# SCIENCE CENTRE NEWS LETTER

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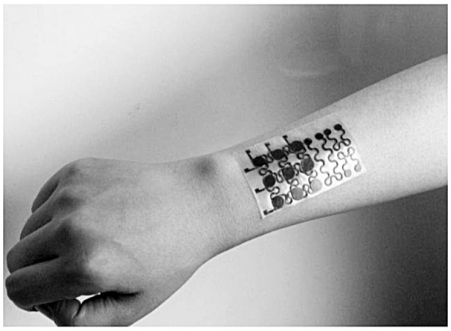
## WHAT'S NEW IN SCIENCE

### New malleable 'Electronic Skin' self healable and recyclable.

Researchers from University of Colorado Boulder have developed a new type of malleable, self healing and fully recyclable "electronic skin" that has applications ranging from robotics and prosthetic development to better biomedical devices. Electronic Skin, known as e-skin, is a thin, translucent material that can mimic the function and mechanical properties of human skin. The new CU Boulder e-skin has sensors embedded to measure pressure, temperature, humidity and air flow said Assistant professor Jianliang Xiamo, who is leading the research effort with CU Boulder Chemistry and Bio chemistry Associate Professor Weizhang. It has several distinctive properties, including a novel type of covalently bonded dynamic network polymer, known as polyimine that has been laced with silver nanoparticles to provide better mechanical strength, chemical stability and electrical conductivity. A paper on the subject was published on 9 February,2018 in the journal Science Advances. Another benefit of the new CU Boulder e-skin is that it can be easily conformed to curved surfaces like human arms and robotic hands by applying moderate heat and pressure to it without introducing excessive stresses. To recycle the skin, the device is soaked into recycling solution, making the polymers degrade into oligomers (polymers with polymerization degree usually below 10) and monomers (Small molecules that can be joined together into polymers) that are soluble in ethanol. The silver nanoparticles sink to the bottom of the solution. 'The recycled solution and nanoparticles can then be used to make new, functional e-skin', said Xiao.



Courtasy : Millennium School, Dandi Road, Surat

## SCIENTIST OF THE MONTH

### G.V.Loganathan

Gobichettipalayam Vasudevan "G.V". Loganathan was born on April 8, 1954 in Karatadipalayam,Tamil Nadu(erstwhile Madras). He was an Indian-born American Professor. He pursued his Bachelor of Engineering degree at PSG College of Technology, Coimbatore in 1976. He did his M.Tech at Indian Institute of Technology, Kanpur and received a doctorate from Purdue University, United States. G.V.Lognathan joined Virgina Tech on December 16, 1981 for his first job teaching civil and environment engineering courses and continued to teach at Virginia Tech until his death in 2007. His work focused on the areas of hydrology and hydraulic networks (pipelines). He Co-authored a number of publications and books which have been particularly useful in the field of municipal water supply distribution networks, such as the 2002AWWA book "Prioritizing Main Replacement and Rehabilitation" which has been used by organizations such as East Bay Municipal Utility District. His work also involved collaboration with the National Weather Service office. At age 53, Loganathan was among the 32 people killed by Seung-Hui Cho in the Virginia Tech shooting on April 16,2007. Loganathan taught an Advanced Hydrology class in Norris Hall's Room 206. On April 16,2007, Cho entered Norris206 and opened fire, Loganathan was Cho's first target of the fifteen registered students in Loganathan's class, nine were killed and six more were injured.

Courtasy : Millennium School, Dandi Road, Surat

## SCIENCE FACTS APRIL 2018

| | |
|---|---|
| 1 April 1962 | Decimal weight measurement system was made compulsory in India. |
| 2 April | World Autism Awareness Day. (UN) |
| 2 April 1618 | Mathematician and Physicist, Francisco M. Grimaldi (discoverer of light diffraction) was born. |
| 3 April 1984 | Indian Astronaut Mr.Rakesh Sharma traveled into Space. |
| 7 April | World Health Day (WHO) (UN) |
| 12 April | International Day of Human Space Flight (UN) |
| 12 April 1961 | First Russian Astronaut Yuri Gagarin traveled into Space. |
| 16 April 1853 | First Indian Steam Engine train was started from Mumbai to Thane. |
| 16 April 1867 | Wilbur Wright (co-inventor of the first manned aeroplane) was born. |
| 19 April 1912 | American Chemist, Glen T. Seaborg (discoverer of plutonium) was born. |
| 19 April 1971 | Russia had launched world's first unmanned Space research station "Salyut-1" in Space. |
| 19 April 1975 | India entered in Space Era. "Aryabhatt" Satellite was launched from Soviet Union. |
| 22 April | International Earth Day. |
| 22 April 1799 | Jean Poiseuille (discoverer of blood pressure) was born. |
| 23 April | World Book & Copyright Day (UNESCO) |
| 23 April 1858 | German Physicist, Max Planck (who wrote the Planck Constant) was born. |
| 25 April | World Malaria Day (WHO) |
| 25 April 1874 | The great Scientist Mr. Marconi (inventor of Radio) was born. |
| 27 April 1791 | Mr. Semual Morse (inventor of Postal Service & Telegram) was born |
| 28 April | World Day for Safety & Health at Work |
| 30 April 1895 | French Scientist Mr. Rontgen discovered X-rays. |

