

# Vijnana Vahini

January 2023 to March 31, 2023



**Karnataka Science and Technology Academy**  
Department of Science and Technology, Government of Karnataka



**Prof. S Ayyappan**  
Chairman

## From Chairman's Desk

We are happy to share with the KSTA Family that the National Award for 'Outstanding Efforts in Science Communication in General (Category A), 2022', of the National Council of Science and Technology Communication (NCSTC), Department of Science and Technology, Govt. of India, has been conferred on the Karnataka Science and Technology Academy, Bengaluru, on the occasion of the National Science Day, 2023, at New Delhi, on 28 February, 2023.

It is a time to rejoice as well as express our gratitude to the Government of Karnataka; Hon'ble Minister for Higher Education, Electronics, IT BT, Science & Technology, Entrepreneurship, Skill Development & Livelihood, Dr. Ashwath Narayan, C.N.; Esteemed Development

Commissioner & Additional Chief Secretary, Commerce & Industries, Electronics, IT BT Science & Technology, Dr. E.V. Raman Reddy; Distinguished Members of the General Body and Executive Committee of KSTA; Former Chairmen & Members; Esteemed Fellowship, Associateship, Institutional Members and Institutions having MoUs with KSTA, for the guidance and support to the Academy at various stages.

A greater responsibility has been bestowed on us for enhanced science communication across Karnataka. We look forward to continued association and guidance of all stakeholders in our efforts of 'Science for Society'.

**- S. Ayyappan**

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## Science and Technology Communication National Award for KSTA



an autonomous organization under the Department of Science and Technology, Government of India. The award has been bestowed upon KSTA in recognition of its significant contribution to science education and communication. The award includes a cash prize of Rs.5.00 lakh, a memento, and a citation.

Karnataka Science and Technology Academy (KSTA) has been conferred with the prestigious national award titled "Outstanding Efforts in Science and Technology Communication" by the National Council for Science and Technology Communication (NCSTC),

On the occasion of the National Science Day held on 28th February 2023 at Vigyan Bhavan, New Delhi, Dr. Jitendra Singh, Hon'ble Union Minister of Science and Technology presented the Award to Dr. A. M. Ramesh, Chief Executive Officer of KSTA.

## Influence of Science and Technology in the 21st century

Dr. Raju

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In the current global scenario, various powerful technologies have been developed to assist humans in every field. Faster communication is made possible through smart phones and the internet. New technology impacts the daily life of man in every field, from cars, cell phones, computers and networks and power. It is a prevailing fact that new information technology not only benefits professionals but it also benefits the common user. Work can be done easily by intelligent machines and equipment. Now-a-days, computer is the most useful and popular invention to every human being. Through science and technology, it is easier for people to communicate with others across the world.

Latest science and technology may lead to alternative fuel vehicles, space travel, virtual reality conferences, a worldwide network of personal wireless electronics, data-transmission, reversal of global warming and too many other innovations to mention. New research technology is in continuous process and researchers have explored new topics for investigations such as environment and renewable energy, space science, electronics, stem-cell investigations and many others. All these developments in human life are wholly credited to the amazing invention of computers.

It has been documented that the initiation of science and technology has brought so many changes in the world. Science incorporates the systematic study of the structure and behaviour of the physical and natural world through observation and experiment. Technology is the application of scientific knowledge for practical use. It is the use of the resources made available by nature to produce and make changes. It includes machines, procedures and processes. It is said that without science and technology, a nation cannot progress. Military and farmers are main pillars of country and there is a need for continual scientific development in these areas. It is equally important for a country to be self-sufficient and strong in the field of science and technology for development and make a good position at global level.

Recently, Prime Minister of India, Shri Narendra Modi, indicated that India is the only country in the world which has amalgamation of democracy, demography and demand. Science and technology not only help in Making in India/Making for India but there is a need to "Made in India". Since decades,

India purchased technology from abroad to make development in the country. There is a desperate need to give emphasis on technique and technology so that technology is generated indigenously through the help to transform indigenous India as well as transforming global technology for Made in India.

