

UN 2022-VCOF-13611

Dear Research  
for N.A. pl.  
Nikhil  
25/11/22



**THE  
NATIONAL ACADEMY OF SCIENCES, INDIA  
(NASI)**

*(The Oldest Science Academy of India)*



92<sup>nd</sup> ANNUAL SESSION OF NASI AND SYMPOSIUM  
ON  
"Science & Technology – a vehicle for social transformation"  
(dedicated to 'Azadi ka Amrut Mahotsav')

ON  
DECEMBER 4-6, 2022

AT  
NASI-HQ AT PRAYAGRAJ, U.P., INDIA

*[Handwritten signature]*

Ms. Aniket Plz  
do the needful done...  
Aniket  
28/11/22

PA.  
Circulate a copy to  
all science Dept. &  
upload on University  
portal  
28/11

**NASI: A Brief Profile** - The idea of establishing a forum for Indian scientists, which would help them in publishing their researches and bringing them on one platform to discuss and find scientific solutions to the problems of the country, was mooted by Prof. Meghnad Saha, a great scientist, visionary and the then Professor of Physics at the University of Allahabad. His views were published in an article titled 'A Plea for an Academy of Sciences' in December 1929 issue of the University of Allahabad magazine; in the very next year, The National Academy of Sciences, India was established as the first Science Academy of this country. Speaking in the inaugural session, Prof. Saha said:

*"An Academy of Science can do a great deal by educating public opinion, undertaking particular problems, and bringing out scientific workers in various fields for discussion and cooperative research. But the main function of the Academy should be towards cultural improvement by contributions to human knowledge."*

Therefore, NASI got the mandate of Science and Society by its Founder. Presently, the programmes are being steered by Prof. Ajoy K. Ghatak, President of the Academy, and formerly Professor at Indian Institute of Technology Delhi. The Past Presidents, namely Prof. M. S. Swaminathan, Prof. P. N. Tandon, Prof (Mrs.) Manju Sharma, Prof Ashok Misra, Prof Asis Datta, Prof. J. P. Mittal, Dr V. P. Kamboj, Dr. K. Kasturirangan, Prof. Akhilesh K. Tyagi, Prof. Anil Kakodkar and Prof. G. Padmanaban have been taking keen interest in the development of Science in general and the Academy, in particular. The Academy was also nurtured especially by Late Prof M. G. K. Menon, Prof A. K. Sharma, Prof S. K. Joshi, Prof. U. S. Srivastava and Dr V. P. Sharma - Past Presidents, NASI (it is not possible to mention the names of all the past presidents, here).

NASI envisions the cultivation and promotion of Science & Technology in all its branches. Such as: (1) publishing two quarterly journals (Proceedings of the National Academy of Sciences, India- Section A (Physical Sciences) and Section B (Biological Sciences) and one bi-monthly journal (National Academy Science Letters); (2) holding an Annual Session in a scientific and academic institution every year; (3) organizing symposia, seminars and workshops on subjects of current national and scientific interest; (4) planning and executing science communication programmes like Science Extension Lectures, State level Science Contests (Quiz, Debate, Oration, Exhibition, Essay, etc), Talent Search, Teachers' Workshops, Summer/Winter Schools, Vocational Training Programmes, National level Scientific Creative Writing Contest, Celebration of National Technology Day, National Science Day, National Mathematics Day and World Environment Day, etc.; (5) recognizing the significant contributions of scientists at every level by honoring them with Fellowship/Membership/Awards such as Lecture Awards, NASI-Reliance Awards, NASI-SCOPUS Awards, NASI-Young Scientist Awards etc.; (6) instituting prestigious Research Fellowships/Chairs/Senior-Scientist Fellowships etc. to honor distinguished scientists; (7) organizing sensitization programmes for women researchers/scientists all across the country; (8) conducting the 'Safe water' project; (9) organizing/conducting other projects and schemes, such as Nutrition Programme for eradicating malnutrition, Science Awareness Programme for adopting COVID Appropriate Behaviour, Entrepreneurship Development Programmes and a joint programme of NASI & ICAR on Farm Mechanization/Implementation, etc.; (10) establishing River Galleries; and (11) organizing Tribal Welfare Programmes.

Besides the fore-mentioned activities, the Academy also organizes several other activities jointly with other two National Science Academies- INSA and IASc- all through the year. Since the year 2000, the annual sessions have been held at places such as Allahabad, Pune, Shillong, Ahmedabad, Jaipur, Pondicherry, Mumbai, Mysore, Chandigarh, Kolkata, Jaipur,

Trivandrum, Varanasi, Goa, Jodhpur, Bhubaneswar, Dehradun, Pune, Chitrakoot and Hyderabad. These annual sessions provide a platform for the scientists across the country to interact, present their papers and exchange expertise with each other. The Academy is also maintaining a well-organized library; and it has 22 Chapters all across the country to organize scientific activities in and around their respective regions.

