASCAL, Sci Cit Index, Math Rev, NCI Curr Contents, ARAI Automotive Abstr and Indian Sci Abstr.

IJEMS Special Issues

“Materials and Manufacturing Processes (ICARAE2021)” Guest Editors: Dr Shankar Sehgal, Dr Kuldeep K Saxena, Dr Velaphi Msomi	March 2022
“Materials and Manufacturing Processes (ICMPC2022)” Guest Editors: Prof. (Dr) Swadesh Kumar Singh, GRIET, Hyderabad, Prof. (Dr) Kuldeep K Saxena, Lovely Professional University	December 2022

Indian Journal of Experimental Biology (IJEB)

- ❖ Abbreviation: *Indian J Exp Biol*
- ❖ Periodicity: Monthly
- ❖ ISSN: 0019-5189
- ❖ e-ISSN: 0975-1009
- ❖ CODEN: IJEBA6
- ❖ E-mail: ijeb@niscpr.res.in

Submission Portal Link: <https://or.niscpr.res.in/index.php/IJEB>

NOPR Link: <https://nopr.niscpr.res.in/handle/123456789/39>



Started in 1963, *IJEB* publishes full papers and notes in Cell Biology, Molecular Biology, Biotechnology, Endocrinology, Reproductive Biology, Immunology, Developmental Biology, Comparative Physiology, Radiation Biology, Chronobiology, Microbiology, Pharmacology, Toxicology and other related biological fields including Instrumentation and Methodology. Review articles on current topics in the above fields are also considered for publication.

Abstracted/Indexed in: Academia, Biological Abstracts, BIOSIS previews, Catalogue (National Library of Australia), Chem Abstr, CABI Abstr, Essential Science Indicators, Hathitrust Digital Library, Science Citation Index Expanded (SCIE), US Natl Lib Medicine, World Cat and Zoological Records.

IJEB Special Issues

“Childhood Cancer and Quality Health Care in Children (BALPEDICON 2021)” Guest Editor: Dr R Somasekar, Dr S Sundari, Prof. WMS Johnson, Prof. S Bhuminathan, Prof. P Ramasamy, Dr Gunasekaran, Dr M Ismail & Dr K Rajendran	October 2021
“Biotechnology for Sustainable Agriculture Environment and Health (BSAEH-2021)” Guest Editor: Dr Meenu Chhabra, Dr Nidhi Pareek, Dr Preeti Chaturvedi & Prof Ashok Pandey	December 2021
“Biodiversity, Climate change, Food & Nutrition and Health” Guest Editor: Dr VA Parthasarathy & Dr M Prakash, NABS, Tamil Nadu	July 2022
“Biotechnology for Resource Efficiency, Energy, Environment, Chemicals and Health (BREEECH-2021)” Guest Editor: Dr Sudhir Pratap Singh, Dr Vinod Kumar & Dr Ashok Pandey, CSIR	September 2022

Indian Journal of Fibre & Textile Research (IJFTR)

- ❖ Abbreviation: *Indian J Fibre Text Res*
- ❖ Periodicity: Quarterly
- ❖ ISSN: 0971-0426
- ❖ e-ISSN: 0975-1025
- ❖ CODEN: IJFRET
- ❖ E-mail: ijftr@niscpr.res.in

Submission Portal Link: <https://or.niscpr.res.in/index.php/IJFTR>

NOPR Link: <https://nopr.niscpr.res.in/handle/123456789/61>



Started in 1976, *IJFTR* publishes research and review papers on production and properties of natural and synthetic fibres (including industrial fibres), yarns, and fabrics; Chemical and finishing processes; Physics and chemistry of fibreforming polymers; Fibre-reinforced composites; Analysis, testing and quality control; Application of microprocessors; Instrumentation; Industrial engineering; Application of nanotechnology in textiles; Dyeing and printing; and Garment technology.

Abstracted/Indexed in: Materials Science Citation Index, Science Citation Index-Expanded (including Web of Science), Journal Citation Report/Science Edition, TEXINCON, Scopus, World Textile Abstract, Indian Science Abstract, Chemical Abstracts, Textile Technology Digest, Refraktivnyi Zhurnal, Paper CLIPP, Art and Archaeology Technical Abstracts, NCI Current Contents.

***IJFTR* Special Issues**

“Medical Textiles in Healthcare and Biomedical Devices” Guest Editor: Prof. S Rajendran, Emeritus Professor, Bolton Institute, UK	March 2022
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Indian Journal of Geo-Marine Sciences (IJMS)

- ❖ Abbreviation: *Indian J Geomarine Sci*
- ❖ Periodicity: Monthly
- ❖ ISSN: 0379-5136
- ❖ CODEN: IJMNBF
- ❖ E-mail: ijms@niscpr.res.in

Submission Portal Link: <https://or.niscpr.res.in/index.php/IJMS>

NOPR Link: <https://nopr.niscpr.res.in/handle/123456789/3>



Started in 1972, this multidisciplinary, peer-reviewed monthly periodical is devoted to the publication of communications relating to various facets of research in marine sciences including physical oceanography; climate change; chemical oceanography including marine pollution; biological oceanography including aquatic biology and fisheries; geological oceanography including geochemistry, micropalaeontology, marine archaeology and marine geo-techniques; satellite oceanography; and marine instrumentation/engineering and naval architecture.

Abstracted/Indexed in: Current Contents/Agriculture, Biology & Environmental Sciences, Oceanographic Abstracts and Bibliography (Deep-Sea Research), Oceanic Abstracts, Aquatic Sciences and Fisheries Abstracts, Agrindex of FAO, Bioresearch Index of Biological Abstracts, Chemical Abstracts, Physical Abstracts, Meteorological & Geostrophysical Abstracts.

***IJMS* Special Issues**

“Intelligent Marine Robotics and Instrumentations” Guest Editors: Mohd Rizal Arshad (Universiti Sains Malaysia (USM), Malaysia) and Xianbo Xiang (Huazhong Institute of Science and Technology (HUST), China)	November 2021
“Marine Natural Products” Guest editors: Dr R Kirubakaran (Former Head and Scientist H, Marine Biotechnology Division, National Institute of Ocean Technology, Chennai) and Dr L Stanley Abraham (Scientist E, Centre for Ocean Research, MoES-ESTC for Marine Biotechnology, Sathyabama Institute of Science and Technology, Chennai)	May 2022

Journal of Intellectual Property Rights (JIPR)

- ❖ Abbreviation: *J Intellec Prop Rights*
- ❖ Periodicity: Bi-Monthly
- ❖ ISSN: 0971-7544
- ❖ e-ISSN: 0975-1076
- ❖ CODEN: JIPRFG
- ❖ E-mail: jjpr@niscpr.res.in

Submission Portal Link: <https://or.niscpr.res.in/index.php/JIPR>

NOPR Link: <https://nopr.niscpr.res.in/handle/123456789/45>



JIPR was started in 1996 keeping in view the importance of intellectual property rights and their protection to enhance communication between policy makers, organizational agents, academics, and managers on the critical understanding and research on intellectual property. The journal publishes contributed/invited research papers, case studies and IPR reviews; technical notes on current IPR issues; literature review; world literature on IPR; national and international IPR news, book reviews, and conference reports.

Abstracted/Indexed in: Scopus, EBSCO host Electronic Journals Service (EJS), Directory of Open Access Journal (DOAJ), Library & Information Science Abstracts (LISA) database, Legal Information Institute of India (LII of India) database.

Indian Journal of Natural Products and Resources (IJNPR)

- ❖ Abbreviation: *Indian J Nat Prod Resour*
- ❖ Periodicity: Quarterly

- ❖ ISSN: 0976-0504
- ❖ e-ISSN: 0976-0512
- ❖ E-mail: ijnpr@niscpr.res.in

Submission Portal Link: <https://or.niscpr.res.in/index.php/IJNPR>

NOPR Link: <https://nopr.niscpr.res.in/handle/123456789/54>



Started in 2002 as *Natural Product Radiance*, the journal publishes original research papers, especially of applied nature, reviews and feature articles dealing with cultivation, fishery, apiary, poultry, dairy, disease control measures, post-harvest technology, development/processes of products and utilisation (including ethnobotany and pharmacology) aspects of plants and animals. Besides, contributed papers by authors, and information compiled and collated by editors are also published.

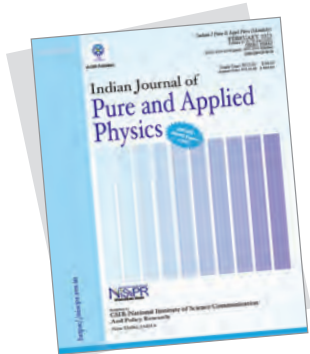
Abstracted/Indexed in: CABI Abstr, MANTIS database, Med Aromat Plants Abstr, DOAJ and Indian Sci Abstr.

Indian Journal of Pure & Applied Physics (IJPAP)

- ❖ Abbreviation: *Indian J Pure Appl Phys*
- ❖ Periodicity: Monthly
- ❖ ISSN: 0019-5596
- ❖ e-ISSN: 0975-1041
- ❖ CODEN: IJOPAU
- ❖ E-mail: ijpap@niscpr.res.in

Submission Portal Link: <https://or.niscpr.res.in/index.php/IJPAP>

NOPR Link: <https://nopr.niscpr.res.in/handle/123456789/63>



Started in 1963, this journal publishes original research contribution as full papers, notes and reviews on classical and quantum physics, relativity and gravitation; statistical physics and thermodynamics; specific instrumentation and techniques of general use in physics, elementary particles and fields, cross-disciplinary physics and related areas of science and technology such as condensed matter physics, nuclear physics, lasers and plasma physics, radio, astro and space physics, synchrotron & accelerator physics, radiation physics, metrology, environmental and biomedical physics, atmosphere and earth physics and physics education research.

Abstracted/Indexed in: Anal Abstr, Appl Mech Rev, Biol Abstr, Cadscan, Ceram Abstr, Chem Abstr, Indian Sci Abstr, Lead Abstr, Mass Spec Bull, Math Rev, Sci Abstr, Sci Cit Index, Phys Briefs, World AluminAbstr, DOAJ, and Zincscan.

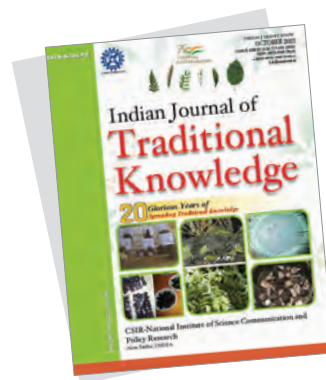
Indian Journal of Traditional Knowledge (IJTK)

- ❖ Abbreviation: *Indian J Traditional Knowledge*
- ❖ Periodicity: Quarterly
- ❖ ISSN: 0972-5938
- ❖ e-ISSN: 0975-1068
- ❖ E-mail: ijtk@niscpr.res.in

Submission Portal Link: <https://or.niscpr.res.in/index.php/IJTK>

NOPR Link: <https://nopr.niscpr.res.in/handle/123456789/43>

Started in 2002, *IJTK* publishes original research papers, review articles and short communications on indigenous systems of medicine, revalidation of traditional knowledge, herbal drug standardisation, folk medicine, artisans and tribal knowledge, agriculture, architecture, arts and crafts, water management,



alternative energy sources, societal developments, etc. based on traditional wisdom. Besides, the journal also welcomes interdisciplinary papers on traditional uses (non-medicinal) of Indian raw materials of plant, animal and mineral origin and development of appropriate technologies for community benefit with specific interest to the rural areas.

Abstracted/Indexed in: CABI Abstr, NAPRALERT, MANTIS database, Food Sci Technol Abstr, Med Aromat Plants Abstr, Indian Sci Abstr, Sci Cit Index Expanded, and DOAJ. The journal is also covered under Non-Patent Literature (NPL) of the Patent Co-operation Treaty (PCT) minimum documentation.

Journal of Scientific & Industrial Research (JSIR)

- ❖ Abbreviation: *J Sci Ind Res*
- ❖ Periodicity: Monthly
- ❖ ISSN: 0022-4456
- ❖ e-ISSN: 0975-1084
- ❖ CODEN: JSIRAC
- ❖ E-mail: jsir@niscpr.res.in

Submission Portal Link: <https://or.niscpr.res.in/index.php/JSIR>

NOPR Link: <https://nopr.niscpr.res.in/handle/123456789/46>

Being the oldest journal of NIScPR (started in 1942), this journal carries comprehensive reviews in different fields of Science & Technology (S&T), including industry, original articles, short communications and case studies, on various facets of industrial development, industrial research, technology management, technology forecasting, instrumentation and analytical techniques, specially of direct relevance to industrial entrepreneurs, debates on key industrial



issues, editorials/technical commentaries, reports on S&T conferences, extensive book reviews and various industry related announcements.

Abstracted/Indexed in: Appl Mech Rev, Anal Abstr, Biol Abstr, Cadscan, CAD-CAM Abstr, Ceram Abstr, Chem Abstr, Chem Eng Abstr, DOAJ and Indian Sci Abstr.

JSIR Special Issues

“Industry 4.0: A way forward for self-reliance and sustainability”
Guest Editors: Dr Suresh Chandra Satapathy (KIIT, Bhubaneswar, Odisha) and Dr Milan Simic (RMIT University, Melbourne, Australia)

January 2023
(Part-I)

February
2023 (Part-II)

Journal of Scientific Temper (JST)

- ❖ Periodicity: Quarterly
- ❖ ISSN: 2278-2788 (print)
- ❖ e-ISSN: 2278-2796 (online)
- ❖ E-mail: jst@niscpr.res.in

Submission Portal Link: <https://or.niscpr.res.in/index.php/JST>

NOPR Link: <https://nopr.niscpr.res.in/handle/123456789/47124>



Started in 2014, this is a quarterly journal devoted to the publication of original research in the area of public understanding and attitudes towards science and technology, survey studies, scientific and extra-scientific belief systems, science and education, science popularisation, science fiction, history and philosophy of science, science and media, the role of science exhibitions, science centres, science museums and science and technology in developing countries.

JST Special Issues

“Role of Indian Science in Freedom Movement”

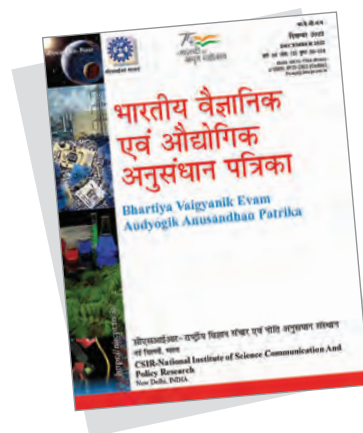
January-June
2022

Bharatiya Vaigyanik Evam Audyogik Anusandhan Patrika (BVAAP, Hindi)

- ❖ Periodicity: Half Yearly
- ❖ ISSN: 0971-7706 (print)
- ❖ e-ISSN: 0975-2412 (online)
- ❖ E-mail: bvaap@niscpr.res.in

Submission Portal Link: <https://or.niscpr.res.in/index.php/BVAAP>

NOPR Link: <https://nopr.niscpr.res.in/handle/123456789/367>



BVAAP was started in June 1993. The journal publishes original and review articles in various disciplines of science such as chemistry, physics, botany, zoology, biochemistry, biophysics, geology, marine science, etc. along with various areas of engineering and technology. Articles in fields like biotechnology, pollution control, alternative sources of energy, science, and society, information science, etc. are also considered for publication.

POPULAR SCIENCE MAGAZINES

CSIR-NIScPR takes science to the people through its three well-known popular science magazines: *Science Reporter* (English monthly), *Vigyan Pragati* (Hindi monthly) and *Science-ki-Duniya* (Urdu quarterly). The magazines find wide circulation throughout the country. Riding on their high quality of content, exquisite production quality, and timeliness the magazines have today become the largest-selling popular science magazines in the country.

As part of its science popularisation mandate, CSIR-NIScPR has also brought out a large number of popular science books, which remain much in demand several years after their publication.

Science Reporter

Launched in 1964, *Science Reporter* entered into its 60th year of publication in 2023. It provides its readers topical coverage of scientific developments from around the world, features on scientific concepts, profiles of scientific institutions & scientists, and views/opinions of experts on critical scientific issues. The

magazine also provides informative and interesting scientific reading material such as amazing scientific facts, inventions & discoveries, debates, science fiction, scientoons, puzzles and much more.

As part of the *Azadi Ka Amrit Mahotsav* programme of the Govt of India, *Science Reporter* brought out prominent focused special issues showcasing Indian S&T:

1. **August 2021** issue of *Science Reporter* highlighted the country's major scientific achievements during the past 75 years after Independence in various fields. Apart from special messages by Dr Jitendra Singh, Union Minister of S&T, and Dr K Vijaya Raghavan, Principal Scientific Adviser (PSA), the issue had special contributions from Secretaries of 6 scientific departments — Space; Health; Scientific and Industrial Research; Atomic Energy; Earth Sciences; Defence Research & Development; Agriculture and Biotechnology. The special issue was released by Dr Jitendra Singh during a ceremony at Prithvi Bhawan, New Delhi on 13 August 2021.

The issue was also translated into Hindi and Urdu and published in *Vigyan Pragati* and *Science ki Duniya*, respectively.



Hon'ble S&T Minister Dr Jitendra Singh releasing the Special August 2021 issue of *Science Reporter*. He is flanked on his right by Prof. K Vijaya Raghavan, Principal Scientific Advisor & Dr Renu Swarup, Secretary, DBT. On his left are Dr Ashutosh Sharma, Secretary, DST and Dr Shekhar C Mande, Secretary, DSIR.



- 2. November 2021** issue focused on “International Mega Science Projects – Indian Contributions” giving a bird’s eye view of major contributions of Indian S&T organizations and scientists in international mega projects like CERN, LHC, INO, ITER, Square Kilometre Array, Facility for Antiproton and Ion Research (FAIR), and the Thirty Meter Telescope.



- 3. March 2022** special issue focused on the journey in science and major achievements of some of the most eminent women scientists working in different S&T sectors in Indian scientific institutions.



- 4. May 2022** issue presented an overview of significant S&T missions launched by the Govt of India such as the Deep Ocean Mission, Semiconductor Mission, Waste to Wealth Mission, Digital India Mission, Electric Vehicles Mission, Quantum Frontier Mission, Hydrogen Mission and Biodiversity &



Health Mission. The issue was brought out on the occasion of the National Technology Day and was released by Hon’ble Ministers Dr Jitendra Singh and Dr Nitin Gadkari.

- 5. September 2022** issue was brought out on the occasion of the 80th anniversary of CSIR and was dedicated to the S&T contributions and achievements of CSIR during the 80 years of its existence. The special issue had inputs from all the past Director Generals of CSIR – Dr RA Mashelkar, Dr Samir K Brahmachari, Dr Girish Sahni and Dr Shekhar C Mande. The issue also contained contributions from leaders of the 8 Theme Directorates of CSIR, highlighting CSIR’s contributions in agriculture, oceanic research, minerals & metals, scientific instruments, chemicals & drugs, biotechnology, leather, and so on.



- 6. March 2023** was an “Innovation Special” focusing on innovation at various levels – in school education, at the grassroots, and at the entrepreneurship level. The issue also contained an exclusive interview with Dr N Kalaiselvi, CSIR’s first woman Director General.



Hon’ble S&T Minister Dr Jitendra Singh; Hon’ble Minister of Road, Transport & Highways Shri Nitin Gadkari and Dr VK Singh, Hon’ble Minister of State of Road & Transport releasing Special issues of *Science Reporter* & *Vigyan Pragati*. On extreme right is Dr Rajesh Gokhale, Secretary, DST and on left is Dr Ranjana Aggarwal, Director, CSIR-NIScPR.

Vigyan Pragati

Launched in 1952, *Vigyan Pragati* entered the 71st year of its publication in 2023. *Vigyan Pragati* endeavours to familiarise its readers with important current events/issues in the field of science. It carries science stories and feature articles on contemporary national-international scientific issues, events, missions, and initiatives along with regular columns such as science fiction, crossword, science poetry, scientoon, book review, science quiz, etc.

Special issues focused on thematic topics were brought out from time to time:

1. **September 2021** special issue on 75 Years of India's S&T development
2. **May 2022** special on National Technology Day
3. **June 2022** special on World Environment Day
4. **August 2022** special issue on Indian organisations engaged in science popularisation
5. **November 2022** science fiction special



Science-Ki-Duniya

Started in 1975, *Science-ki-Duniya* is a quarterly magazine and among the most widely read Urdu science magazines in the country. It provides a package of varied columns such as Science Quiz, Innovative Minds, Nature's Wonders, Q&A, Science News, Photo feature, New Words and definitions, and Science for Children apart from topical and absorbing articles in each issue.

The major articles published during the period include Environmental Protection, Climate Change: Causes and Effects, Rare Elements, Sustainable Development, S&T Breakthroughs, Quantum Apocalypse, etc. July-September 2022 issue was a special issue on the contributions of CSIR during the past 80 years.



Vigyan Pragati received the National Rajbhasha Kirti Award (First position)

NEWSLETTERS & BULLETINS

CSIR News & CSIR Samachar

CSIR-NIScPR brings out two newsletters that showcase latest and most prominent developments and achievements of CSIR laboratories. While *CSIR News* (English) was launched in 1951, *CSIR Samachar* (Hindi) was launched in 1984.

The newsletters are intended to serve as a prominent link among the various CSIR establishments. They also showcase the achievements of CSIR laboratories to other R&D organisations, universities, S&T agencies/departments, industry, mass media, and also foreign agencies.



Science Diplomacy

Quarterly science digest featuring insights, perspectives and opinions of experts in the field from around the world. During 2021-2023, *Science Diplomacy* featured articles from various emerging areas such as ocean diplomacy, space diplomacy, sustainable development, climate diplomacy and STI diplomacy. Eight issues of *Science Diplomacy* were published between April 2021 and March 2023.



- ❖ April-June 2021 issue offered a compelling mix of articles on subjects related to ocean and space diplomacy.
- ❖ July-September 2021 issue focused on the IPCC report and reviewed actions taken by different economies to achieve sustainable development by 2030.
- ❖ October-December 2021 issue showcased creative and sustainable climate solutions that young Indians have implemented to combat climate change.
- ❖ April-June 2022 issue featured articles by participants of the 'Participatory Science Advice for Policy Making' workshop, part of the INSA Asia's Grassroots Science Advice Promotion Awards 2021.
- ❖ July-September 2022 special issue on Science Counsellors included articles from distinguished counsellors from diplomatic missions such as the British High Commission, Embassy of Hungary, Embassy of Italy and Embassy of India in Germany.
- ❖ January-March 2023 issue provided insights on 'Science 20' during India's G20 Presidency, institutional diplomacy and CSIR technologies with significant export potential.

S&T PORTALS

Science Reporter Portal: To enhance the reach, provide instant visibility to the contents of *Science Reporter*, and to host news about Indian R&D developments, *Science Reporter* has established a portal.

CSIR News Portal: To enhance the reach, and host and provide instant visibility to R&D developments from various CSIR laboratories, a *CSIR News Portal* has been established.



SVASTIK (SCIENTIFICALLY VALIDATED SOCIETAL TRADITIONAL KNOWLEDGE)

On the exhortation of the Hon'ble Prime Minister and President of the CSIR Society, Shri Narendra Modi,



that information related to scientific validation of Indian traditional knowledge/practices need to be communicated effectively to the public, CSIR was directed to spearhead the efforts. Subsequently, CSIR-NIScPR was assigned as the nodal organisation to collaborate with partners from across the country and implement the national initiative on 'Communicating India's scientifically validated traditional knowledge'.

The initiative is called "SVASTIK" – Scientifically Validated Societal Traditional Knowledge. As a part of this initiative, simplified creative content on traditional knowledge is being disseminated through digital platforms in English, Hindi, and other Indian languages.

Ten priority areas have been selected – Mathematics, Astronomy, Architecture, Metallurgy, Water & Sustainable Agriculture, Energy, Ecology & Environment, Indian Systems of Medicine, Indian Commerce, and Indian Way of Education & Philosophy. Until now, 32 TK with scientific basis in the identified domains have been verified and documented in a uniform format, and communicated in 17 different languages, namely, English, Hindi, Assamese, Bengali, Kashmiri, Odiya, Kannada, Tamil, Telugu, Malayalam, Nepali, Gujarati, Marathi, Konkani, Maithili, Sanskrit and Urdu.

The SVASTIK campaign has recorded more than 4 lakh social media impressions through its own channels, and in partnership with MyGov it recorded 47.9 million reach.

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

Twitter: https://twitter.com/NIScPR_SVASTIK

LinkedIn: <https://www.linkedin.com/company/niscpr-svastik>

Facebook: <https://www.facebook.com/niscprsvastik>

Instagram: https://www.instagram.com/niscpr_svastik

SVASTIK

SCIENTIFICALLY VALIDATED SOCIETAL TRADITIONAL KNOWLEDGE

A CSIR-NIScPR initiative to communicate scientifically validated traditional knowledge of India

33 TRADITIONAL KNOWLEDGE WITH SCIENTIFIC BASIS COMMUNICATED in English &

16 INDIAN LANGUAGES

हिन्दी, बांग्ला, कन्नड़, तमिल, उड़िया, मराठी, संस्कृत, असमिया, नेपाली, कोंकणी, संस्कृत, कश्मीरी, ओड़िया, कन्नड़, तमिल, तेलुगु, मलयालम, नेपाली, गुजराती, मराठी, कोंकणी, मैथिली, संस्कृत, उर्दू.

PODCASTS, SHORTS/REELS, VIDEOS

Topics: Turmeric, Iron Making, Post-meal walk, Mauryan Hydrology, Yoga, Pandya's Irrigation, URO-5, Ramappa Temple, Brahmagupta, Arsenic Metal Mirror, Ganga, Samba Mosan, Kalmegh, Honey, Kunapala, Turmeric & Cancer, Shrub Sutra, Rojo, Turmeric, Kaba Sura, Aryabhata, Iron Making, Post-meal walk, Mauryan Hydrology, Yoga, Pandya's Irrigation, URO-5, Ramappa Temple, Brahmagupta, Arsenic Metal Mirror, Ganga, Samba Mosan, Kalmegh, Honey, Kunapala, Turmeric & Cancer, Shrub Sutra, Rojo, Turmeric, Kaba Sura, Aryabhata.

myGov मेरी सरकार

NIScPR SVASTIK Lecture Series

Aryabhata

Do You Know Yoga and Meditation?

CSIR-NIScPR

@niscpr_svastik

SVASTIK Lecture Series

To promote and propagate scientifically validated knowledge and to bring in views and opinions of experts, the NIScPR SVASTIK Lecture series was initiated. Three such sessions have been conducted so far:

- (a) The first lecture was organised to commemorate the World Food Day on the theme “Traditional foods for better nutrition, environment and life” on 22 October 2021. Experts in this session were: Prof. Vinti Davar, Founder Director, Ural Organics Pvt Ltd, New Delhi and Prof. Suparna Ghosh-Jerath, Head Community Nutrition, Indian Institute of Public Health, New Delhi.



- (b) The second lecture was organized on the occasion of the National Metallurgists Day on the theme “Marvels of Indian Metallurgy-I” on 15 November 2021. Experts in this session were Prof. BN Jagatap, Senior Professor, IIT Bombay and Dr V Ramanathan, Assistant Professor, IIT-BHU, Varanasi.



- (c) The third lecture was organized on the occasion of the International Day of Yoga 2022 on the topic “Scientific Understanding of Yoga” on 17 June 2022. In this session, Shri Subhash Kesarwani, Director (NGS), NTIPRIT, DoT, Ghaziabad was the distinguished speaker.



Partnership with MyGov

A partnership with MyGov, an online citizen engagement platform, was fostered for promotion of scientifically validated traditional knowledge and several citizen engagement activities were organised:

- (a) A ‘Discuss’ activity on the topic “Share inputs to instil confidence in society about our traditional knowledge and practices” was organised during 3 March 2022 to 31 August 2022.



- (b) A Quiz on “Indian Traditional Knowledge” was launched from 1 June 2022 to 31 August 2022.
- (c) A photography contest on the theme “Indian Architectural Heritage through Your Lens” was organised, and the winners were announced on the occasion of the 2nd CSIR-NIScPR Foundation Day on 13 January 2023.

S&T PUBLICATIONS

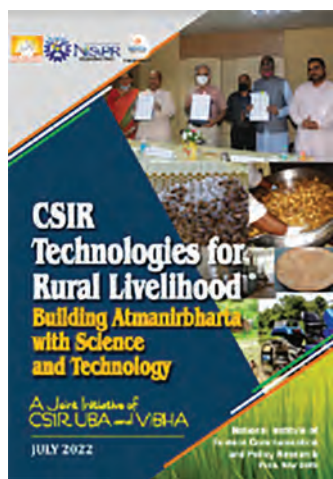
Proceedings of IISF 2020

The India International Science Festival (IISF 2020) was organized in virtual mode from 22-25 December 2020, with CSIR-NIScPR being the nodal institution for organizing the event. The report *Summary Proceedings and Policy Recommendations for Science Development in India* presents comprehensive coverage of the various events organized as part of the IISF 2020 and brings out the major policy recommendations of each event. The report dwells on issues related to growth of Science and Technology in the country that emerged during the deliberations. The report was released by Hon'ble Minister for Science and Technology at the India International Science Festival organized in Goa in December 2021.



