



Science & Technology for All

Vijnana Vahini

Karnataka Science & Technology Academy
Dept. of Science & Technology,
Govt. of Karnataka

From Chairman's Desk

Details of KSTA Logo

● Symbol of Knowledge

☾ Sign represents Science
Green colour represents Prosperity



Govt. of Karnataka

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Greetings to KSTA family, comprising every one of us interested in Science & Technology, that have become a way of life. This is the first e-Newsletter, *Vijnana Vahini*, after the Government of Karnataka have reconstituted the Karnataka Science and Technology Academy (KSTA) on 21st April, 2020.

At the outset, I would like to place on record my gratitude to the Hon'ble Chief Minister, the Hon'ble Deputy Chief Minister and Minister of Electronics, Information Technology, Biotechnology and Science and Technology, Government of Karnataka, as well as to the Additional Chief Secretary to Govt., Department of Electronics, Information Technology, Biotechnology and Science & Technology and all the functionaries of the Department for having given an opportunity to serve the State through this platform along with other distinguished members of the reconstituted General Body. I deem it an honour to become a part of the institution with the legacy of Founder Chairman Late Prof. U.R. Rao, Former Chairman, ISRO/Secretary, DOS, GOI over 12 years followed by Dr S.K. Shivakumar, Former Director, U R Rao Satellite Centre, ISRO, GOI as In-charge Chairman for one and half year.

We are in an exciting phase of the journey of mankind, with unprecedented challenges, as also matching responses for each of us through different means and approaches. The COVID 19 crisis is one such example that has engulfed all of us, seeking science & societal solutions. Science is universal, while Technology is contextual. Innovation is the new paradigm, the triad as major drivers for a development agenda of faster, sustainable and inclusive growth.



Prof. S. Ayyappan

The KSTA, with the objectives of encouraging basic sciences, dissemination of knowledge base, promotion of scientific temper, science communication, technology development and adoption, innovations and related approaches, has been playing a catalytic role over the years. 'Foresight-Innovation-Partnership' occupy a central position in our future endeavors.

Karnataka, in the forefront of the technological revolution, is uniquely placed in the Indian Science map, with institutions, both governmental and corporate, expertise of the yesteryears and energy of today's youth. In this context, Academy could play a role of a Think tank, Coordinator, Facilitator, Promoter, Consultant, Incubator, Advisor, to spread the flavor of science and scientific temper, in all, achieving synergy for wholesome scientific solutions, for a better tomorrow.

The KSTA welcomes suggestions, contributions and partnerships in our pursuit of excellence and relevance for a larger common good. Let us join hands, irrespective of what you are and where you are, Science is Everybody's Business.

- S Ayyappan

June 30, 2020

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Science, Society and Scientific Temperament*

In today's critical times, the world is looking for a scientist who can find a solution to pandemic COVID 19. It is still possible that scientists find a remedy as in previous episodes of virus attacks. Rastra Kavi and a well-known Kannada poet Shri GS Shirudrappa, with an assurance, has bestowed respect for scientists in his poem 'Shri Vijnanige'. Here are some verses from the poem:

ಸದಾ ಪ್ರಶ್ನೆಗಳ ಬಾಗಿಲ ಬಡಿದ
ಹೊಸ ವಿಸ್ಮಯಗಳ ಕಿರಣವ ತೆರೆವ
ಸಾಕ್ಷಾತ್ಕಾರಕೆ ಜೀವವನೆರೆವ
ಶ್ರೀ ವಿಜ್ಞಾನಿಗೆ ನಮೋ ನಮೋ

ಪಾಚಿಗಟ್ಟಿರುವ ಮೌಢ್ಯವ ತೊಡೆವ
ವಿಚಾರ ಶಕ್ತಿಯ ಹೊನಲನು ತರುವ
ಅರಿವಿನ ಪರಿಧಿಯ ವಿಸ್ತರಿಸುವ
ಶ್ರೀ ವಿಜ್ಞಾನಿಗೆ ನಮೋ ನಮೋ

