SCIENCE CENTRE NEWS LETTER

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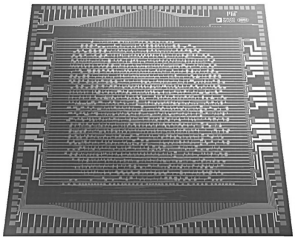
WHAT'S NEW IN SCIENCE?

MIT scientists have built biggest-ever carbon nanotube computer chip

"Scientists at the Massachusetts Institute of Technology (MIT) have developed the biggest-ever computer chip using carbon nanotubes (CNT) instead of silicon, marking a milestone in computing technology", the Journal Nature reported. The RV16XNano is a 16-bit processor that contains 14,000 transistors electronic switches. These switches are made up of CNT tiny cylinders made of rolled-up, atom-thick sheets of graphene.



The RV16XNano also executed the traditional 'Hello, World!' computer programme and churned out the message: "I am RV16XNano, made from CNTs", the report said.

The computer industry, has for decades, survived on silicon transistors that switch between 1 and 0 bits to carry out computations. Until now, engineers have shrunk the size of these transistors to increase their power and speed. But they could be reaching a fundamental limit, the researchers said. The CNTs, on the other hand, conduct electricity much faster, are 10-times more energy-efficient and could also be seen as a greener option compared to their silicon counterparts, the MIT news reported.

But, these often come with natural defects as a small portion of CNTs will be metallic instead of having the semiconducting properties required to be transistors. As a result, they slow down or stop the transistor from switching. The first-known CNT, developed in 2013, contained only hundreds of transistors, the Journal Nature report said.

The new processor, however, was built using clever circuit design to limit these defects. It also integrated two different types of transistor that are essential for modern computer circuitry. The new device is, thus, much closer to a commercial chip, the researchers said.

"This is by far the most advanced chip made from any emerging nanotechnology that is promising for high-performance and energy-efficient computing," co-author Max M Shulaker, assistant professor of Electrical Engineering and Computer Science at the MIT, was quoted by MIT News. "Silicon has a limit. If we want to continue to have gains in computing, carbon nanotubes represent one of the most promising ways to overcome those limits," Shulaker added.

Courtesy: Joyous English School

SCIENTIST OF THE MONTH

Upendranath Brahmachari

Upendranath Brahmachari was born on 19 December 1873 in Sardanga village near Purbasthali, District Burdwan of West Bengal, India. He completed his early education from Eastern Railways Boys' High School, Jamalpur. In 1893, he passed BA degree from Hooghly Mohsin College with honours in Mathematics and Chemistry. He passed his master's degree in 1894 from the Presidency College, Kolkata. In M.B (Bachelor of Medicine) Examination of 1900 of the University of Calcutta, he stood first in Medicine and in Surgery for which he received Goodeve and Macleod awards. He obtained his MD (Doctor of Medicine) degree in 1902, and was awarded a PhD (Doctor of Philosophy) degree in 1904, for his research paper on "Studies in Haemolysis" from the University of Calcutta. Brahmachari joined the Provincial Medical Service in September 1899 and appointed as a teacher of Pathology and Materia Medica, and physician in the Dacca Medical School in 1901. In 1905, he was appointed as a teacher in Medicine and Physician at the Campbell Medical School (Nil Ratan Sircar Medical College and Hospital), Calcutta, where he carried out most of his work on Kala-azar and made his monumental discovery of Urea Stibamine. He retired from the government service as a physician in 1927. After retirement from the government service Brahmachari joined the Carmichael Medical College in Kolkata as Professor of Tropical Diseases. Brahmachari played an important part in the formation of the world's second Blood Bank in Kolkata in 1939. He was the first Indian to become the Chairman of the Managing Body of the Indian Red Cross Society of the Bengal Branch. He died on 6 February 1946 (aged 72). For his achievements, he received many awards, including the Griffith Memorial Prize of the University of Calcutta, the Minto Medal by the Calcutta School of Tropical Medicine and Hygiene (1921) and the Sir William Jones Medal by the Asiatic Society of Bengal. He was awarded the title of Rai Bahadur and awarded the Kaisar-i-Hind Gold Medal, 1st Class by the Governor General Lord Lytton (1924). Brahmachari was a nominee for the Nobel Prize in 1929 in the category of physiology and medicine.

Courtesy: Joyous English School

SCIENCE FACTS DECEMBER 2019

AIDS Awareness Month

1st Dec	World AIDS Day. (by U. N.)
2nd Dec 1984	Bhopal Gas Tragedy.
3rd Dec	International Day, disabilities. (by U. N.)
3rd Dec 1886	Swidish Physicist Karl M.G. Siegbahn (Inventor of Rontgen Spectroscope) was born.
7th Dec	International Civil Aviation Day. (by U. N.)
7th Dec 1972	American Space Craft "APOLLO 17" launched towards moon with Scientist.
9th Dec 1868	German Physicist and Chemist Fritz Haber (Who discovered Haber Process) was born.
14th Dec	National Energy Conservation Day.
15th Dec 1852	Antoine Henri Becquerel (Who discovered Radioactivity) was born.
15th Dec 1863	Arthur D. Little (Inventor of Rayon) was born.
17th Dec 1797	American Scientist Joseph Henry (Inventor and Pioneer of Electromagnetism) was born.
17th Dec 1903	Wright Brothers were the world's first successful persons who flew in an aeroplane.
17th Dec 1908	Willard Frank Libby (Inventor of The Carbon 14) was born.
18th Dec 1856	English Physicist Joseph John Thomson (Discoverer of electron) was born.
23rd Dec	Farmer's Day. (Chaudhary Charansingh's Birth Anniversary)
24th Dec 1818	Physicist James Prescott Joule (Who discovered the Principle of Conservation on energy) was born.
27th Dec 1571	German Astronomer Johann Kepler (Who discovered elliptical orbits) was born.
	U.N. (United Nation)

