



**Shri Basavaraj S. Bommai**  
Hon'ble Chief Minister  
Government of Karnataka

# Vijnana Vahini

April 2022 to June 30, 2022



**Dr. Ashwathnarayan C. N.**  
Hon'ble Minister for Higher Education, IT&BT, S&T,  
Electronics and Skill Development, Livelihood,  
Government of Karnataka



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



**Prof. S Ayyappan**  
Chairman

## From Chairman's Desk

The main global event, the Annual Session of the World Economic Forum, was the first in-person event since the pandemic. With the theme of 'Working together, Restoring Trust', the aim of the Conference was to address the economic, environmental, political and social fault-lines exacerbated by the COVID-19 pandemic. The focus areas were progressing cooperation on tackling climate change, building a better future for work and harnessing technologies for fourth industrial revolution. There are elements that could be addressed in the

programmes of various institutions, such as education, reskilling, climate action and so on.

The Academy undertook programmes of expert talks, publications, small grants support, as also the selection of Annual Awards and Fellowships. Both the Executive Committee and General Body of the KSTA had met during the quarter. The guidance and inputs received from the Members are gratefully acknowledged.

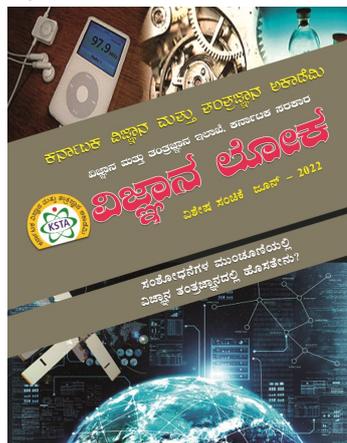
S. Ayyappan

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## Frontiers of Science and Technology - Vijnana Loka Special Issue

Vijnana Loka magazine is being published regularly in Kannada since 16 years under the editorship of Dr. P. S. Shankar. Four special issues have been published till date. One more special issue of 136 pages entitled 'Samshodhanegala Munchuniyalli' and comprises of 25 articles on science and technology written by renowned science writers has been brought out.



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## Humanism: Is it being killed?



**Prof. B. G. Mulimani**



**Prof. J. R. Tonannavar**

Philosopher George Santyana once said, 'Those who cannot remember the past are condemned to repeat it'. War in Ukraine reminds us that history is repeating. It was in 1955, after the Second World War, Bertrand Russell in association with Albert Einstein and eminent men of science, submitted a Manifesto, since called Russell-Einstein manifesto, to a Pugwash Conference where it was resolved as: 'In view of the fact that in any future world war nuclear weapons will certainly be employed, and that such weapons threaten the continued existence of mankind, we urge the governments of the world to realize, and to acknowledge publicly, that their purpose cannot be furthered by a world war, and we urge them, consequently, to find peaceful means for the settlement of all matters of dispute between them'. This appeal is relevant even today and it originated, among others, from the background of the deep scars left behind by the Nazi concentration camp and atom bomb-struck Japan. Following the holocaust, a renowned psychiatrist Victor E. Frankl, in his book 'Man's Search for Meaning', has cautioned as saying, 'The world is in a bad state, but everything will become still worse unless each one of us does his best. So let us be alert – alert in a two-fold sense: (1) Since Auschwitz we know what man is capable of; (2) And since Hiroshima we know what is at stake'. The real

threat to common people's life due to a war has remained since 1946 as it has begun in Ukraine. While the Second World War was fought and won, it appears peace is lost forever. Still wars are fought all over the world by guided missiles and by misguided political leadership. Genocides have continued. People are displaced from their homes, making them refugees in search of new homes. A happy life to which people are entitled is snatched for no mistake of theirs. A fundamental question is therefore raised: Is humanism being slowly killed? The UN, a world body to keep international order, appears helpless since one of its permanent members on the Security Council, Russia, has waged a war in Ukraine. Is the world-politics, day by day, dominated by fascists at the expense of the silence of intellectuals and pacifists? Have scientists and technologists misled us? Are science and technology for the betterment of man or for his destruction? 'Our scientific power', said civil rights activist Martin Luther King Jr, 'has outrun our spiritual power'. Today, governments are armed with the most lethal weapons of mass destruction with no parallel in history. As a result, have we become self-destructive? It is worthwhile to remember destruction caused by explosives made by dynamite inventor Alfred Nobel, who later, in order to atone for his deadly invention,