*Always knocking on the door of questions
Opens a ray of new wonders
Sacrificing life for the realization
Salutations to Shri Vijnanii*

*Wiping the mossy disbelieves
Bringing the light of thoughts
Extending the perimeter of consciousness
Salutations to Shri Vijnanii*

Shri Poorna Chandra Tejesvi has rightly said while appreciating the strength of science "There is no need to question science! Since, in every step, science is constantly evolving by questioning itself". The present modern world is an era of science and technology. Today, science and information technology are as essential as food, air, and water. Science and technology have been helping people's lives since ancient times. Humans have been able to unveil all the hitherto unknown things and the mysteries that are hidden in nature. In a nutshell, there are very few areas where scientists are ignorant or cognitive. One cannot say that science provides a solution to all the earth's



Prof. H. A. Ranganath

wonders and problems. But science's search on all aspects of life is an on-going process. It is infinite and unlimited.

In India, research in science and technology has been a proverbial field since ancient times. Many of the facts are still known as Indian research. Indians were aware of the fact that the earth was round and revolve around the sun during the days when it was believed that the earth was flat and standing still. Probably, the foundation of human calculation is the detection of zero by Aryabhata and is the base of today's statistics. After Independence, several research and technology centers have been established resulting in the progress of science and technology that every Indian is proud of.

Indians have had tremendous success in the fields of natural science and technology, agriculture, nuclear research, space research, and defense; and constant efforts are being made for further improvement. But, India is not completely self-reliant in these fields. India is still dependent on several fields. Governments, both Central, State, and private institutions have scientific research centers and guiding the country in the path of development. Meeting the scientific and technological needs in any difficult conditions is the main objective of India today.

The question remains whether all the thoughts and research findings of scientists have had an impact on the lives of the common people. Today, we are self-sufficient in food grains as a result of

"There is no need to question science! Since, in every step, science is constantly evolving by questioning itself"

- Shri Poorna Chandra Tejesvi

"Developing scientific temperament is the fundamental duty of all citizens"

- The Constitution of India

* We thank Dr Anand R, SSO, KSTA for translating the article ವಿಜ್ಞಾನ, ಸಮಾಜ ಮತ್ತು ವೈಜ್ಞಾನಿಕ ಮನೋಧರ್ಮ written by Prof. H.A. Ranganath.

Children have many social prejudices. Hence one should inspect them, encourage good ones, and show them the right path and prepare them to become the most competent citizens of India

Scientists have a bigger challenging role of creating awareness about recent developments in science and technology among the general public in addition to research, implementation, and knowledge sharing

our scientific and technological research in the field of agriculture. We can store enough food to cope with natural disasters like drought and floods in our warehouses. We are in a position to export food grains and this is due to the faith of farmers in scientific research and technology and its use. Still there exists a traditional system of agriculture. Though modern technology is supporting our achievement in the path of development, much more needs to be achieved. The findings of experiments and research must reach the common people. The ultimate aim of Science and Technology is to comfort the life of our common people.

Science and technology should not lead to slavery. There is a misconception that Mahatma Gandhi was anti-science because he did not accept science. Science is the fifth among the seven social sins that Gandhiji defined. He was not anti-science and he asserted that science without humanity is a sin. Gandhiji was not against machines, but the inequality created by them. While replying about the civilization in Hind Swaraj, his words speak of the future. "Humans do not have to use their hands and feet. When a button is pressed, clothing comes to them. When another button is pressed the newspaper comes in, the third button is pressed, and the car is waiting for them, anything required is ready will be ready for him". They seem to be a critique of today's life, in a time when technology has become so addictive. At this time when technology has enormously pervaded us, Mahatma Gandhi's humane approach needs to be kept in mind.