India has taken major steps in the field of science and technology and it has left its mark on every aspect of human life. From the development of various vaccines to genetically modified crops, Tissue Culture, Ayurveda, Homeopathy, Naturopathy, India has showed its immense power to the world that its science and technology is higher as compared to other countries. Many studies have shown that as globalisation becomes a progressively significant factor in economic success of nations, technological competence is also a vital tool for surviving and prospering not only in society, but in its constituent parts, such as employment, education, agriculture, and industry.

To summarise, science and technology are the major threads of global society to live in a comfortable and enhanced way. Technological developments have shown a substantial growth in each and every field whether it be the communication systems, astronomy, semiconductor devices, automobiles, and electronic devices, bio-electronic devices, building and architectural design techniques or the computers. India has made unparalleled development in the arena of scientific research and technology during the post-independence period and there are countless possibilities. It is well established in scientific studies that progress of science and technology in India has been quite significant. Innovative methods, products and better quality goods have been developed in the country. India has made fast progress in the frontline areas of science and technology like space research and atomic energy. There is a need to plan and organize in a way so as to be able to harness intellectuals in the right direction and provide it with the right opportunities. Science and technology is used as an effective tool for progress and change. It is being brought into the mainstream of economic planning in the sectors of agriculture, industry and services. The country's resources are used to derive the maximum production for the benefit of humanity and improvement in the quality of life.

## Salient Outcome of VGST Funded Research Projects

### Experimental and Analytical Study of Heat Retention from Cooking Utensils by External Coating

**Prof. Kishan Nayaka**

University of DBT College of Engineering, Hadadi Road, Davanagere

The surface coating is a cost-effective way of fabrication of different materials that need the preferred surface properties such as corrosion, wear, erosion, and thermal resistance. The coating with micron/submicron particles also provides enhanced functional properties. In the present research work, aluminium and stainless steel cook-wares are selected as the substrate materials and nano Al<sub>2</sub>O<sub>3</sub> particles as coating material. The coating process was carried out by plasma spray coating technique. Two different types of cook-wares as open and closed for both Aluminium and Stainless steel are chosen for the experimentation. Five different food samples with varying quantities were selected as per the experimentation design.

The morphology and compositional study of the coating was carried out along with coating thickness and porosity. The surface temperature, time taken, and fuel reduction were calculated for different mass flow-rate of the fuel. Through scanning electron microscopy, it was observed that coating was well adhered to the substrate with no cracks on both the substrate materials. Higher porosity was observed

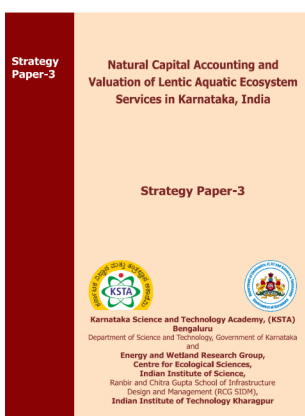
on stainless steel substrate than aluminium substrate. The hardness of the coating was decreased as the thickness of the coating is increased from 125 µm to 200 µm,

It was observed that alumina coating on Al and SS cook-wares have more influence on cooking different food samples with varied quantity of food and mass flow rate of fuel (0.2 LPM to 0.6 LPM). Compared to all coated cook-wares, Al closed cooker has the maximum average surface temperature for all the considered flow rates and samples. More time saving is observed in coated SS closed cooker than the rest three coated cook-wares. In compared to open cook-wares of Al and SS, closed cookers of Al and SS showed a better performance it terms of surface temperature increase, reduction in the cooking time and fuel saving. Analysis on coated cook-wares was carried out through ANSYS. Comparative study between numerical and analytical analysis was carried out. Thus, fuel consumption can be reduced in turn saving the fuel using the coated cook-wares in place of uncoated cook-wares.

