

SCIENCE CENTRE NEWS LETTER

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SCIENCE CENTRE

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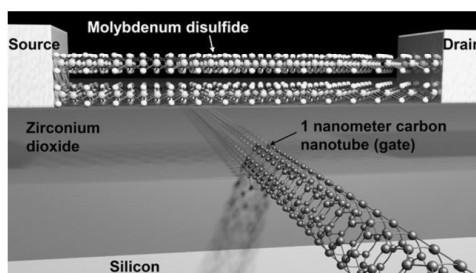
WHAT'S NEW IN SCIENCE

Smallest Transistor Ever :

For more than a decade, engineers have been eyeing the finish line in the race to shrink the size of components in integrated circuits. They knew that the laws of physics had set a 5-nanometer threshold on the size of transistor gates among conventional semiconductors, about one-quarter the size of high-end 20-nanometer gate transistors now on the market.

A research team led by faculty scientist Ali Javey at the Department of Energy's Lawrence Berkeley National Laboratory, California has created a transistor with a working 1-nanometer gate. For comparison, a strand of human hair is about 50,000 nanometers thick.

The key was to use carbon nanotubes and molybdenum disulfide MoS_2 , an engine lubricant commonly sold in auto parts shops.



The findings were published on 6 October, 2016 in the journal Science. Once they settled on MoS_2 as the semi-conductor material, it was time to construct the gate making a 1-nanometer structure, it turns out, is no small feat. Conventional lithography techniques don't

work well at that scale, so the researchers turned to carbon nanotubes, hollow cylindrical tubes with diameters as small as 1 nanometer. They then measured the electrical properties of the device to show that the MoS_2 transistor with the carbon nanotube gate effectively

controlled the flow of electrons.

"A cellphone with this technology built-in would not have to be recharged as often", researcher Moon kim said.

Courtesy : Dr. PVT Primary Girls School (English Medium)
Vanita Vishram, Surat

SCIENTIST OF THE MONTH

Sir Jagdish Chandra Bose

Jagdish Chandra Bose, the great Indian scientist who made the world aware that "plants too have feelings", was born on November 30 1858, in Mymensingh district of Bangladesh (East Bengal in those days). He did his schooling at St. Xavier's School, Kolkata. Impressed by the famous physicist Lord Rayleigh in England, he changed track from the field of medicine to Physics. In 1885, he obtained D.sc. degree from London University with trips in natural Science, he returned to India. He joined the Presidency College in Kolkata as professor of physics.

After coming to Kolkata, Bose started research on double-refraction. Later, he started work on electromagnetic waves. It was for the first time, he used microwaves to understand the structure of substances and

met with success. The device he designed is today known as 'wave guide'.



Before Guglielmo Marconi, the famous Italian inventor and electrical engineer associated with wireless telegraphy began work in this field; Bose had already begun research in this difficult area and was successful to a considerable extent. He later gave up experiments in this area and shifted attention to the study of botany. He made crescograph-A super sensitive instrument for recording plant growth. In 1920, he was elected Fellow of the Royal Society. The British Government conferred the title

'Sir' on him for his valuable contribution. On November 23, 1937 at Giridih in Bihar, this great scientist breathed his last.

Courtesy : Dr. PVT Primary Girls School (English Medium)
Vanita Vishram, 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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SCIENCE FACTS NOVEMBER 2016