To realize the concept of "Vasudaiva Kutumbakam" (the world is a family), we should overcome our greediness. we should move towards science and technology and become 'humans', learn to love all living things - only then the flora and fauna flourish. Present resources are the gifts provided by the next generations. It is our responsibility to return all the resources without harming them and

pass them on even better. These resources should be utilized judiciously, and it is important to cultivate the habit of developing them. However, a few among science learners are engaged in a strategy of destroying the communities and the nation. As a noted writer, Dr. K. Sivarama Karanta said, "Though we have been taught nonviolence by Buddha and even our ancient sages proclaimed the presence of Brahma in microorganisms, we Indians, have very little knowledge of the environment. We also do not understand the relationship between animals, birds, and humans. We do not want to see Brahma in nature. We indulge in worshiping monetary comfort in *Kaliyuga* and that has become everything than Brahma. Today, we are amassing the wealth of nature for our benefits, not thinking of tomorrow". Progress in science must, therefore, be towards the benefit of all living beings. Science of living together with all living beings, living environment friendly, living in simple prosperity, and living peacefully is the way for living and let others live.

Even though society is living in the world of science and technology, only a few people are aware of them. There is a lack of awareness among the general public. This is evident from the way our people have reacted to the recent Covid-19, with a fear general public have been forwarding information without verifying the facts. In such a situation, the biggest problem before the scientific community is how to manage the problem arising in the future. Scientists have to educate people about science and technology through information and scientific facts. They have a bigger challenging role of creating awareness about recent developments in science and technology among the general public in addition to research, implementation, and knowledge sharing. popular lectures and useful science shows in the context of such scenarios will be beneficial for the vast majority of scholars Renowned educationist,

Continued in page 4

Science, Society and Scientific Temperament *Continued*

Dr. H. Narasimhaiah has explained this point in his essay 'Science and Society', "Scientists must perform other duties also in addition to their research work. They being highly intellectuals, should use their knowledge to correct the mindset of common people and assist societal improvement. The role of scientists in popularizing science is very significant.

They should attempt to write popular science articles and give lectures in their mother tongue besides English. The attitude of the scientist is not to make people feel that he is a unique intellectual in the ivory tower. The general public should not think of a scientist as a special species. It is their duty, not a favor, that the learned scientist to work towards changing the thinking capacity of the general public. Organizing popular lectures and useful science shows in the context of such scenarios will be beneficial for the vast majority of scholars and the public interested in science".

Scientists abroad have gone far beyond us. The main reason for this is that they make a special effort to explain science in a language that is understandable to the masses. They are also socially involved. The Indian scientists should not only create awareness of science among the masses but also involve themselves in society. Nowadays, social media have been making a lot of noise in matters related to Covid19 than science and some people believe it to be true. Hence, we are witnessing the rise of Covid19 cases than the number of well-informed people. Many such examples can be given.

Our scientists are largely laboratory oriented and publishing their research results in English. While that is required for global research, they do not try to convey it to the general public in native / colloquial language. Most scientists think that explaining research to the masses is pointless. Here I am again reminded of Dr. Shivarama Karanth, who is not a scientist with degrees but wrote three volumes of *Bala Prapancha* and three volumes of *Vijnana Prapancha* for children. These volumes are milestones of Kannada science literature. Shri Sivarama Karantha wrote many science books. Whenever he found a good science book in English, he would translate it for Kannadigas. Mr. Rachel Carson is one of the most famous science writers in English and after reading his book "The Sea Around Us", Dr. Karanth translated it to "Namma Suttalina Kadal".

Not only science awareness but also creating scientific temperament among the general public is the responsibility of scientists. Now, this is being done by non-science degree holders. In our Constitution, develop-

ing scientific temperament is the fundamental duty of all citizens. Scientific attitude is a way of life. To use knowledge, one must be intellectual and moral. The influence of scientific temperament has more to do with different ways in which society and humans think, react or act, rather than on science as a subject of study.

