

SCIENCE CENTRE NEWS LETTER

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SCIENCE CENTRE

Volume 2, Issue 8

WHAT'S NEW IN SCIENCE

What molecules you leave on your phone reveal about your lifestyle.

We leave behind trace chemicals, molecules and microbes on every object we touch. By sampling the molecules on cell phones, researchers at University of California, San Diego School of Medicine and Skaggs School of Pharmacy and Pharmaceutical Sciences were able to construct lifestyle sketches for each phone's owner, including diet, preferred hygiene products, health status and locations visited. This proof-of-concept study, published November 14 by proceedings of the National Academy of Sciences, could have a number of applications including criminal profiling, airport screening, medication adherence monitoring, clinical trial participant stratification and environmental exposure studies.

Thirty-nine healthy adult volunteers participated in Professor Pieter Dorrestein's latest study. The team swabbed four spots on each person's cell phone - an object we tend to spend a lot of time touching- and eight spots on each



person's right hand, for a total of nearly 500 samples. Then they used a technique called mass spectrometry to detect molecules from the samples. They identified as many molecules as possible by comparing them to reference structures in the GNPS database, a crowd sourced mass spectrometry knowledge repository and annotation website developed by Dorrestein and co-author Nuno Banderia. With this information, the researchers developed a personalized lifestyle "read-out" from each phone. Some of the medications they detected on phones included anti-inflammatory and anti-fungal skin creams, hair loss treatments, anti-depressants and eye drops. Food molecules included citrus, caffeine, herbs and spices. Sunscreen ingredients and DEET mosquito repellent were detected on phones even months after they had last been used by the phone owners, suggesting these objects can provide long-term composite lifestyle sketches.

SCIENTIST OF THE MONTH

Kariamanikkam Srinivasa Krishnan

Kariamanikkam Srinivasa Krishnan was born on December 4, 1898 in Watrap, Tamilnadu in a Brahmin family. He did his B.Sc from Christian College, Chennai and M.Sc from the University College of Science, Kolkata.

In 1920, Krishnan went to work with C.V.Raman at the Indian Association for the Cultivation of Science, Kolkata. There he engaged himself in experimental study of the Scattering of light in a large number of liquids and its theoretical interpretations. He played a Significant role in the discovery of the Raman Effect. In 1928, he moved to the Dacca University (now in Bangladesh) as the Reader in the Physics Department where he studied magnetic properties of crystals in relation to their structure. Krishnan along with Santilal Banerjee, B. C. Guha and Asutosh Mookerjee developed an elegant and precise experimental technique to measure the magnetic anisotropy of dia- and paramagnetic crystals. Their findings were published by the

Royal Society of London in 1933. In 1933, he returned to Kolkata to take up the post of Mahendralal Sircar Professor of Physics in the Indian Association for the Cultivation of Science where he continued to Collaborate fruitfully with Dr. Santilal Banerjee on the Magnetic properties of crystal. Their experiments in Dhaka and continued Collaborative research in Kolkata led to what is now known as the Krishnan Banerjee method in measuring the magnetic susceptibility of small crystals.



Krishnan was elected as Fellow of the Royal Society (FRS) in 1940. In 1942, he moved to Allahabad University as Professor and Head of the Department of Physics. He awarded the Padma Bhushan by the Government of India in 1954. He was the first recipient of the prestigious Bhatnagar Award in 1958. He was known as a co-discoverer of Raman Scattering. He died on June 14, 1961 at the age of 62.



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 DECEMBER 2016

AIDS Awareness Month

1st Dec	World AIDS Day. (by U. N.)
2nd Dec 1984	Bhopal Gas Tragedy.
3rd Dec	International Day of persons with disabilities. (by U. N.)
3rd Dec 1886	Swedish Physicist Karl M.G. Siegbahn (Inventor of Rontgen Spectroscope) was born on this day.
7th Dec	International Civil Aviation Day. (by U. N.)
7th Dec 1972	American Space Craft "APOLLO 17" launched towards moon with Scientist.
9th Dec	National Girl Child Day. (by U. N.)
9th Dec 1868	German Physicist and Chemist Fritz Haber (Who discovered Haber Process) was born on this day.
9th Nov 1897	British Chemist Ronald G.W. (Inventor of Flash Photolysis Methodology) was born on this day.
14th Dec	National Energy Conservation Day.
15th Dec 1852	Antoine Henri Becquerel (Who discovered Radioactivity) was born on this day.
15th Dec 1863	Arthur D. Little (Inventor of Rayon) was born on this day.
17th Dec 1797	American Scientist Joseph Henry (Inventor and Pioneer of Electromagnetism) was born on this day.
17th Dec 1903	Wright Brothers were the world's first successful persons who flew in an aeroplane.
14th Nov 1863	Belgian Chemist Leo Baekeland (Inventor of Bakelite) was born on this day.
17th Dec 1908	Willard Frank Libby (Inventor of The Carbon 14) was born on this day.
18th Dec 1856	English Physicist Joseph John Thomson (Discoverer of electron) was born on this day
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 on this day.
27th Dec 1571	German Astronomer Johann Kepler (Who discovered elliptical orbits) was born on this day.
U.N. United Nations	