*"Our scientific power  
has outrun our  
spiritual power"*

**- Martin Luther King Jr.**

instituted a Nobel Prize for the promotion of peace. Can scientists and technologists redeem themselves from guilt like Nobel did? In his book 'The Demon-Haunted World – Science as a Candle in the Dark', the distinguished cosmologist Carl Sagan refers to a meeting between J. Robert Oppenheimer, who was the scientific director of the Manhattan nuclear weapons project and the then US president Harry Truman. During the meeting Oppenheimer comments that "scientists had bloody hands, they had now known sin". His reference was to the dropping of atomic bombs on Hiroshima and Nagasaki in Japan. It seems Truman never wanted to see Oppenheimer again. So what drives governments to war? In his letter to 'Friends of Peace' in 1934, Einstein opined that, 'the armament industry is indeed one of the greatest dangers that beset mankind. It is the hidden evil power behind nationalism which is rampant everywhere. Last year I asked a well-known American diplomat why Japan was not forced by a commercial boycott to desist from her policy of force – "Our commercial interests are too strong" was the answer'. Powerful nations are persuaded by the military-industry

complex for a war citing potential threats and strategic reasons. Military prowess blinds leaders in power as seen in mythologies where a blessed devout is armed by God and he goes berserk creating victims. God is invoked by the victims for protection who then destroys the devout. In the end, the good wins over the evil. However, in the practical world, it is man's wisdom, not folly that saves him from the brink of unjustifiable war. A Buddhism principle says there is only one key to open the gates of both Heaven and Hell; it is up to the man to decide. Einstein says in semi-scientific terms, 'Only two things are infinite, the universe and the human stupidity, and I am not sure about the former'. We wish to live in a world free of conflicts, suffering and misery; that world would be more human, spiritual and a happier one.

**Prof. B. G. Mulimani**

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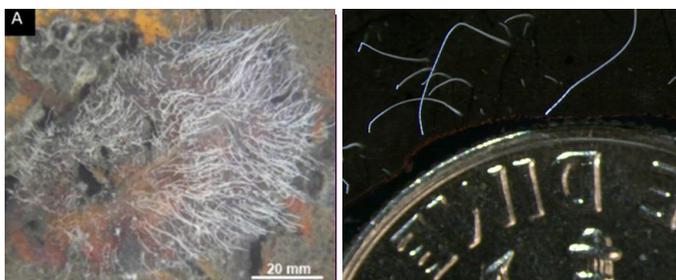
And

**Prof. J. R. Tonannavar**

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## Current Science & Technology

### Giant Bacteria



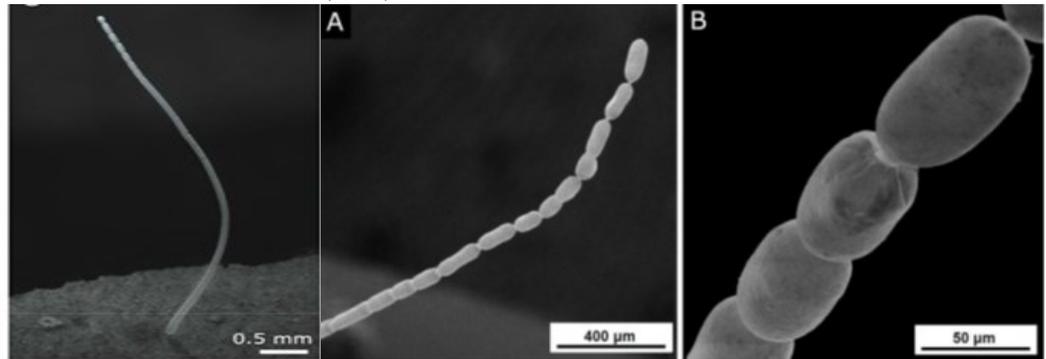
Until now we believed that the bacteria are tiny and can be seen only under microscope. However, marine biologist Jean-Marie Volland of the Laboratory for Research in Complex Systems in Menlo Park, California and his colleagues found an unusually large, sulfur-oxidizing bacterium with a complex membrane organization on the decaying mangrove leaves in the waters of a Caribbean mangrove swamp. Named *Thiomargarita magnifica*, the giant bacterium measures one centimeter in length and is visible to the naked eye. Using fluorescence, x-ray, and electron microscopy in conjunction with genome sequencing, the team characterized and observed highly polyploid cells with DNA and ribosomes compartmentalized within membranes. The DNA, instead of floating freely inside the

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## Current Science & Technology *Continued . . . . .*

cell as happens in other bacteria, is compartmentalized within membrane-bound structures, as seen in eukaryotes - a group of organisms that includes plants and animals. These are first discovered

Source: *Science* **376**, 1453 (2022) DOI: 10.1126/science.abb3634



while collecting water samples in tropical marine mangrove forests in the Caribbean's Lesser Antilles. The long white filament like structures suggested them to be some eukaryotes at first instance. However, the genetic analyses showed that the organisms were actually bacteria. This new discovery has opened up new way of thinking about bacteria.