## KSTA Publications

### Strategy Paper 3: Natural Capital Accounting and Valuation of Lentic Aquatic Ecosystem Services in Karnataka, India

The valuation of ecosystem services (VES) provides an unbiased framework to value unaccounted ecosystem benefits and helps develop meaningful policy interventions. KSTA has brought out a strategy paper focusing on the valuation of provisioning, regulating, and cultural services through the residual value and resource rent method as well as the benefit transfer method

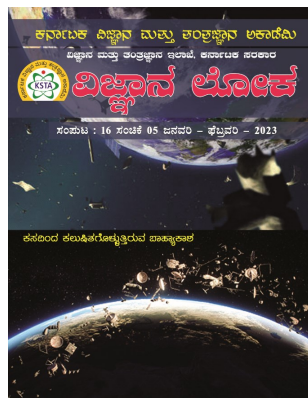


from aquatic ecosystems in Karnataka. This strategy paper is an effort of a group of eminent scientists led by Prof. T.V. Ramachandra, Coordinator, Energy

and Wetlands Research Group, CES, IISc in collaboration with the United Nations Environment Programme (UNEP), ENVIS Division. Ministry of Environment Forests and Climate Change (MoEFCC), Government of India and Ranbir and Chitra Gupta School of Infrastructure Design and Management (RCG SIDM), Indian Institute of Technology Kharagpur (IIT-KGP) as part of the international, EU-funded Natural Capital Accounting and Valuation of Ecosystem Services (NCAVES) project.

### Vijnana Loka — Bimonthly Magazine

Brought out Jan - Feb 2023 and March - Apr 2023 issues of *Vijnana Loka* and sent to subscribers including pre-university and science degree colleges, science centres, libraries and other organizations across the state. Interested may subscribe by filling the prescribed application form available on the website and send the same along with payment details to our email: [vijnanaloka@gmail.com](mailto:vijnanaloka@gmail.com)



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## Programs carried out during Fourth Quarter (January - March 2023)

### IP in Academics: Patents

Organized one day workshop on 'IP in Academics: Patents' on January 30, 2023 in association with Karnataka State Council for Science and Technology (KSCST).

### Introduction to Statistical Data Analysis using R software

A three-day hands on training on 'Introduction to Statistical Data Analysis using R-Software' was organised for the PG Students/Research Scholars during February 21-23, 2023 at KSTA.

### Celebrations of National Science Day

National Science Day (NSD) is being celebrated on February 28th every year to commemorate announcement of "Raman effect" on February 28th, 1928 by Indian physicist Sir C.V. Raman. National Science Day was celebrated in KSTA on March 07, 2023. Prof. M. R. S. Rao, Former President and SERB-YOS Chair Professor, JNCASR gave the commemorative address and presented the Prof. UR Rao Award for PG students, Dr. SK Shivakumar Award for UG students and KSTA Award for the General Public.



### URR, SKS and KSTA Innovation Award for UG, PG and General Public

Exemplary innovations/ solutions emanating from Science & Technology or any segment of economy that have helped transform the lives of people, particularly in rural areas or have enabled enterprises and employment are being recognised every year. The three categories of Awards include: Prof. U. R. Rao Award (URR) for best innovation at postgraduate level; Dr S. K. Shivakumar Award (SKS) for best innovation at undergraduate level; and KSTA Award for best innovation by General Public. Each award carries a cash prize of Rs 10,000 and a Certificate. An expert committee constituted by KSTA has selected best innovative projects in each category. Five projects were awarded with URR Award, Five projects were awarded with SKS Award and Six projects from General Public were awarded with KSTA Award. Selected awardees were awarded during the celebration of NSD on March 07, 2023.