### **Symposium on 'Science & Technology – a vehicle for social transformation'**

*Science and Technology are incomplete until its Benefits and Access reach everyone. Science and Technology is now becoming a major bridge filling the gap of lack and influence in India.*

**-Narendra Damodardas Modi, Hon'ble Prime Minister of India**

Further, in the words & vision of the PM himself- There are many challenges in our country like Water Scarcity, Pollution, Soil Quality, Food Security, which modern science has a solution to. Science plays a major role in rapidly exploring the treasure of water, energy and food in our seas. Just as we succeeded in the space sector, similarly we have success in the field of Deep Sea. We have shown our strength & tremendous potential in health sector during the pandemic. Whatever new we are achieving in science will benefit commerce, industry and business as well. For example, with the reforms made in the Space Sector, we are encouraging our youth, and the private sector of the country, to touch not only the sky but also the heights of the infinite space. The new Production Linked Incentive Scheme has also been focused on sectors related to science and technology. Such steps will strengthen the scientific community and the ecosystem associated with science. Moreover, technology will also improve. This will generate more resources for innovation. This will create a new culture of partnership between science and industry. Whether it is Hydrogen Economy, Blue Economy, or the use of Artificial Intelligence, new collaborations will lead to new avenues. However, for any country to develop, it needs science to power it. Because, what is called science today becomes the technology of tomorrow and an engineering solution later.

Two thousand years ago, the *sutrakavya* or the mantra given by the great Tamil saint and social reformer Thiruvalluvar ji is still extremely accurate and relevant today. He had said- 'In sandy soil, when deep you delve, you reach the springs below; The more you learn, the freer streams of wisdom flow.'

Therefore, to follow the path, and realizing this as the need of hour, the Academy (NASI) working for the betterment of the 'Science & Society' (as per its mandate), thought to organize a symposium on 'Science & Technology - a vehicle for social transformation', so that the young Indian researchers/scientists be enthused to take-up the challenges of different disciplines of science & technology, for fruitful exciting results leading to the growth of science in general and our nation, in particular, by ensuring transformative changes in our social realms.

The Convener of the symposium, Prof. Manju Sharma, Past President, NASI, and former Secretary to the Govt, along with the Co-Convener Prof. Anurag Sharma, IIT Delhi & Vice-President of the Academy, has developed a compact programme incorporating almost all the essential points for discussion; and eminent scientists/technocrats/entrepreneurs having experience of working in different areas of Science & Technology, have given their kind consent to make it a fruitful brain storming. Prof. Ajoy Ghatak, President, NASI has also taken keen interest to ensure the involvement of the expertise from all relevant areas directly concerned with the aim & objective of this symposium.

# THE NATIONAL ACADEMY OF SCIENCES, INDIA (NASI)

**Prof. Madhoolika Agrawal**

PhD, FNASc, FNAAS, FNA

**Prof. Jayesh R Bellare**

PhD, FNASc, FNAE, FEMSI, FMAS

General Secretaries

5, Lajpatrai Road,  
Prayagraj - 211 002, India

03.08.2022

Dear Sir/Madam,

We are happy to inform you that the 92<sup>nd</sup> Annual Session of the National Academy of Sciences, India and Symposium on 'Science & Technology - a vehicle for social transformation' will be held during December 4-6, 2022, to be hosted by the NASI-HQ at Prayagraj, U.P., India

On behalf of The National Academy of Sciences, India, we have great pleasure in inviting you to attend these events and participate in the deliberations.

## Scientific Sessions

The Scientific Sessions will be held in two sections: **Section of Physical Sciences**- Sectional President Prof. Vimal Kumar Jain, Director, UM-DAE Centre for Excellence in Basic Sciences, Nalanda Building, University of Mumbai, Kalina Campus, Santa Cruz (E), Mumbai; and **Section of Biological Sciences**- Sectional President Prof. Latha Rangan, Deptt. of Biosciences & Bioengineering, IIT Guwahati, Assam, India.

The scientific papers are presented by selected researchers/scientists in scientific sessions, for which prior submission of the Abstract(s)/Paper(s) is necessary (for details please see the sub-heading "Abstracts", given overleaf).

The National Academy of Sciences, India- Swarna Jayanti Puruskars, each comprising Rs. 5000/- and a citation, will be awarded to young scientists (below the age of 35 years as on 1.1.2023) presenting the best research paper(s) in the Sections of Physical and Biological Sciences. Another prestigious award, 'NASI-Springer Young Scientist Award' has also been started from the year 2015, for the young bright researchers and is given as per the norms of NASI and Springer.

## Symposium

A symposium on 'Science & Technology - a vehicle for social transformation' will be held during the Annual Session. Presentation of papers in the Symposium would only be through invitation. The Convener of the Symposium is Prof. (Mrs.) Manju Sharma, NASI Distinguished Woman Scientist Chair & former Secretary to the Govt. of India, DBT, New Delhi; and the Co-Convener is Prof. Anurag Sharma, Vice-President, NASI; Indian Institute of Technology Delhi, New Delhi - 110016.