It is miserable that today's youth do not consider science as an innovative and creative subject, but just a way to earn money. People have developed an attitude that there is no other career other than being an engineer or a doctor. The number of people choosing basic science subjects has declined, for which our education and social system are responsible. There is a need to bring out our youth from this kind of mindset.

Scientific temperament is essential for everyone, especially students. Children who come to schools have many social prejudices. Hence one should inspect them, encourage good ones, and show them the right path and prepare them to become the most competent citizens of India. Fostering scientific passion, human interest and a spirit of discovery and improvement are our basic duties. The words of Mahakavi Kuvempu (Dr. K. V. Putappa) are noteworthy, "Every child is universal by birth, and while growing, we make them low-level humans. Education has to make them universal again". Once students get an interest in science, they would start exploring and applying the same, in their lives.

Scientists should work on bringing people out of blind beliefs. I would like to remind the words of Dr. H Narasimhaiah's again "Scientific way is the only solution to complex problems that our country facing over hundreds of years. The solution to social evils like casteism is possible only through science and scientific temperament. Only then can a humanitarian value and the ethics-based universal religion be embodied. Religion is moral. This type of religion, beyond the barriers of nationalism, can only be established by following scientific principles. Poverty and exploitation can be eradicated through the scientific mindset and use of science and its applications. It can dispel the anti-development hypothesis and self-interest. As scientists, let us be honest to our conscience, to the science, and its ways. Science should not be a means of livelihood. We must have a living faith in it. The betterment of society is possible only when we act rationally and courageously".

(Some of the content of this essay is compiled from a few sources. Thanks to all those original authors and to my friend Dr. Satyanarayana who read this essay and expressed his opinion)

- Prof. H.A. Ranganath

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<i>Kannata Sahitya Parisattu Mattu Vijnana Prasara</i>	Shri S L Srinivasamurthy
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<i>Karnataka Vijnana Mattu Tantrajana Akademi</i>	Dr. A M Ramesh
<i>Mahiti Tantrajana- Ondu Sthula Nota</i>	Shri G N Narasimhamurthy
<i>Samajika Jala Talagalu Mattu Samajika Parinama</i>	Shri Avinasbaipadittaya
<i>Samagra Gadya (Samputa 1 & 2)</i>	Rastra Kavi Kuvempu
<i>Smritipataladinda (1,2,3)</i>	Shri Shivaramakaranta
<i>Gandhijiyavara Atmacaritre – Satyasodhane</i>	Translation – Shri Betageri Krishna Sharma
<i>Teredamana</i>	Dr. H Narasimhaiah
<i>Samagra Kavya</i>	Dr. G S Shivarudrappa

A Bird's eye view of the programs conducted during 2019-'20**Karnataka Science and Technology Academy Conferences**

Place	Theme	Date	Association	Beni fisheries
Bengaluru	Life, Chemical and Health Sciences	October 24—26, 2019	Ramaiah College of Arts, Science and Commerce, Bengaluru	700 Delegates 300 Research Posters
Dharwad	Mathematics and its Applications	November 07—08, 2019	Karnatak University	600 Delegates 200 Research Posters
Mysuru	Innovations in Chemical Sciences	January 30—31, 2020	Mysore University	500 Delegates 170 Research Posters
Bidar	Physics and Allied Sciences	March 11—13, 2020	B V Bhumireddy Degree College, Bidar	500 Delegates 120 Research Posters

Science and Technology Conference in Kannada

KSTA is organizing Science and Technology Conference in Kannada every year. Third Science and Technology Conference in Kannada on the theme “New Vistas in Science and Technology” was successfully organised in association with BLDE Institution's S. B. Arts and K.C.P. Science College, Vijayapura during February 18-19, 2020. About 500 delegates from different parts of the State attended the conference. More than 100 research posters in Physical, Chemical and Life Sciences were presented in Kannada during the Conference.