### Robots with living skin

A team of researchers at the University of Tokyo have built a robotic finger that is covered with living skin. The researchers grown a real human skin cells around the robot finger which heal itself when injured with the help of a collagen bandage in laboratory. The skin thus grown is water-repellent and wrinkles up when the robot's finger makes movements. They used skin equivalents that is used to treat severe burns

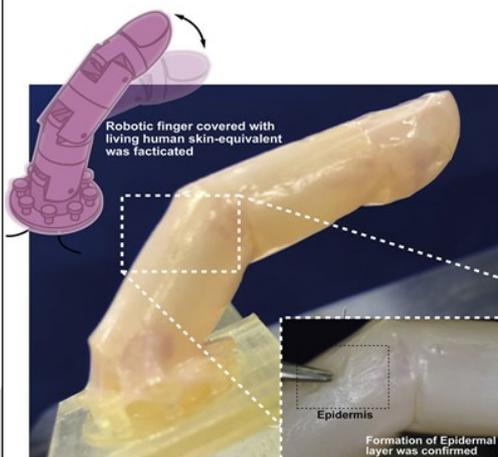


Image: <https://doi.org/10.1016/j.matt.2022.05.019>

which are made of living human skin cells and hydrogels made of collagen. The researchers effectively grew skin on top of a robot finger by culturing the dermis (the middle layer of human skin) on the robot finger using a mixture of collagen and dermal fibroblasts. Then, they seeded this dermis with keratinocytes, which are cells that make up the epidermis (the outermost layer of the skin), and finally developed a robot finger covered with living human skin equivalent. The team is also working towards reproducing some of the organs found in skin viz., sensory cells, hair follicles and sweat glands.

- Dr. Anand R

Senior Scientific Officer, KSTA

## International Years in 2022

### International Year of Glass

UN General Council declared 2022 as International Year of Glass. The Year will celebrate the essential role glass in Society. Glass is an integral part of everyday life and is one of the oldest industries. It has a wide range of usage due to its physical and



chemical properties. Made entirely of raw materials found in nature, glass is sustainable and harmless to the environment. It's the only packaging material that is both reusable and infinitely recyclable.

### International Year of Artisanal Fisheries and Aquaculture

The United Nations General Assembly has declared 2022 as the International Year of Artisanal Fisheries and Aquaculture. FAO is the lead agency for celebrating the year in collaboration with other relevant organizations and bodies of the United Nations. The vision is to recognise and empower small-scale artisanal fishers, fish farmers and fish workers to continue their contributions to human well-being, healthy food systems and poverty eradication through the responsible and sustainable use of fisheries and aquaculture resources.



### The International Year of Basic Sciences for Sustainable Development



Focusing on the links between basic sciences and the Sustainable Development Goals, the year will help highlight the crucial role of basic sciences for sustainable development and emphasize their contributions to the implementation of the 2030 Agenda and achievements of the Sustainable Development Goals (SDGs). Basic sciences provide an essential means to meet crucial challenges such as universal access to food, energy, health coverage and communication technologies. They enable us to understand the impact of the depletion of

the ozone layer, climate change, degradation of natural resources, extinction of living species, etc.

- Dr. Anand R

### National Conference: Science & Technology for Start-ups



Karnataka Science and Technology Academy and Siddaganga Institute of Technology, Tumakuru are jointly organizing the 12th KSTA National Conference on the theme entitled 'Science and Technology for Start-ups' from July 19 to 21, 2022 at

Tumakuru.

#### Poster Presentation

Research papers are invited from UG, PG students as well as doctoral and research scholars. Space will be provided to display their research results in poster form (size of the poster - 3 x 2 1/2 feet). As all the posters exhibited during the conference must be manned by the first author, multiple entries will not be entertained. The selected posters will be brought out in the form of a compendium and made available to all the delegates at the conference. Visit <http://ncsts22.sit.ac.in> for more details.

## KSTA Awards

### Prof. CNR Rao Lifetime Achievement Award in STEAM

Two senior scientists/technologist have been selected for the Prof. C.N.R. Rao –KSTA Lifetime Achievement Award for the year 2022 in recognition of their unique contributions in the fields of science, technology, engineering, agriculture and medicine. The award carries a gold medal, a cash prize and an honorary fellowship from the Academy. The award function will be held in the month of August 2022.



**Dr. C. A. Viraktamath**  
Retired Emeritus Professor  
Agricultural University,  
Bengaluru



**Dr. T. Shivanandappa**  
CSIR Emiretus Professor  
University of Mysore,  
Mysuru

### KSTA Lifetime Achievement Award for STEAM Communication in Kannada

KSTA is awarding Lifetime Achievement Award in recognition of the outstanding contributions made in STEAM communication in Kannada by senior science communicators. The selected awardees will be honored with a gold medal, a cash prize and an honorary fellowship from the Academy. Two outstanding communicators have been selected for the Lifetime Achievement Award for the year 2022 and the award distribution will be held in the month of August 2022.