CSIR Technologies for Rural Livelihood: Building Atmanirbharta with Science and Technology

A joint initiative of CSIR, Unnat Bharat Abhiyan and Vigyan Bharati, this publication lists out some major technologies developed by CSIR labs which could augment rural livelihoods in the country.



CSIR Compendium of Technologies 2021

This policy bulletin is a product of the CSIR Compendium of Technologies 2021 conceptualised and developed by CSIR-NIScPR (erstwhile CSIR-

NISTADS). It is the first kind of rigorous exercise to evaluate the TRL levels of technologies at TRL6 and above developed by CSIR and aiming to validate the TRL levels using DELPHI Method. The *CSIR Compendium of Technologies* provides the list of technologies with validated TRLs and brief description of technologies in eight different themes as well as also CSIR Laboratory-wise.



COVID-19 Bulletin

During the COVID-19 pandemic, the institute brought out regular updates from India and abroad through a weekly online *COVID-19 Bulletin*. The bulletin featured research updates from around the world, innovations to counter the pandemic, advice on staying safe and healthy, and also regularly debunked several myths prevalent during those times. Later, the bulletins were translated into Hindi and Urdu and the e-compendiums were hosted on the institute's website and promoted through social media channels.



Vigyan Sanchar ko Sanwarati Vidhayen

This book brings together the various formats and media of science communication such as Science poetry, Science Fiction, Science blog, Puppet, Print & Social media, etc.

Science & Technology Quiz: Celebrating Azadi Ka Amrit Mahotsav

As part of the “Azadi Ka Amrit Mahotsav” programme of the Govt of India, *Science Reporter* carried monthly quiz series containing questions related to S&T progress registered by the country after Independence and also achievements of S&T institutions in India. The book contains a compilation of this year-long series.

Samkaleen Hindi Vigyan Kavita Sanchayan

This book was brought out as an effort to popularize science through the format of science poems. The

book contains around 100 science poems on different S&T topics and written by experts from different walks of life. The book was released by Dr N Kalaiselvi, DG, CSIR during the *Vigyanika* event organized by CSIR-NIScPR as part of the India International Science Festival, Bhopal 2023.

SVASTIK Stories: Indian Traditional Knowledge Through the Lens of Science (Volume 1)

Based on the efforts of CSIR-NIScPR under the SVASTIK (Scientifically Validated Societal Traditional Knowledge) initiative, the institute has brought out a popular science book *SVASTIK: Stories of Indian Traditional Knowledge Through the Lens of Science*. The book is a collection of 20 profusely illustrated scientifically validated TK stories covering a wide range of subject areas targeting students and the public through its lucid language.



2

STI Studies and Policy Research



SPONSORED PROJECTS

Unraveling the role of plant growth promoting rhizobacteria responsive micro RNA(s) in *Arabidopsis*

Project Code: Grant-in-Aid Project; INSA/SPYSP/148/2019/273; GAP-0115

PI: Dr Charu Lata

Duration: 2021-2022

Objectives

Several Gram positive and negative Plant Growth Promoting Rhizobacteria (PGPR) are known to colonize rhizosphere and impart beneficial effects to plants including abiotic stress tolerance through various direct and indirect mechanisms. However, the molecular basis of plant-PGPR interaction for abiotic stress tolerance is yet not fully understood. Recently post transcriptional and post translational gene regulation mediated by microRNAs (miRNAs) during plant growth and development and various stresses has become an emerging field of study. However, the role of miRNAs in regulating responses to PGPR remains to be answered. *Pseudomonas putida* (RA) has been proposed as a very good PGPR for agricultural crops. The knowledge of gene expression and a better understanding of the role of miRNAs in model plant *Arabidopsis thaliana* will thus, help in understanding RA-mediated plant growth promoting attributes and stress regulatory mechanisms.

Outcomes/Results

Genome-wide profiling of small RNAs and the stem-loop RT-qPCR analysis demonstrated that miR393a-5p was significantly up-regulated in *P. putida* RA-inoculated *Arabidopsis* as compared to the control. miR393 has been reported as a key regulator of auxin signaling and actively participated in numerous aspects of plant growth and development, like root and leaf development. Therefore, functional study was carried out to establish the role of AtmiR393a-5p-mediated growth and development of *Arabidopsis*. *P. putida* RA-responsive miR393a-5p precursor sequence was selected from *A. thaliana*, cloned and functionally characterised in homologous system (Fig. 1A-D; Table 1). Previous studies have been reported that miR393 negatively regulates their targets which encode F-box-containing genes, such as TIR1 and AFBs, in a variety of plant species.

Previously, root development analysis revealed that miR393 overexpressing *Arabidopsis* seedlings exhibited slightly longer primary root and fewer lateral

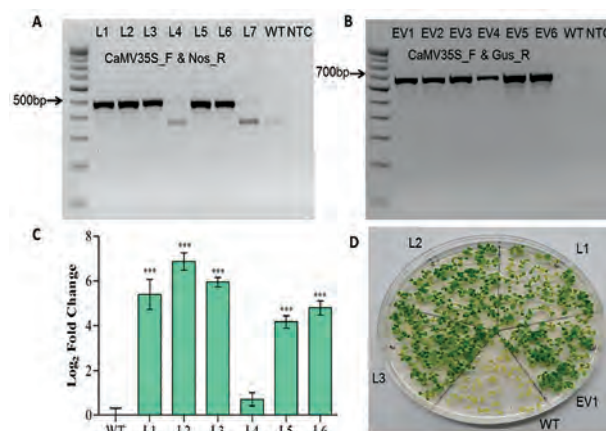


Fig. 1A-D: Screening of *Arabidopsis* transgenic lines. (A) PCR-based screening of miR393a-5p overexpressing lines; (B) PCR-based screening of empty vector transgenic lines; (C) Expression analysis of miR393a-5p in transgenic lines using qRT-PCR; (D) Homozygous T3 overexpressing lines, L1, L2, L3, EV1 and WT plants growing on 1/2 MS medium containing 50 mgL⁻¹ kanamycin.

roots. However, overexpressing *Arabidopsis* seedlings of *TIR1* and miR393-resistant form of *TIR1* (*mtIR1*) have shown shorter primary roots and more lateral roots.

In the present study, target prediction analysis revealed that *AtTIR1* and *AtAFB2* were predicted as the target of *AtmiR393a-5p*. *AtmiR393a-5p* overexpression resulted in significantly induced expression of miR393a-5p and significantly down-regulation of its predicted targets, *AtTIR1* and *AtAFB2* in T3 homozygous *Arabidopsis* plants. Taken together, *AtmiR393a-5p*-mediated regulation of *TIR1* and *AFB2* is important for *Arabidopsis* root growth and development. miR393a-5p overexpressing *Arabidopsis* exhibited diverse plant growth and development attributes, such as increased shoot length, primary root length, biomass, number of lateral branches and number of siliques in comparison to the Col-0 wild type plants (Fig. 2A-B). This research has therefore, provided useful insights into the understanding of roles of *P. putida* RA-responsive miR393a-5p in plant growth and development.



Elucidating the role of gram-domain containing gene(s) in *Bacillus amyloliquefaciens*-mediated abiotic stress responses in plants

Project Code: Grant-in-aid project

ECR/2017/001593; GAP-0116

PI: Dr Charu Lata

Duration: 2021-2022

Objectives

Several Gram positive and negative Plant Growth Promoting Rhizobacteria (PGPR) are known to colonize rhizosphere and impart beneficial effects to plants through various direct and indirect mechanisms. However, the molecular basis of plant PGPR interaction in rhizosphere is yet not fully understood as it is not a case of characteristic “gene-to-gene” interaction. A knowledge of GRAM-domain containing genes and a better understanding of their role in various abiotic stresses will not only help in understanding PGPR mediated stress responsive mechanisms but will also help in designing better strategies aimed at improving stress tolerance of crop plants. The study is expected to enhance our understanding on PGPR-mediated novel molecular mechanisms operating in model crops *Arabidopsis* and rice for abiotic stress tolerance.

Outcomes/Results

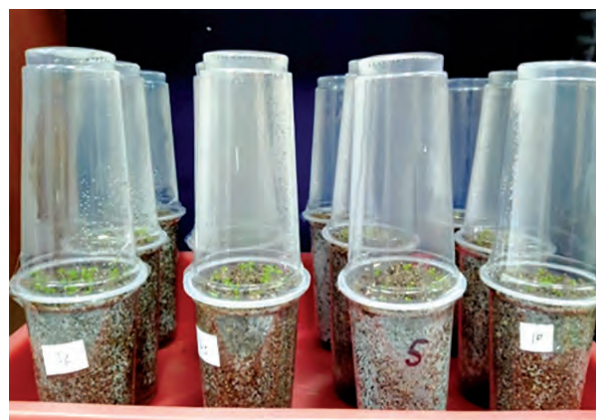
For functional validation, selected candidate genes [OsGRAM57 (579 bp) and AtGRAM 10 (819 bp)] were amplified and cloned in pGEMT-Easy vector and confirmed by *EcoRI* restriction digestion (Fig. 1A-B & 2A-B). Further, both the candidate genes were cloned in pCAM1303 vector using their respective restriction sites, and transformed in *Agrobacterium* GV1301.

A. tumefaciens GV3101 strain containing pCAM1303:OsGRAM57 and pCAM1303: AtGRAM10 expression cassette used for flower dipping of *A. thaliana* (Col-0) plants. Seeds (T₀) were obtained from flower dipped plants and considered as putative transgenic *A. thaliana* lines under the transcriptional control of *CaMV* 35S constitutive promoter.



Floral dipped plants of *A. thaliana*

For the selection of putative transgenics, T₀ seeds were sterilized and grown on ½ MS medium supplemented with hygromycin. Overexpressing lines with long hypocotyl and green expanded cotyledons were designated as hygromycin resistant transgenic seedlings, while those with pale unexpanded cotyledons were considered as non-resistant seedlings. Survival of transgenic seeds on hygromycin plates was considered as putative overexpressing lines. The selected transgenic plants were transferred on soilrite pots supplemented with OS medium.



Hygromycin selected T₁ transgenic plants on soilrite pots

Genomic DNA was isolated from hygromycin selected *Arabidopsis* lines overexpressing *OsGRAM57* namely L1, L2, L3, L4, L5, L6, L7 and L10. PCR amplification result confirmed the integration of *OsGRAM57* transgene in the genome of transgenic lines of *A. thaliana* namely L1, L2, L3, L4, L5 and L6. L2, L3 and L5 transgenic lines have been chosen for the generation advancement. However, in case of *Arabidopsis* GRAM gene, mature T₀ seeds of *AsGRAM10* overexpressing lines were shown on ½ MS medium supplemented with hygromycin for the selection of T₁ transgenic plants. The integration of *AtGRAM10* transgene in the genome of transgenic lines of *A. thaliana* needs to be done through PCR amplification.

MDA content was found to be higher in WT plants under salt stress that indicated a greater

extent of membrane damage in WT than overexpressed plants. Transgenic plants showed ~33% lower MDA content than WT plants at 150 mM salt concentration. Accumulation of proline was found to be higher by ~20% in *OsGRAM57* overexpressing plants as compared to the WT plants (Fig. 7B). Super oxide dismutase (SOD) activity found to be higher by ~20% in overexpressing plants upon salt stress as compared to the WT plants.

Expression of SZF1 and GRF1 was analysed in WT, EV and selected three independent *OsGRAM57* overexpressing lines. Expression of SZF1 and GRF1 found to be significantly up-regulated in all the three homozygous lines as compared to the WT plants (~3-fold).

This research has provided useful insights into the understanding of roles of GRAM family genes in root-rhizobacteria interactions, salt stress-response as well as in plant growth and development.



Choosing scientific research as a career: Why & how

Project Code: GAP-0117
PI: Dr Puspanjali Tripathy
Duration: 2021-2022

Objectives

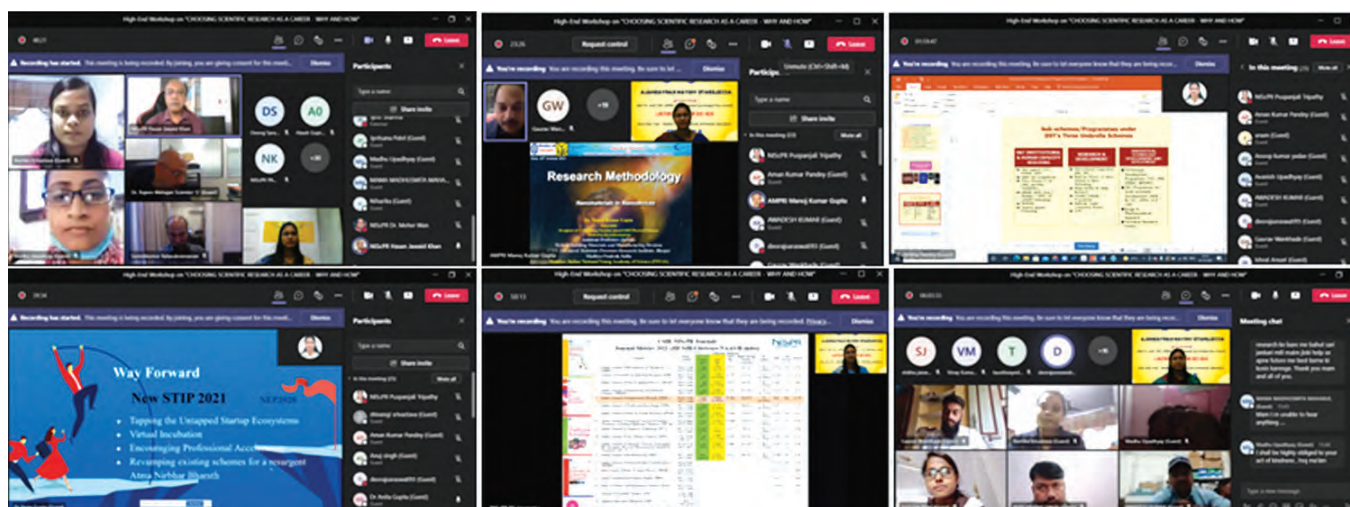
The high-end workshop on “Choosing Scientific Research as a Career: Why and How” was aimed at encouraging and informing students of MSc second year about the importance of research and its role in nation building. Experts interacted with the students to provide them information about choosing research as post-MSc career.

Outcomes/Results

About 30 students from universities attended the program via online mode. The queries of the students

were discussed by the coordinator; feedbacks were taken verbally as well as through Google forms. The course materials and certificates were sent to the participants via post.

The program gave an understanding of how to choose a scientific research area, basic understanding of laboratory research, effective ways of research communication writing format and presentation style, social responsibility of scientists, need for scientists as science communicators and S&T entrepreneurship opportunities.



National Workshop on “Role of Taxonomical Identification & Authentication of Plants & Crude Drugs in Traditional Medicine & Research”

Project Code: Grant-in-Aid Project; IEC/DL-06/2022-23-NMPB;GAP-0122

PI: Dr Charu Lata

Duration: 2022-2023

Objectives

The workshop was organized for the registered participants of CDTK-2023. Drug development from medicinal plants and the importance of taxonomy in drug identification/authentication was the focus of the national workshop session.

Outcomes/Results

A total of 54 delegates participated in the national workshop. A total of 36 participants presented posters on different medicinal plants encompassing the theme of the national workshop.

Prof. Ranjana Aggarwal, Director, CSIR-NIScPR highlighted that the SVASTIK initiative was the vision of honorable PM Shri Narendra Modi's call for disseminating scientifically validated Indian traditional knowledge to the society. Prof. (Dr) Tanuja Nesari, Chief Executive Officer, NMPB and Director, AIIA, New Delhi in her Inaugural Address illustrated the relevance of Indian medicinal system, and emphasized the importance of minimizing the gap between traditional knowledge and contemporary science

and technological methods. Prof. (Dr) Saroj K Barik, North-Eastern Hill University, Shillong highlighted the achievements of NMPB with regard to the organised cultivation of medicinal plants by farmers and their trade. Prof Indira Priyadarsini, DAE Raja Ramanna Fellow, University of Mumbai, Mumbai shared her views on how currently available medicinal plant/ Ayurvedic formulations have quality control issues and how relevant this aspect is for reproducibility in experimental research studies. Dr Sharad Srivastava, CSIR-NBRI, Lucknow focused on the relevance of authenticating medicinal plants for usage in R&D activities. Dr Sunita Garg, Former Chief Scientist, CSIR-NIScPR spoke on the “Role of Taxonomy in Drug Authentication” and Shri R S Jayasomu, Chief Scientist, CSIR-NIScPR demonstrated how India is positioned in the worldwide scenario of published research with respect to traditional medicinal knowledge.

A visit to Raw Materials Herbarium & Museum, Delhi (RHMD) was conducted for demonstration of activities such as herbarium preparation and authentication of medicinal plant parts used. This was followed by a visit to the Institutes medicinal plants garden, Ayurvatika.



Communication and Dissemination of Traditional Knowledge (CDTK-2023)

Project Code: SSY/2022/001105; GAP-0123

PI: Dr Charu Lata

Duration: 2022-2023

Objectives

A two day International Conference on Communication and Dissemination of Traditional Knowledge (CDTK 2023) was organized during 14-15 February 2023 to showcase the developments of its newly launched project SVASTIK (Scientifically Validated Societal Traditional Knowledge), a national initiative for the promotion and dissemination of traditional knowledge among the experts, academicians, students and general public, and also to strengthen the collaborations between individuals and organizations dedicated towards documentation, validation, communication and dissemination of traditional knowledge in India.

Outcomes/Results

The programme was inaugurated by the Chief Guest, Dr N Kalaiselvi, DG, CSIR & Secretary, DSIR, Guest of Honour, Shri Vaidya Rajesh Kotecha, Secretary, Ministry of Ayush, Govt of India, Prof Ranjana Aggarwal, Director, CSIR-NIScPR, Dr G Mahesh, Chairperson and Dr Charu Lata, Organising Secretary of CDTK-2023. The Keynote Speaker was Prof. Subhash Kak, Oklahoma State University, USA through online mode who emphasized the use of Indian languages to communicate science and suggested that India should mainstream traditional

medicine systems and the health systems running in the country.

The two day conference witnessed six scientific sessions and a special panel discussion by the Quality Council of India.

On the second day, Union Minister of State (Independent Charge) Science & Technology, Dr Jitendra Singh graced the occasion and released the Conference Abstract Book & Souvenir, *Indian Journal of Traditional Knowledge* Azadi Ka Amrit Mahotsav Issue, popular science book on SVASTIK disseminated stories 'SVASTIK: Indian Traditional Knowledge Through the Lens of Science', SVASTIK Brochure, and CSIR-NIScPR calendar 2023.

A special Exhibition pavilion was a major highlight of the Conference in which different CSIR labs namely, CSIR-CDRI, CSIR-CLRI, CSIR-IGIB, CSIR-IIP and CSIR-NIScPR participated. In addition, Central Council for Research in Ayurvedic Sciences (CCRAS), Quality Council of India (QCI), and international publishers ACS Publications and Clarivate also participated in this pavilion.

A total of 309 delegates attended the event with 302 national and 7 foreign delegates. The registration/participation for the conference was from 22 states, 3 UTs and 7 foreign countries.



Science communication for beginners

Project Code: AV/KAR/2020/0128

PI: Dr Manish Mohan Gore

Sponsoring agency: SERB

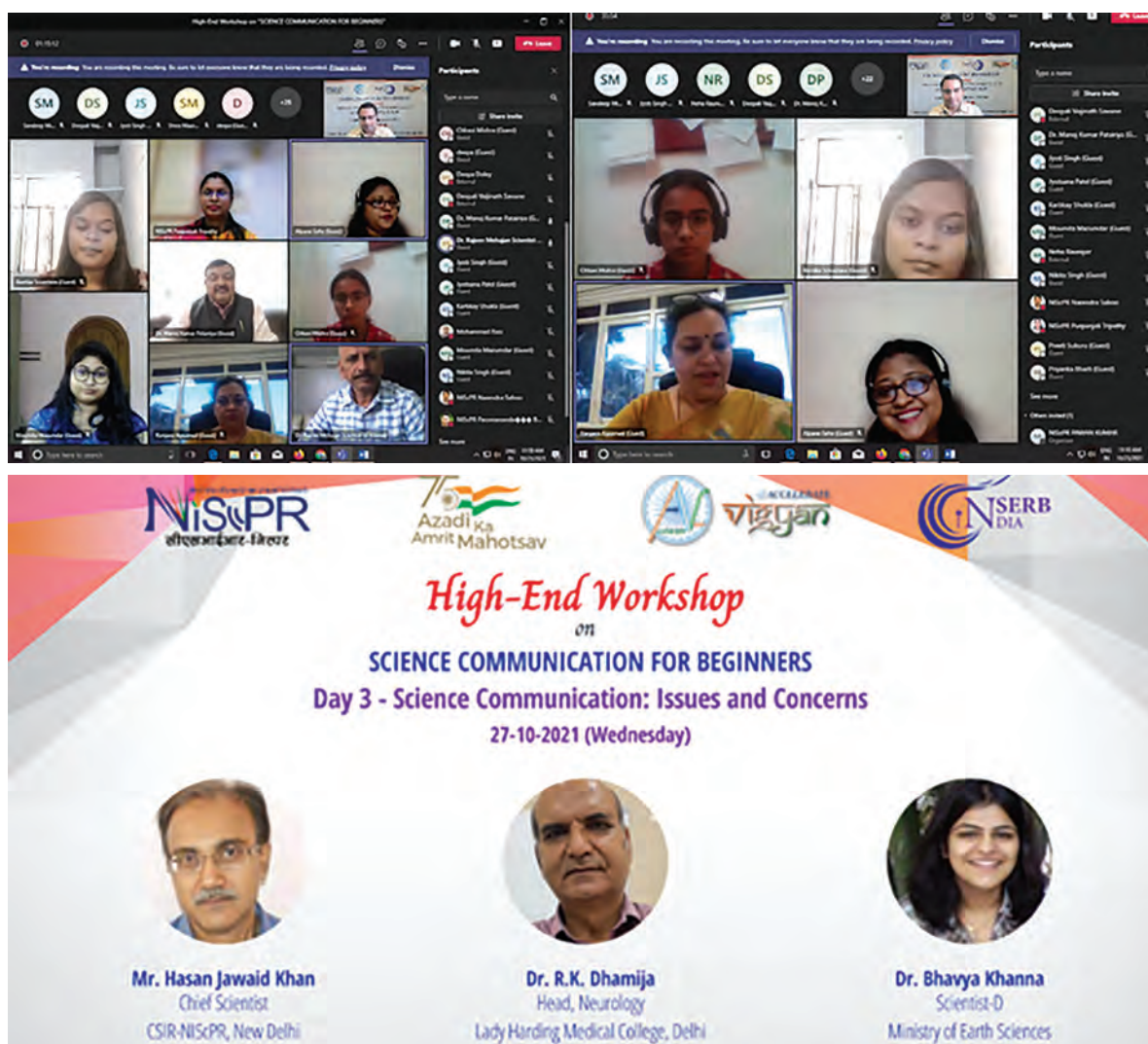
Duration: 2021-2022

Objectives

A high-end workshop on 'Science communication for beginners' was organized on 25-29 October 2021, funded by Science & Engineering Research Board (SERB), Govt of India, under 'Karyashala' scheme of Accelerate Vigyan (AV). The objective was to introduce participants to various aspects of science communication and the significance of dissemination of scientific information in increasing the level of scientific awareness of the country's citizens and in the progress of the country. The workshop was aimed at Master students (2nd year) [Stream: Science/ Science communication/ Mass communication] and PhD students (1st year) in science from any Indian College and University.

Outcomes/Results

The total number of shortlisted participants was 25 (as per SERB guideline). They were provided with knowledge and learning by nine expert speakers. The workshop concentrated on concept, history and objectives of science communication; science and technology policies of India with respect to science communication; medium and format to communicate science; Role of IT in science communication; popular science writing, research communication and health communication, etc. The workshop also engaged the participants in hands-on training through assignments.



CSIR Hydrogen Technology mission

PI: Dr Madhulika Bhati
Sponsoring agency: CSIR
Duration: 2022-Continuing

Objectives

The project aims to map current state-of-art in Hydrogen technology and policy interventions.

Outcomes/Results

Policy document related to country-specific hydrogen economy policies as well as cataloguing of current projects worldwide has been done.

- **Weekly e-Hydrogen digest:** A notable initiative is the weekly e-hydrogen digest. This digest is distinct as it not only provides news updates but also includes valuable information such as books, reports, publications, and patents related to hydrogen research. In the past year, CSIR-NIScPR has successfully published 34 issues of the digest and compiled the document to offer a comprehensive overview of groundbreaking research happening worldwide, as well as highlight the dedicated research efforts taking place within India. By sharing timely and relevant information, CSIR-NIScPR aims to facilitate knowledge dissemination, collaboration, and advancement in the field of hydrogen research. This serves as a valuable resource for researchers, enabling them to stay updated with the latest developments, access relevant literature, and engage with the research community in this field.
- **India Green Hydrogen Policy Brief:** India's transition to green hydrogen, examining policy measures, renewable energy promotion, and stakeholder engagement is on peak to achieve net carbon zero by 2070, as per the declaration made by Honourable Prime Minister Narendra Modi. The study utilises grey literature and analyzes state

and country-level initiatives in India. It also uses Bradford law analysis to identify the core journal in the field of green hydrogen – “*International Journal of Hydrogen Energy*” – publishing highly cited articles. Bibliometric analysis provides valuable insights into the top countries publishing in the journal, the most prolific Indian institutes and R&D organisations, as well as prolific Indian authors who have made significant contributions to the field. These analyses contribute to our understanding of the global research landscape in hydrogen energy and help identify key players and trends in the Indian scientific community. India is among the top three publishing countries. The Brief addresses various challenges that will be encountered by the Indian Green hydrogen economy, including production cost, water footprint, potential leakage and environmental consequences, land use and acquisition, and availability of critical materials.

- **Cataloguing of Hydrogen Projects worldwide:** The report provides a comprehensive overview of hydrogen projects commissioned worldwide since 2000, focusing on their significance in energy production and climate change mitigation. Encompassing a wide range of initiatives, the report includes projects aimed at reducing emissions associated with hydrogen production for existing applications, as well as those utilizing hydrogen as a low-carbon energy carrier or industrial feedstock in new applications. The document extensively covers the top ten countries with operational projects in the hydrogen sector. This detailed cataloguing of projects serves as a valuable resource for researchers seeking to gain insights into the global hydrogen-based technology and project landscape.



Capturing thematic intervention of agriculture sector in Asian countries: A scientometric approach

PI: Dr Madhulika Bhati

Duration: 2018-2022

Objectives

Publication and patent analysis of agriculture interventions in Asian countries.

Outcomes/Results

Patent activities and focus areas in India have been captured and compared against other Asian countries.



Random verification of annual inventory on hazardous waste management

PI: Dr Madhulika Bhati

Sponsoring agency: Central Pollution Control Board

Duration: 2021-2022

Objectives

The objective of this project was to verify the annual inventory submitted by the CPCBs/PCCs based on annual returns submitted by hazardous waste generating & handling units including compliance to the provisions of HOWM Rules, 2016/Guidelines/Standard Operating Procedures issued by CPCB. The HOWM Rules, 2016, stipulate provisions for maintaining records and

filing annual returns pertaining to hazardous waste generation and their management. As per Rule 20 of the HOWM Rules, 2016, the occupier handling hazardous waste and operator of the disposal facility are required to submit the annual return in the prescribed Form to the SPCB/PCC every financial year about hazardous wastes generation, storage, recycling, utilization, disposal, etc.



MLP PROJECTS

Creating Livelihood Opportunities in Rural Areas Through CSIR Technologies Using UBA-VIBHA Network

Project Code: NIS/MLP-0011

PI: Dr Yogesh Suman

Duration: 2022-2025

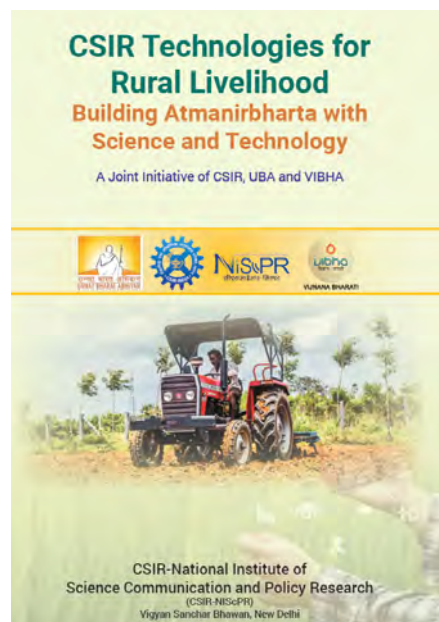
Objectives

The aim of the project is to contribute towards creating livelihood opportunities in rural areas through the wide dissemination of CSIR technologies using the UBA Network. The project tries to achieve its aim through the following objectives:

- To prepare a repository of CSIR technologies suitable for rural development and are ready for deployment.
- Mapping of CSIR technologies with respect to the actual need of specific geographical area and sector.
- To conduct training programmes on CSIR technologies for:
 - (i) General potential/possible users
 - (ii) For females working in Self Help Groups (SHGs)
- To develop an action plan for the implementation of CSIR technologies suitable for rural development, in coordination with UBA.
- To prepare an action plan for facilitating the dissemination CSIR Mission Mode Projects in rural areas.