Vijnana Loka — Bimonthly Magazine

Is being regularly published in Kannada since August 2007. About 2000 copies of each issue of the magazine are being printed and distributed free of cost to pre-university and science degree colleges, science centres, libraries and other organizations across the state. All the issues of Vijnanaloka magazine are uploaded in KSTA website – www.kstacademy.in

Special Lecture Series/Workshop in Science for PG Students

To provide an opportunity for the students to widen the horizon of their understanding in advanced scientific research and also to encourage them to pursue career in R&D, Special Lecture Series, workshops are being organised in different subjects of basic and applied sciences for Post Graduate students. During FY 2019-'20, nine programs were successfully organised which benefited around 1200 post graduate students of different universities of the state.

Certificate Courses in Science and Engineering

Conducted certificate course for science and engineering students, young researchers and teaching faculty in Intellectual Property Rights and Artificial Intelligence and Robotics as well as Integrated Farming for Formers about 330 participants were benefited.

Five conferences

2800 beneficiaries

790 research posters

6 issues of Vijnanaloka
have been released
distributed 1950 copies
of each issue free of
cost

1200 PG Students
attended Special
Lecture Series

330 participant earned
certificate in frontiers
of Science &
Engineering

Divisional and State Level Science Drama, Mathematics, Drawing/ Painting and Essay Competitions

KSTA, for the first time, organised divisional and state level competitions for degree students in science drama, mathematics quiz & model making, drawing and essay in Kannada for degree and PG students. Divisional level competitions were held at 4 divisions of the State viz., Bengaluru, Mysuru, Kalaburgi and Belagavi and later state level competitions were held at Bengaluru in KSTA office, Bengaluru during March 6-7, 2020. At the State level, 162 winners of four divisional level competitions participated.

Science Program for Specially Abled Students

In order to provide a platform for specially abled students to showcase their talent as well as to build self-confidence in them, KSTA organised quiz and other science programs in association with Samarthanam Trust, Bengaluru and Dharwad Regional Science Center, Dharwad

Other Programs

- ◆ Celebration of National and International Days of Importance related to Science and Technology: Organized International Biodiversity Day, International Ozone Day, Engineer's Day and 100 Years of Hydrogen Bonding.
- ◆ In order to recognise and foster curiosity in children, KSTA in association with M/s Egg Heads Pvt. Ltd., organised STING 2020 - science model exhibition on January 18, 2020.
- ◆ NanoJata program: Organised Nano Jata program for science degree students in association with the Centre for Nano and Soft Matter Science (CeNS) and Karnataka Science and Technology Promotions Society (KStePS) on January 21, 2020. In this event, two distinguished talks by eminent scientists related to nanotechnology was organised. In addition, Nano Kit demonstration, Hands-on training and quiz were also organised.
- ◆ Small Grants: In order to create scientific awareness and popularise science among students and general public, KSTA supported educational institutions, universities and other organisations to organise science programs across the state.

KSTA Meetings

Executive Committee (EC): The 9th EC meeting of KSTA was held under the Chairmanship of Prof. S. Ayyappan, Chairman, KSTA on May 11, 2020 from 11:30am to 1:30pm by means of Video Conferencing (VC) due to Covid19 pandemic.

General Body (GB): The 10th GB meeting of KSTA was held under the Chairmanship of Prof. S. Ayyappan, Chairman, KSTA on May 27, 2020 from 11:30am to 2:00pm by means of Video Conferencing (VC) due to Covid19 pandemic.

Proposed Programs for FY 2020-'21

Karnataka Science and Technology Academy Annual Conference : will be held on suitable date during November 2020 January 2021 in Bengaluru on a focal theme.