#### Prof. U. R. Rao Award (URR) Award

Title of the Project	Name of the Investigator	Prize Amount (Rs.)
Topical formulation loaded with pomegranate seed oil for the treatment of Psoriasis.	Ms. Vidya K	10,000
Exploration and screening of insect species from different habitat for their antimicrobial activity against plant pathogens of horticultural crops.	Mr. Akshay Kumar	10,000
Design of nasal route mucoadhesive in-situ gel and establish pharmacodynamic treatment for motion sickness using animal model	Ms. Shivani Srinivasan H	10,000
A low-cost Nanomaterial based electro chemical immunosera for detection of trichomoniasis	Mr. S Ajith Kumar	10,000
To analyze the protective role of quercetin and saroglitazar on ethanol induced hepatic steatosis	Ms. Lakshana D P	10,000

#### Dr S. K. Shivakumar (SKS) Award

Title of the Project	Name of the Investigator	Prize Amount (Rs.)
Biomedical foot balancing platform to measure plantar foot pressure	Mr. Vibhu Karan and Group	10,000
Leg aided hole digger for sapling plantation	Ms. Padma Priya Mohan and Group	10,000
Smart city auto ticketing and crowd management for bus travel	Mr. S.C. Arham and Group	10,000
Chalaka Mithra	Ms. Ninaada M S	10,000
Modified desalination system with water cooled condenser operated by solar PV panel	Mr. Ganesh Amate	10,000

#### KSTA Award





Title of the Project	Name of the Investigator	Prize Amount (Rs.)
Sahyadri nidhi coffee leaf beverage instant dip sachet technology-	Dr. Sudharani N	8,333
Novel JD-flower shaped K <sub>TaO<sub>3</sub></sub> perovskite prepared by areca seeds for effluent treatment & hydrogen generation.	Dr. Praveen BM	8,333
Automated biological cell stainer technology,	Dr. Anin Prakash	8,333
Metacarpus pressure measuring device for better assisting in physiotherapy procedurals	Ms. Preeta Sharan	8,333
Development of natural stain remover using soapnut extract & biofunctionalized silver nanoparticles	Dr. Ravishnkar Bhat	8,333
Reinforcement of bamboo with polypropylene band	Ms. Anusha M	8,333

### Best Book Award 2022

In order to encourage writing and publication of books related to science, technology, agriculture and medicine in Kannada, KSTA has instituted Best Book Awards. The biennial awards in each of the above four categories will be conferred on selected authors, with felicitation, cash price of Rs 25,000/- and Certificate. Following books were awarded with the best book award for the year 2022-23:

**ಕೃಷಿ ವಿಭಾಗ**

ಸಮಗ್ರ ಕೃಷಿ ಪಠ್ಯಕ್ರಮಗಳು      ಬೆಳೆ ರೋಗಗಳು, ಕೀಟಗಳು ಮತ್ತು ಅವುಗಳ ನಿವಾರಣೆ



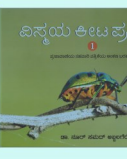
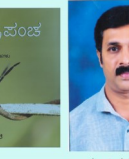





ಡಾ. ಮೂರ್ತಿಗೌರಿಯಪ್ಪ  
ಡಾ. ಕೆ.ಎಸ್. ಎಲ್. ಲಕ್ಷ್ಮಿ, ಡಾ. ಎಂ. ಎಸ್. ಕಿಶೋರ್  
ಡಾ. ಐ. ಜಿ. ವಾಸಂತಿ ಮತ್ತು ಡಾ. ಕೆ. ದೇವರಾಜ

ಡಾ. ನರೇನ್ದ್ರ ಪೂಜಾರಿ  
ಡಾ. ಸುಶಾನ್ತ ಪೂಜಾರಿ

**ವಿಜ್ಞಾನ ವಿಭಾಗ**

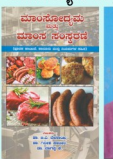



ದಿವ್ಯ ಸುಳಿ      ವಿಸ್ಮಯ ಕೀಟ ಪ್ರಪಂಚ - 1

ಡಾ. ಕೆ. ಎನ್. ಗಣೇಶಯ್ಯ  
ಡಾ. ನರಸಿಂಹ ಸುಮನ್ ಅಧ್ಯಾಪಕ

**ತಂತ್ರಜ್ಞಾನ ವಿಭಾಗ**

ಮಾಂಸೋತ್ಪಾದನ ಮತ್ತು ಮಾಂಸ ಸಂಸ್ಕರಣೆ      ದೇಹಾ ದೇವರು ಬಂದಾಯ್!