Outcomes/Results

- Repository of CSIR Technologies suitable for rural development and ready for deployment.
- Mapping of CSIR Technologies with respect to the actual need of specific geographical areas and sector.
- Brainstorming on the establishment of Technology Demonstration and Rural entrepreneurship Centres in Assam at CSIR-NIScPR, SV Marg Campus on 25 May 2022.
- Farmer-Industry-Scientist Meet for Dissemination of CSIR Technologies for Rural Development (Kisan Sabha and Gur Bhatti Technology), organized by CSIR-NIScPR and CSIR-IIP, Dehradun on 30 May 2022.



- CSIR Technologies for Rural Livelihood: Showcasing CSIR-IHBT Technologies (Two Day Technology Demonstration and Networking Meet), organized by CSIR-NIScPR, CSIR-IHBT, Unnat Bharat Abhiyan (UBA) and Vijnana Bharati (VIBHA) June 29-30, 2022 at CSIR-IHBT, Palampur.
- Consultancy meet of CSIR-IHBT technology dissemination with Scientists and UBA Stakeholders on 1 and 3 November 2022.
- Discussion on commercialization of the Bamboo Composite Technology developed by CSIR-AMPRI with Industry representative on 6 January 2023 at CSIR-NIScPR.
- Science Conclave and Agro-Tech Expo-2023: Rural Development Through Science & Technology for “Aatmanirbhar Bharat”, organized by CSIR-NIScPR, DST-Haryana, and Gurugram University during March 15-16, 2023 at Gurugram University, Gurugram.
- Installation of Solar Thermal Dryer facility at NECTAR Center Guwahati.

Assessment of Technology Readiness Level (TRL) of various CSIR technologies under ANB and E3OW

Project Code: NIScPR/MLP-0014/2022-23
PI: Dr Vipin Kumar
Duration: 2022-2023

Objectives

This study aims to assess the technological readiness level (TRL) of 13 CSIR technologies under the themes ANB and E3OW and identify the gaps that need to be addressed for their commercialization or deployment. The proposed methodology includes a comprehensive review of TRL literature, identification of potential technologies, TRL assessment using the TRL framework, identification of technology development gaps, and recommendations for bridging those gaps. The research has the potential to contribute to the efficient use of resources, reduce the risk of failure, and generate economic and societal benefits.

Outcomes/Results

The data was collected from various sources, analyzed qualitatively, and presented descriptively. The findings show that financial constraints are one of the major challenges faced by CSIR scientists during technology development, as highlighted in the constraint analysis during the data collection and analysis. Addressing these constraints would require concerted efforts by CSIR leadership, policymakers, and other stakeholders to provide adequate funding, build necessary capacity and capabilities, and promote a culture of collaboration and innovation within the organization.



Adiwasi Kanya Shiksha Parisar, Chindwara Dist. (M.P.)



Products from Crispy Fruits and Vegetable Technology
 Developed by CSIR-IHBT Palampur



Socio-economic Impact Analysis of Food and Agri-Technologies developed by CSIR (MLP-0013)

Project Code: NIScPR/MLP-0013/2022-23
PI: Dr L Pulamte
Duration: 2022-2023

Objectives

The study aims to evaluate 12 food and agri-technologies developed by CSIR, including technologies from CFTRI Mysuru (6), IHBT Palampur (1), and NEIST Jorhat (5). These technologies aim to enhance the efficiency, productivity, and quality of the agriculture and food industries. The study also anticipates future advancements through continued innovation. The project encompasses the following

aspects: (i) Estimation of employment generation as a result of the technology, (ii) Estimation of revenue earnings by the CSIR labs and other stakeholders such as manufacturing industries, wholesalers, retailers, etc., (iii) Direct contribution to rural economy and women empowerment, (iv) Identification of import substitution and its magnitude, (v) Estimation of exports contribution, and (vi) New business opportunities created as a result of technology.

Outcomes/Results

The primary data was collected by the project team through field visits, focused group discussions and also online feedback surveys. Out of total 180 firms, 55 firms were actively utilising CSIR agri-technologies, participated enthusiastically and shared their valuable insights during the survey study. Field survey included 30 firms spread across 7 states—Assam (Jorhat), Manipur, Arunachal Pradesh, Punjab, Delhi, Uttarakhand, and Karnataka. Quantitative and qualitative analysis was done for the collected data. The findings revealed that cultivation of edible mushrooms has the highest number of technology users (38) followed by agro-technology on Lemongrass (18) and Citronella (13) respectively. Other technologies included Spirulina cultivation (27), Vermi-compost production (14), Dosa making machines (9), Virgin coconut oil (18), and Sugar-free biscuits (6). Canning technology for Ready To Eat (RTE) foods: Chemicals and Preservative free (4) and Oleoresins industry (2) were among the least number of technology users respectively. Data analysis showed that 46% of the responders highly recommended CSIR technologies. Based on the feedback survey, the

technologies developed by CSIR were rated on a scale as follows: Good (35%), Excellent (27%), Very Good (20%), Average (14%), and Not Satisfactory (4%). It was evident from the study, that CSIR technologies are being adopted by firms with varying levels of annual income, showcasing their versatility and impact across diverse industries and income groups. The results suggest that some technologies are more widely adopted and have greater potential than others.



Varities of edible mushroom cultivated by CSIR-NEIST at Jorhat, Assam



Benchmarking and Socio-Economic Impact analysis study of the CSIR Water Technologies

Project Code: NIS/MLP-0012/2022-23

PI: Dr Madhulika Bhati

Duration: 2022-2023

Objectives

- Categorization of CSIR technologies based on contamination removal claims, size and capacity of water treatment systems and associated parameters.
- Screening of best available community based and point of use technologies.

- Implementation of best available technologies in villages in Delhi (NCR state and nearby states).

Outcomes/Results

CSIR water technologies have been mapped, benchmarked against the other Indian technologies as well as their socio economic impact analysis has been done.



OLP PROJECTS

COVID-19 Crisis: Mapping R&D in Diagnostics, vaccines and Therapeutics in India

Project Code: NIScPR/OLP/0001/2021

PI: Dr Y Madhavi

Duration: 2021-2022

Objectives

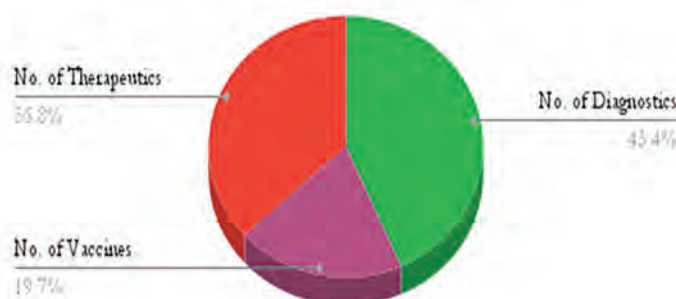
- To map research progress, identify key R&D achievements and technologies commercialized in combating COVID-19 pandemic with its central focus on diagnostics, vaccines and therapeutics.
- To map linkages between the public and private sector and to draw the triad of university-industry-government linkages with respect to R&D in Covid-19.
- To provide policy inputs to accelerate/strategize commercialization of technologies not only to manage current pandemic but also to prepare better

for any unforeseen future health emergencies/ epidemics/pandemics.

Outputs/Results

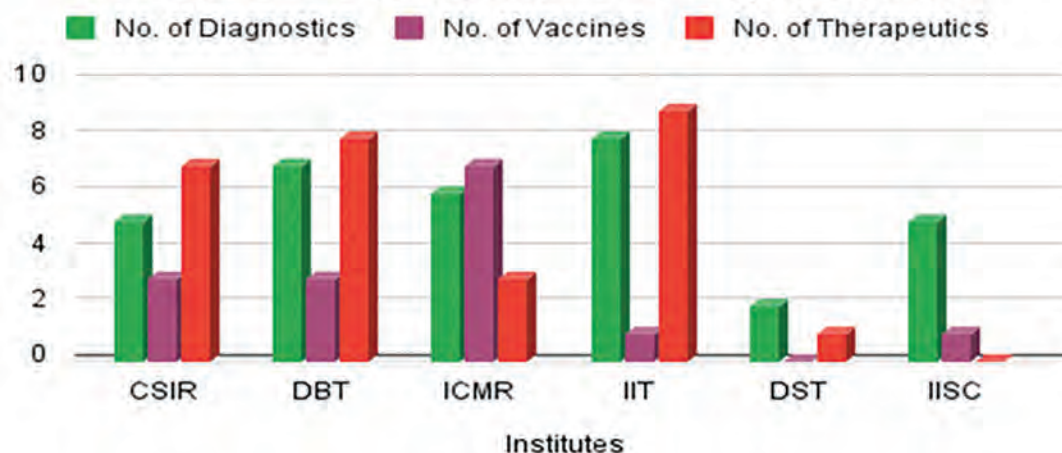
The autonomous institutes under CSIR, ICMR, DST, DBT, IIT's and others carried out extensive R&D at rapid speed by pooling resources, through capacity building, and vigorous linkages and networks between academia and industry. In total around 41 R&D institutes were involved in Covid-19 R&D on diagnostics, vaccines and therapeutics in India.

R&D on COVID-19 in S&T Institutes



Covid-19 R&D efforts in Diagnostics is the highest (43.3%) followed by therapeutics (36.8%) and vaccines (20%).

COVID R&D in Indian S&T Departments



Role of Public and Private Sector in vaccine self-reliance: Lessons learnt from the COVID-19 era

Project Code: NIScPR/OLP/002/2021
PI: Dr Y Madhavi
Duration: 2021-2022

Objectives

- To understand the role of public, private sectors and Public Private Partnerships to achieve self-reliance in Covid-19 vaccine through affordable domestic manufacture.
- Challenges & opportunities in developing and scaling up manufacture to meet demand-supply gaps in Covid-19 vaccines in India.
- Lessons learnt and policy suggestions to achieve self-reliance for future health emergencies.

Outputs/Results

The findings show that both the public and private sector vaccine companies were actively engaged in Vaccine

Innovation in India. Public Private Partnerships (PPP) through the Government of India (GOI)'s extensive support played a significant role in achieving self-reliance in vaccines.

Linkage mapping analysis of various Covid vaccine manufacturers in India shows that R&D linkages were few whereas manufacturing linkages were predominant. There were also predominant linkages with sub-contracting manufacturers.

Within a year since the Covid-19 pandemic, India could manufacture two Covid-19 vaccines indigenously with consistent support (financial and institutional) from GOI. Fund access through BIRAC, Covid Suraksha, PM care funds, CEPI facilitated self-reliance in Covid-19 vaccines.



Development of resource/reference materials for scientific awareness through public engagement

Project Code: NIScPR/OLP/003/2021
PI: Mr Hasan Jawaid Khan
Duration: 2021-2022

Objectives

The objectives of the project were to develop interest in S&T among various stakeholders of the society; to bring forth views of students on specific issues through webinar; to create scientific awareness among the target audience through seminar; to disseminate scientific knowledge among children through various competitions and student webinar.

Outputs/Results

As part of the project, three distinct and interactive activities were organized.

1. **National Blog Writing Competition 2022:** Blogs have emerged as major purveyors of information and are an innovative genre of communication providing scientific news, views, analyses and even experiences in a creative, interactive and appealing manner. A blog-writing competition was organized

on the theme “S&T Roadmap for Building a New India” for which many entries were received. After a screening and assessment process, winners of the competition were announced.

2. **Webinar:** In recent years, the learning process in the classroom has been witnessing a paradigm shift with digitization of educational resources and emergence of virtual platforms. A webinar was organized on the theme “Science Teaching Methodologies in the 21st Century — A Students’ Perspective” where 12 young students selected from different schools across the country, presented their views. Prof. Ashok Bakhshi, former Vice Chancellor and a well-known educationist, delivered the concluding remarks and interacted with the students.
3. **National Seminar (Hybrid Mode):** Several agencies fund and promote science communication projects and many organisations and individuals

implement/carry-out science communication projects among various stakeholders. While there is a need to inform people interested in science communication about funding opportunities for science communication projects, there is also a need to showcase some of the innovative science communication and engagement projects being implemented across the country. A one-day National Seminar was organized on the theme “Nurturing Science Communication —

Motivating Science Communicators”. Representatives from several organisations such as National Council for Science & Technology Communication (NCSTC), DST; Science and Engineering Research Board (SERB); Department of Biotechnology (DBT); National Book Trust (NBT); Indian National Science Academy (INSA); Eklavya; National Academy of Sciences India; Vigyan Prasar, etc. participated. Selected science communication initiatives were also showcased during the seminar.



Implementation strategies and challenges towards BS-VI emission norms in India: An analytical introspection

Project Code: NIScPR/OLP/0005/2021

PI: Dr Sandhiya Lakshmanan

Duration: 2021-2022

Objectives

In an effort to reduce the impact of vehicular emissions on air quality, India has set Bharat Stage (BS) emission standards since 2000 and the country has now shifted to BS-VI norms from April, 2020 onwards. These emission standards and the associated after treatment technologies have helped to reduce the emissions of CO, OC, BC, SO₂ and particulates over time. In the present work, the impact of different stages of BS emission standards in controlling the pollutant emissions is analyzed. With the stringent emission norms throughout the years, the CO, NMVOC, OC and BC emissions have reduced by 7%, 9.7%, 20% and 5%

respectively in 2021, when compared to 2017. The NO_x emission levels have increased by 4.9% in 2021 with reference to 2017.

Outcomes/Results

The findings indicate that though the advanced emission control measures effectively reduce the emissions, it comes out with the penalty of emitting new pollutant species and increase in NO_x levels leading to ozone pollution and even SO₂ emissions. Thus it calls for the integration of different emission control technologies in a balanced way to have a significant impact on reducing exhaust emissions, which is not reflected in the current policy scenarios.

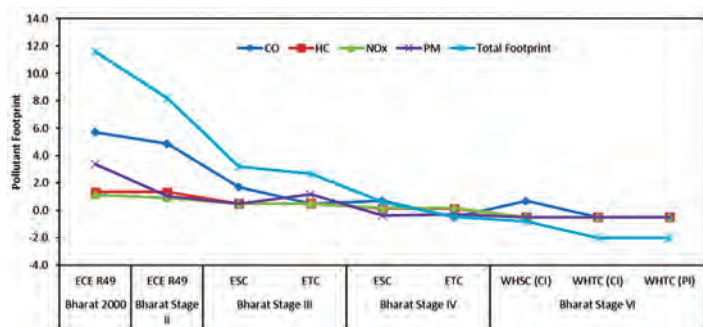


Figure 1. Pollutant footprints for pollutants calculated for different tests and stages of BS Standards

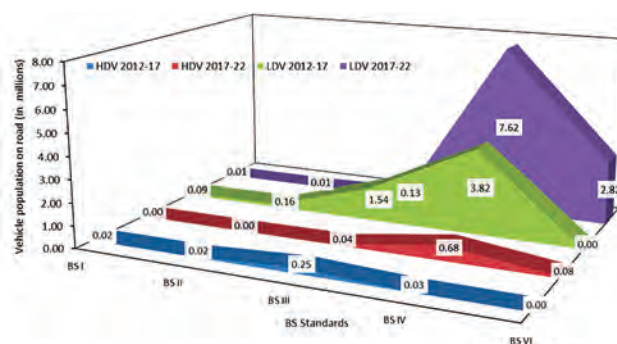


Figure 2. Vehicle population in use calculated from the survival fraction



Documentation, communication and policy research on scientifically validated traditional knowledge of India

Project Code: NIScPR/OLP/0008/2021

PI: Dr Manish Mohan Gore

Duration: 2021-2022

Objectives

India is endowed with a rich legacy of Traditional Knowledge (TK) across diverse domains. Most of our traditional practices are inevitably related to human needs and nature. However, currently our traditional knowledge systems are eroding rapidly. Further, such knowledge is often unreachable to the public and seldom understood. The lack of effective communication to society on our S&T achievements including information related to the validity of our TK has been a major gap. This project therefore aimed to communicate India's scientifically validated TK to the society using digital communication tools.

Outcomes/Results

Ten priority TK areas were identified in which communication could be initiated. A brand name #SVASTIK (Scientifically Validated Societal Traditional

Knowledge) was envisaged and social media channels namely Twitter, Facebook, Instagram, and LinkedIn were created. Crowd sourcing and literature survey was done to identify scientifically validated TK from various academic and research organizations/NGOs/individual experts across the country.

A total of 10 TK/practices with scientific basis were identified and documented in a uniform format, and communicated in 16 different languages including English, Hindi, and other regional languages through social media using simplified and attractive infographics, audio-visuels, popular lectures, and webinar. A partnership with MyGov was fostered to reach a wider and diverse audience. Seven brainstorming meetings were conducted with eminent experts to have a better understanding of the gaps, and challenges in identification, validation and communication of TK in various domains. Based on these meetings, a policy brief was developed.



Science Diplomacy Strategies in Selected Asian Countries

Project Code: NIScPR/OLP/0010/2021

PI: Dr Monika Jaggi

Duration: 2021-2022

Objectives

- To understand SD strategies, actions, plans, and practices at sub-national and national levels being followed in selected Asian countries.
- To explore best-practices and SD coordination mechanisms and activities being followed in the selected Asian countries.

Outcomes/Results

The project was designed to rapidly capture data in a short period and provide an idea about the existing Science Diplomacy strategies and activities in the neighbouring countries. A region-wide survey was conducted in Jan-Feb 2022 as a part of this project. The survey comprised 25 questions designed to gain valuable insights from the selected Asian countries. The online survey was shared with approximately 200 respondents from 15 countries. Finally, responses

from 8 countries, Bangladesh, India, Japan, Nepal, Pakistan, Philippines, Saudi Arabia, and Sri Lanka were received.

The significant outcomes of this study are:

- The information gathered via this survey indicates that there is not much focus on Science Diplomacy outside India in the Asian continent. Most countries do not have a specific overarching science diplomacy strategy or national policy document.
- The main goals of these countries are increasing national capacities and addressing global challenges. Access to large-scale infrastructures and evidence-based decision-making is also part of the core actions. Boosting linkages with the scientific diaspora and strengthening the quality of higher education are also important objectives.
- Interestingly, many Asian countries are looking for regional collaborations.
- Government stakeholders are leading SD approaches.
- Bilateral and multilateral S&T cooperation agreements are widely used to advance Science Diplomacy, followed by S&T advisors attached to embassies and national or research-funding schemes.
- Most countries do not have specifically designed SD training mechanisms. Only India and the Philippines have a few mechanisms. Online

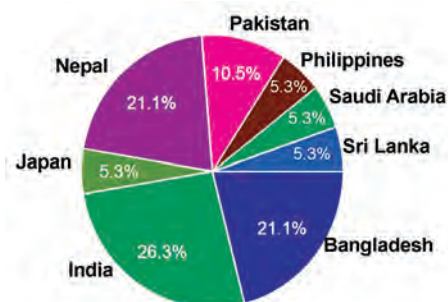


Figure 1. Countries responded



Figure 2. Core Objectives of science diplomacy strategies

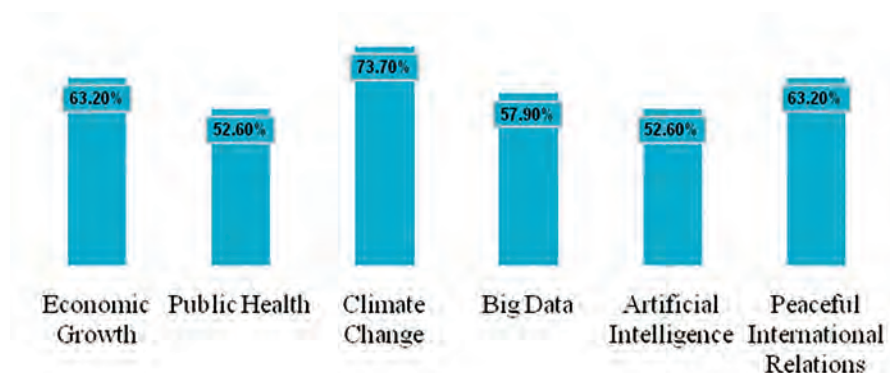


Figure 3. Preferential areas for collaboration among selected Asian countries

courses, workshops and seminars are the most frequent mechanisms offered for SD training.

- SDG-1 (No Poverty), SDG-2 (Zero Hunger), SDG-3 (Good Health and Well-being), SDG-4 (Quality

Education) and SDG-13 Climate Action) are identified as the major targets of immediate importance for international collaborations. India has a big potential in transcending SDG in the Asian region.



Assessment of blue water dependency for sustainable food supply of India

Project Code: NIScPR/OLP/0011/2021

PI: Dr Shiv Narayan Nishad

Duration: 2021-2022

Objectives

The present study provides a quantitative assessment of water use for irrigation from surface water and ground water (blue water) for agriculture purposes using water footprint approach. The study also explored the dependency on water resources for sustainable food supply in terms of water footprint sustainability indicator. The primary goals were:

- Assessment of blue water dependency for sustainable food supply versus blue water availability.
- To develop indicators for mapping of water sustainability which may be useful for policy formulation for better management of water resources and sustainability.

Outcomes/Results

The analysis shows that food grains are major blue water consumers — about 39% of the total water demand is met from the blue water. In terms of crops, 70% of the total water demand for wheat crop

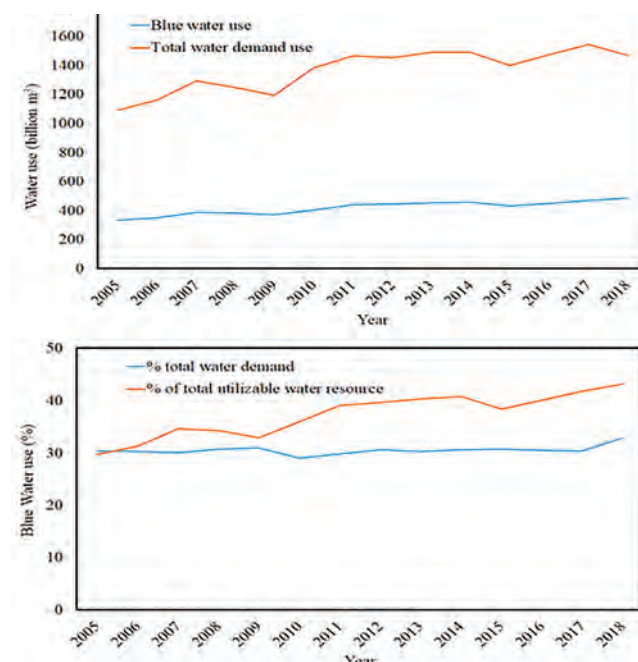


Figure 1. Blue water use, total water demand in terms of the quantity (top panel) while the blue water as percentage of total water demand and total utilizable water is given in the bottom panel

production is met from the blue water while rice water demand from blue water is about 33%. The share of blue water for use for fruits, vegetables, pulses, oil crops, sugarcane are 30%, 35%, 18%, 21% and 56% of the total water use for the production of the crops. The total blue water consumption was about 486 billion m³ in the year 2018 for the production of food grains, fruits, vegetables, oil crops, sugarcane etc. which is about 43% of the total utilizable water resource available. Time series analysis of the period 2005-2018 of the

blue water use shows that there is an increasing trend in the blue water consumption for the production of the food. The blue water use was 333 billion m³ in the year which has increased to 486 billion m³ in the year 2018.

The main observation from the study is that the blue water demand has increased with increase in food demand; the balance between water demand and water availability has reached critical levels. There is need for better management practices to reduce the wastage of fresh water.



Bridging traditional food systems, health and modern agribusiness solutions: an evidence based policy study

Project Code: NIScPR/OLP/0012/2021

PI: Dr M Rais

Duration: 2021-2022

Objectives

- To identify the traditional foods that provide nutrition and have a positive impact on health.
- Inputs for policy for inclusiveness based on innovative and virtuous “holistic” model of traditional food production and distribution, health and modern agribusiness solutions.

Outcomes/Results

While efforts are being made around the world to achieve food self-sufficiency and solve health concerns, millets have garnered recognition as vital crops to overcome food insecurity. Millets are well-suited crops to diversify cropping systems for climate resilient agriculture due to their unique nutritional profile, excellent health benefits, and C4 photosynthetic pathway.

However, the biggest concern related with millet production is the shrinking worldwide cropping area. The agricultural statistics has shown an unexpected fall in the area, production and yield of millets in India (Directorate of Economics and Statistics Report 2019-2020).

The primary causes of the decline in consumption are a lack of knowledge about the nutritional benefits, inconveniences associated with food preparation, a lack of processing technologies, as well as government policies that discourage the consumption of millets and favour the supply of high-quality cereals at reduced costs.

Policy Recommendations

- ❖ Millets Policy should address issues of research, production, consumption, value-addition opportunities and health benefits in an integrated manner.
- ❖ Policy and budgetary allocation competition of millets with other modern or popular crops such as wheat, rice and leguminous crops should be addressed with specific targets benefitting marginal farmers in the remote and fragile areas.
- ❖ Monetary and fiscal incentives for Millets based enterprises should be initiated separately.
- ❖ National Health Mission should also popularize the benefits of consumption of the miraculous millets and its value added products addressing the lifestyle related diseases.
- ❖ A long-term perspective strategy for millets research should be developed, and millets should be treated equally to other crops in terms of research visibility and funding distribution.
- ❖ In order to effectively reach common people on a big scale, special emphasis should be paid to addressing the research needs of small business owners engaged in the millets food industry.



Study of Life Sciences Cluster in the context of Covid-19: A case study of Genome Valley

Project Code: NIScPR/OLP/0013/2021
PI: Ms Pramila Majumdar
Duration: 2021-2022

Objectives

The COVID-19 pandemic highlighted the important role of linkages among firms, governments and academia in addressing the challenges faced to overcome the pandemic. This focused attention on knowledge-driven clusters in life sciences. Genome Valley cluster becomes important to study in-depth in this context. The structure and dynamics of this cluster, the response of firms in this cluster to address the challenges of COVID-19, and the successful pathways some of the firms could take are some of the important aspects needed to be examined in-depth to discern key enablers in successful translation from research-innovation-commercialization.

Outcomes/Results

The study identified competencies of the firms, their linkages and various other factors that have helped

shape their competencies and develop solutions for mitigating COVID-19.

Deeper examination within this cluster was undertaken for three firms namely Bharat Biotech International Limited, Biological E Limited and Indian Immunological Limited. These three firms were identified as playing a key role in COVID-19 vaccine development. The Indian STI ecosystem took up this challenge and the first indigenously developed vaccine came out of Genome valley, i.e., COVAXIN® by Bharat Biotech International Limited. Detailed analysis of the three firms located in the Genome Valley involved in vaccine development revealed different types of linkages. It was also observed that the largely 'closed innovation model' that is observed in Indian pharmaceutical/biopharmaceutical firms is shifting towards an 'Open innovation' model.



Mainstreaming Gender in STEM through Gender Budgeting of CSIR

Project Code: NIScPR/OLP/0015/2020
PI: Dr Sandhya Wakdikar
Duration: 2020-2022

Objectives

The project was undertaken to undertake a situational analysis of the CSIR labs in terms of the experiences of women scientists and technical staff and the difficulties faced by them in maintaining work-life balance. It was an effort in the direction of identifying the areas on which CSIR needs to work for incorporating gender parity at the workplace and was expected to help in formulating more effective policy change toward the creation of workplaces in STEM,

which are safe, violence-free, and stimulating for women.

Outcomes/Results

A report Women in STEM: A CSIR Survey towards Gender Parity was brought out based on primary data gathered from two different sources, i.e., CSIR labs and individual women respondents comprising employees and students. Based on the findings of the survey, policy recommendations were proposed to help the organizations create women-friendly workplaces.



Analysis of biodegradable plastic patents, product sustainability and challenges

Project Code: NIScPR/OLP/0018/2022
PI: Dr Tarakanta Jana
Duration: 2022-2023

Objectives

The study provides patent information of biodegradable polymers from 2001-2020. The study analyses the overall portfolio summary which describes the overall status of the patent in terms of total application number, number of patents granted and their legal status. Secondly, the study also gives snapshot of the patent trend to establish various relations between application country, current assignees, patent class

and patent family. It highlights the number of patent families, patent applications, and granted patents for each biodegradable polymer.

Outcomes/Results

Out of the five polymers studied, two polymers PLA and PCL showed exponential growth (predicted early maturity) and the rest three polymers — PHA, PBS and PBAT — showed less growth (predicted yet to mature).