Science and Technology Conference in Kannada : Fourth Science and Technology Conference in Kannada will be held in November 2020

KSTA Awards :

- ◆ **Life time Achievement award:** A distinguished scientist of the State who has made an outstanding contribution in the field of science and technology as well as for the development of the Country will be bestowed with KSTA Life Time Achievement Award. The selected scientist will be felicitated with award during annual KSTA Conference.
- ◆ **Lifetime Achievement Award in Science Communication:** In order to recognize the outstanding contribution in the field of science popularisation and communication in Kannada, Lifetime Achievement Award is being given every year during S&T conference in Kannada.
- ◆ **Best Book Award in Science, Agriculture, Technology & Medicine:** In order to encourage publication of Kannada books in the field of agriculture, science, technology and medicine, KSTA has been providing best book award for the selected books once in two years. Books published during January, 2019 to December 2020 are eligible for the current years' award.

Vijnana Loka — Bimonthly Magazine: During FY 2020-'21, six issues will be published in the month of May, July, September & November of 2020 and January & March of 2021 and will be distributed free of cost to pre-university and science degree colleges, science centres, libraries and other organizations across the state.

A Platform for encouraging innovations by general public

Development and distribution of Knowledgebase in frontiers of science & Technology

Special Lecture Series/Workshop in Science : Six Special Lecture Series of 3 days each and 05 Special Workshops of 2 days each will be organized during 2020-'21 for PG students.

Science Communication, Interlocution and Science Popularization: Science communication workshops, interfacing science writers and publishers, media communication and programs.

Certificate Course in Science and Engineering: Six programs will be organized during FY 2020-'21.

Divisional and State Level Science Drama, Mathematics, Drawing/ Painting and Essay Competitions: Divisional level competitions will be held in 6 educational divisions of the state in December 2020 and the state level competitions will be held in Bengaluru during January/ February 2021.

Digital Content Generation, Production of Science Capsules, Short Feature Films /Clippings : Development of digital information in frontier areas of science and technology and knowledge base. Production of talk by expert, short films and feature films in KSTA and distribution of the same to educational institutions in the backward areas through DVD/CD.

Innovation Platform and Promote Indigenous Talents in Frontline S&T Areas, with a focus on Entrepreneurship development: The program aims to bring the innovations by the general public in the state, especially the rural population to the mainstream.

Other Programs

- ◆ Celebration of National and International Days of importance related to Science and Technology
- ◆ Sting 2021 and Sci-Cascade 03: Science Model Performance Competition for High School Students
- ◆ Small Grants: to encourage organization of science promotional programs by educational institutions, universities and other associations across the state.
- ◆ Membership, Fellowship and Emeritus positions .
- ◆ Collaborative R&D with Corporate Institutions
- ◆ Post COVID-19 Restoration related Workshops and Publications
- ◆ PME & Impact Assessment Studies of KSTA Activities

Programs carried out during First Quarter (April-June) of FY 2020—'21

Sl. No	Date	Program Title	Number of Beneficiaries
1	May 19, 2020	Best Cyber Security Practices in Corona Era – COVID 19	772
2	May 27, 2020	A Comprehensive Overview of Corona Virus and Latest Updates : COVID – 19	298
3	May 28, 2020	A Holistic approach of Development and Conservation of Environment with blend of Modernization & Indian Tradition : COVID – 19	375
4	May 29, 2020	Current Update on Transmission, Virology and Epidemiology: COVID – 19	243
5	June 2 – 3, 2020	2-Day web seminar on “Innovation and Intellectual Property Strategy”	139
6	June 12, 2020	Cyber Security	117
7	June 17 – 20, 2020	Research Methodology & Data Analysis	400

For more information on KSTA programs visit our website kstacademy.in

Department of
Planning and KSTA
jointly organized
Webinar

Discussed Post
COVID19 Strategies

'Post COVID19 Strategy for Karnataka' - June 19, 2020 from 11:00am to 3:30pm

Prof S Ayyappan, Chairman, KSTA welcomed the participants and gave an overview on the subject of the meeting. The meeting was inaugurated by Shri B. J. Puttaswamy, Vice Chairman, State Planning Board, Government of Karnataka. In his inaugural address, Shri Puttaswamy, stressed the need of initiatives and measures to tackle post COVID19 scenarios and protect both life and livelihood.