3rd Nov 1957	Soviet Union launched an artificial Earth Satellite "Sputnik-2" which was the first satellite to carry a living organism i.e. A dog named 'Laika - 1'.
3rd Nov 1960	America launched "Explorer 8" satellite into the space to discover atmospheric Composition of the Ionosphere.
5th Nov 1855	French Meteorologist Leon Teisserenc de Bort (Discoverer of Stratosphere) was born on this day.
6th November	International Day for preventing the Exploitation of the Environment in war and Armed conflict. (Recognised by U.N.)
7th Nov 1867	French Scientist Mary Curie (Discoverer of Radium) was born.
7th Nov 1888	Indian Famous Scientist Chandrashekhar Raman (Discoverer of Raman Effect) was born on this day.
8th Nov 1922	South African Surgeon Christian Bernard (Who made first successful Heart Transplant) was born on this day.
9th Nov 1801	Gail Borden (Father of Modern Dairy Industry) was born.
9th Nov 1897	British Chemist Ronald G.W. (Inventor of Flash Photolysis Methodology) was born on this day.
10th November	World Science Day for Peace & Development (by UNESCO)
12th Nov 1896	Dr. Salim Ali (Internationally honoured Indian Ornithologist known as "Birdman of India") was born on this day.
13th Nov 1893	American Bio-chemist Adverd A Doicy (Inventor of process to make Vitamin K1) was born on this day.
14th November	World Diabetes Day [by WHO]
14th Nov 1776	Henri Dutrochet (discoverer of process of Osmosis) was born on this day.
14th Nov 1863	Belgian Chemist Leo Baekeland (Inventor of Bakelite) was born on this day.
18th Nov 1897	British Physicist Petrik M.S.Bleckett (Discoverer of Nuclear Reaction) was born on this day.
19th Nov 1997	Kalpana Chawala's (First Woman Astronaut of Indian Origin) first flight in space.
19th Nov 1912	Cell Biologist George E Palade (Discoverer of Ribosomen) was born on this day.
20th November	Universal Children's Day. (by U.N.)
21th November	World Television Day. (by U.N.)
29th Nov 1803	Austrian Physicist Christian Doppler (Discoverer of Doppler effect Radar) was born on this day.
30th Nov 1858	Sir Jagdishchandra Bhagwanchandra Bose (Great Indian Scientist and Botanist) was born on this day.
30th Nov 1917	Sir Jagdishchandra Bose started "Bose Research Institute" for research on Plants and Animals at Calcutta.
U.N. United Nations / WHO : World Health Organization	
UNESCO United Nations Educational Scientific & Cultural Organization	

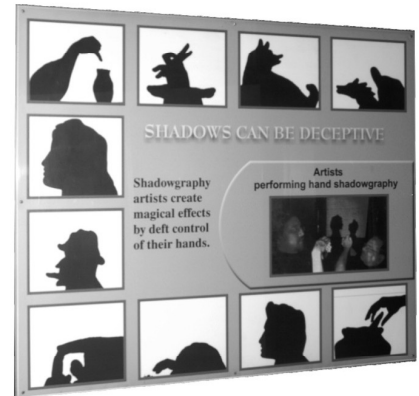
Ans. 1)-B 2)-D 3)-D 4)-A 5)-A

KNOW THE EXHIBITS AT FUN SCIENCE GALLERY

Frozen Shadow

Press the switch. Quickly turn back and move close to the screen. Stretch your arms in front of the screen and wait for a flash of light to fall on it from behind you. Now move back and look at the screen. Your shadow has been captured on the screen.

This special screen is made of a phosphorescent material which absorbs light incident on it and re-emits the same after a while. Those portions of the screen that is blocked by your body does not receive any light and hence can not re-emit light, while the exposed areas can. As a result, the area blocked by your body appears black in comparison to the exposed areas. Hence you see your shadow even after the direct light is put off.



SCIENTIFIC QUESTION

What is an Atmosphere ?

Wrapped around our planet is a thin blanket of gases called the atmosphere. It is about 600 miles (1000 km) high before it fades into the black nothingness of space. Without the atmosphere, our planet

from meteorites.

Layers in the Air :