Communicating science & creating knowledge products in regional languages of India

Project Code: NIScPR/OLP/0019/2022
PI: Dr Manish Mohan Gore
Duration: 2022-2023

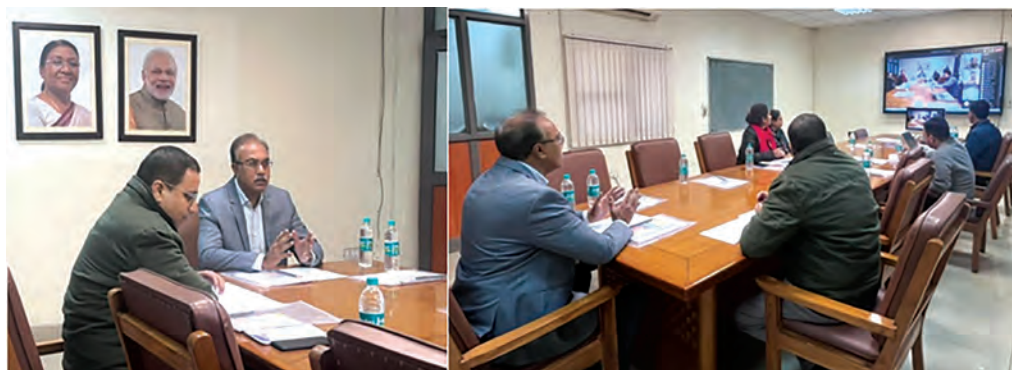
Objectives

It is important to communicate scientific knowledge to all citizens of the country to make them scientifically aware. However, a large population of India cannot read, write or communicate in English. It is therefore required to communicate science in Indian languages. India is a multi-linguistic country with 22 scheduled languages according to the Indian Constitution. Creation of new knowledge products in Indian languages is the need of the hour. Through this project workshops and

brainstorming meetings were conducted with expert science communicators in different languages. Efforts were also made to create policy document and popular science literature in Indian languages.

Outcomes/Results

A National Level Brainstorming Meeting on science communication was organised on 10 January 2023. In this meeting, experts from all 22 Indian languages listed in the 8th schedule of Indian constitution joined and expressed their views.



Glimpses of the brainstorming meeting



On 13 March 2023, a workshop on “Science Communication: Exploring New Horizons of Indian Languages” was organized in which 35 participants joined.

A review paper was published in the theme book of the Vigyanika event of the IISF 2022. This

paper comprised an analysis of the efforts of science communication in Indian languages.

Translation of three books in three Indian languages (Marathi, Bengali and Kannada) was undertaken as a tangible outcome of the OLP.



Enabling growth in research and performance through collaborations in Agriculture 4.0

Project Code: NIScPR/OLP/0021/2022

PI: Dr Vinayak

Duration: 2022-2023

Objectives

Interdisciplinarity is effective for solving complex problems and fostering innovation. Even agriculture is not an exception. Meeting contemporary demands for meeting sustainable development goals, global needs, and for providing solutions to diverse social, technical, ecological, and economic problems big strides are being taken by the Government agencies with sustained efforts leading the agro-society towards an agricultural reform by integrating technologies of Industry 4.0.

The project had the following objectives:

- To identify emerging characteristics in research collaborations from Social Network Approach and to assess their impact on performance measures.
- To develop an understanding of the underlying mechanism that leads to increased research efficiency.
- To explore policy aspects stimulating growth in indigenous research efficiency through research collaborations.

Outcomes/Results

Secondary data is obtained from the *Clarivate Web of Science* of the research published in the form of a research article or proceedings in indexed journals, viz. SCIE and CPSCI journals, in the past 12 years. A preliminary analysis was performed to sketch the profile of the publications of three countries — India, China and USA.

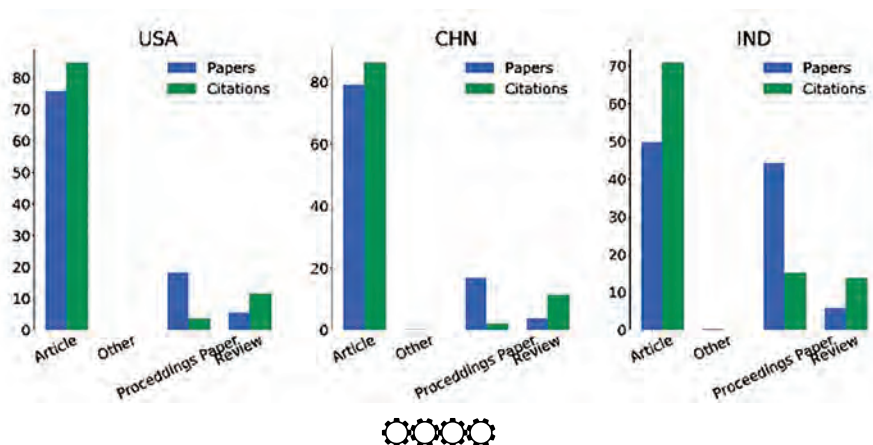
It is found that nearly 44% of the publications from Indian dataset are proceedings while nearly 80% publications are research articles in the datasets of the other two countries. From the viewpoint of performance, citations fetched by an article, on average, are much higher than that by a proceedings. This tendency evidently hampers the performance of India in AIA.

Next, nearly 40% of articles from China have been published in the top-ranked journals while for India this share is nearly 8%. The network statistics has been compared in two time windows, viz. 2010-2019 (TW1) and 2020-2021 (TW2) for the three countries. The analysis reveals that the collaboration

activities have increased in TW2, in all three countries. China rapidly takes lead in almost all the statistical measures indicating thereby the fastest development of collaborative infrastructure in China. These activities led China towards forming a large knowledge network. For India, there is no sign of percolation, suggesting thereby lack of a collaboration infrastructure conducive to increase growth and performance.

It was observed that knowledge-base of the authors, on average, expanded with respect to team exploration in recent years. The increase in this expansion has been

sharp for the USA and China. Moreover, many authors from the USA have preferably been very cohesive to their teams and while some explored. For China, some authors have been cohesive to their teams, while many explored which in turn have been helpful to increase the knowledge-base, network growth, and performance of the country. For India, most authors remained extremely cohesive but this tendency has reduced in recent years. This indeed is a good sign from the perspective towards the development of collaboration infrastructure in early phase.



Enhancing social media visibility of CSIR-NIScPR through social media and in-house capacity building

Project Code: NIScPR/OLP/0020/2022

PI: Mr Hasan Jawaid Khan

Duration: 2022-2023

Objectives

CSIR-NIScPR is a newly formed entity emerging from the merger of CSIR-NISTADS and CSIR-NISCAIR. It completed two years of its existence in January 2023 during which the mission, mandate, programmes and activities of the Institute have been realigned and focused to transform the Institute into a global think tank in the fields of science policy and science communication.

Through this project a rebranding exercise was undertaken to increase the visibility and exposure of the newly created entity CSIR-NIScPR among various stakeholders and the public through various social media channels.

Outcomes/Results

CSIR-NIScPR institutional social media handles were set up on Twitter, Facebook, Instagram and YouTube.

Several knowledge and communication products in the form of reels, posters, creatives, short films, etc. were produced and communicated through these social media channels. These included programmes and knowledge products of CSIR-NIScPR; technologies and achievements of CSIR; knowledge products of CSIR-NIScPR; special national and international science days; quotes, achievements and birth/death anniversaries of prominent Indian scientists, etc. When CSIR was completing its 80 years of existence, a series was initiated on Twitter and Instagram showcasing significant technologies developed by CSIR laboratories in these 80 years.

A brainstorming session was organised on 6 March 2023 to discuss the good practices to enhance institutional visibility. In the meeting, eight experts expressed their viewpoints.

Posts related to CSIR-NIScPR Products



Special Events



Special Days



Birth Anniversary of Scientists



Quotes of Scientists



Social Media Campaign for CSIR Technologies



Communicating science in North East India with focus on the Assamese language

Project Code: NIScPR/OLP/0022/2022
PI: Dr Paramananda Barman
Duration: 2022-2023

Objectives

The majority of scientific communication initiatives are conducted in English, a language spoken or written by only roughly one-tenth of our population, therefore language is still a barrier to science communication in India (Barath, 2019). Science communication in Indian languages is essential for breaking this language barrier. This project is a small initiative in this direction with goals to initiate an online magazine in Assamese, research for assessing ongoing activities and understanding public perspectives, human resource training in science communication, and documentation and dissemination of the rich traditional knowledge of Assam.

Outcomes/Results

A network was established with science communicators from Assam and collaboration with CSIR-NEIST,

Jorhat for initiating an online popular magazine in Assam. Content creation and editing is under process and the magazine will be released soon. A survey for assessing ongoing activities and understanding public perspectives/preferences for science communication in Assamese was also conducted. Majority of participants preferred Assamese for learning science and mentioned that it is easier for them to understand science content in Assamese.

A workshop was conducted on 6 March 2023 on “Engaging and creative ways of communicating science in Assamese: Popular stories, videos, podcasts and social media”. Some traditional knowledge and practices of North East India were also documented. Stories disseminated in collaboration with SVASTIK include Kolakhar, inland edible salt extraction, Joha rice and Poitabhat.



Assessment of water footprint versus water availability: A case study of Bundelkhand region of India

Project Code: NIScPR/OLP/0023/2022
PI: Dr Shiv Narayan Nishad
Duration: 2022-2023

Objectives

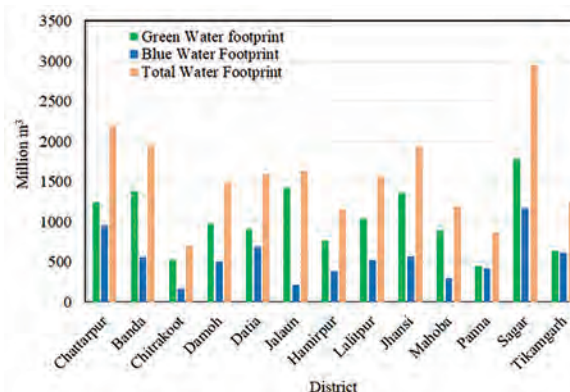
The Bundelkhand region faces water scarcity due to changing rainfall patterns, shrinking of monsoon with changing climate extending to longer dry spells that directly affect the agricultural practices. The study objectives were to:

- Evaluate water resources utilization by agriculture and domestic sector using water footprint approach.
- Compare the available water resource to develop water policies and water resource management strategies.

- Calculate the water sustainability index, which will help in policy planning, efficient water resource management and increase water resource efficiency.

Outcomes/Results

Analysis shows that more than 40% of water demand for agriculture in districts like Chattarpur, Datia, Panna, Sagar, and Tikamgarh is met from the ground water. The study also provides inputs to response formulation as policy recommendation for formulating policies and water resource management strategies to reduce the water footprint of the region through improving water resource efficiency. The potential stakeholders may be concerned central/states ministries for water, agriculture and resource management.



Green, blue and total water footprint of 13 districts of Bundelkhand region



Mitigation potential for Hydrofluorocarbons (HFCs) towards global warming — An assessment of their environmental acceptability as per Kigali Amendment

Project Code: NIScPR/OLP/0025/2022

PI: Dr Sandhya Lakshaman

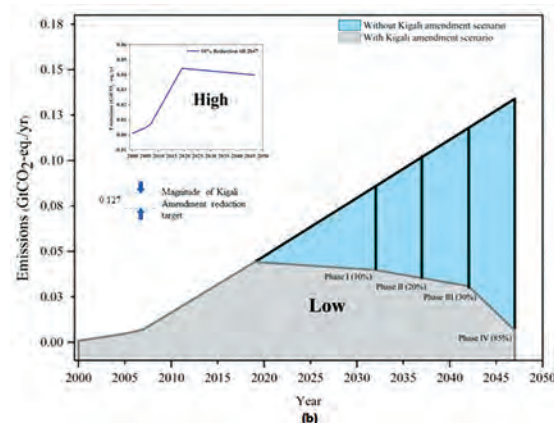
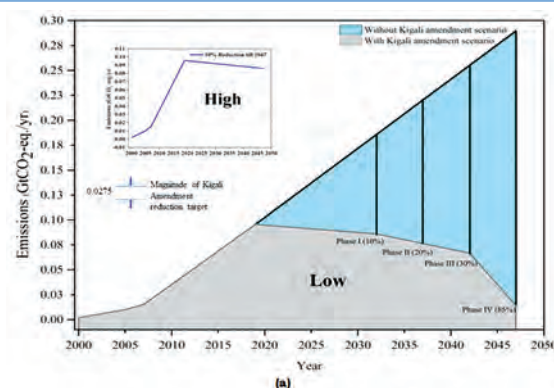
Duration: 2022-2023

Objectives

To combat climate change resulting from hydrofluorocarbons (HFCs), Kigali Amendment to Montreal Protocol was proposed in 2016. India gave its nod to Kigali Amendment and accordingly the phase down of HFCs will take place in four steps from 2032 to 2047. In the present study, the emission scenarios of five majorly used HFCs in India, HFC-125, HFC-134a, HFC-143a, HFC-152a and HFC-227ea, with and without Kigali Amendment are developed. Here the climate forcing due to direct HFC contribution is considered, whereas the indirect contribution to climate forcing is associated with the energy used. Since most of the HFCs emitted into the atmosphere are prone to undergo oxidation by OH radical, the atmospheric oxidation potential of these HFCs is studied. Thus, the present work is centred on providing a policy mechanism to mitigate the use of HFCs.

Outcomes/Results

The project has identified the major HFCs used in India along with their radiative forcing properties. There are 9 HFCs which are banned by Kigali Amendment but still they are in use and contributing significantly to global warming. Among the 9 HFCs, five HFCs, HFC-125, HFC-



GWP weighted emissions of the five HFCs studied and projections as per Kigali Amendment (a) GWP-20 weighted emissions (b) GWP-100 weighted emissions

134a, HFC-143a, HFC-152a and HFC-227ea are the major HFCs employed in cooling sector in India. From the available emission data of these HFCs, the radiative forcing properties are projected for scenarios with and without Kigali Amendment.

Over the years, 2000 to 2021, the HFC emissions have decreased gradually on a global level. However, the percentage contribution of HFCs emissions from India to the global has increased over the years. In particular, the HFC-125 and HFC-227ea emissions from India have contributed a maximum of ~12% and ~11%, respectively to the global emissions. It is also interesting

to note that, the percentage contribution of Indian HFC emissions to global scenario remain saturated from 2017 onwards, due to the Kigali Amendment. However, the emissions of HFC-134a and HFC-125 are increasing from 2008 onwards.

The results of the present study reiterate that banning of HFCs as per Kigali Amendment should also include the atmospheric oxidation potential, product toxicity and chemical stability as policy-relevant metrics in addition to GWP. The policy mechanism should be revisited and amendments are needed taking into account the above mentioned factors.



State-wise synthesis of transport emissions in India — Effectiveness of Bharat Stage Emission Standards (BSES) in mitigating emissions

Project Code: NIScPR/OLP/0026/2022

PI: Dr Sandhya Lakshaman

Duration: 2022-2023

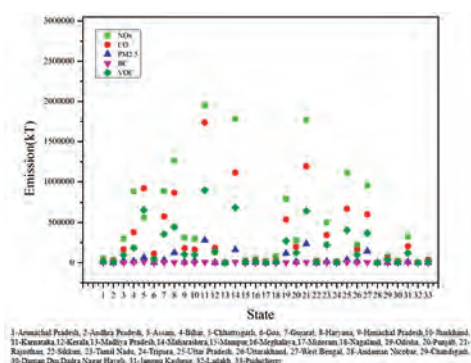
Objectives

The implementation of different stages of Bharat Stage Emission standards (BSES) in India for reducing the vehicular emissions has been enforced in different parts of the country at various points of time. A quantitative assessment of the emission standards in mitigating vehicular emissions in different Indian states will provide an estimate of achievable emissions standards for future norms. In this regard, the present work reports an assessment of the BS standards — BS-III, BS-IV and BS-VI — in reducing the exhaust emissions in each of the Indian states.

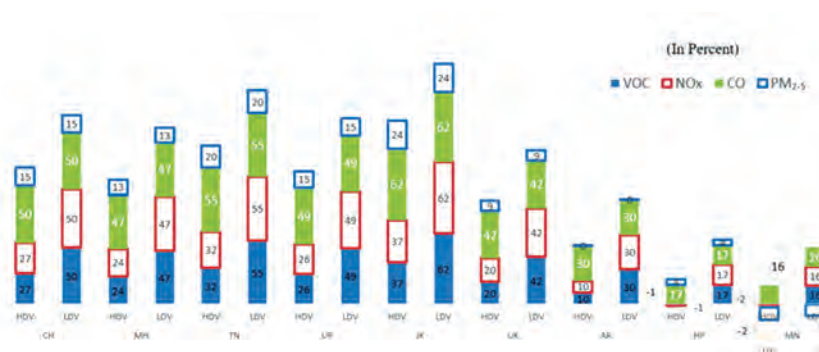
Outcomes/Results

Over the years 2013-2022, the NO_x emissions are the major contributors of vehicular emissions in all

the states studied. Surprisingly, the BS-IV vehicles contributed significantly to vehicular emissions in particular states when compared to the BS-III vehicles. It was needed to analyze the impact of meteorological and topographical factors on the vehicular emissions. The results revealed that the vehicular emissions are largely dependent on the temperature and altitude and with an increase in temperature and at high altitudes, the CO and VOC emissions are predominant, even in regions with low vehicle population. This finding therefore indicates that the emission limits are not the same for all over the country and meteorology dependent emission limit should be included in framing the vehicle emission norms.



Cumulative pollutant emissions for the years 2013-2022 obtained from on-road vehicular population and emission factors



Percentage increase in emissions with inclusion of meteorological parameters



Early detection and management of Alzheimer's Disease: Focus on Medhya Rasayanas (a preliminary/pilot study)

Project Code: NIScPR/OLP/0028/2022

PI: Dr Suman Ray

Duration: 2022-2023

Objectives

Traditional medicinal practices offer an attractive basis for testing novel remedies against Alzheimer's Disease (AD). India's traditional medicine system, Ayurveda, is rich in various forms of traditional medicine, and certain herbs have been categorized as Medhya Rasayanas, which have been used for centuries to enhance cognitive abilities and brain function. The study objectives were:

- To identify precursors to AD for early disease diagnosis and treatment.
- To explore the safety, efficacy, quality and therapeutic properties of 'Medhya Rasayanas' in the context of AD.
- To explore possible healthcare policy outcomes based on the above study.

Outcomes/Results

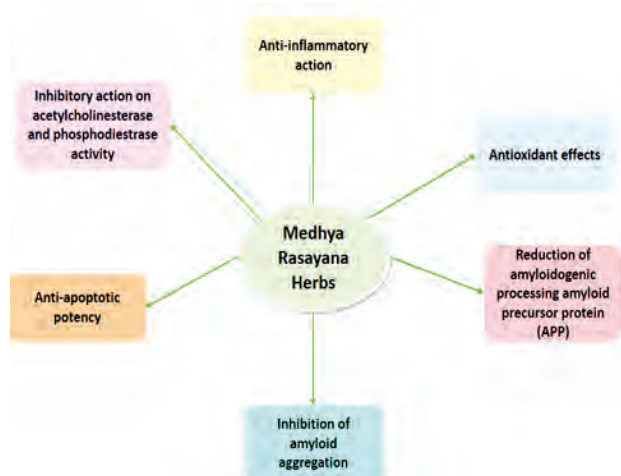
Research and review articles highlighting the effects of Medhya Rasayanas against AD, dementia, and neurodegeneration were screened using data search engines such as Google Scholar, Pubmed, and Science Direct. Ayurvedic plants described as Medhya Rasayanas (including *Bacopamonniera*, *Centella asiatica*, *Withania somnifera*, *Evolvulu salsinoides*, *Nardostachy sjatamansi* and *Acorus calamus*) were inspected to

conduct further in-depth literature reviews. Accounts highlighting the efficacy of selected plants against AD-specific pathogenesis were screened and analyzed. The pre-clinical and clinical studies highlighting the efficacy of selected plants against AD-specific pathogenesis were also analyzed.

The bioactive components from nootropic plants have shown neuroprotective effects through various mechanisms. Promising results were obtained from the therapeutic efficacy of nootropic plants such as *Withania somnifera*, *Bacopamonniera*, and *Centella asiatica* in limited clinical trials available. However, to establish the therapeutic efficacy of herbal therapy against AD, more clinical trials with large sample sizes must be carried out, and an elaborated mechanism of action against AD must be deciphered.

Policy Recommendations

- There is a need for a national management plan for AD.
- There is a need to find the risk factors of the disease on a regional level and to keep it from getting out of control.
- There is a need for developing customized policies that will be more suitable for each individual state's population.



The mechanistic insights of Medhya rasayana herbs against the pathogenesis of AD have been elucidated. These plants exhibit promising effects in reducing beta-amyloid aggregation and neuroinflammation; show anti-oxidant and anti-apoptotic activity, thereby providing a potential avenue for the AD management



Documentation and communication of India's traditional knowledge with scientific basis and a survey on its public perception

Project Code: NIScPR/OLP/0030/2022
PI: Dr Charu Lata
Duration: 2022-2023

Objectives

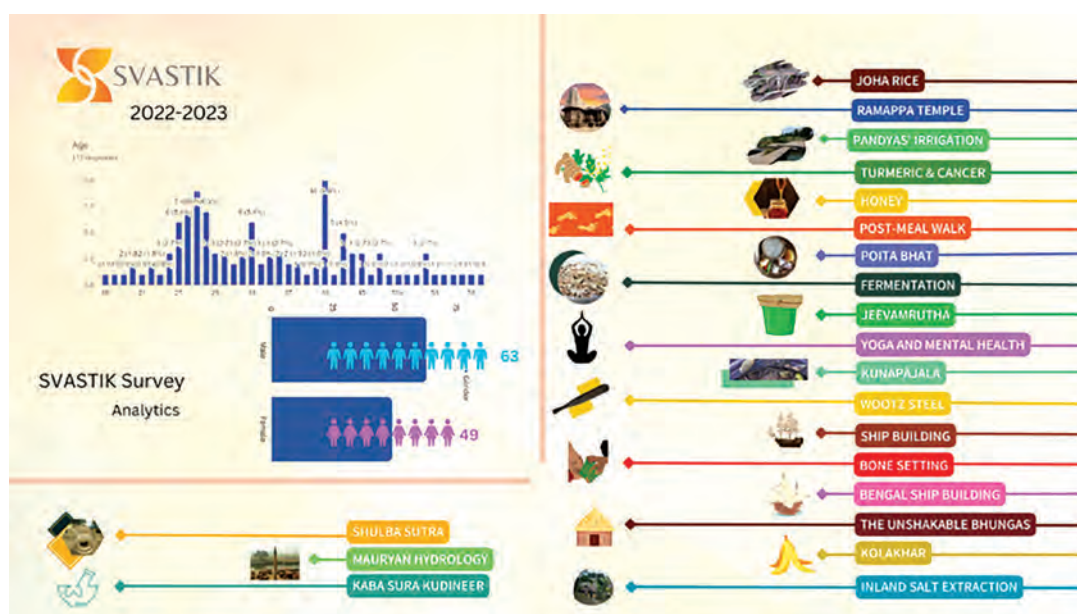
A pilot project was executed to document and communicate India's scientifically validated traditional knowledge to successfully implement and support the national initiative branded as SVASTIK. During the project, the need for preparing a concept document was realised. As an outcome of the project, a total of 10 TK/practices with scientific basis were identified, documented and communicated through SVASTIK social media channels. The present study was a continuation of the previous project. The study envisaged to identify, document and disseminate India's rich TK/practices to the masses in various Scheduled Indian languages; to catalogue the validation criteria in various TK domains; and to decode the understanding and perception of the public.

Outcomes/Results

A total of 22 TK/practices with scientific basis in the domains of metallurgy, traditional medicinal systems, mathematics, sustainable agriculture and traditional foods, water, architecture and Indian commerce were obtained, verified and documented in a uniform format, and communicated in English and 10 Indian languages

through social media channels using simplified and attractive infographics and audio-visuals, popular lectures, and webinar. Crowdsourcing and literature survey strategies were used for identification of scientifically validated traditional knowledge. Expert views/publications were considered for evaluating the scientific validation claims. For communication, social media campaign, popular lectures, webinar and partnering with MyGov and KAMP was done. Brainstorming sessions and dialogues were conducted to come out with a base document.

Through social media, SVASTIK has reached approximately 324.9 K people on Twitter, 16.8 K on Instagram, 22.4 K on LinkedIn and 51.9 K on Facebook. Various activities were conducted in partnership with MyGov and KAMP for promotion of Indian traditional knowledge. A concept/base document as a compilation of scientific validation criteria in various TK domains is being prepared for reference purposes. A survey was conducted with about 113 participants about their views on traditional knowledge communication and ways to improve it. The survey showed a positive indication of the public's interest and engagement in this topic.



Developing Resource Material for Social Network Analysis: Case Studies and Training Modules

Project Code: NIScPR/OLP/0031/2022

PI: Dr Sujit Bhattacharya

Duration: 2022-2023

Objectives

Social Network Analysis (SNA) is a conceptual as well as a methodological approach. SNA helps to construct a conceptual framework based on structural embeddedness of the actor's overall linkages and individual linkages in a system. This helps to bring insights into the group structure, the interaction patterns, and the strength of the relationship among different actors. Various tools and techniques have been developed in SNA, which provide a novel analytical/methodological approach to studying relationships and interactions. With wide applications of SNA, there are two types of challenges in incorporating social network analysis in research studies. There are various software for social network

analysis and visualization. Many of them are open access. It requires expertise to be developed over a period of time to undertake desired analytics. It is understood in a narrow sense in India and is primarily being used in scientometric studies for research mapping. This lack of guidance has led to only limited types of studies being undertaken using social network analysis in India.

Outcomes/Results

The project has developed a handbook to facilitate learning of SNA software, usage and application in different contexts. Case studies have been developed in this context which can help in learning and imparting training in SNA.



Policy interventions for High-Technology Start-ups in niche areas: IoT based Systems & After treatment Technologies in automobiles

Project Code: NIScPR/OLP/0032/2022

PI: Dr Sujit Bhattacharya

Duration: 2022-2023

Objectives

India has emerged as a hub for startup creation in the world. It has now the third largest startup ecosystem in the world in terms of size. India also stands very well when compared globally on various other parameters such as sectoral diversity, unicorn creation, and employment generation. Strong policy push and schemes that have been implemented are some of the key enabling factors behind India's startup success. However, despite this remarkable success, there are only a few startups

created in high technology. The study examined the critical requirement for supporting the creation of startups in high technologies and particularly in IoT based, and After Treatment technologies.

Outcomes/Results

The study draws attention to the need for differentiation in terms of policy interventions, support system and framework conditions for enabling technology startup creation and growth.



Science Diplomacy Strategies in Selected Asian Countries

Project Code: NIScPR/OLP/0036/2022

PI: Dr Monika Jaggi

Duration: 2022-2023

Objectives

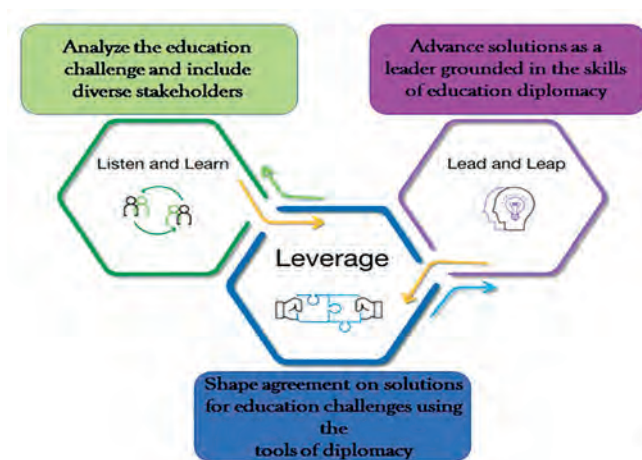
- To understand the links between education and science diplomacy.
- To study the role of science diplomacy in achieving sustainable development goals.
- To identify the best technologies that can be shared among selected Asian countries.

Outcomes/Results

This project was an extension of last year's study on SD strategies in selected Asian countries. This year, the focus was on exploring the links between education and SD. The study found that high-quality higher education is a valuable resource for any country, and India has a long history of providing quality education. The internationalisation of higher education can enhance the quality of education and positively impact the economy through educational scholarships, research collaborations, diversified curriculum.

The second objective of the project focused on the role of SD in achieving SDGs. The study found that SD can significantly contribute to SDGs by promoting international collaborations in areas

such as renewable energy, sustainable agriculture, environmental protection, disaster risk reduction, global health, and economic development. While progress has been made in implementing SD in India and other countries, there is still work to be done. Identifying and applying tools for effective management of national challenges are essential to ensure the success of SD.



The "5L" Education Diplomacy Framework



India's SDG performance dashboard and trends. (Source: Sachs et al., 2022)

The project's third objective aimed to identify the latest technologies developed by the CSIR that can be shared with neighbouring countries to foster long-term economic growth.