ಡಾ. ಐ. ಎ. ದೇವರಾಜ  
ಡಾ. ಗಿರೀಶ ಪಾಟೀಲ ಮತ್ತು ಡಾ. ನಾಗೇಶ್ ಕೆ.

ಶ್ರೀ ಗುರುರಾಜ್ ಎಸ್. ದಾಜೇಗೌಡ

**ವೈದ್ಯಕೀಯ ವಿಭಾಗ**

ವೈದ್ಯಕೀಯ ಕ್ಷೇತ್ರದ ನೋಬೆಲ್ ಪುರಸ್ಕೃತರು      ಚಿತ್ತ ಸಮುದ್ರ






ಡಾ. ಎಸ್. ಎಸ್. ಜೈಗೌಡ  
ಡಾ. ಕೆ. ಎಸ್. ಶೆಟ್ಟಿ

ವಿಕಲತೆಗಳ ಪರಿಚಯ




ಶ್ರೀ ಉಮೇಶ್ ಡಿ.

### Celebration of Space Day

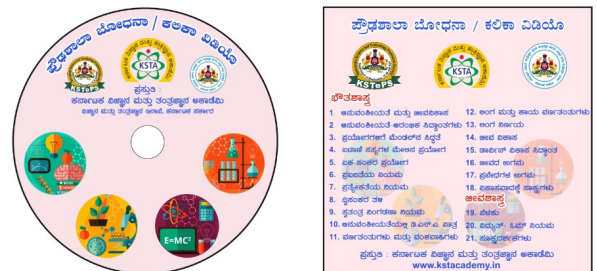
Organized 'Space Science Day' on March 10, 2023 to commemorate 91st birth anniversary of Padma Vibhushana awardee Late Prof. U R Rao, Former Chairman, ISRO/KSTA. As a part of this celebrations, a distinguished online talk on "Indian Planetary and Space Missions" by renowned space scientist Dr. Anil Bhardwaj, Director, Physical Research Laboratory, Ahmedabad was organised.

### Celebration of Telemetry Day

'Telemetry Day' was celebrated in commemoration of the birth anniversary of Padma Shri awardee Late Dr S K Shivakumar, Former Chairman, KSTA on March 17, 2023. Quiz and elocution competitions were organized for the UG students.

### Digital Content Generation

Digital teaching & learning contents are being developed for the high school students in Physics, Chemistry, Mathematics and Biology as per the Karnataka Secondary Education Examination Board (KSEEB) syllabus in Kannada and are being disseminated through DVD to the selected Government High Schools across the State. The Program is supported by KSTePS, DST, Govt. of Karnataka .



## National Seminar on 'Millets for Healthy Living'

KSTA collaborated with the Faculty of Biological Sciences, St. Aloysius College, Mangaluru, Department of Food Processing and Engineering (DDU) in organising National Seminar on 'Millets for Healthy Living' on March 16, 2023

## Science Talent Search Program for Pre-University Students

During January - March 2022, 54 online talks by eminent scientists in physics, chemistry, biology, engineering, and agricultural sciences were organized and around 7830 PUC (1st & 2nd) students are benefited by this program. This program is supported by KSTePS, DST, Govt. of Karnataka.