**Dr. K. V. Rao**  
Director, Pilikula Regional  
Science Center, Mangaluru



**Dr. Na Someshwara**  
Medical Doctor & Renowned  
Quiz Master, Bengaluru

### KSTA meetings

**Executive Committee (EC):** The 16th EC meeting of KSTA was held on June 08, 2022 under the Chairmanship of Prof. S. Ayyappan, Chairman, KSTA from 3:00 pm to 5.15 pm.

**General Body (GB):** The 12th GB meeting of KSTA was held on June 28, 2022 under the Chairmanship of Prof. S. Ayyappan, Chairman, KSTA from 3.00 pm to 4.30 pm

### MOU and Collaborations

During April—June 2022, MOU with 06 organisations/institutions were signed, while till date totally 50 MOUs have been signed.

Sl. No.	Organisations/Institutions	Date of MOU
1	Dayananda Sagar College of Engineering, Bengaluru	07-04-2022
2	BLDEA's V.P. Dr. P.G. Halakatti College of Engineering and Technology, Vijayapura	09-05-2022
3	B.L.D.E. Association's Shri Sanganabasava Mahaswamiji College of Pharmacy And Research Centre, Vijayapura	11-05-2022
4	Manipal Academy of Higher Education, Manipal	18-05-2022
5	PRESIDENCY UNIVERSITY, BENGALURU	27-05-2022
6	Vigyan Prasar, DST, Gol, New Delhi (SCOPE Project)	04-06-2022

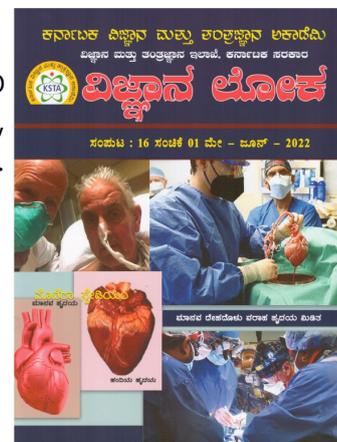
## Programs carried out during First Quarter (April - June 2022) of FY 2022—'23

During the period of April - June 2022, following twenty three programs related to frontier areas of science and technology were conducted through Video Conference (VC) mode in association with research institutes/ science forum/ educational organizations.

Sl. No	Date	Program Title	Associate Institution/ Organisation	Beneficiaries (No.)
1	April 7, 2022	'6/6: Eye Care' - Dr Arun Adkoli		60
2	April 18, 2022	'Rare Genetic Disease Diagnosis' - whole-exome & whole-genome Sequencing		94
3	April 19, 2022	'Magic of Pi' - Prof. Sarmishta Sahu		68
4	May 7 2022	Science and Technology Education in Kannada	e-Jnana and Surana College	
5	June 2-4, 2022	3-D Printing for Innovative Research and Knowledge Development	Jyothy Institute of Technology, Bengaluru	149
6	June 4, 2022	Science and Technology Journalism for Women Writers	Vigyan Prasar, New Delhi and Kuthuhali	45
7	June 8, 2022	World Ocean Day – Theme- Revitalization : 'Collective Action for The Ocean' - Dr N Ramaiah		191
8	June 29, 2022	Talent Search Program: Thermodynamics by Dr Dr G. K. Venkatesh	KSTePS, GOK	124
9	June 30, 2022	Talent Search Program: Elements in the Humam Body By Dr. C. K. Manjunath	KSTePS, GOK	35
10	June 28 - July 04, 2022	Biotechnology Workshop – Skill Vigyan Program	KTECH, GOK	35

### Vijnana Loka — Bimonthly Magazine

Brought out the May-June issues of *Vijnanaloka* and sent to subscribers including pre-university and science degree colleges, science centres, libraries and other organizations across the state. Available in KSTA website - <https://kstacademy.in>



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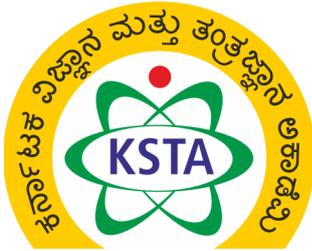
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Branch: Vidyananyapura

UPI ID: KSTABANGALORE@SBI

Interested may fill the prescribed application form available in the website [kstacademy.in](http://kstacademy.in) and send the same along with payment details to our email: [vijnanaloka@gmail.com](mailto:vijnanaloka@gmail.com)

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.



Science & Technology for All



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