U. N. : United Nations

WHO : World Health Organization

UNESCO : United Nation Educational Scientific and Cultural Organization

SCIENCE CENTRE SCS SURAT

**Timings**

Tuesday to Friday
9.30 am to 4.30 pm

Saturday - Sunday & Public Holidays
11.00 am to 6.30 pm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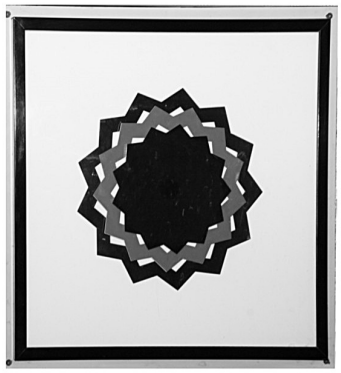
सूरत महानगर पालिका
बहुजनहिताय बहुजनसुखाय

## KNOW THE EXHIBITS AT FUN SCIENCE GALLERY

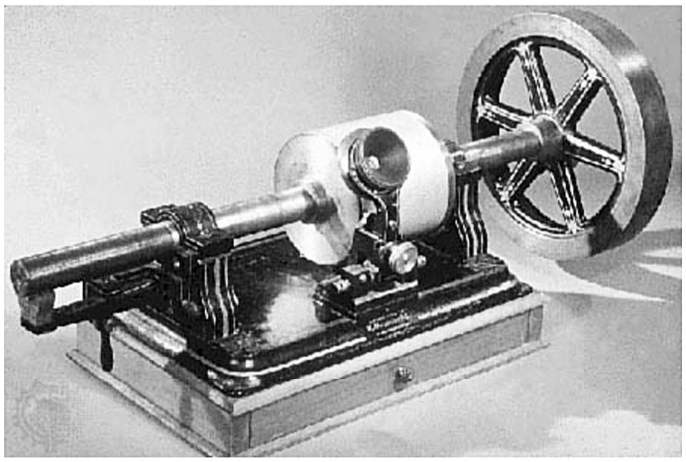
### Kaleidoscopic motion

Press the switch and observe that red star like wheel rotate. Does it rotate smoothly? Some time depending on the contrasts in the rotating wheel may appear to pulsate, jolt, or accelerate and the inner stationary shape may wiggle. Between the stationary inner and outer blue. starlike wheels, a similar red coloured wheel rotates with constant velocity about its own center. While doing so, its edges are sometimes hidden behind the inner blue wheel and sometimes they come in front of the outer blue wheel. But at regular intervals, it precisely fills the space between the two stationary blue wheels. Due to this its motion appears jerky although it is actually rotating uniformly.

## SCIENTIFIC QUESTION

### Who performed the first recording and how?



Experiments in capturing sound on a recording medium for preservation and reproduction began in earnest during the Industrial Revolution of the 1800s. Many pioneering attempts to record and reproduce sound were made during the latter half of the 19th century-notably Scott's Phonautograph of 1857 and these efforts culminated in the invention of the Phonograph by Thomas Edison in 1877. The phonograph is a device, for the mechanical recording and reproduction of sound. In its later forms, it is also called gramophone. Edison's machine had a cylinder turned by a hand crank, a horn and a blunted needle or 'stylus'. At the small end of the horn there was a flexible cover. Sound waves that entered the large end of the horn moved this cover one way or another. Since the stylus was also attached to this, it too moved up and down with the sound waves. The cylinder was covered by a layer of tin foil. As the crank was turned, the stylus pressed against this tin foil went around the cylinder many times, thereby making crease on the foil. When a person spoke into the horn, it made the stylus move up and down. When the stylus was down, it made a deeper groove in the tin foil and when the stylus was in an upward position, it made a lighter crease. The changing depth of the groove was the pattern of the sound waves made by a person singing or talking. It was the record of the sound.