The final objective of the project was to study best practices that can be implemented to strengthen SD in India. This was done through a comparison of existing institutional networks between countries and by conducting case studies. The case studies highlighted

that SD can be a powerful tool for building relationships between countries, advancing international diplomatic goals, and promoting economic and social development. They also showed that SD is a global phenomenon and that both developing and developed countries are actively engaged in it. The findings suggest that India can benefit from enhancing its SD efforts by implementing the best practices identified from these case studies.



Study of Life Sciences Cluster in the context of Covid-19: A case study of Genome Valley

Project Code: NIScPR/OLP/0037/2022

PI: Ms Pramila Majumdar

Duration: 2022-2023

Objectives

The study aims to understand the structure and dynamics of an important life science cluster in India, the Genome Valley cluster. The specific focus is on the cluster response during COVID-19. The study examines the challenges faced by the cluster during the pandemic situation and how the cluster managed to overcome these to prepare and enable the cluster to face future emergencies/disasters. The study tried to decipher where the cluster stands in the Global Value Chain. Also, the focus was to understand how the cluster managed to leverage the innovations during the pandemic situation to generate appropriate knowledge assets.

Outcomes/Results

The study identified firms having a presence in the Genome Valley cluster or supported by an entity

located in the Genome Valley and having made contributions related to COVID-19 mitigation measures. A questionnaire to assess both the general challenges and challenges in vaccine development was generated. Also, to understand how technological solutions for addressing the COVID-19 pandemic materialized so quickly, a study was undertaken to look into the innovative products supported by IKP Knowledge Park through the IKP COVID Fund (ICO Fund). A total of 17 products in four different categories viz. Medical devices and equipment; Personal Protective Equipment (PPE); Screening and Monitoring/AI Connected Systems; any other (Diagnostics, Online counseling services, and Air Disinfection) from 18 start-ups/SMEs were studied.



3

Research Output, Training and Outreach



RESEARCH OUTCOME

PAPERS PUBLISHED

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Kshitij Avinash

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- Kshitij A, Mandal K (2022). Reviewing the National Solar Mission in India from the lens of Mission Oriented Innovation Policies. *Asian Research Policy*, 13(1) 56-74.
- Vinayak, Adarsh Raghuvanshi, Avinash Kshitij, (2023) Signatures of capacity development through research collaborations in artificial intelligence and machine learning, *Journal of Informetrics*, Volume 17, Issue 1.

Lakshmanan Sandhiya

- G Manonmani, L Sandhiya, K Senthilkumar (2023). Tailoring the mechanistic pathways and kinetics of OH-addition reaction of sulfoxaflor and its ecotoxicity assessment. *Environmental Science and Pollution Research*.
- G Manonmani, L Sandhiya, K Senthilkumar (2022). A Computational Perspective on the Chemical Reaction of HFO-1234zc with the OH Radical in the Gas Phase and in the Presence of Mineral Dust. *Journal of Physical Chemistry A*, 126, 51, 9564.
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Lata Charu

- Yadav A, Kumar S, Verma R, Narayan S, Jatan R, Lata C, Rai SP, Shirke PA and Sanyal I (2023). Overexpression of PGPR responsive chickpea miRNA166 targeting ATHB15 for drought stress mitigation, *Plant Cell, Tissue and Organ Culture (PCTOC)*, <https://doi.org/10.1007/s11240-023-02458-x> [IF: 2.726].
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- Nishad SN and Naresh Kumar (2021). Quantitative analysis of Virtual Water Trade of rice and its implications on Water Sustainability: a case study of India. ESS Open Archive.
- Nishad SN, Wakdikar Sandhya (2021). Future Food Demand and Food Security with Sustainable Approach, *GLS Law Journal*, 3(1), pp. 32-49.
- Singh AR, Nishad SN, N Kumar (2022). Capturing Evolution of Research Trends in Air Pollutants and its Health Impact: A Bibliometric Approach. *Journal of Scientometric Research*, 11(2):226-234.
- Shiv Narayan Nishad, Sujit Bhattacharya, Vipin Kumar (2022). Developing a Technology Readiness Scale: Validation and Assessment Based on CSIR Technologies. 12th ASIP International Conference, Organised by the Indian Institute of Science and MS Ramaiah University of Applied Sciences, Bangalore, 4 November to 26 November 2022.

Madhavi Y

- NK Prasanna, Anu & Madhavi Y, (2021). "A policy Dialogue on COVID-19 Vaccine from Vaccine Self-Reliance to Global Leadership, Opportunities, Challenges, and Policy Imperatives in Covid Era: Brief Report", *Indian Journal of Chemical Technology*, Vol. 28, May 2021, pp. 378.
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Nishad Shiv Narayan & Kumar Naresh

- N Kumar, SN Nishad (2022). Revisiting Infrastructure Development and Institutional Response for Mitigation of Air Pollution in India. *Productivity*, 63 (1).
- Nishad SN and Naresh Kumar (2021). Virtual water trade and its implication on water sustainability. *Water Supply* 22 (2), 1704-1715.
- Naresh Kumar, Nishad SN (2021). Immunization Strategies for Prevention of Covid-19 Infection: Regional and Global Analysis. *International Journal of Scientific Engineering and Research*, 9(6), 27-37.

Ray Suman

- Agarwal, S Ray (2023). Safety and behavior at laboratories in India. *Clin Chem Lab Med* 2023, 61, Special Suppl, pp. S87-S2222. IF: 8.49.
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- Ray S, Saini MK (2022). Impending threats to the plants with medicinal value in the Eastern Himalayas Region: An analysis on the alternatives to its non-availability. *Phytomedicine Plus* 2, Volume 2, Issue 1, February 2022, 100151.
- Suman Ray and Mahesh Kumar Saini (2021). Cure and prevention of cardiovascular diseases: herbs for heart. *Clinical Phytoscience*, 7:64.
- Suman Ray and Mohammad Kaif Khan (2021). Beliefs and attitude about Musculoskeletal Disorders (MSD) medications: a questionnaire survey based pilot study in Delhi (India). November 26, 2021. Theme “Grooming the Pharmacological Boundaries for Drug Design and Development”. *Annual Congress on Pharmacology Toxicology*.
- Suman Ray and Mohammad Kaif Khan (2021). Beliefs and attitude about musculoskeletal disorders (MSD) medications: a questionnaire survey based pilot study in Delhi (India). November 26, 2021. Theme “Grooming the Pharmacological Boundaries for Drug Design and Development”. *Annual Congress on Pharmacology Toxicology*. November 26, 2021.

Sahoo Narendra

- Sahua G, Sahoo NK, Gupta PK, Chauhan V & Saw SK (2022). Characterization and testing of KF/CaO heterogeneous catalyst for biodiesel production, *Indian J Eng Mater Sci*, 95(5), 573–580, <https://doi.org/10.56042/ijems.v29i5.50912>.

BOOKS/CHAPTERS PUBLISHED

Bagga Gurparsad

- Gurparsad Singh Bagga, Kartikay Shukla (2023). WBG Semiconductors: The future of Power Electronics Devices. *TIDEE Journal* (TERI Press) (Accepted, March 2023).

Barman Parmananda

- Sasi JM, Barman P, Lata C (2023). Nutraceuticals of Foxtail Millet (*Setaria italica* L.): Insights. In: Kole, C (eds) *Compendium of Crop Genome Designing for Nutraceuticals*. Springer, Singapore. https://doi.org/10.1007/978-981-19-3627-2_8-1.

Bhattacharya Sujit

- Bhattacharya S (2023). COVID-19: Opportunities, New Expectations and challenges for Innovation Policy, In: Lakhwinder Singh & KJ Joseph (Ed.), *Reimagining innovation systems in the COVID-19 and Post COVID-19 world* (pp 121-1310, New Delhi & Abingdon, Oxfordshire: Routledge.
- Bhattacharya, S (2023). Scientific Misconduct: Good Science, Bad Science and Beyond, In: Ramesh Kundra, Wolfgang Glanzel, Bernd Markscheffel & Chen Yue (Ed.), *The ‘social gestalt’ of scientific communication: Festschrift in honour of Hildrun Kretschmer* (pp, 353-363), New Delhi: Taru Publications.
- Bhattacharya S, Kumar V, Nishad SN, & Lakshmanan, S (2023). Proceedings of the Workshop on Technology Readiness level (TRL) and its Applications for Technology Assessment. CSIR-National Institute of Science Communication and Policy Research. ISBN: 978-81-7236-377-2.
- Filgueira AC, Bhattacharya S, Kanujia A, Mandal K, Freire, Luiz Claudio Mandarin, Silva, Jorge Elias Gomes. *STI System Analysis and Cooperative Directions for Reciprocal Development Cooperation: Focused on Brazil and India*. Published by STEPI, South Korea (In Korean language) (2022). Galvão, Published by STEPI, South Korea. ISBN: 978-89-6112-765-393300.
- Kanauji, A and Bhattacharya, S (2021). “On governance and regulation of Genetically Modified (GM) crops in India” In: *Indian Agriculture under the shadow of WTO and FTAs: Issues and Concerns*, Rajan Sudesh Ratna, Sachin Kumar Sharma, Radika Kumar, Adeet Dobhal (Ed.), Springer Nature: London.
- Sujit Bhattacharya (2023). *India’s Digital Transformation: A Contemporary Assessment*. Prepared for Science and Technology Policy Institute (STEPI) South Korea.
- Wakdikar S and Suman Y, *Energy – Conventional and non-conventional and energy devices*, 2021, Technology Compendium of CSIR.

Gore Manish Mohan

- *Vigyan Sanchar aur Sancharak* (2021) book published by National Book Trust, India, New Delhi (ISBN: 978-81-2379-387-0).

- *Mere Chuninda Vigyan Lekh* (2022), book published by Vigyan Prasar, DST, Govt of India, New Delhi (ISBN: 978-81-7480-373-3).
- *Bharat me Sankhyiki Ke Vastushilpi* (2022): PC Mahalanobis, book published by Rabindranath Tagore University, Bhopal (ISBN: 978-81-962017-1-5).
- *Kritrim Medha me* (2023), Hindi. In: Hindi: *Vaishvik Aayam*, National Book Trust, India, New Delhi, pp 111-119, ISBN: 978-93-5491-856-8.
- Koshika. In: *Samkaleen Hindi Vigyan Kavita Sanchayan* (2023), CSIR-NIScPR, New Delhi, pp 124-125, ISBN: 978-81-7236-384-0.

Jaggi Monika

- Maldonado A, Htoo H, Goveas JJ, Jaggi M, Loganathan M, Parvatam S, Namdeo SK, Mafi V, Nan H, (2021). Asia's Innovation Diplomacy: Analysis and Roadmap. In: *Innovation Diplomacy: Brazil's and Regional's Analysis and Roadmap*; De Oliveira AJ, Da Silva PIF, Ferreira GGC (eds.) Bold and Wise Publisher, USA pp. 37-50. ISBN 978-1-943350-90-2.

Lata Charu

- Shivhare R, Kumar A & Lata C (2022). Molecular basis of biotic and abiotic stress tolerance in finger millet, In: *The Finger Millet Genome*; Kumar A, Sood S, Kalyana Babu B, Gupta S M & Dayakar Rao B (eds.), Springer Nature, pp. 225-238.
- Tiwari S, Lata C & Chauhan PS (2022). Salicylic acid: Metabolism, Regulation, and Functions in Crop Abiotic Stress Tolerance, In: *Augmenting Crop Productivity in Stress Environment*, Elsevier, pp. 257-274.
- Tiwari S and Lata C (2021). Cation diffuser facilitator family of transporters in plants. In: *Cation transporters in plants*; Upadhyay SK (ed.), Elsevier, pp. 375-381.
- Tiwari S, Jatan R, Chauhan PS and Lata C (2021). Plant growth promoting rhizobacteria *Pseudomonas putida* RA for climate resilience and agricultural sustainability. In: *Environmental sustainability, Green Growth and Disaster Resilience Knowledge Compendium*, NIDM, New Delhi, pp. 95-108.
- Satyavathi CT, Ambawat S, Sehgal D, Lata C, Tiwari S, *et al.*, 2021. Genomic Designing for Abiotic Stress Tolerance in Pearl Millet [*Pennisetum*

glaucum (L.) R. Br.]. In: *Genomic Designing of Abiotic Stress Resistant Cereal Crops*; Kole C. (eds) Springer, Cham., pp.223-253. https://doi.org/10.1007/978-3-030-75875-2_6.

- Satyavathi CT, Ambawat S, Singh S, Lata C, Tiwari S, *et al.* (2021) Genomic Designing for Biotic Stress Tolerance in Pearl Millet [*Pennisetum glaucum* (L.) R. Br.]. In: *Genomic Designing of Biotic Stress Resistant Cereal Crops*; Kole C (eds) Springer, Cham., pp.257-294. https://doi.org/10.1007/978-3-030-75879-0_6.
- Jatan R and Lata C* (2021). Tripartite interactions: Plant-*Pseudomonas putida* – microRNAs in agricultural productivity. In: *Microbes in Land Use Change Management*; Singh JS, Tiwari S, Singh C & Singh AK (Eds.), Elsevier, Netherlands pp. 509-540. DOI: <https://doi.org/10.1016/B978-0-12-824448-7.00025-5>.
- Tiwari S, Lata C and Prasad V, (2021). Application of nanotechnology in overcoming salinity stress. In: *Nanobiotechnology*; Jameel M Al-Khayri, Mohammad Israil Ansari & Akhilesh Kumar Singh (Eds.), Springer Nature, Switzerland, doi. [org/10.1007/978-3-030-73606-4](https://doi.org/10.1007/978-3-030-73606-4).
- Sen P, Lata C, Kiran K, Mondal TK (2021). RNA interference (RNAi) in functional genomics of wheat. In: *Genome Engineering for Crop Improvement*; Prof BK Sarmah and Dr BK Borah (Eds.) Springer Nature Switzerland AG pp. 239-264, ISBN 978-3-030-63372-1.

INVITED LECTURES/TALKS

Bagga Gurprasad

- Lecture in the “IMT industrial Expo-2022” held at IMT, Faridabad from 10-12 December 2022 on the topic, “Recycling of PV modules: A Circular economy approach”.

Barman Parmananda

- Talk on ‘SVASTIK and its Media Coverage Insights’ in Contact Session on Science Communication and Popular Science Writing organised by CSIR-NIScPR in association with ICMR (16 November, 2022).

Bhattacharya Sujit

- INDIALICS Public Lecture-7, 20 March 2021. Understanding the Structure and Dynamics of the Fourth Industrial Revolution: Implications for India.

- Invited Speaker, Moderator at the Asian Society for Innovation and Policy 11th Conference on “Pandemic Innovation and Asia”, 7-9 October 2021, Jiju University, South Korea.
- Panelist at the workshop ‘Research data and FAIR data framework in the context of India’s STIP 2021: The way forward, organised by working group of CODATA, Indian National Committee on 26 October 2021.
- Invited talk entitled Scientific Misconduct: Good Science, Bad Science and Beyond, at Indian Statistical Institute, Kolkata, 17 August 2022.
- Dr Nagarajan Memorial Lecture. SIS Annual Convention & Seminar, October 14-15, 2022.
- Invited talk ‘Designing A TRL Framework: Some Conceptual and Methodological Challenges’ at the Stakeholders Meeting and Brainstorming Session on TRL and its Application in Food Processing and Agriculture Technologies at IIT (ISM), Dhanbad, Delhi Campus, October 2022.
- Invited talk entitled Challenges for Post-Covid Transition: Some thoughts on Innovation Systems and Models. Presented at INDIALICS International conference 2022, IIT-Indore, 21-23 December 2022.
- IPRs: It’s Implications for Research, Innovation, Economy and Development. DST-CPR symposium on ‘Significance of Science Communication and Intellectual Property’, at Punjab University, Chandigarh, 21 March 2022.
- Plenary Speaker at 12th Conference, of the Asian Society for Innovation and Policy, 24-26 November 2022, Indian Institute of Science, Bangalore.

Gore Manish Mohan

- ‘Learning Insights with Innovative Approach and Career Prospects for Science Students’ organised by NASI-Deen Dayal Upadhyay College, New Delhi on 4 September 2021.
- ‘Role of Translation in Hindi Scientific Literature’ organised by CSIR-Central Road Research Institute, New Delhi on 10 January 2022.
- ‘Science, Scientific Temper, Science Popularisation and Rational Society’ organised by SS Khanna Mahila Mahavidyalaya, University of Allahabad, Allahabad on 27 February 2022.
- ‘Career Opportunities in Academic Publishing & Science Communication’ organised by the Indian

National Young Academy of Sciences (INYAS) on 24 April 2022.

- ‘Science, Communication and Hindi’ jointly organised by Chaudhary Charan Singh University, Meerut and Uttar Pradesh Bhasha Sansthan, Lucknow on 1 September 2022.
- ‘Role of Science Fiction in communicating science’ organised by Rabindranath Tagore University, Bhopal on 7 November 2022.
- ‘Tradition of Science Literature in the Indian Languages’ jointly organised by the Indian Science Writers’ Association and Karuna Foundation on 17 December 2022.
- ‘Dissemination of S&T Knowledge’ organised by the Indian Strategic Petroleum Reserve Limited, Ministry of Petroleum and Natural Gas, Govt of India, Noida on 28 March 2023.

Radio Talks

- Power of Listening (Chemistry). All India Radio, New Delhi, broadcast on 27 August 2021.
- Power of Listening (Mathematics). All India Radio, New Delhi, broadcast on 24 September 2021.
- Science Nama: National Conference of Science Communicators and Science Teachers. All India Radio, New Delhi, broadcast on 7 December 2021.
- Science Nama: Time Capsule. Broadcast by All India Radio, New Delhi on 9 July 2022.
- Drone Technology: Atmanirbhar Bharat Ki Nayi Udan. Broadcast by All India Radio, New Delhi on 29 September 2022.
- Mahasagariy Pradushan: Swachhta aur Mahatv. Broadcast by All India Radio, New Delhi on 30 November 2022.
- Science Nama: CSIR’s One Week One Lab. All India Radio, New Delhi, broadcast on 4 March 2023.

TV Programmes

- Participated as panellist in the panel discussion on Lunar Eclipse organised by ZEE News on 8 November 2022. Vigyanika, IISF 2022. Interview at Doordarshan Bhopal, telecast on 29 December 2022.

Jaggi Monika

- Invited lecture on “Science and Science Communication” organised by the Department of Botany, Deshbandhu College, University of Delhi (13 April 2022).

- Invited lecture on “Popular Science Writing” organised by Hansraj College, University of Delhi (18 June 2022).

Lakshmanan Sandhiya

- Invited talk in the Chemical Sciences Section at the “108th Indian Science Congress” held at RTM University, Nagpur from 3 to 7 January 2023 on the topic, “Molecule Induced Radical Formation in Hydrocarbon (Aut)oxidation”.
- Invited talk on the topic, “Modern Density Functional Theory for electronic structure calculations of molecules” in the Lecture Series organised by PSGR Krishnammal College of Women, Coimbatore, on March 17 2023.

Lata Charu

- Invited speaker in workshop on “Taxonomic identification & authentication of medicinal and aromatic plants & crude drugs in biodiversity conservation, traditional knowledge and drug discovery”, CSIR-IIIM, Jammu on 24 March 2023.
- Invited Speaker in 4panel discussions during HySci 2023 conference at National Institute of Animal Biotechnology, Hyderabad on 17 March 2023.
- Invited speaker at Deshbandhu College, University of Delhi and delivered talk on Bridging the Gap – Ensuring Gender Equality in STEM on the occasion of International Women’s Day on 6 March 2023.
- Invited Speaker at International Conference on Plant Genetic Engineering and Genome Editing at Central University of Kerala, Kasargod during 27-29 October 2022.
- Invited Speaker at the INYAS flagship event WiSDoM (Women in Scientific Domain) about the Journey of Outstanding Young Women Scientists working in STEM on 13 July 2022.
- Invited Speaker at INYAS flagship programme Rural Science Education and Training Utility Program (RuSETUP) and delivered at talk on Imparting Education on Indian Knowledge Systems in view of NEP 2020 & a Glimpse of SVASTIK at IIT Delhi on 9 July 2022.
- Invited Speaker at “Build Future Science Enthusiasts with INYAS” – Training programme & scientific visit for students of class 8 to 12 at IIT Delhi on 26 November 2022.
- Invited Speaker on the topic Scientific Writing & Effective Communications – How to Write

a Research Paper? organised by the Campus Placement Cell of the Central University of Kerala on 18 November 2021.

- Invited Speaker in a two weeks Interdisciplinary Refresher Course in “Information Communication Technology” organised by the UGC HRD Center, DDU Gorakhpur University, Gorakhpur on 5 October 2021.
- Invited Speaker on the topic “Indigenous traditional knowledge of plant genetic resources” during a two-week workshop on “Plant Genetic Resources Management and Utilization” organised by ICAR-NBPGR, New Delhi on 26 July 2021.
- Invited Speaker at workshop on Research Methodology and Innovations in Life Sciences for PhD and MSc students organised by DDU Gorakhpur University, Gorakhpur on 30 June 2021.
- Invited Speaker at International symposium on “Advances in Plant Biotechnology and Genome Editing” on 9 April 2021.

Nagar Sonali

- Online expert talk on “Scientific writing” on 9 April 2022 during the Faculty Development Program (e-FDP) at Department of Mechanical Engineering, NIT Delhi.
- Invited online lecture on “Popular Science Writing” on 16 March 2023 at CSIR-NPL.

Nishad Shiv Narayan

- Invited Talk in Seminar on Technological Readiness Level and its Application in Food Processing and Agriculture Technologies held on 26th September 2022 at the IIT(ISM), Dhanbad.

Sahoo Narendra

- Sahoo NK, Kumar S, Lal K & Garg KC, Acoustics research in India – A bibliometric Analysis, Invited talk in NSA-2023 VSSUT, 50th National Symposium on Acoustics, (Veer Surendra Sai University of Technology, Sambalpur, Odisha) 24-26 February 2023.
- Invited Lecture on Sustainable Agriculture in “Capacity Building and Tutorial Classes for Personality Development Programme” (Jawaharlal Nehru Krishi Vishwa Vidyalaya, College of Agriculture, Tikamgarh, MP) 16-29 March 2023.

Ray Suman

- Invited talk on “A traditional important medicine: Indian ginseng”, KAMP Fortnightly session, 22 December 2022.
- Invited talk on “Rare, Endangered and Threatened Species” under Technical Session II-‘Bio-economy, Bio-Diversity and Sustainable Development’, National Conference on North East Sustainable and Inclusive Development (NESID)-2022.
- Climate Resilient Bio-Economy for Sustainable and Inclusive Development organised by the Centre of Excellence in Sustainable and Inclusive Development (CoESID). A Synergy between the Assam Kaziranga University and Institute for Frontier Science and Application (IFSA). Guwahati, 10-12 April 2023.

Suman Yogesh

- Plenary lecture at International Conference on “Recent Advances in Mathematical Sciences and its Applications (RAMSA-2022)” organised by Jaypee Institute of Information Technology (JIIT), Noida on 08 December 2022.

PARTICIPATION IN SEMINARS/ CONFERENCES/WORKSHOPS/ TRAINING COURSES

Barman Paramananda

- Coordinator of the International Science Film Festival of India, IISF 2022, Bhopal, (21-23 January 2023).
- Co-organising secretary of the ‘International Conference on Communication and Dissemination of Traditional Knowledge (CDTK 2023), 14-15 February 2023.
- Poster Presentation, Scientifically Validated Societal Traditional Knowledge (SVASTIK) workshop on ‘Unsettling Archaeology’, 26-28 September 2022, IIT Gandhinagar.
- The India Alliance Annual Conclave 2021 as a past fellow of India Alliance (India Science Media Fellow 2019-20).
- The Indo-German dialogue on ‘Science Communication’, 18 November 2022, online, organised by the German Centre for Research and Innovation — DWIH New Delhi.

Bhattacharya Sujit

- National Conference on “Science and Technology in India: A Historical Introspection with a Contemporary Perspective” 16-18 August 2021. A Temporal Analysis of Indian Research: A Quantitative Perspective with a Qualitative Introspection.

Gore Manish Mohan

- Farmer-Industry-Scientist Interaction on 30 May 2022 jointly organised by CSIR-NIScPR and CSIR-IIP.
- International Conference on ‘Communication and Dissemination of Traditional Knowledge (CDTK-2023)’, 14-15 February 2023.
- Science Conclave and Agro-Tech Expo 2023, jointly organised by CSIR-NIScPR, Gurugram University and DST Haryana during 15-16 March 2023.
- Coordinated the National Workshop on ‘Science Communication for Beginners’ under the Accelerate Vigyan Scheme of the Science & Engineering Research Board (SERB), DST, Govt of India, during 25-29 October 2021.
- Coordinated the ‘Vigyanika — Science Literature Festival’ at IISF 2022 at Bhopal during 22-23 January 2023.
- Participated in the Induction Programme for Scientists at CSIR-IICB, Kolkata during 11-16 July 2022 organised by CSIR-Human Resource Development Centre.

Jaggi Monika

- ‘Science Diplomacy for Trust Building’ session organised by the Global Young Academy (1 June 2021; Online).
- ‘Using Science for/in diplomacy for solving global challenges’ during UNGA76 Science Summit (24 September 2021; Online).
- Geneva Science and Diplomacy Anticipation Summit, Geneva, Switzerland (7-9 October 2021; Online).
- Second Prof. B Guha Memorial Annual Lecture on “Data Diplomacy” organised by the Information and Communication Society of India (13 May 2022; online).
- A European Science Diplomacy Agenda in Times of War – what can we expect? organised by European University Association (24 May 2022; online).

- Science Diplomacy in Latin America: Regional Opportunities for Cooperation (31 May 2022; online).
- Science Diplomacy in Times of War: Scientific Cooperation on-the-spot (14 Jun 2022; online).
- Open Science South Asia Network, the first open science international conference organised by DST-CPR, IISc (5-8 September 2022; online).
- How to Communicate your research — out of the lab, organised by Euraxess India Team (15 September 2022; online).
- Science Diplomacy in the Global South: A Brazilian Perspective jointly organised by Transdisciplinary Research Cluster on Frugality Studies and Centre for Studies in Science Policy, JNU at Jawaharlal Nehru University, New Delhi (30 September 2022).

Kshitij Avinash

- Conference on Science and Technology in India: A Historical Introspection with a Contemporary Perspective.
- Two days National Conference on “Swatantrata ka Amrit Mahotsav” on 29-30 November 2021.
- Joint workshop with DSIR on Technology Readiness Level and its applications for Technology Assessment, 22 June 2022.
- Discussion meeting with CSIR-ISTAD with Global Governance and Science Diplomacy team.
- Nominated and participated in NIAS-DST Training Programme (Science, Technology and Innovation Policy), 19-30 September 2022.

Lakshmanan Sandhiya

- CSIR Young Scientists Conclave Meet — 2021 organised during the first Friday of every month starting from January 2021 and presented the topic, “Autoxidation of Hydrocarbons”.
- Online training programme on “Climate Change: Challenges and Response” by Centre For Disaster Management, Lal Bahadur Shastri National Academy of Administration, Mussoorie from 09-13 August 2021.
- Talk on “Direct Dynamics Simulation of the Thermal $^3\text{CH}_2 + ^3\text{O}_2$ Reaction” at the 5th National Symposium on “Shaping the Energy Future: Challenges and Opportunities” by CSIR-IIP, Dehradun, on 27 August 2021.

Lata Charu

- Organised the International Conference on Communication and Dissemination of Traditional Knowledge (CDTK-2023) during 14-15 February 2023.
- Session Chair (Oral presentation) at the International Conference on Plant Genetic Engineering and Genome Editing organised by Central University of Kerala, Kasargod, from 27-29 October 2022.

Madhavi Y

- Co-organised a panel in International conference on EASST “The future of vaccine techno-politics: outcomes and lessons of the COVID-19 pandemic”, with Stuart Blume, University of Amsterdam, The Netherlands, 6-7 July 2022, Madrid, Spain.
- “Inclusive Innovation for Sustainable Health: Challenges Faced and Lessons Learnt”, Parallel session on 15 September 2022, in 8th edition of Science Summit on ‘India’s Innovation System and Sustainable Development: Contemporary Challenges and Way Forward for Inter-linking evolutionary actors, organisation and institutions, 77th United Nations General Assembly (UNGA77).
- Invited panellist on “Industrial Policy and COVID-19 Vaccine Production: The Policy Lessons from Experiences of India and the US”, Online Research Seminar, 28 October 2022.
- “Indigenous innovation”, ‘Symposium on Self-Reliance’, by Delhi Science Forum & All-India Peoples Science Network, 12-13 November 2022, P Ramamurthy Bhavan, New Delhi.
- “Agenda shaping and decision making in Health: The role of Civil Society, State and Science”, ‘National Workshop on Civil Society, State and Science: Transformative Initiatives in/for Rural India, 1980s-2010s’, India International Centre Annexe, 22-23 January 2023 by SNU, Noida and GIDR Ahmedabad.

Mandal Kasturi

- Jointly moderated session on Open Science in the Panel Discussion on “Open Science” at the Indo-French Knowledge Summit on 24 November 2021 in collaboration with CNRS bureau, India Office.