Ans. 1) C, 2) A, 3) A, 4) A, 5) C.

KNOW THE EXHIBITS AT FUN SCIENCE GALLERY

Kaleidoscope

Look through the triangular opening and rotate the long cylinder slowly. Observe the magnificent patterns forming on the other side. As you rotate the cylinder, the pattern change continuously.

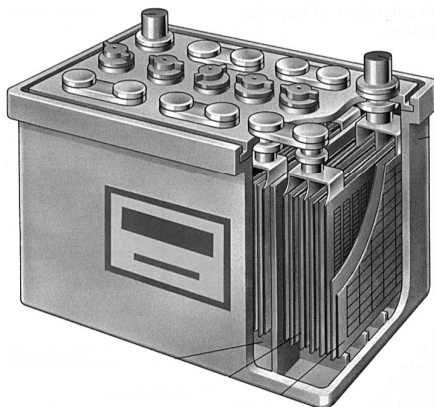
This is a Kaleidoscope with three plain mirrors arranged along the three sides of an equilateral triangle. The mirrors being at equal angles with each other form multiple symmetrical images of the flowing colored liquid kept inside.



SCIENTIFIC QUESTION

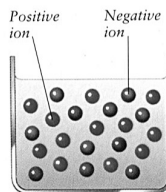
Formation of the car batteries and how it works?

The Simplest unit for making electricity is called cell. It makes electricity from chemical reactions and works like a pump to push electrons along wires. A battery has two or more cells and some types, such as car batteries, are rows or "batteries" of single cells, hence our common name "battery" for single and multiple cells. In a primary cell, as electricity is produced, the chemicals are slowly used up. Eventually, the chemicals run out and the battery can not make electricity and more. In a secondary cell, the chemicals can be replenished or reformed by recharging the cell with electricity.

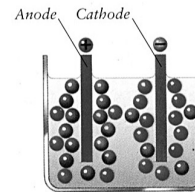


It also called an

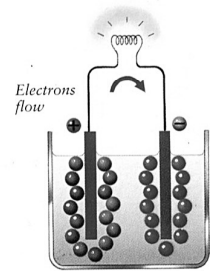
accumulator, a vehicle batteries can be recharged. The chemical reaction which has taken place to make electricity can be reversed by putting electricity back in, so the battery can be used



The electrolyte consists of charge particles called ions, positive and negative.



The electrodes are the positive anode and the negative cathode.



Opposite electrical charges attract and electrons move, making the current.

again. In a vehicle the recharging is carried out by an alternator, which is carried out by an alternator, which is driven by the engine.

Most car batteries have six linked cells, each with an output of about two volts. Each cell consists of lead plates,

lead dioxide plates and sulphuric acid. Electricity is produced in the reactions between the plates and the sulphuric acid.

How a cell works:

Substances such as acids dissolve in water to form charged particles, ions-positive cations (red) and negative anions (blue). In a cell, these form the electrolyte. When other materials, such as metal rods, are put in the electrolyte, They act as electrodes. They attract opposite- charged ions and cause an electric current to flow.

SCIENCE QUIZ

1) The caterpillar gradually matures into?

- a) Beetle b) Frog c) Butterfly d) Cockroach

2) Leaves are green in color because they contain the following chemical?

- a) Chlorophyll b) Xanthophylls c) Carotene d) Lycopene

3) Clouds are made of?

- a) Water b) Air c) Wool d) White Sand

4) Which of the following do not have their own light?

- a) Planets b) Stars c) Moon d) Sun

5) How many senses does a human being have?

- a) 3 b) 9 c) 5 d) 6

EXHIBITION

'HERITAGE EXHIBITION'

Heritage exhibition was organized in celebration of Heritage Week from 19 to 25 November, 2016 on the first floor of Sardar Vallabhbhai Patel Museum at Science Centre. In this exhibition panels comprising photographs and write-up on Surat's historical heritage and buildings etc. 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