To play the record, the stylus and the horn were moved back to the beginning of the groove. As the stylus followed the groove, it caused the flexible cover in the horn to vibrate in the some pattern. Further, it made the air in the horn move to and fro, which could make a sound like the original sound recorded. Thus, this was the whole process by which Edison performed the first recording.

Courtasy :
Millennium School, Dandi Road, Surat

## SCIENCE PROJECT

Surat Municipal Corporation in collaboration with Surat Smart city Development Ltd. had organized "Science Fair" at ground floor of Art Gallery, Science Centre, Surat from 21st to 22nd July 2017. 'Bhakt Kavi Shamal Pri.School No.107' presented their project on 'Solar Chimney'. The principle of the project is produce electric energy from Solar energy. In this project, the plastic wrapped porch are placed and high chimney is arranged and in this chimney the turbine is placed. Plastic wrapped porch are placed in hot places and big areas. The downward air is heated due to Sun's heat during the day. Since this air is inferior this hot air try to exit very fast upward from the chimney. The rotating wheel known as turbine is placed under the chimney. By rotating this turbine from the magnetic medium the electric energy is produced. At present, in France, turbine is rotated by this type of plastic wrapped porch and hot air is get out through the chimney and turbine is rotated. By arranging a chimney in 2 km area approx. 200 MW electricity is produced through every chimney. Thus, at present electricity is produced in large scale by this way.

## EXHIBITION

### Astrophotography Exhibition

Surat Municipal Corporation had organized Astrophotography Exhibition at First Floor of Art Gallery, Science Centre Surat from 03/03/2018 to 13/03/2018. In this exhibition, the photographs on the subject of Astronomy i.e., Milky Way, Solar System (Sun,Moon,Planets), Night Sky, Star Trail, etc. were displayed. 160 photographs were displayed by 36 photographers from Gujarat.

## SCIENCE CENTRE

Science Centre forms the main part of the entire complex; it displays thematic galleries in the field of Science and Technology. The ground floor of Science Centre showcases 3D Theatre and Souvenir Shop. The first floor of Science Centre showcases Planetarium, Fun Science Gallery and Power of Play Gallery and second floor of Science Centre showcases Diamond Gallery, whereas Entering into Space, Textile Gallery, Cosmos Gallery and Polar Science Gallery are under development.

| 3d Show | Tuesday to Friday (Time) | Saturday, Sunday & Holidays (Time) |
|---|---|---|
| English | 09:15, 11:20, 12:00, 02:40, 04:00 | 11:20, 12:00, 02:40, 04:00 |
| Hindi | 10:00, 10:40, 12:40, 01:20, 02:00, 03:20 | 12:40, 01:20, 02:00, 03:20, 04:40, 05:20, 06:00 |

| | |
|---|---|
| **Science Centre + Planetarium + Museum + Diamond Gallery** | |
| Above 18 Years | Rs. 100 |
| 3 Years to 18 Years | Rs. 65 |
| **Science Centre + Museum + Diamond Gallery** | |
| Above 18 Years | Rs. 60 |
| 3 Years to 18 Years | Rs. 40 |
| **Science Centre + Planetarium + Museum + Diamond Gallery + 3D Show** | |
| Above 18 Years | Rs. 120 |
| 3 Years to 18 Years | Rs. 80 |
| **Planetarium** | |
| Above 18 Years | Rs. 50 |
| 3 Years to 18 Years | Rs. 40 |
| **3D Show** | |
| Above 18 Years | Rs. 60 |
| 3 Years to 18 Years | Rs. 40 |

**Planetarium**

| Tuesday to Friday | | Saturday, Sunday & Public Holidays | |
|---|---|---|---|
| 09:30 to 10:20 | English | 11:30 to 12:20 | Gujarati |
| 10:30 to 11:20 | Gujarati | 12:30 to 01:20 | English |
| 11:30 to 12:20 | Gujarati | 01:30 to 02:20 | Hindi |
| 12:30 to 01:20 | English | 02:30 to 03:20 | Hindi |
| 01:30 to 02:20 | Hindi | 03:30 to 04:20 | Gujarati |
| 02:30 to 03:20 | Hindi | 04:30 to 05:20 | English |
| 03:30 to 04:20 | Gujarati | 05:30 to 06:20 | Gujarati |