## KSTA meetings

Executive Committee (EC): The 17th EC meeting of KSTA was held on March 06, 2023 under the Chairmanship of Prof. S. Ayyappan, Chairman, KSTA from 11.00 pm to 12.15 pm

## Join hand with KSTA

### MOU and Collaborations

In order to promote science and technology and to popularise science in the State, the KSTA is collaborating with Institutions (public/ corporate/private) having similar interests and programmes. As on March 31, 2023, Fifty-five institutions have collaborated with KSTA. Interested institutions may send expression of interest and after approvals from KSTA, a Memorandum of Understanding (MoU) in the prescribed format (available in the KSTA website) will be signed on mutually accepted terms and conditions, also legally vetted, for specific activities involving manpower, finance, etc. with the following purpose and scope:

- Inculcating scientific temper across civil society through science communication
- Facilitating technology dissemination through Academia-Farm-Industry interface, with a focus on rural areas
- Fostering innovations and entrepreneurship for societal benefits
- Organising conferences & outreach programmes
- Capacity building in frontier areas of Science & Technology
- Any other aspects with mutual consent

### Institutional Membership

Nine institutions have obtained Institutional Membership as on March 31, 2023. Institutions who are desirous of seeking paid Institutional Membership of KSTA, may do so by paying a fee of Rs. 1,00,000/- (Rupees One lakh only), and submitting a letter of interest throughout the year. This is valid for a tenure of 10 years. Visit KSTA website for further details.

### Individual Associates

Hundred and Four individuals have been admitted as Associates of KSTA as on March 31, 2023. Individuals who are desirous of seeking paid Associate Membership of KSTA may do so by paying a fee of Rs. 1,000/- (Rupees One thousand only), and submitting a duly filled application throughout the year. This is valid for a tenure of 5 years. Visit KSTA website for further details and Application form.



**Scan to view  
Program  
Videos**

## Proposed Programs for FY 2023-'24

**Karnataka Science and Technology Academy Annual Conference:** will be held on suitable date during November 2023 - January 2024 in Bengaluru on a focal theme

**Science and Technology Conference in Kannada:** Fifth Science and Technology Conference in Kannada will be held in the month of November 2023

**KSTA Awards:** Nominations invited for year 2023. Last date is April 30, 2023. Visit website for more details

- ◆ Prof. CNR Rao Lifetime Achievement Award in STEAM
- ◆ KSTA Lifetime Achievement Award in STEAM Communication in Kannada

**Prof. UR Rao Prize, Prof. SK Shivakumar Prize and KSTA Prize:** Selected five best innovative projects by PG and UG Students and General Public will be awarded with a cash prize of Rs. 10,000/- each along with a certificate

**KSTA Science Communication Prize (Specially Abled):** Outstanding efforts in science communication by specially abled person from Karnataka will be awarded with a cash prize of Rs. 10,000/- along with a certificate of appreciation

**Special Lecture Series/Workshop in Science:** Special Lecture Series of 3 days and Special Workshops of 2 days will be organized during 2023-'24 for PG students and UG Students

**Certificate Courses in Science and Engineering:** Certificate programs on the upcoming fields of science and technology will be organized during FY 2023-'24

**Vijnana Loka - Bimonthly Magazine:** During FY 2023-'24, six issues will be published in the month of May, July, September & November of 2023 and January & March of 2024 and will be sent to subscribers. Subscription Rate: Rs 50/- per copy; Annual subscription of Rs 300/- and Rs 500/- for Individual & Institutional respectively; For three years Rs 875/- and Rs 1,500/- respectively for Individual & Institution.

**Vijnana Vahini - Quarterly e-newsletter:** published digitally and is available on KSTA website

**Science Communication and Science Popularization:** Science communication workshops, interfacing science writers and publishers, media communication, programs for science popularisation in Kannada will be organized

**Establishment of Common Instrumentation Facility for Promotion of Research (CIFPR) and Virtual Science Labs for Remote Learning (VSLRL):** aims to encourage creativity, innovation and to promote research by PG & UG Students and research scholars

**Convergence of Efforts in Promotion of STEAM:** KSTA would collaborate with the autonomous organizations of the Department of Science and Technology, Govt. of Karnataka, for promotion of science education and literacy through organization of workshops, symposia, conferences, etc.