Dr (Smt.) Shalini Rajneesh, Addl. Chief Secretary, GoK, Planning, Programme Monitoring & Statistics Department, highlighted the importance of science and technology in containing the COVID19 pandemic. She stressed the need of making use of 'Atmanirbhar Bharath' package announced by the Hon'ble Prime Minister of India and also called for innovative solutions through Public Private Partnership and Global Partnership for speedy recovery of health and economy.

Dr E. V. Ramana Reddy, Addl. Chief Secretary, GoK, Department of Higher Education and Department of Electronics, IT,BT and S&T, in his address, said that Government of Karnataka is efficiently using technology for effective monitoring of pandemic. He appreciated the efforts of Planning Department and KSTA in organizing the meeting.

During the meeting three invited presentations were made by the Experts viz., Dr C.N. Manjunath, Director, Sri Jayadeva Institute of Cardiovascular Sciences & Research, Bengaluru, Dr Akash Prabhune, Consultant (Health), Centre for Public Affairs, Bengaluru, Dr Alope Kumar, IISC; Dr Santosh Ansumali, JNCASR, Dr Mehar Prakash, JNCASR; Bengaluru and Dr Chaya K. Degaonkar, Addl. Chief Evaluation Officer, KEA, PPMSD, GoK.

The meeting was attended by over 50 invited delegates representing Health; Industry, Institutions & Policy; Agriculture & Veterinary Sciences; Disaster Management; Science & Technology; Banking; Tourism and related aspects. Dr. A. M. Ramesh, CEO, KSTA proposed vote of thanks.

Did You Know ?

Grapes light on fire in the microwave

- Dr. Anand R, Senior Scientific Officer

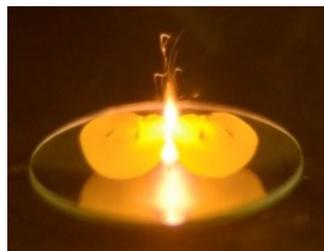


Photo: pnas.org/content/116/10/4000

The video by physicist at the University of Sydney that went viral in 2011, showing ignition of grapes when placed in microwave oven, was answered successfully after two decades. A study published in Proceedings of the National Academy of Sciences in March 05, 2019 reported that the fruity fireball occurs as a result of the loose electrons and ions that cluster to form plasma when grapes get hot. For more details visit : <https://doi.org/10.1073/pnas.1818350116> .

Caution: Try only under parental guidance

The Only known Bird That Can Fly Backwards



Photo: www.discovermagazine.com

Hummingbirds are the only Birds that can fly backwards. They are small birds with a length of about 5 inches and a weight of less than 31.75 gms and are native to America. Nearly one-third of their body weight comes from the muscles they use when flying. They have different wing pattern and can rotate its wings 180 degrees in all directions due to unique ball and socket joint at the shoulder. They can move quickly and easily through the air as their wings are long, narrow and tapered. The shoulder and elbow joints of the wing are very close to their tiny bodies, allowing the wings to tilt and pivot. They can flap their wings at a speed of about 80 beats per second. These birds can fly at a top speed of 15 - 22 miles per second.

Source : <https://www.discovermagazine.com/> & <https://www.worldatlas.com/>

New Generation of Lightweight, Flexible Solar Cells and Display Screens Using Transparent Graphene Electrodes