- Webinar on International Collaboration Funding Opportunities through Bilateral programmes of IUSSTF, IFCPAR, IGSTC and GITA on 4 March 2022.
- Represented CSIR-NIScPR in an International knowledge-sharing workshop on cross-border Innovation Acceleration and Challenges in the International Transfer of Technologies during 14-15 November 2022.
- Round Table Discussion: Indo-German stakeholder dialogue on Science Communication, 18 November 2022 as Expert.
- Participated in a Regional Benchmarking Initiative – CSIRO Australia and CSIR India (ongoing).
- Participated jointly with CSIR-ISTAD in WAITRO benchmarking Project information for CSIR India.

Nagar Sonali

- Seven weeks online course from 11 July 2022 to 28 August 2023 on “Popular Science Writing” from the University of Cambridge, UK.
- Networking reception with Science and Technology journalists at the British High Commission, New Delhi, on 23 March 2022.
- DST sponsored one week (21-25 February 2022) online training programme on “Emotional Intelligence at Workplace for Scientists/Technologists”.
- Virtual two days (23 & 24 September 2021) 4th International Conference on “Food and Nutrition Immunity, Nutrition and COVID-19” organised by the Universal Society of Food and Nutrition (USFN) with other partners. Also earned one-year USFN membership.

Nishad Shiv Narayan

- CSIR Young Scientist Conclave held on 1 October 2021.

Ray Suman

- Coordinated National Workshop on “Role of taxonomical identification and authentication of plants and crude drugs in traditional medicine and research”, 15 February 2023.

Suman Yogesh

- Session chair in 6th online international conference on “Advancing Management: Innovation, Engagement

and Impact in the post-COVID era” in association with Southwestern Oklahoma State University (SWOSU) the USA, Namangan Institute of Engineering Technology (NIET) Uzbekistan and Indo Gulf Management Association (IGMA), organised by KIET School of Management (MBA) on 6 August 2021.

POPULAR ARTICLES

Gore Manish Mohan

- RV Sindhu Sadhana: A Mission to Explore the Genomic Diversity of Indian Ocean. *Invention Intelligence*, March-June 2021, pp. 32-39, ISSN: 0970-0056.
Mahasagariya Jivon ke Koshikiya Star Par Adhyayan ke Liye RV Sindhu Sadhana Abhiyaan. *Awishkar*, May-July 2021, pp. 34-38, ISSN: 0970-6607.
- COVID Mein Zindagi Ko Aasan Banate Mobile App. *Technical Today*, July-September 2021, pp. 52-54, ISSN: 2455-9458.
- Science Heroes of India's Independence Movement (Part 1). *DREAM 2047*, October-December 2021 issues.
- Azadi Ke Bad Digital Hota Kisan. *Vaigyanik*, October 2021-March 2022, pp. 19-21, ISSN: 2456-4818.
- CSIR Ka 80th Sthapana Diwas Samaroh. *Awishkar*, November 2021, pp. 42-44, ISSN: 0970-6607.
- Vigyan Katha: Vigyan Sanchar Ki Ek Samarth Vidha. Neha, *Sahitya Varshiki* 2021-22, pp. 146-147.
- Shulva Sutra: Prachin Bharatiya Ganit Ki Ek Advitiya Upalabdhi. *Pustak Sanskriti*, January-February 2022, pp. 14-17, ISSN: 2582-9548.
- Ayurveda: Adarsh Chikitsa Pranali. *Hindi Vivek*, April 2022, pp. 107-108.
- Ab Bharat Men Bhi Heeng Ki Kheti. *Awishkar*, May 2022, pp. 29-31, ISSN: 0970-6607.
- Prithvi Ham Sabaka Ghar Hai, Iske Sansadhanon Ka Bevajah Dohan Na Karen. *Vaigyanik*, April-June 2022, pp. 15-19, ISSN: 2456-4818.
- Mrida Ke Sanrakshan Men Nambhumi Ka Yogadan Aur Ransar Samjhaute Ki Karyanitiyan. *Awishkar*, June 2022, pp. 33-40, ISSN: 0970-6607.
- Jaruri Hai Saaf Pani. *Bal Bharti*, July 2022, pp. 26-27, ISSN: 0971-8443.
- Ojhal Ho Gaya Vigyan Lekhan Ka Dhruvatara. *Electroniki Apke Liye*, July 2022, pp. 30-31, ISSN: 2455-2399.

- Badalon Ki Anokhi Duniya. *Vigyan Sampreshan*, July 2022, pp. 13-15, ISSN: 2583-6064.
- JIGYASA: A Student-Scientist Connect Initiative by CSIR. *VIPNET Curiosity*, July 2022, pp. 11-12.
- Hamare Vaigyanikon Ne Bhi Jhela Tha Utpidan. *Pustak Sanskriti*, July-August 2022, pp. 26-28, ISSN: 2582-9548.
- 28. Hamare Jivan Men Prakash Ka Mahatva. *Vaigyanik*, July-September 2022, pp. 58-61, ISSN: 2456-4818.
- 29. Azadi Ka Amrit Mahotsav Aur Desh Ke Vikas Mein CSIR Ka Yogadan. *Vigyan Sampreshan*, August 2022, pp. 34-39, ISSN: 2583-6064.
- CSIR played the role of a technical expert in the safe demolition of Noida twin towers. *Invention Intelligence*, Sept.-Oct. 2022, pp. 57-58, ISSN: 0970-0056.
- Bharat Men Vigyan Lokpriyakaran Ke Prayas. *Vigyan Sampreshan*, October 2022, pp. 49-53, ISSN: 2583-6064.
- Mahasagar Ke Jivon Aur Sansadhanon Ko Sahejna Avashyak. *Yojana*, October 2022, pp. 15-18, ISSN: 0971-8397.
- Cyclone: A Calamity that can be mitigated by Technology. *Invention Intelligence*, November-December 2022, pp. 7-19, ISSN: 0970-0056.
- Vaigyanikon Ko Duniya Ka Utkrishta Puraskar. *Electroniki Apke Liye*, December 2022, pp. 6-12, ISSN: 2455-2399.
- Vishva Men Prabhavshali Hote Bharat Ki Gauravshali Vigyan Parampara. *Rajbhasha Bharati*, January 2023, pp. 18-23, ISSN: 0970-9398.
- Application of Biosensor Technology in Food and Dairy Industry. *Invention Intelligence*, pp. 27-32, ISSN: 0970-0056.
- Sudur Arunachal Men Adhyayankartaon Ko Mila Durlabh Gavaiya Pakshi. *Vigyan Sampreshan*, February 2023, pp. 32-33, ISSN: 2583-6064.
- Vigyan Ko Samaj Se Jodne Ka Ek Anokha Prayog Hai 'Vigyanika'. *Awishkar*, February 2023, pp. 47, ISSN: 0970-6607.
- CSIR Ne Shuru Kiya Ek Saptah Ek Prayogshala Abhiyaan. *Awishkar*, February 2023, pp. 47, ISSN: 0970-6607.
- TechNinv@75: Vigyan Aur Proudhyogiki Par Kendrit Ek Anokhi Pahal. *Vigyan Sampreshan*, February 2023, pp. 29-30, ISSN: 2583-6064.
- Santulit Swasthya Budget. *Kurukshetra*, pp. 43-46, ISSN: 0971-8451.

Ray Suman

- Suman Ray, Shubhada Kapil, Ritika Sharma, Gayathri J, and Anil Kumar, 2023. Alzheimer's Disease: Recent Advancements in Diagnostic and Therapeutic Strategies. *Invention Intelligence*. pp. 38-41.
- Gayathri J, Suman Ray, Shubhada Kapil & Chandrashekar Chavan, 2022. Spotlight on Alzheimer's disease and Dementia. *Science Reporter*. 42; April 2023.
- Mohammad Rais, Suman Ray and Vasundhara Bhardwaj, 2023. Millets: an opportunity for Sustainable Health & Agriculture. *Science Reporter*.
- Suman Ray, Manish Mohan Gore, Vasundhara Bhardwaj, Mohammad Rais. स्वास्थ्य एवं पोषण सुरक्षा हेतु आवश्यक पोषक अनाज. *Vigyan Pragati*, March 2023.
- Chandra Shekhar Chavan and Suman Ray, 2022. स्टैमसेल थेरेपी और भारतीय नियामक प्रणाली का विकास. नवसंचेतना 24;1:September 2022.
- Suman Ray. 2021. Aromatic and essential oil: towards transformative change in the rural economy, market dynamics and growth opportunity in the country. *Swadeshi Vigyan Patrika*. Vol. 2 (2) July-December 2021, pp. 53-55. Special Issue: Technology & Ecology.

Wakdikar Sandhya

- Aggarwal R, Wakdikar S, Sharma P (2022). "Mainstreaming Gender at Workplace: CSIR-NIScPR evaluates Women in STEM", *Science Reporter*, March 2022, pp. 54-55.
- Aggarwal R, Wakdikar S, Sharma P, STEM mein Mahilaon Ki sthiti: CSIR ka sarvekshan (Article in Hindi), Oct 2022-March 2023, *Nav-sanchetna*, 24 (2), pp. 1-9.



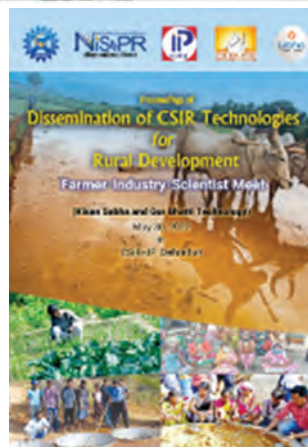
COLLABORATIONS & NETWORKING

Creating Livelihood Opportunities in Rural Areas through CSIR Technologies

As part of a Memorandum of Understanding (MoU) signed between CSIR, Unnat Bharat Abhiyan (UBA) and Vijnana Bharti (VIBHA), CSIR-NIScPR is the nodal organisation to act as an interface between UBA and CSIR to provide an enabling platform to create livelihood

opportunities in rural areas through intervention of CSIR technologies. Various events are being organized to showcase and demonstrate CSIR technologies for the benefit of stakeholders from rural areas.

1. A farmer-industry-scientist meet was organized at CSIR-IIP Dehradun on 30 May 2022 to disseminate the CSIR Technologies — Kisan Sabha Mobile



Proceedings of Workshop

App and Gur Bhatti Technology — to farmers. The objective was to disseminate the Kisan Sabha application developed by CSIR-CRRI and later transferred to CSIR-NIScPR and a Gur Bhatti Technology developed by CSIR IIP Dehradun, for creating livelihood opportunities in rural areas; and also to develop business opportunities for the farmers. In the meet, scientists, industrialists, financiers and farmers came together on a single platform to discuss the opportunities and challenges. The event was broadcast live on YouTube. The event was attended by representatives from financial institutions like NABARD and private sector industry along with farmers who are involved in Gur making from sugarcane.



Food Processing Technologies



Tea Processing Technologies



Aromatic and Bamboo Technologies



Technology Demonstration at Bamboo Museum



Vertical Aeroponics Facility

2. CSIR-NIScPR, CSIR-IHBT, UBA, and VIBHA jointly organized a Two-day Technology Demonstration and Networking Meet on 29-30 June 2022, at CSIR-IHBT, Palampur. The key objective was to showcase and demonstrate rural technologies developed by CSIR-IHBT that can help in farmers' livelihood creation and enhance their income through the

development of business opportunities. The meet brought scientists, researchers, investigators, Regional Coordinating Institutes (RCIs), and Participating Institutions (PIs) of UBA, SHGs, FPOs, and village communities together on a single platform to discuss opportunities as well as challenges in the successful translation of the identified technologies.

MoU with CSIR-CSMCRI and NECTAR

A MoU was signed with CSIR-Central Salt & Marine Chemicals Research Institute (CSIR-CSMCRI) and the North East Centre for Technology Application and Reach (NECTAR) on 28 June 2022 with the objective of technology demonstration/deployment and training of unemployed youths in rural areas of the Northeast. The background and purpose of the MoU are as follows:

- NECTAR has established a Temp Technology Demonstration Centre (TTDC) at Assam Science Society, Khanapara, Guwahati to provide ground-level exposure to technologies and practical hands-on involvement of the people of the region. It also aims to conduct skill development, training programmes, and workshops to create awareness of technological benefits and commercial implications.
- CSIR-CSMCRI has offered to establish a technology facility for a “Solar Thermal Dryer for Improvement of Livelihood of Fishing Communities” in NECTAR TTDC in Guwahati which not only demonstrates the technology but also creates a business environment for its sustainability.
- CSIR-NIScPR to act as a facilitator in the field-level implementation of the said facility/installation of CSIR-CSMCRI technology at NECTAR TTDC Guwahati and prepare a strategy for ensuring that the installation of CSIR technology meets its desired objectives.

MoU Signed with Sarvodaya Infotech Private Limited (Trucksuvidha) for Kisan Sabha & AarogyaPath

A Memorandum of Understanding (MoU) was signed between CSIR-NIScPR and Sarvodaya Infotech Private Limited (Trucksuvidha) for transferring Kisan Sabha & Aarogya Path to CSIR-NIScPR on 7 April 2022. The MoU was signed by Prof. Ranjana Aggarwal, Director, CSIR-NIScPR and Mr Amit Punaini, Managing Director, Trucksuvidha, an entity of (Sarvodaya Infotech Private Limited).

Kisan Sabha was created to connect farmers to the Supply Chain and Freight Transportation Management System. Kisan Sabha has six major modules taking care of Farmers, Mandi Dealers,

Transporters, Mandi Board Members, Service Providers, and Consumers. This app acts as a single stop for every entity related to agriculture.



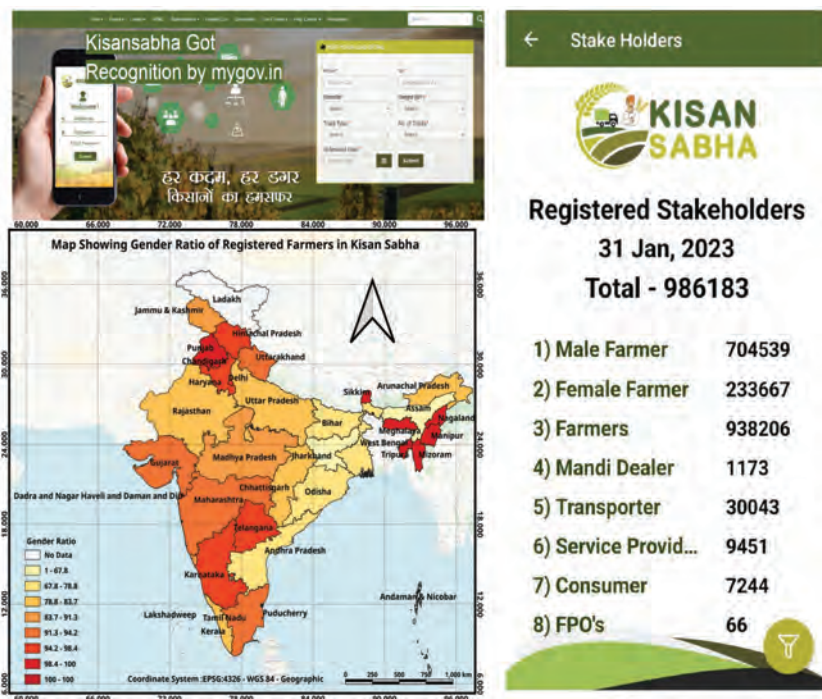
Signing of Memorandum of Understanding (MoU) of Kisan Sabha & Aarogya Path between CSIR-National Institute of Science Communication and Policy Research & Sarvodaya Infotech Private Limited (Trucksuvidha) on 7 April 2022

Aarogya Path is a CSIR National Healthcare Supply Chain Portal that aims to provide real-time availability of critical healthcare supplies. AarogyaPath serves manufacturers, suppliers and customers.

Kisan Sabha App

The agriculture sector demands a robust supply chain network linking all the stakeholders involved in the “farm-to-fork” process. The Kisan Sabha Mobile App is an initiative in this direction by CSIR. It is aimed at providing the farmers an impartial, sustainable, and transparent IT driven social network.

The App offers the stakeholders a simple, quick, efficient, and secure portal and generates business opportunities for them. Since the launch of the portal, the App has registered nearly a million users. The large share of farmers in the registration data reflects its popularity. For the efficient functioning and dissemination of the App, CSIR-NIScPR and Trucksuvidha-Sarvodaya Infotech Private Limited, the industrial partner of the institute, signed a bi-partite MoU on 22 March 2022. A meeting was also organized with the representatives of the industrial partners on 23 January 2023 to discuss the future action plan for the App.



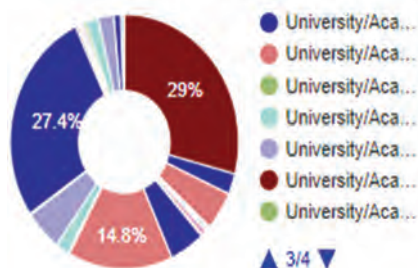
Pravasi Bharatiya Academic and Scientific Sampark (PRABHASS)

CSIR-NIScPR facilitates an interactive platform that is accessible to Indian S&T and S&T management experts

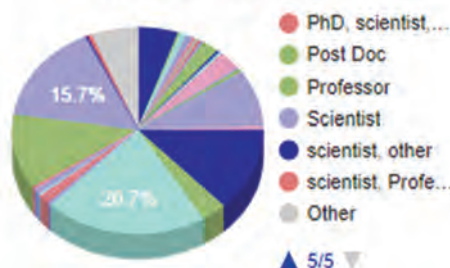
based in India and abroad. Pravasi Bharatiya Academic and Scientific Sampark (PRABHASS) is a national digital portal to engage with the global Indian S&T community. Thousands of users from the S&T Diaspora, both in India and abroad, are currently registered in this portal.



Organisations-wise Experts



Profession wise Experts



MoU with JC Bose University to promote Science Communication and STI Policy Research

CSIR-NIScPR, New Delhi and JC Bose University of Science and Technology, YMCA, Faridabad, signed a Memorandum of Understanding (MoU) for collaboration and networking to advance policy research and science communication by leveraging respective strengths.



MoU signing ceremony between CSIR-NIScPR and JC Bose University

The MoU signing ceremony was organised in the JC Bose University on 27 August 2021. The MoU



Prof. Ranjana Aggarwal, Director, CSIR-NIScPR

was signed by the Director Prof. Ranjana Aggarwal on behalf of CSIR-NIScPR, New Delhi, and the Registrar Dr SK Garg on behalf of JC Bose University.



Dr SK Garg, Registrar, JC Bose University



Collector's edition (August 2021 issue) of "Science Reporter" was also showcased on this occasion

The collaboration will open new avenues for knowledge sharing and skill development in science communication and STI policy research.

A collector's edition (August 2021 issue) of the popular science magazine "Science Reporter" of CSIR-NIScPR was also showcased on this occasion.

MoU with National Translation Mission for Translation of CSIR-NIScPR's Popular Science Literature

In view of the authenticity and high content quality of popular science books brought out by CSIR-NIScPR, the National Translation Mission-Central Institute of Indian Languages (NTM-CIIL), Mysore, Ministry of Education, Govt of India expressed desire to bring out translations of Popular Science Books published by CSIR-NIScPR in print and electronic format in 22 Indian languages. Consequently, an MoU was signed between CSIR-NIScPR and National Translation Mission-Central Institute of Indian Languages (NTM-CIIL) on 1 June 2022.



SCIENCE OUTREACH

JIGYASA – SCIENCE-SOCIETY CONNECT

For reaching out to students, to motivate and inculcate in them scientific temper, an initiative called ‘Jigyasa’ has been adopted at the pan-CSIR level. This initiative has been facilitated with a joint collaboration of CSIR and Kendriya Vidyalaya Sangathan.

Some of the major activities carried out by CSIR-NIScPR as part of the Jigyasa initiative include the following:

Science outreach and sensitization programme for underprivileged students of NGO, Roshni Foundation, Noida

To sensitize students about scientific issues & create scientific temper among them, a science outreach & sensitization programme for underprivileged children was organized in collaboration with Roshni Foundation, Noida on 17 September 2021 at CSIR-NIScPR, Pusa Campus, New Delhi.

A lecture was delivered on insights about the utility of herbs and their relevance in different seasons. Children were informed about “Azadi Ka Amrit Mahotsav” (Celebration of 75th year of India’s independence) with a special focus on Jagdish Chandra Bose, who protested against the Britishers by not taking the reduced salary and also his achievements in science and technology.

A visit to the Herbarium Museum was especially interesting. There were also motivating interactions

with scientists of the Institute. A video competition was earlier organized for the students. The best video was showcased.

Increasing reach of CSIR technologies to around 400 villages through Zila Parishad members of Ghaziabad

CSIR-NIScPR approached farmers through Zila Parishad Chairman and Members of Bhojpur Block, District Ghaziabad and organized a meeting on 2 November 2021. It was informed to members of Zila Parishad that CSIR Laboratories across the country have developed many technologies that could offer solutions to several problems faced in rural areas and at the same time for generating livelihood.

Some of the technologies that were discussed was Gudd-Batti technology developed by CSIR-IIP Dehradun; Paperplate making technology developed



by CSIR-NEIST, Trivandrum; Ayurvatika for medicinal plants for generating business for local farmers. The Kisan Sabha app developed especially for farmers by CSIR was also showcased to them.

National Painting Competition for Specially-abled students with USO, UNESCO and Ministry of Social Justice and Empowerment

A National Science Painting Competition for Specially-Abled Children was organized jointly by CSIR-NIScPR, United Schools Organisation of India (USO), and UNESCO-New Delhi during December 2021 to January 2022.

The competition was launched on the occasion of World Science Day for Peace and Development which



is observed on November 10 each year. The theme for the painting competition was “Building Climate-Ready Communities”. The aim was to bring science closer to society, especially to provide specially-abled students a national platform to showcase their unique creativity.

Inculcating scientific temper among students of Shri Gandhi Smarak Govt Inter College, Mandola Ghaziabad

To inculcate scientific temper among students, a science society connect programme was organized on 21 December 2021 at Shri Gandhi Smarak Inter College, Mandola, Ghaziabad (UP). Students were very keen to hear from the CSIR-NIScPR scientific and technical personnel.

A brief introduction of CSIR and CSIR-NIScPR was given to the students and they were also explained about various initiatives in CSIR available for students. A presentation on Herbs and their utility and another presentation on creative writing was given. Besides, a documentary on CERN was also screened.



Sensitization programme for specially-abled children at Child Development Centre, Jamia Milia Islamia, New Delhi

To sensitize specially-abled children about scientific issues & create scientific temper among them, an outreach & sensitization program was organized on 29 March 2022 at the Child Development Centre, Jamia Milia Islamia University, New Delhi. To motivate the students, interactive activities such as Quiz & Painting



were organized. The children were very responsive and eager to show their best talents in all aspects. An educational kit was also distributed among the students.

KNOWLEDGE AND AWARENESS MAPPING PLATFORM (KAMP)

Knowledge and Awareness Mapping Platform (KAMP), a knowledge alliance of CSIR-NIScPR, with its industrial partner M/s Nysa Communications Private Ltd conducted its National Assessment for Scientific Temperament and Aptitude (NASTA) — 2022

Problem-Solving, Precision, Prediction, Critical Thinking, and Interpretation. NASTA 2022 assessment was conducted with participation of 21,904 students from 33 states, 367 districts and 1755 schools. 24.31% of students were from Rural and 75.69% students from Urban India.

Students were from classes 5th to 12th from various CBSE self-financed schools, Kendriya Vidyalaya, Navodaya Vidyalaya and Army Public Schools. The

Promoting S&T temperament in students

Interactive platform for assessing students' awareness level about S&T and humanities

Developing decision support system for improving students' knowledge level

kamp
KNOWLEDGE & AWARENESS MAPPING PLATFORM

<https://kamp.res.in>

during 19-21 January 2023. NASTA is an attribute-based assessment where each attribute allows the student to think critically based on their knowledge level.

The students are assessed on eight different attributes — Recognition, Observation, Classification,

students who had registered for the NASTA were also enrolled for free online knowledge-sharing sessions from experts.

This year KAMP conducted 23 such knowledge-sharing sessions for the students on topics ranging from robotics to traditional know.



TRAINING AND SKILL DEVELOPMENT

CSIR-NIScPR is equipped with necessary facilities and manpower to train and prepare science communicators, R&D personnel and library & information science professionals for meeting the challenges of the current times. Human Resource Development Programmes/Skill Training Programmes are also conducted under the CSIR Integrated Skill Initiative.

Training programmes are conducted in the following areas:

1. Science Communication & Science Writing
2. Social Media Communication
3. Information Technology
4. Information Management
5. Library Automation
6. Open Source Software, viz. Operating System Linux, Integrated Library Management Software Koha
7. Institutional Repository Creation Software DSpace

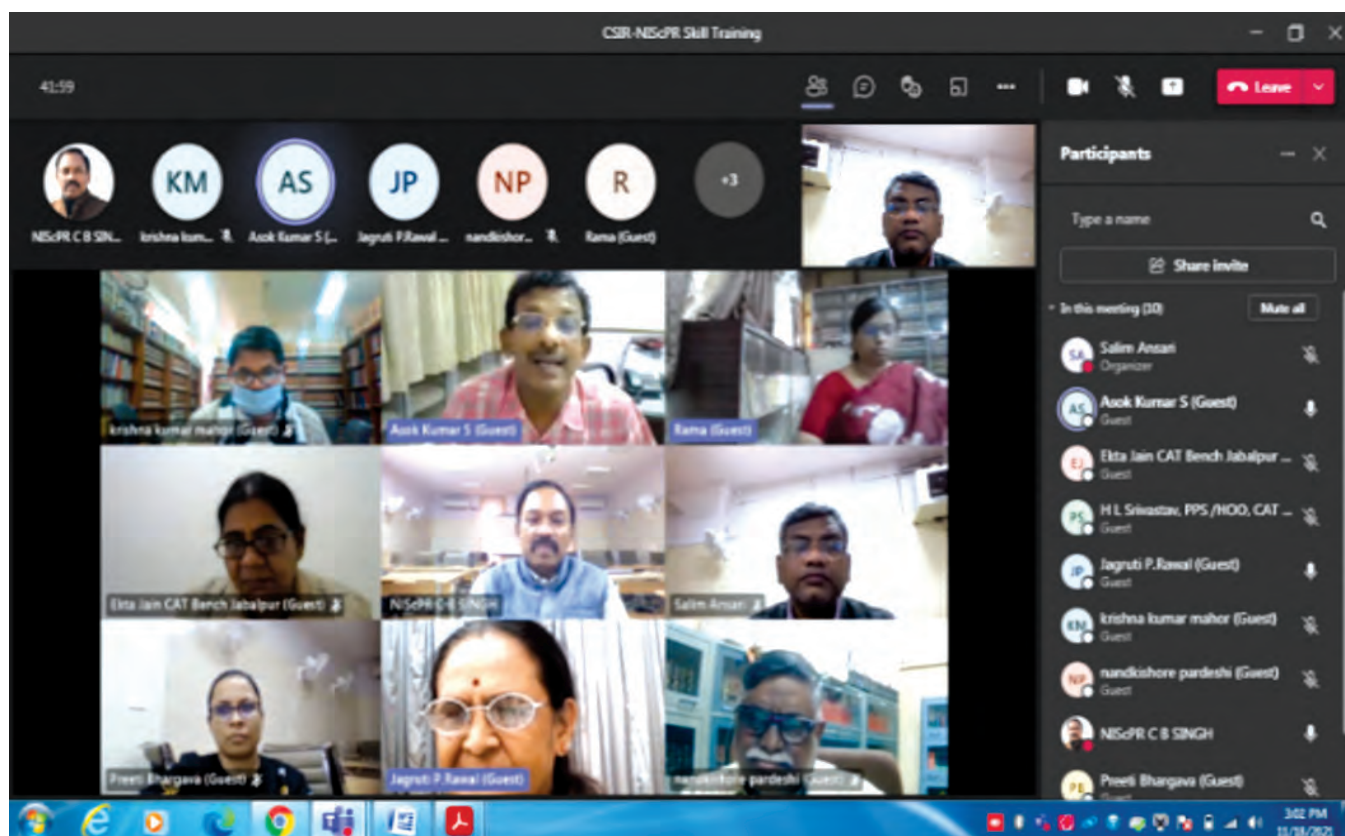
8. Open Journal Systems (OJS) Software
9. Content Management Software Joomla
10. Website Development

CSIR-NIScPR also organises onsite training courses as per the specific requirements of institutions, subject to a minimum of 10 participants.

Due to COVID-19 pandemic, the in-person training programmes could not be conducted for a long time. The following two training programmes were conducted during the period:

- Two weeks skill training in Library Automation and Digitization
- Four weeks skill training in Library Automation and Institutional Repositories for Library Professionals

The participants were from Central Administrative Tribunal, Intelligence Bureau, Ministry of Home Affairs and Academic Colleges.



Training programmes were also organized at nodal laboratory and at participating laboratories in the usage of e-resources.