All interested persons are invited to attend the Symposium and Scientific Sessions of Physical and Biological Sciences by registering/applying on the email (nasi.92annualsession@gmail.com). Fellows and Members of NASI are exempted from the registration formalities.

## Abstracts in the Scientific Sessions

The abstract(s) of paper(s) (not exceeding 250 words), along with one copy of the full-length paper for presentation in the scientific session should reach the Office of the Academy at 5, Lajpatrai Road, Prayagraj - 211 002, India, latest by October 31, 2022. An author can submit up to a maximum of three papers, including papers having more than one author.

The advance copy of the abstract may also be sent by email to [nasi.92annualsession@gmail.com](mailto:nasi.92annualsession@gmail.com)

Bonafide research scholars are required to get their abstract(s)/research paper(s) forwarded by the Supervisor and/or the Head of the Department/Institution. All abstracts/papers submitted for presentation will be screened. Authors whose papers are accepted will be informed about the mode of presentation (Oral or Poster) at the earliest. The decision of the Academy for the acceptance/rejection and also for the mode of presentation would be final.

#### Publication of full length Papers

It is encouraged that a paper presented at the Annual Session be separately submitted as a full paper for publication in the Journals of the Academy, viz. Proceedings of the National Academy of Sciences, India- Part A (Physical Sciences) or Part B (Biological Sciences)/National Academy Science Letters; and in that case it should be submitted on line as per the prescribed procedure of submission (For details please see the website of the Academy). These manuscripts will undergo the usual processing and refereeing as per rules of the Academy. Papers sent for the Session will not be automatically considered for publication in the journals of NASI.

#### Fellows Meeting and Annual General Body Meeting

The aforesaid meetings will also be held during the 92<sup>nd</sup> Annual Session; the notices for the same will be sent separately to the Fellows/Members.

We once again extend a very cordial invitation to you to participate in the 92<sup>nd</sup> Annual Session of the National Academy of Sciences, India and Symposium on 'Science & Technology - a vehicle for social transformation' to be held during December 4-6, 2022, to be hosted by the NASI-HQ at Prayagraj, U.P., India

Yours truly

Sd/ Madhoolika Agrawal  
Sd/ Jayesh R Bellare  
General Secretaries, NASI, Prayagraj

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Email: [nasi.92annualsession@gmail.com](mailto:nasi.92annualsession@gmail.com)  
Website: <http://www.nasi.nic.in>; [www.nasi.org.in](http://www.nasi.org.in)

A panoramic view of the 'Ganga-gallery' at NASI, Prayagraj



# Guidelines for the Abstract

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1. Abstracts should represent the original work.
2. Informative abstracts and critical abstracts are accepted.
3. The Abstract should be written in English.
4. The abstract should be submitted in the format of MS Word document.
5. It should be one paragraph with a word limit of 250.
6. Keywords should be provided as a must (no more than 05 words).
7. Keywords should be written in lowercase letters (Not applicable to names/scientific names) and should be separated with commas.
8. Please do not include subheadings, bullets, lists and header/footer in the abstract.
9. Abstract titles should be short, but descriptive. Informative titles, indicating key points are encouraged. Abbreviations should not be used in the title.
10. Acronyms should be written in full the first time, mentioned in the text, followed by the abbreviation in parentheses.
11. Always follow SI Units.
12. Scientific names must be in Italic.
13. Use a negative exponent (g.  $\text{kgm}^{-3}$ ) and do not indicate units as divisions (e.g.  $\text{kg/m}^3$ ).
14. Chemical formulae should be written in a standard form such as " $\text{CaCO}_3$ ", not as " $\text{CaCO3}$ ". Use a zero before decimal points such as "0.45," not ".45."
15. There shall be no citations or references in the abstract specifically. If there is a need to cite references, please provide the sources in brackets.

## A. FONT

1. **Title:** Times New Roman, 12 points, Upper case, Centered text in bold
2. **Body:** Times New Roman, 11 points; Line spacing: 1, one column of text

## B. AFFILIATIONS

1. Affiliations should be indicated with superscript Arabic numbers appearing at the end of surname/family name.
2. A superscript asterisk should be used for the corresponding author
3. Names of affiliations should be given including the country.
4. If there is more than one name and address, they should be related by superscript numbers.

Eg:-

Surname INITIALS 1, Surname INITIALS 1\* and Surname INITIALS 2

1 Department, University, Country

2 Department, Institute, Country

\*author@gmail.com (\* Email address of the corresponding author)

5. Abstract(s) received after the given deadline due to any reason, will not be accepted unless the deadline is extended.

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NASI encourages the work being submitted as abstract here, to be separately submitted to its journals. The links for NASI-Journals are as follows:

- I. <https://www.editorialmanager.com/nasa/>: PNASI, Sec.A  
(Physical Sciences)
- II. <https://www.editorialmanager.com/nasb/>: PNASI, Sec.B  
(Biological Sciences)
- III. <https://www.editorialmanager.com/scle/>: National Academy  
Science letters