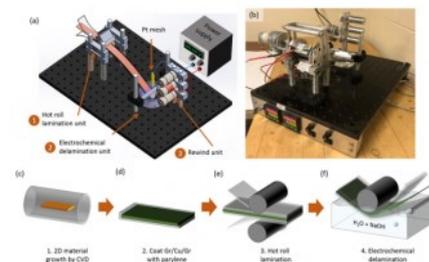


Photo: <http://news.mit.edu>

Graphene, a form of pure carbon whose atoms are arranged in a flat hexagonal array, has extremely good electrical and mechanical properties, yet it is vanishingly thin, physically flexible, and made from an abundant, inexpensive material. Furthermore, it can be easily grown in the form of large sheets by chemical vapor deposition (CVD), using copper as a seed layer. A new way of making large sheets of high-quality, atomically thin graphene could lead to ultra-lightweight, flexible solar cells, and to new classes of light-emitting devices and other thin-film electronics. The new manufacturing process, which was developed at MIT and should be relatively easy to scale up for industrial production.

Sincere Thanks to Dr. H Honne Gowda – Eminent Scientist and Able Administrator

- Dr. A. M. Ramesh

Chief Executive Officer, KSTA



Dr. H. Honne Gowda

Dr. H Honne Gowda, Special Secretary, Department of Science and Technology; Managing Director, Karnataka Science and Technology Promotion Society (KSTePS) and Ex-officio Member Secretary, Karnataka Science and Technology Academy (KSTA) demitted office on his retirement on May 31, 2020. He has served the Government for 31 years, in which 10 years in the Indian Space Research Organisation (ISRO), Government of India as Scientist (Scientist 'SD' to 'SF') and 20 years in the Government of Karnataka as Director, Karnataka State Remote Sensing Applications Centre (KSRSAC), Special Director (Technical) and Special Secretary (Technical) in the Department of Science and Technology. Hailing from a rural background, he occupied important positions in the government. He is an eminent scientist, able administrator and friendly person.

Dr. Honne Gowda was appointed as Director, Karnataka State Remote Sensing Applications Centre (KSRSAC) in July 2000 and he led the centre till March 2007. He started an M.Tech. course in Geoinformatics in association with Visvesvaraya Technological University (VTU) and Survey of India (SOI) by utilising multidisciplinary domain expertise available in the Centre. In about six and a half years duration, he developed the Centre into one of the best remote sensing centres in the Country.

Dr. Gowda played a pivotal role in establishing the Karnataka Science and Technology Academy (KSTA) under the Chairmanship of Distinguished Space Scientist Padma Vibhushan Late Prof. U R Rao, Former Chairman, Indian Space Research Organisation (ISRO)/ Secretary, Department of Space, GoI in July 2005. He served KSTA efficiently as its Chief Executive Officer for 13 years, while as Member Secretary for 15 years.

KSTA has grown into a model organisation under his guidance and perseverance. The Academy has successfully organised many science educational and promotional programs across the State. A state-of-the-art office and a training centre have been constructed for KSTA in 2 acres of land in the GKVK Campus of the University of Agricultural Sciences, Bangalore.

Dr. Gowda has played a key role in building many science organisations and centres in the State. He has strived hard to establish Karnataka Science and Technology Promotion Society (KSTePS), Two Regional Science Centres in Dhaward and Pilikula in Mangalore as well as sub-regional science centres in Ballari, Bidar, Raichur, Gowribidanur and Karwar. In addition, he took initiative to establish sub-regional science centres in 17 districts across the State. He played a major role in establishing a 3D planetarium in Pilikula, which is the first of its kind in Asia. In order to provide quality education for rural students, he established resource centres in 6 places in the State. That apart, he has contributed immensely in establishing Science Gallery in Bengaluru, which is the first of its kind in Asia and the third in the world.

Dr. Honne Gowda is a recipient of many awards and honours for his contribution to the field of geoinformatics and important among them is the prestigious Kempe Gowda Award given by the Bruhat Bengaluru Mahanagara Palike (BBMP).

We wish Dr. Honne Gowda an active life with good health in his post retirement, while continuing to contribute for science educational and promotional activities in the State.

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KSTA has 15 members comprising of Additional Chief Secretaries/ Principal Secretaries of Govt. Departments and renowned educationists & distinguished scientists.



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