S. No.	Sessions topic	Date	No. of participants
1.	<i>Inspiring Innovation at "NISCAIR: CSIR & DST" with IEEE Xplore</i>	24 May 2021	80
2.	<i>Wiley Online Library: Using Boolean Operators and Advanced Search Techniques with Wiley Journals</i>	25 May 2021	100
3.	<i>Use of Scopus metrics for journal selection</i>	26 May 2021	144
4.	<i>How to publish open access and succeed with your publication</i>	27 May 2021	117
5.	<i>Excellence in Peer Review: How to be an effective peer reviewer</i>	22 June 2021	367
6.	<i>Publishing Ethics</i>	23 June 2021	237
7.	<i>Increasing Research Impact</i>	24 June 2021	188
8.	<i>Introducing F1000 Research: An Open Access Publishing Platform</i>	25 June 2021	111
9.	<i>Publishing in Wiley Journals and Resources for Authors</i>	25 May 2022	220
10.	<i>Avoiding Rejection: How to successfully navigate the publishing process</i>	6 September 2022	162
11.	<i>Avoiding Rejection: How to successfully navigate the publishing process</i>	18 November 2022	152
Total			2381



ACADEMY OF SCIENTIFIC AND INNOVATIVE RESEARCH (AcSIR)

AcSIR was established in 2010 (by a resolution of Government of India on 17 July 2010) and formalized by an Act of Parliament vide The Gazette of India (dated 7 February 2012) and notified on April 3, 2012 as an Institution of National Importance.

With the merger of CSIR-NISTADS and CSIR-NISCAIR into a unified entity CSIR-NIScPR (National Institute of Science Communication and Policy Research), the Institute now offers new opportunities as part of AcSIR activities.

Mission: To promote STI policy studies and science communication among diverse stakeholders and act as a bridge at the interface of science, technology, industry and society to enable robust S&T ecosystem in the country.

Objectives: To identify ST&I needs for National missions and create road maps for Sustainable Development and act as a facilitator in furthering the economic, social, industrial, scientific and commercial development by providing timely access to relevant and accurate information.

Details of Ph.D. Scholars (1 April 2021 – 31 March 2023)

PhD Scholars	
<i>Student from Policy Research</i>	12
<i>Student from Science Communication</i>	39
<i>Student from MSc Programme</i>	12
<i>Total</i>	63
<i>Total Strength of PhD Scholars = 51</i>	

PhD Viva-voce Exam Conducted

S.No.	Date	Name	Thesis Title	Name of Guide
1.	09.12.2022	Biju D	<i>Gender and Geographical Dimensions of Science Communication in India: A Case Study of Science Reporter</i>	Dr G Mahesh
2.	23.09.2022	Priyamvadah Kint	<i>Nutraceuticals as Dietary Supplements: An Assessment of Consumer Experience</i>	Dr Yogesh Suman
3.	14.06.2022	Shilpa	<i>Indo-French S&T Collaboration and its Impact on Innovation System: Case Study of Bilateral S&T Organizations</i>	Dr Sujit Bhattacharya

PTOC Conducted

S. No.	Date	Name	Title	Name of Guide
1	28.07.2021	Umang Gupta	Role of Institutions in creation of Ecosystem for Technology-based startups in India	Dr Sujit Bhattacharya
2	25.05.2022	Suvita Rani	India's Plant Variety Protection and Farmers' Right Act : Implications for Agriculture Innovation System	Dr Sujit Bhattacharya
3	22.07.2022	Priti	Resource Potential of Biodegradable Waste : Quantification and Pathways	Dr Vipin Kumar, Co-guide - Dr Kasturi Mandal
4	04.10.2022	Manoj Varghese	A Comparative Study on the Impact of Interventions to Popularise Science in Delhi Schools	Dr Manish Mohan Gore
5	18.11.2022	Ankita Rathore	Public Perception of Nanotechnology in India	Dr G Mahesh
6	27.02.2023	Navneet Kumar Gupta	भारत में लोकप्रिय हिंदी विज्ञान पत्रिका के माध्यम से विज्ञान संचार: एक अध्ययन	Dr G Mahesh
7	03.03.2023	Aneep Kumar	Energy Requirement, Resources and Future Management: Role of Science Communication	Dr Shobhna Choudhary

Publications (2021 – 2023)

S. No.	Publications	Numbers of Publications
1	Journal Papers	19
2	Conferences Paper / Proceedings	71
3	Research Reports	1
4	Miscellaneous Papers / Manuscripts / Briefs	3



4

S&T Information Resources and Services



DIGITAL INFORMATION RESOURCES

CSIR-NIScPR's scientific information dissemination and science communication activities are actively supported by a robust and modern IT infrastructure. With science communication, policy research & studies and outreach activities relying heavily on modern ICT, services like NIScPR's Online Periodical Repository (NOPR), Online Publishing Software (OJS), website & portals, popular science magazines, books, reports, etc. and a state-of-the-art Data Centre have gained paramount importance.

Data Centre

To fulfil the mandate of CSIR-NIScPR, the institute has an ISO 27001:2005 Certified Data Centre. The Data Centre was established in 2012 under the XI Five Year Plan Project with an objective to provide uninterrupted, authorized and secure access of CSIR-NIScPR and CSIR Resources to the scientific community and researchers all over the world. The Data Centre offers facility of primary hosting/co-location of major web services and securing Digital Resources for CSIR and its Labs. The Data Centre is running 24x7x365 days. The following website services are being facilitated in the Data Centre:



- CSIR-NIScPR bilingual website
- Science Reporter Portal
- Indian Science Abstract (ISA)
- CSIR News Portal
- Online Journal Systems website
- NIScPR Online Periodicals Repository (NOPR)
- National Science Digital Library (NSDL)
- CSIR Knowledge Gateway (KNOWGATE)
- National Knowledge Resource Consortium (NKRC)
- Pravasi Bharatiya Academic & Scientific Sampark (PRABHASS)

- Koha Library Management Server
- MATLAB, ARCGIS, SPSS Server
- CSIR Indian Patent Unit
- CSIO backup portal

The data centre is equipped with 10 IBM rack servers, 40 blade servers, 30 TB SAN storage, Check Point and Fort iGATE Firewall and load balancer. These servers are running on Windows Server 2008, Windows Server 2012, Ubuntu and CentOS operating system. The institute has 1 Gbps leased line from the National Knowledge Network (NKN). The NKN is a state-of-the-art multi-gigabit pan-India network for providing a unified high speed network backbone for all knowledge related institutes in the country.

Some of the IT-based functions undertaken at CSIR-NIScPR are as follows:

- Design, development and hosting of new CSIR-NIScPR bilingual Website:** The new CSIR-NIScPR website is designed and developed in-house by using latest open source technologies. The website has SSL and Security Audit Certificate. It is a fully responsive and GIGW compliance website. For frontend HTML5, CSS3, Bootstrap4, Javascript and jQuery were used. For backend MySQL and codeigniter PHP framework were used.





2. **CSIR Vendor Registration Portal — Hosting & Archival:** The CSIR HQ Purchase Section developed a portal for online registration of vendors. NIScPR was requested for provisioning of Server and Security umbrella, which is available to CSIR HQ for 24x7 operation and storage of data of the portal with the daily backup of the data.
3. **Aadhaar Enabled Biometric Attendance System (AEBAS):** Management of operation and maintenance of Biometric Machines installed at Pusa and SV Marg Campus.
4. **Full HD Video Conferencing Facility:** Management of Video Conferencing Unit is being done regularly.
5. **Management and Up keeping of Digital Information Resource Facility (MAUKDIRF):** The Digital Information Resource Facility (DIRF) has been created to provide uninterrupted, authorized and secure access of NIScPR and CSIR resources to the scientific community and researchers all over the world. The DIRF also houses ISO27001:20013 certified Tier-II Level Data Centre(DC). It is successfully hosting CSIR and NIScPR contents.

6. **Document Management Information System (DMIS):** Login creation of new users, password reset, modify permission of user etc. Creation and modifications of users, sections and divisions on SQL Server.

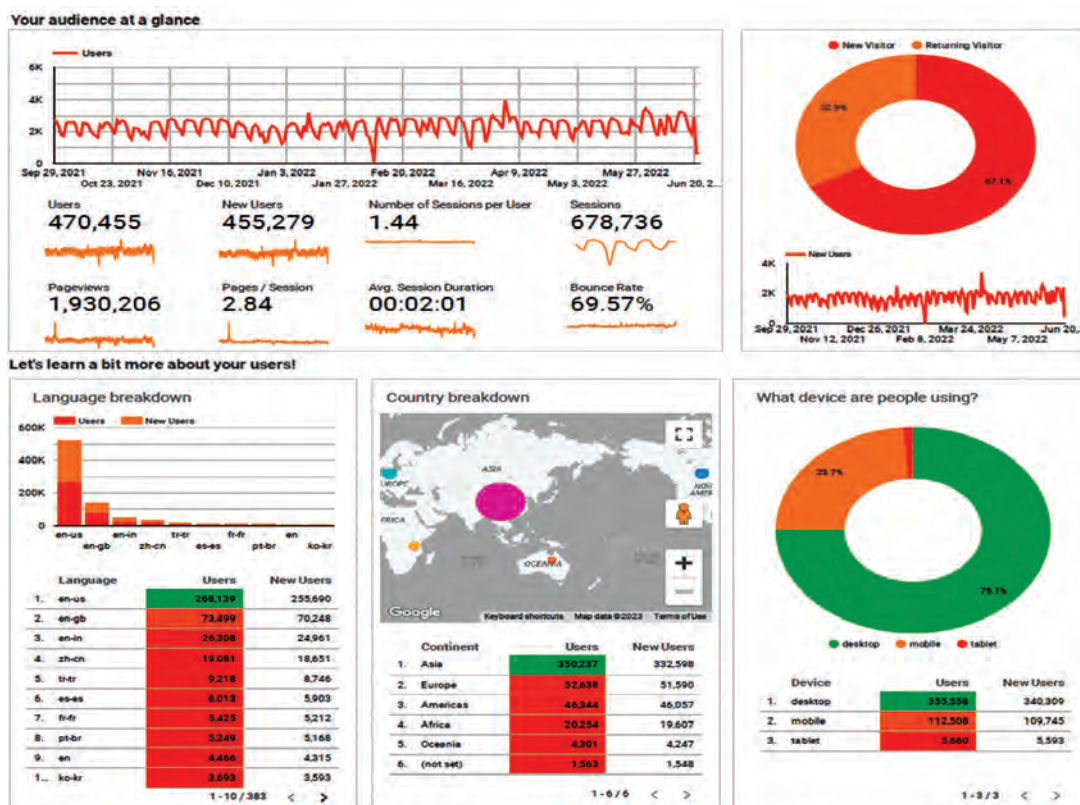
NIScPR Online Periodicals Repository (NOPR)

CSIR-NIScPR Online Periodicals Repository (NOPR) hosts the Institute's knowledge products, including research journals, popular science magazines & Natural Products Repository at <http://nopr.niscpr.res.in>. All 15 research journals have been added under Open Access mode for accessing full text. Current issues of all the research journals are published online in NOPR for open access well before the publication of the print version for the immediate benefit of researchers.



Printed copies of Science Reporter (English-Monthly) and Vigyan Pragati (Hindi-Monthly) would be available from December 2022 onwards.

A digitization facility has been created in the Institute and digitization work of all journals is in progress. After 100% digitization of all NIScPR journals, NOPR will have more than 1 lakh research articles in the public domain.

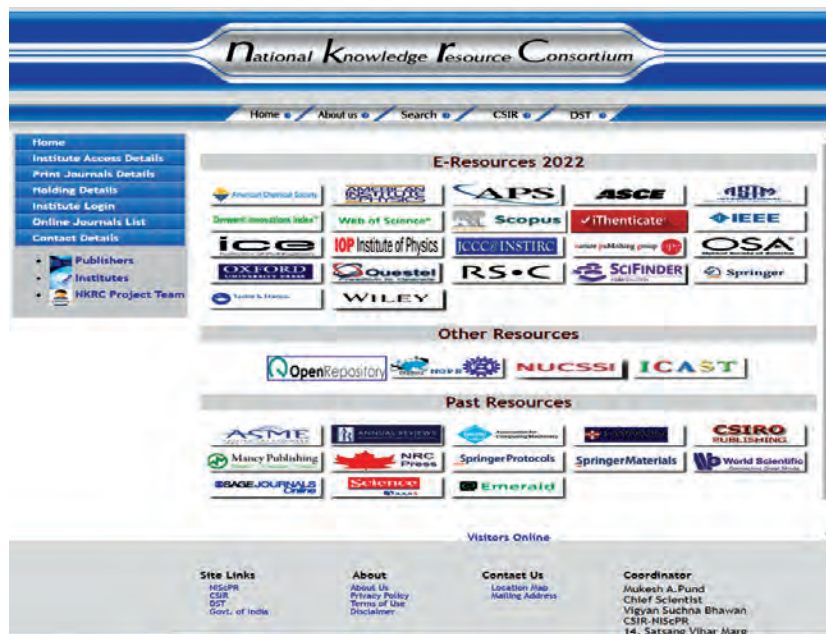


Audience overview and site visitors

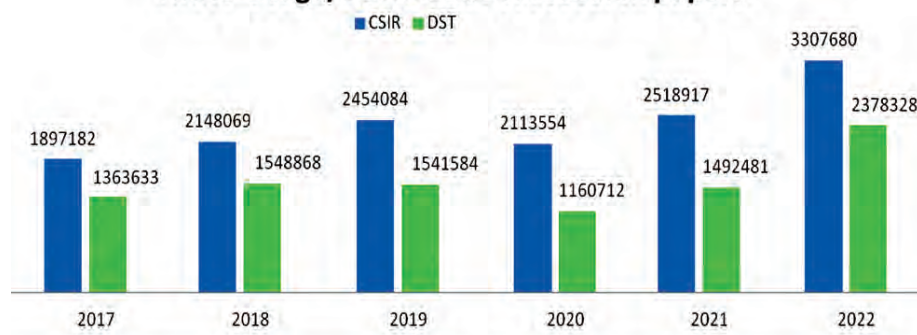
National Knowledge Resource Consortium (NKRC)

National Knowledge Resource Consortium (NKRC) has been providing access to global S&T information resources since 2002. The NKRC is a network of

libraries and information centers of CSIR and DST institutes. It facilitates access to 5,000+ e-journals of all major publishers, patents, standards, citations and bibliographic databases. Apart from licensed resources, NKRC also provides access to a multitude of open access resources.



NKRC-Usage/Downloads of research papers



Graph showing the number of downloads of research papers by CSIR & DST Labs

E-resources

S. No. e-Resources Publisher

S. No.	e-Resources Publisher	Type
1.	American Chemical Society (ACS)	Journals
2.	American Institute of Physics (AIP)	Journals
3.	American Physical Society (APS)	Journals
4.	American Society of Civil Engineers (ASCE)	Journals
5.	ASTM SEDL Standards	Database
6.	Clarivate Analytics-Derwent Innovation	Database
7.	Clarivate Analytics-Web of Science	Database
8.	Elsevier- Scopus	Database
9.	Emerald	Journals
10.	IEEE	Journals
11.	Institute of Civil Engineers (ICE)	Journals
12.	Institute of Physics (IOP)	Journals
13.	J-Gate	Database
14.	Optical Society of America (OSA)	Journals
15.	Oxford University Press (OUP)	Journals
16.	Questel Q-Pat	Database
17.	Royal Society of Chemistry (RSC)	Journals
18.	SciFinder ⁿ	Database
19.	Springer Nature- NPG Journals	Journals
20.	Springer Nature- Springer Journals	Journals
21.	Taylor & Francis (T&F)	Journals
22.	Wiley	Database

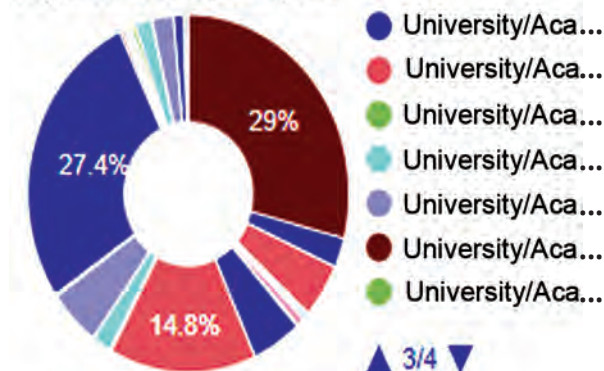
Pravasi Bharatiya Academic and Scientific Sampark (PRABHASS)

CSIR-NIScPR facilitates an interactive platform that is accessible to Indian S&T and S&T management experts based in India and abroad. Pravasi Bharatiya Academic and Scientific Sampark (PRABHASS) is a national digital portal to engage with the global

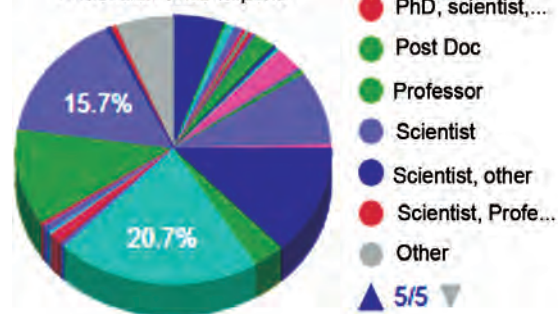
Indian S&T community. Thousands of users from the S&T Diaspora, both in India and abroad, are currently registered in this portal.



Organisations-Wise Experts



Profession Wise Experts



S&T INFORMATION RESOURCES/SERVICES

National Science Library

The National Science Library (NSL) was set up in 1964 to provide a broad range of S&T documentation and information services. NSL subscribes to several Indian and foreign S&T periodicals. NSL also holds the international memberships of International Federation of Library Associations and Institutions (IFLA) and International Standard Serial Number (ISSN). Currently, it has more than 2,90,000 collections including books, monographs, bound volume of journals, reports, theses/dissertations, handbooks, directories, standards and patents, etc.

The following services are offered by CSIR-NIScPR:

National Science Library Reader Service

The NSL is open to the public for reading and consultation during working hours from 9.00 AM to 5.30 PM (Monday to Friday) except during public holidays. The NSL provides on-the-spot photocopies of articles from its collection at a nominal rate of Rs. 1.00 per page. During 2021-2022, a sum of approximately Rs. 3,097/- and during 2022-2023, a sum of Rs. 3,694/- was realized from the photocopying service by NSL.

NSL also has registered members including research scholars, scientists and students. During 2021-2022, a sum of Rs. 36,500/- and during 2022-2023, a sum of Rs. 6,000/- was realised on account of NSL memberships.

Scientometrics and Informetrics

The National Science Library offers bibliometric/scientometric analysis of research papers of individual scientists and institutions; Impact Factor calculation of non-SCI journals and detailed analysis of research papers of academic and research organisations. The following services were offered:

- During 2021-22, citation analyses of ~877 papers of 16 individual scientists/Institutions and journals and during 2022-23, citation analyses of ~764 papers of 10 individual scientists/Institutions and journals were carried out.
- NSL provides analytical data to CSIR-HQ and CSIR labs pertaining to various Parliament and

audit queries on a case-to-case basis. During 2021-22, a sum of Rs. 19,11,707/- and during 2022-23 a sum of Rs. 20,91,468/- was realised on account of Bibliometric/Scientometric Services offered by NSL.

- Citation analyses were also carried out for two prestigious awards and the report submitted to the CSIR-HRDG:
 - › Young Scientist Award Nominees 2021 (692 publications of 53 Nominees) and 2022 (616 publications of 47 Nominees).
 - › Dr Shanti Swarup Bhatnagar Prize Nominees 2021 (10714 papers of 292 Nominees) and 2022 (11575 papers of 335 Nominees).

CSIR Research Output

NSL brought out detailed analysis reports of CSIR Research Papers published during 2020 and 2021. The reports give descriptive analysis of CSIR publications during the years and also benchmark with the S&T publication output of other leading research institutions in the country. The reports also analyse the research publications across CSIR laboratories with the detailed subject-wise distribution of research publications of the laboratories.

NUCSSI

National Union Catalogue of Scientific Serials in India (NUCSSI) is the first indigenous database that serves as an ideal tool to access Journal holding information. NUCSSI is a data repository of a large number of unique journal titles and library holdings belonging to major state and central universities, Scientific and Technical institutions, Research and Development units of industries, higher institutes like IISc, IITs and professional institutes spread all over the country. Presently it has 572 libraries covering about 2,67,881 journal holdings.

Document Procurement, Copying and Supply

To meet the requirements of researchers and scientists in the country, Document Copy Supply Service is being offered by CSIR-NIScPR from its collection of about five thousand periodicals. Besides, the Institute taps resources of a number of S&T libraries in the country through its database of the National Union Catalogue of Scientific Serials in India (NUCSSI).

ISSN National Centre, India

The Indian ISSN National Centre at NSL is one of a network of over 93 national centers worldwide. The primary functions of the ISSN National Centre are: i) Assigning ISSN to serials published from India; ii) Registering allotted ISSNs in the international database in Paris (ISSN Portal), and iii) Promoting the use of ISSN in India and acting as a link between the publishers and the ISSN Network.

- Up to 31 March 2022, 24,994 Indian periodicals were assigned ISSNs while up to 31 March 2023, 25,406 Indian periodicals were assigned ISSNs.
- During the period 2021-22, 422 ISSNs were registered by the ISSN National Centre, India and a sum of Rs. 62,680/- was realised from the sale of the ISSN Annual Directories and the issuance of ISSN certificates.
- During the period 2022-23, 412 ISSNs were registered by the ISSN National Centre, India and a sum of Rs. 63,720/- was realised from the sale of the ISSN Annual Directories and the issuance of ISSN certificates.

Raw Materials & Herbarium Authentication Service

The RHMD provides authentication service (of herbarium and crude drug samples based on



morphological key features) to students, research scholars, scientists and entrepreneurs.

As part of the authentication service, RHMD processed 1929 samples from 589 agencies including major manufacturers of Indian Medicine. Through its authentication service, the RHMD generated a revenue of Rs. 11,38,110/- during 2021-23 processing 1929 samples from 589 parties, approximately.

RHMD publishes a quarterly e-bulletin (<https://niscpr.res.in/periodicals/rhmdebuletin>). During the period, six issues of the e-bulletin were compiled.

Print, Production & Graphic Arts

CSIR-NIScPR publishes Research Journals, Popular Science Magazines, Books, Encyclopedias, Reports (Annual Reports, Policy documents, etc.), Newsletters, Bulletins, Posters, Banners, Visiting

CSIR-NIScPR undertakes complete production of jobs from initial manuscript stage to the final printed copies

cards, Pamphlets, Invitation cards, etc. These include in-house publications as well as publications from CSIR Headquarters, CSIR Laboratories, and other Government Departments and Ministries.

CSIR-NIScPR has in-house capability in planning and execution of varied S&T publications, involving costing, designing & formatting, editing/

Revenue generated during 2021-23

Department/Institution	Number of Jobs	Revenue Generated (in Rs)
CSIR-NIScPR	117	12,58,312/-
CSIR/CSIR Labs	19	16,62,870/-
Total	136	29,21,182/-

copy editing & proofreading, binding, printing, etc. CSIR-NIScPR undertakes complete production of jobs from initial manuscript stage to the final printed copies and timely delivery to the clients. CSIR-NIScPR possesses effective in-house skills and facilities to undertake:

- Editing/copy-editing of manuscript.
- Creative graphic designing through latest graphic soft ware like Photoshop, CorelDraw, InDesign, etc.
- Scanning, quality enhancement and colour correction of illustrations/photographs through state-of-the-art scanners.
- Page formatting through software like MS Office, Page Maker, Photoshop, In-Design, Hindi software Saransh, etc.
- 2-colour and 4-colour printing through panel of printers.



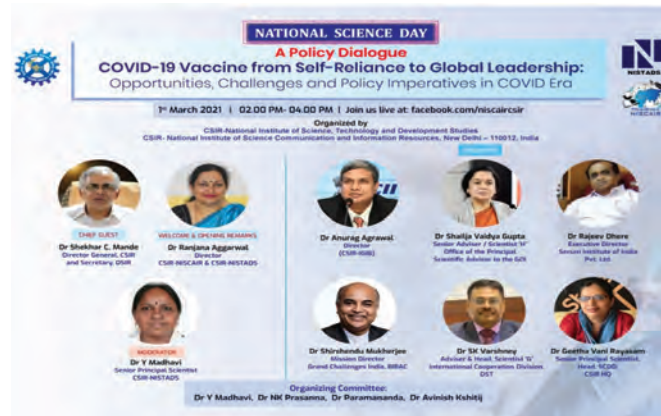
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Programmes & Events



Policy Dialogue on “Covid-19 Vaccine Self-Reliance”

CSIR NIScPR organised a policy Dialogue on “Covid-19 Vaccine Self-Reliance to Global Leadership: Opportunities, Challenges and Policy Imperatives in COVID Era” on 1 March 2021. The Chief Guest was Dr Shekhar C Mande, Director-General, CSIR.



International Day for Biological Diversity

To commemorate the International Day for Biological Diversity 2021, a webinar was organized on “We’re part of the solution” on 27 May 2021. The distinguished speakers in the webinar were: Prof SK Gakhar, Vice Chancellor, Meerpur and Prof. Saroj K Barik, Director CSIR-National Botanical Research Institute, Lucknow.



Release of Thematic Luni-Solar Calendar “Food as a Medicine”

On the occasion of Chaitra Shukla Pratipada (Nav Varsh) on 13 April 2021, CSIR-NIScPR and Vijnana Bharati (VIBHA) jointly organized a special session (hybrid mode) on the “Release of a Thematic Luni-Solar Calendar *Food as a Medicine*”. Prof. Somak Raychaudhury, Director,

IUCAA, Pune delivered the Keynote address, and Dr Shekhar C Mande, Director General, CSIR delivered the inaugural address at the event.



Hon’ble Union Minister of S&T Dr Jitendra Singh Releases Special Independence Day issue of Science Reporter



On 13 August 2021, Hon’ble Union Minister of S&T Dr Jitendra Singh released the August 2021 special issue of *Science Reporter* on India approaching 75 years of S&T progress.



The August 2021 Independence Day special issue of *Science Reporter* carried a special Message by



Shekhar Mande @shekhar_mande
This is a great piece of work by @CSIR_NIScPR @hjkhan -must read for all Science enthusiasts. It traces the remarkable journey of science in India in the last ~75 years.

@DrJitendraSingh @RenuSwarup
@kvijayraghavan @Ashutos61
@DAEIndia @icarindia @ICMRDELHI
@moesgoi @DRDO_India

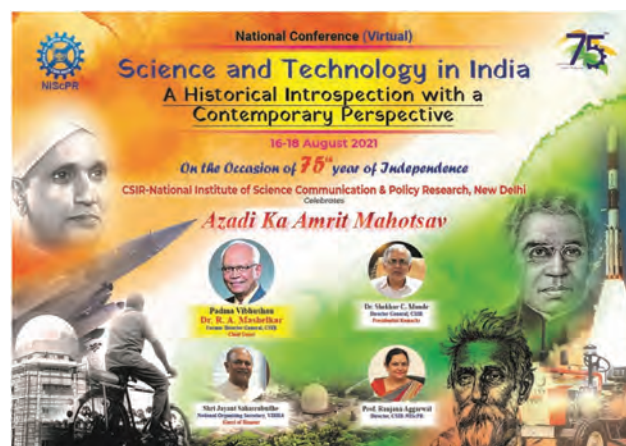


Dr Jitendra Singh and contributions by the Principal Scientific Adviser & nine science secretaries to the Govt of India including DST, ISRO, ICMR, CSIR, DAE, MoES,

DRDO, ICAR & DBT. The Hon'ble Minister released the magazine in the presence of Dr K Vijay Raghavan, Principal Scientific Adviser to the Government of India; Dr Shekhar C Mande, Secretary, Department of Scientific & Industrial Research and Director-General, CSIR; Dr Renu Swarup, Secretary, Department of Biotechnology; and Dr Ashutosh Sharma, Secretary, Department of Science & Technology.

National Conference on “Science and Technology in India: A Historical Introspection with a Contemporary Perspective”

CSIR-NIScPR organised a virtual National Conference on “Science and Technology: A Historical Introspection with a Contemporary Perspective” to commemorate “Azadi Ka Amrit Mahotsav” during 16-18 August 2021.



During the inaugural session on 16 August 2021, the logo of the newly formed institution CSIR-NIScPR was released by Padma Vibhushan Dr RA Mashelkar, Former DG, CSIR, in the presence of Dr Shekhar C Mande, DG, CSIR and Shri Jayant Sahasrabudhe, National Organising Secretary, VIBHA. Prof. Ranjana Aggarwal, Director CSIR-NIScPR, welcomed all the dignitaries and the audience.

The conference had sessions on “Building the Infrastructure of Science: Learning from the Past”; “Important Transitions in Indian STI: The Last 100 Years”; “Academia-Industry Linkages and Entrepreneurship: From Colonial Times to Present”; “The Growth of Science in India: A Quantitative Perspective”; “Indian Science in the 21st Century”; “Women in S&T: Challenges and Opportunities in Emerging Context”; “Experiments on Learning from the Past to the Present and New Education Policy 2020”; “Science and Society: Some Reflections for Building a New Model for Closer Engagement”.