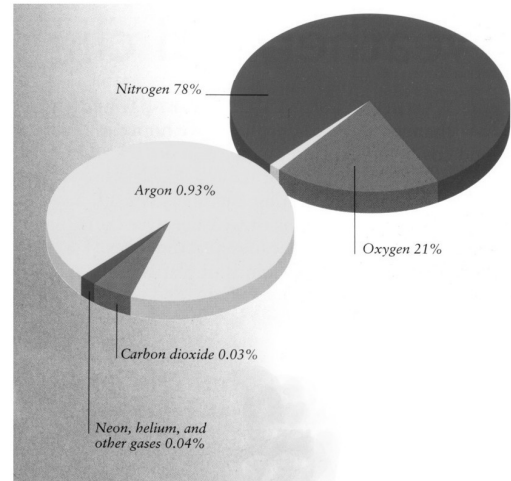
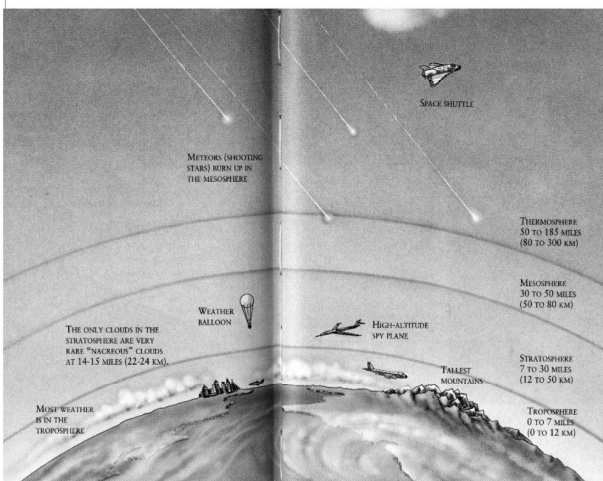
Scientists divide the atmosphere into layers. we live in the bottom layer, called troposphere. Compared to the rest of the atmosphere, the troposphere

is dense. It contains three quarters of its gases, even though it only goes up 7 miles (12 km). The troposphere is warmed by the sun, but it gets most of this heat indirectly,

last thermosphere (80 to 300 km)

Atmospheric gases :

More than 99 percent of the atmosphere is just two gases. These are nitrogen (78 percent) and oxygen (21 percent). The remaining one percent includes



would be as lifeless as the moon. It gives us air to breathe and water to drink. It keeps us warm by the natural greenhouse effect and it shields us from the sun's harmful rays and

reflected off the ground. The air gets thinner and colder as you go higher. There is stratosphere above 12 to 50 km from the ground level. Above the stratosphere, there is mesosphere (50 to 80 km) and at

argon, carbon dioxide, water vapor and minute trace of other gases such as helium and ozone.

Courtesy : Dr. PVT Primary Girls School (English Medium)
Vanita Vishram, Surat

SCIENCE QUIZ

1) Another name for a twister is :

- a) Earthquake b) Tornado c) Wind d) Flood

2) It is a bird born out of the largest egg in the world.

- a) Sparrow b) Hen c) Turkey d) Ostrich

3) The blanket of air that envelops the Earth is called :

- a) Upper crust b) Hydrosphere c) Lithosphere d) Atmosphere

4) Albatross is :

- a) A sea bird b) A beetle c) A fruit d) A city

5) The number of bones in the Human face is :

- a) 14 b) 33 c) 15 d) 11

EXHIBITION

'Gandhi Exhibition' was organized at Science Centre from 1st October to 16th October, 2016 in celebration of 'Gandhi Birth Anniversary'. In this exhibition replicas of daily utility items used by Gandhiji, illustrated literature on the life events of Gandhiji and more than 100 reproductions of line-drawings painted by artist Shri Rathin Mitra on places visited by Gandhiji during freedom movement were exhibited.



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, Souvenir shop, Entry Plaza Exhibits and Park Exhibits. The first floor of Science Centre showcases Fun Science Exhibits and Power of Play Gallery. Second floor showcases Diamond Gallery, Gazebo is developed behind Maheshwari Bhavan which can be used for serving food. Gazebo is given on rental basis. Where as Entering into Space, Textile Gallery, Cosmos Gallery and Polar Science Gallery are under development.

Science Centre + Planetarium + Museum + Diamond Gallery Above 18 Years Rs. 100 3 Years to 18 Years Rs. 65	Planetarium			
	Tuesday to Friday		Saturday, Sunday & Public Holidays	
Science Centre + Museum + Diamond Gallery Above 18 Years Rs. 60 3 Years to 18 Years Rs. 40	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
Planetarium Above 18 Years Rs. 50 3 Years to 18 Years Rs. 40	03:30 to 04:20	Gujarati	05:30 to 06:20	Gujarati