Answers: 1. B 2.D 3.A 4.D 5.C 6.A 7. B 8.B

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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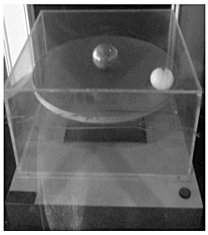
KNOW THE EXHIBIT AT FUN SCIENCE GALLERY

Why do we see only one side of Moon?

Press the switch and observe revolution of the Moon around the Earth. It takes 27.5 days for Moon to complete on rotation around its axis as well as one revolution around Earth. Every time when we see towards the Moon we can see only one side of the Moon, because its rotation and revolution period are same.

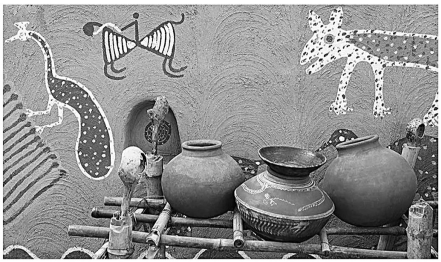


SCIENTIFIC QUESTION

Why does water get cooled in earthen pot and not in a metal or glass pot?

Have you ever had a drink of cool refreshing water from a 'matka' or earthen clay pot placed outside? Surprisingly enough, the pots are exposed to blazing sunlight, yet the water within stays so cool. How is that possible?

This is because of a physical process known as evaporation. When a liquid changes to a gaseous (or vapour) state without boiling, it is known as evaporation.



A matka is made of clay and has many minute pores (extremely small holes). No matter how tightly you pack the mud, these pores remain. It is through these pores that the water, placed inside the matka, oozes out. Now, to evaporate, the water needs to absorb heat, which will change it to vapour.

The only way the water oozing out of the matka can turn to vapour is by absorbing heat from the liquid within the matka and the matka itself. Due to this process of continuous absorption of heat from the water inside the matka, in a few hours, this water becomes cool.

Glass and metal do not have any pores. So the water placed inside glass and metal vessels cannot seep out and evaporate. Therefore, water inside remains hot.

In nature, there are countless examples of evaporation. For instance, have you ever noticed how a dog hangs its tongue out after running around? The saliva on its tongue evaporates and the tongue becomes cooler. In turn, the dog also feels cooler.

Why do we feel cool under a fan? This is because the sweat, that is oozing out of the pores in our skin, evaporates in the fan's breeze. The heat needed for the sweat to evaporate is absorbed from the object it comes in contact with (our body) and so we feel cooler.

Courtasy: Joyous English School

SCIENCE QUIZ

1. The planet closest to the Sun is:

A. Neptune, B. Mercury, C. Venus, D. Saturn

2. What is called the blanket of air that envelops the Earth?

A. Upper crust, B. Hydrosphere, C. Lithospere,

D. Atmosphere

3 How many bones in the Human Face?

A. 14, B. 33, C. 15, D. 11

4. What is called the smallest indivisible particle of an element that can exist?

A. Cell, B. Nucleus, C. Molecule, D. Atom

5. Lunar eclipse refers to the eclipse caused by which?

A. Sun, B. Mars, C. Moon, D. Venus

6. Which type of star is the Sun?

A. Supernova, B. Hypernova, C. Red giant,

D. Red Supergiant

7. What powers the Earth's water cycle?

A. The Moon, B. The Sun, C. The Ocean,

D. Earth's rotation

8. Which is faster in the air?

A. Speed of sound, B. Speed of light,

C. Speed of Cheetah D. Speed of Aeroplane

SCIENCE PROJECT

Surat Municipal Corporation had organized 'Science Fair' at Art Gallery, Science Centre, Surat on 30th and 31st August 2019. M.T. Jariwala Madyamik Shala had presented their project on 'Role Of Medicinal Plant'.

The Aim of the project is to define the Role of medicinal plants to control epidermal diseases. The term "Medicinal Plant" include various types of plants used in herbalism. It is the use of plants for medicinal purposes long before pre-historic period. Treatment with medicinal plants is considered very safe as there is no or minimal side effect. These remedies are in sync with nature, which is the biggest advantage. Medicinal plants such as Aloevera, Tulsi, Neem, Turmeric and Ginger cure several common aliments. These are considered as home remedies in many parts of the country, recipes for the treatments of common ailments such as Diarrhea, Bronchial, Asthma and Fever are given by the traditional medicine practioners very effectively. Over the past two decades, there has been a tremendous increase in the use of herbal medicine. However, there is still a significant lack of research data in this field.

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 & Astronomy Gallery will be opening soon

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