**Understanding Science through Activity Based Learning at Primary School Level:** aims to foster scientific temper through experimentation and demonstration involving students directly in activities.

**Production of Science Capsules, Short Feature Films/Clippings :** Development of digital information and knowledge base in frontier areas of science and technology. Production of digital content, especially expert talks, short films and capsules and distribution of the same to educational institutions in the backward areas.

### Other Programs

- ◆ Celebration of National and International Days of importance related to Science and Technology
- ◆ Programs for Specially abled students
- ◆ Science exhibition competition for High School
- ◆ Small Grants & Short term Study: to encourage organization of science promotional programs by educational institutions, universities and other associations across the state, while short term studies is to encourage research by researchers and young teaching faculty
- ◆ Policy, Strategy, Status and Approach Papers
- ◆ Membership, Fellowship and Emeritus positions
- ◆ Collaborative R&D with Corporate Institutions

Note: Depending upon the availability of funds and decisions of EC, above programs will be implemented

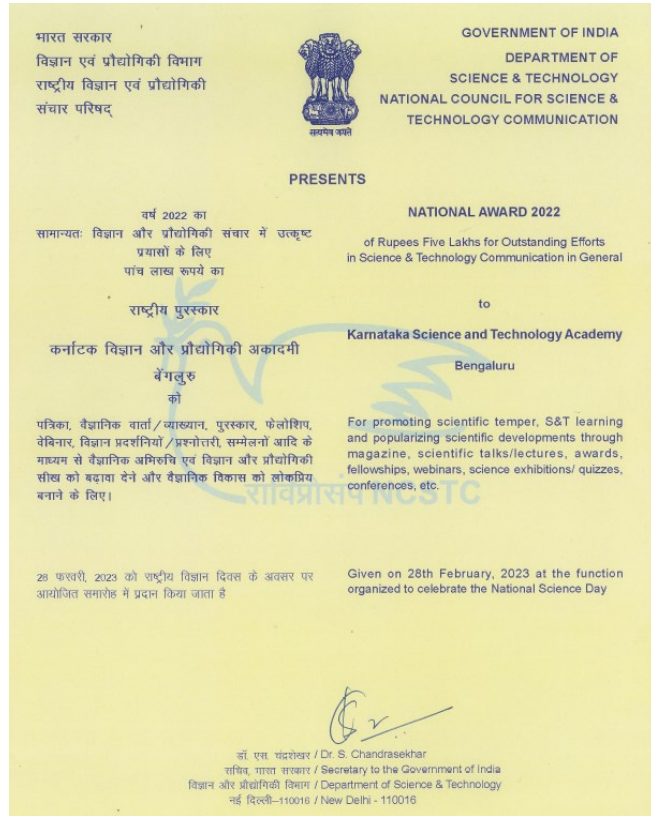




## Science & Technology for All

*KSTA, a Unit of the Department of Science and Technology, Government of Karnataka, established on 5th September, 2005, has been mandated for science promotion and popularisation in the State. KSTA has the Vision of 'Nurturing and Enabling Science & Technology for All' and Mission of 'Playing a pivotal role in Science promotion, Technology dissemination and fostering Innovations for Societal welfare'. The Objectives of the KSTA are to inculcate scientific temper across the civil society through science communication, particularly in Kannada; facilitate technology dissemination through Academia-Farm-Industry interface, with a focus on rural areas; foster Innovations & Entrepreneurship for Societal benefits; recognise talents and contributions through Awards; organise Conferences & Outreach programmes; serve as Resource Centre for Capacity building in frontier areas of Science & Technology; and act as a Science, Technology & Innovation Policy (STI) Advisory Body for the State.*

## National Award 2022 for KSTA



Dr. Jitendra Singh, Hon'ble Union Minister of Science and Technology presented the Award to Dr. A. M. Ramesh, Chief Executive Officer, KSTA

### Contact

#### Chief Executive Officer

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#### Editor & Designing

Dr Anand R, Senior Scientific Officer, KSTA

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