The Chief Guest during the valedictory session was Dr Anil Sahasrabudhe, Chairman, All India Council for Technical Education.

National Conference on “Indian Independence Movement & the Role of Science”

CSIR-NIScPR, in association with Vigyan Prasar (DST) and Vijnana Bharati (VIBHA), organised a two-day National Conference at CSIR-NPL (CSIR-National Physical Laboratory) auditorium, New Delhi, on the theme “Indian Independence Movement & the Role of Science” on 29 and 30 November 2021. Dr Jitendra Singh, Union Minister of S&T was the chief guest at the National Conference.



Dignitaries who attended the conference included Dr Rajesh Kotecha, Secretary, Ministry of AYUSH; Dr Shekhar C Mande, Director-General, CSIR; Dr Anil Kothari, DG, MPCST; Dr Nakul Parashar, Director, Vigyan Prasar; Prof. BN Jagtap, Professor, Department of Physics, IIT Bombay; Prof. Jagadesh Kumar, Vice-Chancellor, Jawaharlal Nehru University; Shri Jayant Sahasrabudhe, National Organising Secretary, Vijnana Bharati.

“Vigyanika — Science Literature Festival” at Goa

“Vigyanika — Science Literature Festival”, was organised by CSIR-NIScPR during 10-13 December 2021 as



a part of the 7th India International Science Festival 2021. Vigyanika had panel discussions on science communication and role of science communication during India's freedom movement; an inspiring session with CSIR Young Scientist Award winners; and a Vigyan Kavi Sammelan.



Dignitaries who attended the festival included Dr Shekhar C Mande, Director General, CSIR; Dr Vijay P Bhatkar, National President, VIBHA; Prof. BK Mishra, Director, Indian Institute of Technology (IIT), Goa; Prof. Harilal Bhaskara Menon, Vice-Chancellor, Goa University; Ms Indira Murthy, Joint Secretary, MoES; and Dr Shivaprasad Khened, Former Director, National Science Centre, Mumbai.

First CSIR-NIScPR Foundation Day

Dr Jitendra Singh, the Hon'ble Minister of the Ministry of Earth Sciences & Minister of Science & Technology graced the occasion of the first foundation day celebration on 13 January 2022. In his address the Minister called upon CSIR-NIScPR to come out with innovative ways of science communication in a country like India which is characterized by diversity of

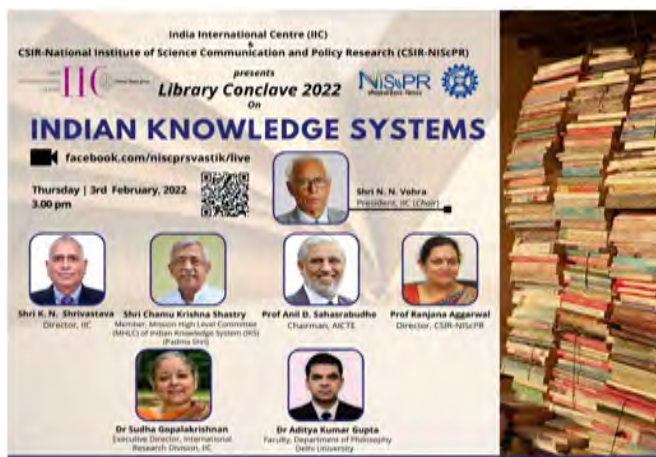


Dr Jitendra Singh, Hon'ble Minister addressing the gathering on the occasion of the first Foundation Day of CSIR-NIScPR on 13 January 2022

language, religion, caste and creed. He said, the main aim of CSIR-NIScPR is to bring policy research and science communication together. He further said that our policy direction is towards building a knowledge-based economy with the development of a robust STI ecosystem that can create a new synergy in the country.

Webinar on Indian Knowledge Systems

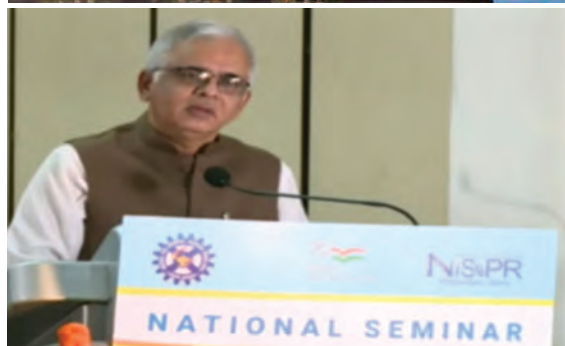
A webinar on “Indian Knowledge Systems” was organised in collaboration with India International Centre (IIC), New Delhi on 3 February 2022. Padma



Vibhushan Shri NN Bohra; Prof Anil D Sahasrabudhe, Former Chairman AICTE; Dr Sudha Gopalakrishnan, Executive Director, IIC and Shri Chamu Krishnashastry, Member, Mission High Level Committee of Indian Knowledge System were the distinguished speakers of the session.

National Seminar on “Nurturing Science Communication — Motivating Science Communicators”

CSIR-NIScPR organised a national seminar on “Nurturing Science Communication — Motivating Science Communicators” on 10 March 2022 at the CSIR-NPL auditorium. The seminar brought together 15 institutions engaged in science communication on a single platform to share their views and ideas for strengthening the science communication efforts in the country. A first of its kind event, the National Seminar provided an opportunity to science communication institutions and science communicators to meet and network to motivate and nurture science communication and science communicators.



Release of special S&T publications

The chief guest of the seminar was Prof. K Vijay Raghavan, Principal Scientific Adviser to Govt of India. Dignitaries who attended the conference included DG-CSIR, Dr Shekhar C Mande; Dr Venugopal Achanta, Director, CSIR-NPL; Prof. Avanish Kumar Srivastava, Director, CSIR-AMPRI; Dr Sharmila Mande, Distinguished Chief Scientist, TCS Research; Dr Rajeev Kumar Mehajan, Scientist-G, SERB; Dr Jyotsna Dhawan, CEO, DBT/Wellcome Trust India Alliance; Dr CM Nautiyal, Programme Consultant (Science Communication), Indian National Science Academy (INSA); Dr Anurag Kumar, Director, Science City, Kolkata; Dr Santosh Shukla, In-charge Officer (Science Popularization) National Academy of Sciences India (NASI).

“CSIR Women Scientists Meet”

On 10 March 2022, in view of the International Women’s Day (8 March), CSIR-NIScPR organised the “CSIR Women Scientists Meet” at CSIR-NPL, New Delhi. During the programme, a half-day workshop



on “Women leaders in CSIR: Experiences on work-life balance” was held where women holding headships in various CSIR scientific divisions shared their experiences on balancing work with life. In the workshop, around 50 women staff and students of CSIR-NIScPR and CSIR-NPL attended.

National Workshop on “IP and Youth: Innovating for a Better Future”

Organized on World Intellectual Property Day, 26 April 2022, the workshop was meant to create an understanding of the IP system that balances the interests of inventors and creators with those of society. About 150 students and teachers participated in the workshop. CSIR-Innovation Awardees were invited to interact and inspire school students with their success stories.



Dr Sameer Kumar Swarup, Deputy Controller of Patents & Designs, IPO, Delhi mentioned that the number of inventions during the COVID-19 pandemic period was higher than the normal times. Prof. Anil Kumar Gupta, Coordinator, SRISTI and Honey Bee Network and Executive Vice-Chair, National Innovation Foundation delivered his lecture on “IP and youth: strategies for engagement, empowerment and entrepreneurship”.

Hon’ble Ministers Release Special Issues of *Science Reporter* & *Vigyan Pragati*

On 9 May 2022, Dr Jitendra Singh, Hon’ble Union Minister for S&T; Mr Nitin Gadkari, Hon’ble Minister of Road Transport & Highways; and General Vijay Kumar Singh, Hon’ble Minister of State for Road Transport & Highways and Civil Aviation, released the May 2022 special issues of *Science Reporter* & *Vigyan Pragati*, focussing on India’s Science & Technology Missions. As part of the Azadi Ka Amrit Mahotsav special issue series, and also to commemorate India’s National Technology Day 2022 (11 May), the special issues focus on “India’s S&T Missions” addressing specific issues related to electric



vehicles, semiconductors, hydrogen energy, deep ocean exploration, biodiversity & health, waste management, quantum computing, and making India digital.

Workshop on Technology Readiness Level (TRL) and its Applications for Technology Assessment

CSIR-NIScPR, in association with IIT Madras, IIT Delhi, IIT Mumbai, IIT Roorkee, IIT Dhanbad, IIT Jammu, CSIR-Indian Institute of Petroleum (CSIR-IIP) Dehradun, UNDP Accelerator Labs and TIFAC, organised a one-day “Workshop on Technology Readiness Level (TRL) and its Applications for Technology Assessment” on 22 June 2022.

In her inaugural address, Prof. Ranjana Aggarwal explained the efforts made by CSIR-NIScPR in assessing the TRL of various technologies developed at various CSIR laboratories across the country. The institute has so far prepared the assessment of 467 technologies having TRL 6 and above. Chief Guest, Dr Shekhar C Mande, Former Director General, CSIR, stressed that whatever research our labs are doing, everything should be evaluated by its TRL.

Experts who attended the meeting included Dr Sujata Chaklanobis, Advisor/Scientist-G, Head (PACE, CRTDH & A2K+), DSIR; Prof. Pramod P Wangikar,



Department of Chemical Engineering, IIT Bombay; Dr Anjan Ray, Director, CSIR-IIP, Dehradun; Dr V Rajkumar, IIT Jammu; Dr BR Basak, Scientist, TIFAC; Dr Ramesh Andnarbun, IIT Roorkee; Dr Manjusha, IIT Delhi; Mr C Sripathi, ICCW, IIT Madras; and Dr Shashank Bansal from IIT Dhanbad.

CSIR-NIScPR Celebrates 81st Foundation Day of CSIR

CSIR-NIScPR celebrated the 81st Foundation Day of CSIR on 27 September 2022 at the National Agricultural Science Complex (NASC), New Delhi. Distinguished guests Prof. Virendra K Vijay, IREDA Chair Professor, CRDT, IIT Delhi & National Coordinator, Unnat Bharat Abhiyan (UBA) and Dr Ashok Jain, former Director, CSIR-NISTADS, graced the occasion. During the Foundation Day celebration, a book published by CSIR-NIScPR bringing together different formats of science communication literature was released.



Workshop-cum-Contact Session on Health Communication

CSIR-NIScPR in collaboration with the Indian Council of Medical Research (ICMR) organised a Workshop-cum-Contact Session on 'Health Communication' on 16 November 2022 at CSIR-NIScPR, New Delhi. The programme was attended by 30 scientists from various laboratories of ICMR. Lectures were delivered by experts on research communication, popular science communication, health communication post-Covid, and production and printing of scientific publications. The participants also visited the scientific facilities of CSIR-NIScPR.



CSIR-NIScPR Celebrates its 2nd Foundation Day

CSIR-NIScPR celebrated its 2nd foundation on 13 January 2023. In her welcome address, Prof. Ranjana Aggarwal, Director, CSIR-NIScPR, discussed the strength and rich legacy of CSIR-NIScPR.



Prof. Ranjana Aggarwal, Director, CSIR-NIScPR (extreme right) addressing the Foundation Day Function



Prof. BN Jagatap, Senior Professor, Department of Physics, IIT Bombay & Chairperson, Research Council, CSIR-NIScPR, delivered the Foundation Day lecture. Dignitaries also released various scientific publications including the special issue of the *Journal of Scientific & Industrial Research (JSIR)*; TRL Assessment Bulletin; 'Science & Technology Quiz: Celebrating Azadi Ka Amrit Mahotsav', and a flip-book titled Treasure of Indian Traditions.

International workshop on "Research Agenda, Social Needs and Open Science"

Organised at CSIR-NIScPR, New Delhi, 8 December 2022, the conference drew upon the global challenge that has called for scientific research to increasingly reshape agenda to focus more on societal problems. The key issues of Responsible research and innovation, Open science, Open innovation in the context of policy articulations were discussed. The conference highlighted the importance of informal, grassroots and



frugal innovations as they intervene to address unmet societal challenges.

The conference was attended by policy funding bodies, researchers from different academic institutions, research scholars and project fellows. The workshop had speakers from Leiden University,

The Netherlands; Purdue University-USA; Banaras Hindu University; Department of Biotechnology, Jawaharlal Nehru University.

“Vigyanika – Science Literature Festival” at Bhopal

CSIR-NIScPR organised yet another successful edition of “Vigyanika – Science Literature Festival” at the 8th India International Science Festival (IISF) in Bhopal during 22-23 January 2023. CSIR-NIScPR had organised the earlier editions of “Vigyanika” during the IISF events at Chennai, Lucknow, Kolkata, New Delhi and Goa. “Vigyanika” provided a forum to deliberate on mechanisms to take science to every corner of the country through effective science literature, disseminated through the multitudes of media channels available today.



Release of “Vigyanika” Theme Book during the Inaugural Session by Dr N Kalaiselvi, DG-CSIR (centre)



“Vigyanika” was inaugurated by Director General of CSIR and Secretary, DSIR, Dr N Kalaiselvi. The Keynote Lecture was delivered by Dr Shekhar C Mande, President, Vijnana Bharati & former Director General.

As in its earlier editions, this year too “Vigyanika” offered a rich fare of Keynote Lectures, Panel Discussions and Scientific Sessions interspersed with interactions with S&T authors, Vigyan Kavi Sammelan, Science Drama, Science Puppetry and exciting competitions.

International Conference on “Communication and Dissemination of Traditional Knowledge (CDTK-2023)”

The International Conference on *Communication and Dissemination of Traditional Knowledge (CDTK-2023)* was organized during 14-15 February 2023 by CSIR-NIScPR. The conference was sponsored by CSIR, SERB, CCRAS and QCI.

The programme was inaugurated by Dr N Kalaiselvi, DG, CSIR & Secretary, DSIR, Guest of Honour, Shri Vaidya Rajesh Kotecha, Secretary, Ministry of Ayush, Govt of India, and Prof Ranjana Aggarwal, Director, CSIR-NIScPR. The Keynote Speaker was Prof. SubhashKak, Oklahoma State University, USA through online mode who emphasized the use of Indian languages to communicate science and suggested that India should mainstream traditional medicine systems and the health systems running in the country.



In a special session, Union Minister of State (Independent Charge) Science & Technology, Dr Jitendra Singh graced the occasion and released the Conference Abstract Book & Souvenir, *Indian Journal of Traditional Knowledge Azadi Ka Amrit Mahotsav*

Issue, popular science book on SVASTIK disseminated stories *SVASTIK: Indian Traditional Knowledge Through the Lens of Science*, SVASTIK Brochure, and CSIR-NIScPR calendar 2023.

National Workshop on “Role of taxonomical identification and authentication of plants and crude drugs in traditional medicine and research”



A national workshop on Role of taxonomical identification and authentication of plants and crude drugs in traditional medicine and research sponsored by National Medicinal Plants Board (NMPB) was organized by CSIR-NIScPR on 15 February 2023 at NASC, New Delhi.

“Science Conclave and Agro-Tech Expo 2023”

Gurugram University in collaboration with CSIR-CSIR-NIScPR, New Delhi, and the Department of Science & Technology (DST), Haryana, organised “Science Conclave and Agro-Tech Expo 2023” during 15-16 March 2023 at Gurugram University. The conclave brought together the audience from different strata of society such as scientists, academicians, students, farmers, entrepreneurs and technology developers.



Dignitaries observing the Puppet Show and stalls in the Expo area

Dr N Kalaiselvi, DG, CSIR & Secretary, DSIR, GoI, inaugurated the event. Dignitaries present during the occasion included Dr Kailash Chandra Sharma, Vice Chairman, Haryana State Council of Higher Education; Prof. Dinesh Kumar, Vice Chancellor, Gurugram University; mentor of Vijnana Bharati Dr Shankar Rao Tatwawadi; Dr Omkar Rai, Executive Chairman,



Dr N Kalaiselvi, DG, CSIR addressing the Science Conclave at Gurugram University

Startup Odisha and Prof. Asim Ali Khan, Director General, CCRUM, Ministry of Ayush.

At the Agro-Tech Expo, eight labs of CSIR showcased their technologies and products. Technical sessions focused on scientist and farmer interaction, rural development & Atmanirbhar Bharat along with science mentalism show, science cartoon show, and special lecture on *Saur Mandal Ki Sair* were the centre of attraction for the audience.



During the release of *Science Reporter* and *Vigyan Pragati*

Special issues of CSIR-NIScPR's popular science magazines — *Science Reporter* and *Vigyan Pragati*— on innovations and the International Millet Year were released by DG-CSIR and VC, Gurugram University during the programme.



The background is a dense, overlapping collage of Hindi text in various shades of blue and white. The text is arranged in a way that creates a sense of depth and movement, with some words appearing larger and more prominent than others. The overall effect is a rich, textured backdrop for the title.

6

Rajbhasha

Rajbhasha – Implementing Official Language Policy

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सीएसआईआर-राष्ट्रीय विज्ञान संचार एवं नीति अनुसंधान संस्थान
(सीएसआईआर-निस्पर)
CSIR-National Institute of Science Communication and Policy Research (CSIR-NIScPR)


मुख्य पृष्ठ संस्थान के बारे में अनुसंधान एवं विकास परियोजनाएं मानव संसाधन विकास ज्ञान उत्पाद आउटरीच राष्ट्रीय मिशन संसाधन सुविधाएं



अनुसंधान पत्रिका


निदेशक संदेश


नया क्या है

स्वच्छता पखवाड़ा 2023 की कार्य योजना संबंधी कार्यालय ज्ञापन

अंशकालिक चिकित्सक (डॉक्टर) के लिए सीधासाक्षात्कार (वॉक इन इंटरव्यू): 1 पद

सीएसआईआर-निस्पर में परामर्शदाताओं की नियुक्ति के लिए विज्ञापन

परियोजना स्टाफ की नियुक्ति के लिए आवेदन फॉर्मेट

विभिन्न ओएलपी परियोजनाओं में परियोजना स्टाफ

सीएसआईआर-राष्ट्रीय विज्ञान संचार और नीति

With the establishment of CSIR-NIScPR on 14 January 2021, the process for implementation of the official language was initiated along with the commencement of other administrative works in the newly created institute.

An action plan was prepared for the Official Language Unit and accordingly the work of updating the CSIR-NIScPR logo, new forms, standard drafts,

proforma, etc. was completed along with nameplates, visiting cards, stamps, etc. of the newly created Divisions and the Heads/Implementing Officers. The new website of the newly created institute has also been made bilingual.

The Official Language Unit initiated afresh efforts to inform and encourage the implementation of the

official language. Hindi knowledge roster of all the personnel (scientific, technical and administrative) of the institute was prepared.

CSIR-National Institute of Science Communication and Policy Research (CSIR-NIScPR) celebrated its first 'Hindi Month' from September 1 to 30, 2021. During this period several Hindi competitions were organized for the employees of CSIR-NIScPR. Some of the other activities/initiatives undertaken by the Official Language Unit are as follows:

- The English report on the "Status of Women in Science, Technology, Engineering and Mathematics (STEM)" (105 pages) has been translated into Hindi.



- On 11 May 2022, on the occasion of 'National Technology Day', a Hindi lecture was organized in which Prof. Avinash Chandra Pandey, Director, Inter University Accelerator Centre, New Delhi gave a lecture outlining the various applications of accelerators.
- On the occasion of the World Environment Day, a lecture was organized on 6 June 2022 in which Dr Mrityunjay Mohapatra, Director General, Indian Meteorological Department delivered his lecture on understanding climate & weather and the implications of climate change.
- On the occasion of International Mother Language Day, as per the guidelines issued by the Ministry of Earth Sciences, CSIR-NIScPR, acting as the

nodal agency, organized webinars in coordination with six laboratories of CSIR and a consolidated report of these webinars was sent to the Ministry of Earth Sciences through CSIR headquarter. 32 slides related to International Mother Language Day were also prepared in Hindi by the Official Language Unit.



- A webinar was organized in the institute on 20 June 2022 on 'Challenges and Solutions of Science Communication in the Era of Social Media' in Hindi.
- Hindi Month was celebrated by CSIR-NIScPR from 1 to 30 September 2022 to mark the Hindi Day (14 September 2022). On this occasion Mr Mahendra Kumar Gupta, Joint



Secretary (Admn.), CSIR HQ was invited as the chief guest. The Joint Secretary (Admn.) also released the CSIR-NIScPR's half-yearly Rajbhasha Patrika *NavSanchetna* (April to September 2022).

- Four issues of the Institute's official language magazine *NavSanchetna* (Rajbhasha half-yearly magazine) have been published during the period.
- Time-bound publication of 24 issues of *CSIR Samachar*, monthly Hindi newsletter, was also accomplished.



- Bilingualization of banners/posters/programme details of events organized by CSIR-NIScPR during this period.
- Bilingualization and updation of the Institute's telephone/email directory.
- Cooperation was provided in translation into Hindi of articles published in the special issues popular science magazines brought out on the occasion of the Amrit Mahotsav.
- Translation of botanical names of trees and plants planted in CSIR-NIScPR into Hindi.
- Reports of meetings/programmes organized with farmers under Unnat Bharat Abhiyan program were translated into Hindi and posters were prepared in Hindi language.
- Prepared 20 slides in Hindi on "Government Guidelines on Cyber Security" and made available to IT Division of CSIR-NIScPR.
- Advertisements and official announcements translated into Hindi and made available to Administration Section for uploading on website.



7

Honours & Recognitions



Honours & Recognitions

CSIR-NIScPR SCIENCE MAGAZINE VIGYAN PRAGATI RECEIVES 'RAJBHASHA KIRTI AWARD'

Vigyan Pragati received the National Rajbhasha Kirti Award (First position). The award was given at the Second All India Rajbhasha Sammelan held during 14-15 September 2022 in the Pandit Deen Dayal Upadhyay Indoor Stadium, Surat, organized

by the Department of Official Language, Ministry of Home Affairs, Govt. of India. Prof. Ranjana Aggarwal, Director, CSIR-NIScPR received the award in the presence of Union Minister for Home Affairs Shri Amit Shah. Hon'ble Chief Minister of Gujarat, Shri Bhupendrabhai Patel and Hon'ble Ministers of State, Ministry of Home Affairs Shri Ajay Kumar Mishra and Shri Nisith Pramanik also graced the programme.



Prof. Ranjana Aggarwal, Director, CSIR-NIScPR receiving the prestigious Kirti Award

SVASTIK – FEATURED AS CSIR SUCCESS STORY

A webinar on “Communicating Scientifically Validated Societal Traditional Knowledge (SVASTIK) to the Society” was organized by CSIR on 22 August 2022 as part of the CSIR #80Years_80SuccessStories campaign wherein SVASTIK was included as one of the CSIR’s 80 success stories.



CSIR-NIScPR PERSONNEL HONOURS & AWARDS

Charu Lata

- Elected Fellow of the International Society of Environmental Botanists (ISEB), India 2021.
- Listed in the top 2% of researchers worldwide by Stanford University, USA for the year 2022.
- Elected Associate (2019-2022) of the Indian Academy of Sciences, Bengaluru, India.
- Biography featured in the compendium ‘We the Scientists’ released by INYAS on the eve of International Women’s Day 2022.

Kasturi Mandal

- Conferred the ARP Honors Fellow Award by KISTEP, South Korea for the research summary jointly submitted on national STI capacity and competence analysis entitled “Regional Innovation System Pathways for Start-ups in India”.

Manish Mohan Gore

- Rajbhasha Gaurav Award (2021) conferred on 14 September 2022 by Department of Official Language, Ministry of Home Affairs, Govt of India at Surat.

Sandhiya Lakshmanan

- Appointed Member of Board of Studies, Department of Physics, Bharathiar University.

MEMBERSHIP IN COMMITTEES

Charu Lata

- Jury Member of the national competition SARANSH organised by INYAS on 19 December 2022.
- Advisory Committee Member at the “2nd International Conference on Natural Products and Human Health-2022”, held from 4-6 November 2022 at Deshbandhu College, University of Delhi.
- Advisory Committee Member and Invited Session Chair (Poster presentation) at Two Days International (Online) Conference on “Insect and Plant Biology: 2021” organized by Mahatma Hansraj Faculty Development Centre, Hansraj College, University of Delhi during 7-8 October 2021.

Manish Mohan Gore

- Member of the Selection Committee to select candidate for Programme Coordinator in the AWSAR project of DST, Govt of India, 24 January 2022.
- Member of the AWSAR Expert Committee of the Department of Science and Technology (DST), Govt. of India to guide, support & select the best popular science stories for the AWSAR Awards.

Monika Jaggi

- Member cum Monitor in the São Paulo School of Advanced Science on Science Diplomacy and Innovation Diplomacy, organised by the Institute of International Relations (IRI-USP) and the Institute of Advanced Studies (IEA-USP), University of São Paulo (USP), Brazil. Brazil (4-8 August 2021; Online).
- Subject Expert: Reviewed a PhD thesis and conducted Viva-Voce registered under the Kalinga Institute of Industrial Technology (KIIT), Deemed to be University, Bhubaneswar. (September 2022).
- Member, Judgement Committee, Guru Gobind Singh Indraprastha University, New Delhi (2023).

Sandhiya Lakshmanan

- Member of Board of Studies, Department of Physics, Bharathiar University.

Shiv Narayan Nishad

- Expert member in TRL Assessment, IIT Dhanbad.
- External Expert in Board of Studies, Department of Mathematics, MS Ramaiah University, Bangalore.

Sujit Bhattacharya

- Co-Chairman of the peer reviews committee for DST-UNIDO 'India innovation and System Survey Report'.
- Member of Review Committee for DST-STI post-doctoral fellowship, Review Policy Research Centers.
- Member of Screening and Review Committee, PCPM (NSTMIS), Division, DST.
- Member of the Advisory Committee for Selection of Organization for grant to establish Biotech finishing School, Centre for Excellence and Bio-Incubation centre/upgradation of existing Bio-incubation Centre, Department of Science and Technology, Govt of Odisha, Bhubaneswar.
- Member of the expert committee for establishment of new DST-CPRs (Centers for Policy Research), Policy Coordination and Programme Management (PCPM) Division, DST.
- Paper Review committee of the Globelics 2021.
- Programme committee member, ASIP 11th Conference on "Pandemic Innovation and Asia", 7-9 October, 2021, Jiju University, South Korea.
- Programme and Award Committee member 12th Conference, of the Asian Society for Innovation and Policy, 24-26 November, Indian Institute of Science, Bangalore, 2022.
- Review committee, International Society for Scientometrics and Infometrics Conference, July 2-5, 2023.
- Technical Advisory Committee (TAC) member of Documentation & Information Science Division, Indian Statistical Institute, Kolkata.

Vipan Kumar

- Member of Project Guidance cum Review Committee (PGRC) under A2K+ programme of DSIR

DISSERTATIONS GUIDED

Charu Lata

- PhD: 02 (Thesis submitted and Degree awarded in Biological Sciences by AcSIR).
- MSc: 01 (Dissertation submitted and Degree awarded by AcSIR).

- Provided training to 01 MSc, 01 BSc and 01 College teacher from IASc Summer Research Fellowship Programme in 2022-23.
- Provided virtual training to 04 BSc students (02 from IASc Summer Research Fellowship and 02 from INYAS-DST KARYA programmes) in 2021-22.
- Evaluated 01 Doctoral thesis from the Department of Biotechnology, Assam Agricultural University, Jorhat.

Parmananda Barman

- Role of Folk Media in Science Communication: A preliminary study, Md Khalid Anwar, MSc, CSIR-NIScPR, 2021.
- Public Awareness and Perception of Cancer: A Survey Based Preliminary Study, Ms Sakshi Verma, MSc, CSIR-NIScPR, 2022.

Sujit Bhattacharya

- PhD Guide of AcSIR Student Anurag Kanujia. PhD awarded to Dr Anurag Kanujia on "Innovation Regulation and Governance: Study".
- PhD Guide of AcSIR Student Ms Shilpa. Thesis Awarded to Dr Shilpa on "Indo-French S&T Collaboration and its impact on innovation System: Case Study of Bilateral S&T Organisations".
- Thesis Examiner of "Measuring and Characterizing Participation of Women in Research Publishing" (Computer Science Department, BHU).
- Thesis Examiner of "Biomedical Innovation Systems in India: Issues and Challenges in Translational Research in Select Diseases" (Centre for Science Policy, Jawaharlal Nehru University).
- Thesis Examiner An Analysis of Metrics for Scholarly Articles derived from Bibliometric and Social Media Data (Department of Computer Science, Faculty of Maths and Computer Science South Asian University).

Tarakanta Jana

- Thesis Examiner 'Studies on some medicinal plants of the coastal belt of Purba Medinipur with special reference to different salinity conditions' (Vidyasagar University, Paschim Midnapore, Midnapore 721102, West Bengal).

Y Madhavi

- 3 PhD students under AcSIR are being mentored.
- Mentored a summer trainee in Vaccine STS and innovation.



