

SCIENCE CENTRE NEWS LETTER

March 2025
Issue 108



Published by
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SCIENCE CENTRE

Volume 9, Issue 12

WHAT'S NEW IN SCIENCE?

An 'Environment friendly' Plastic that dissolves in Seawater!

According to UNEP (United Nations Environment Programme) almost 2000 garbage trucks full of plastic are dumped into the World's oceans, river and lakes every day. Around 19-23 million tones of plastic waste leaks into aquatic ecosystems, polluting lakes, rivers and seas. Plastic pollution can alter habitats and natural processes, reducing ecosystem's ability to adapt the climate change, directly affecting millions of people's livelihoods, food production capabilities and social well-being.

Researchers at the RIKEN (RI Kagaku KENkyusho) centre for Emergent Matter Science in Japan had designed a revolutionary Biodegradable plastic that dissolves in seawater. The material of this plastic is strong and can be adjusted to fit various uses such as packaging materials to medical devices, etc.

The Speciality of this plastic lies in the composition-it consists of food-safe components, meaning that the material used is non-toxic and safe for usage in various industries.

How can the New compostable plastic be used?

It can be used in the production of eco-friendly packaging and reduce the hazardous environmental impact that plastic has on the environment. In the medical field, it can be used in various devices and equipment, as this non-toxic and easily customizable.

How is it different from traditional plastic?

Traditional plastics take centuries to decompose and fill oceans and other ecosystems with their residues, residues, which poses risk to the the wildlife and causes pollution.

This new biodegradable plastic dissolves within hours in seawater and eliminates the long

term environmental contamination. In the soil, it degrades in 10 days. As the plastic, breaks down, it turns into organic essential nutrients and restores the carbon content of the soil.

Why is this Discovery Significant?

According to Researchers, when this plastic breaks down, it release no carbon dioxide in contrast to other plastics that break down and release greenhouse gases, which in turn contribute to the increased level of

Main Source: Times of India- Student's Edition
Courtesy : Joyous English School



SCIENTIST OF THE MONTH

Kalpana Chawla

Kalpana Chawla was born on 17th March, 1962 in Karnal, Haryana. She studied at the Tagore Baal Niketan Senior Secondary School and Dayal Singh College in Karnal. She graduated from the Panjab Engineering College, Chandigarh in 1982 with a Bachelor of Engineering (B.E). She traveled to United States to continue her education in 1982, where she earned Master in Science (M.Sc) from the University of Texas at Arlington (UTA) in 1984 and Doctor of Philosophy (Ph.D) from the University of Colorado Boulder in 1988.

In 1988, Chawla began working at NASA'S Ames Research Center, Us (United States), where she initially conducted computational fluid dynamics research on vertical and/or short take-off and landing (V/SToL) concepts. She first flew on Space Shuttle Columbia in 1997 as a mission Specialist and robotic arm operator aboard STS-87 (Space Transportation System).



She became the first woman of India origin to go into Space. Chawla's Second flight was in 2003 on STS-107.

She was one of the seven crew members who died in the Space Shuttle Columbia disaster when the Space craft disintegrated during its reentry into the Earth's atmosphere on February 1st, 2003.

In February 2003, Prime Minister of India Shri Atal Bihari Vajpayee announced the Satellite, "MetSat-1" renamed "Kalpana-1". In

August, 2003, Asteroid "51826 Kalpana Chawala" was named after her. Chawla was posthumously awarded the Congressional Space Medal of Honor in February 2005, The Kalpana Chawla Government College was established in Karnal, Haryana in 2017. Several Buildings, Spacecraft and extra-terrestrial landmarks are named in her honor.

Main Source: en.m.wikipedia.org/wiki/kalpana_Chawla
Courtesy : Joyous English School

SCIENCE FACTS MARCH 2025



Timings

Tuesday to Sunday
& Public Holidays

9.30 am to 4.30 pm

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1 March 1910	:	English Chemist Archer John Porter Martin (Co-winner of the 1952 Nobel Prize in Chemistry for the invention of partition chromatography) was born
4 March 1847	:	Austrian Chemist Karl Bayer (Invented the bayer process of extracting alumina from bauxite, essential to this day to the economical production of aluminium) was born.
7 March 1938	:	American Biologist David Baltimore (Co-winner of the 1975 Nobel Prize in Physiology/Medicine for their discoveries concerning the interaction between tumour viruses and the genetic material of the cell) was born.
8 March 1618	:	Johannes Kepler discovers the third law of planetary motion.
8 March 1879	:	German Chemist Otto Hahn (Winner of the 1944 Nobel Prize in Chemistry for his discovery of the fission of heavy nuclei) was born.
8 March 1886	:	American Chemist Edward Calvin Kendall (Co-winner of the 1950 Nobel Prize in Physiology/Medicine for their discoveries relating to the hormones of the adrenal cortex, their structure and biological effect) was born
9 March 1923	:	Austrian born physicist Walter Kohn (Co-winner of the 1998 Nobel prize in chemistry for his development of the density-functional theory) was born.
10 March 1923	:	American Nuclear Physicist Val Logsdon Fitch (Co winner of the 1980 Nobel Prize in Physics for the Discovery of violations of fundamental symmetry principles in the decay of neutral K-mesons) was born.
12 March 1925	:	Japanese Physicist Leo Esaki (Co- winner of the 1973 Nobel Prize in Physics for their experimental discoveries regarding tunneling phenomena in semi conductors) was born.
13 March 1899	:	American Physicist John Hasbrouck van Vleck (Co-winner of the 1977 Nobel Prize in Physics for his contributions to the understanding of the behavior of electronic magnetism in solids) was born.
14 March 1854	:	German Scientist Paul Ehrlich (Co-winner of the 1908 Nobel Prize in Physiology/Medicine in recognition of their work on immunity) was born.
15 March 1930	:	Russian Physicist Zhores Ivanovick Alferov (Co-winner of the 2000 Nobel Prize in Physics for the development of the semiconductor heterojunction for optoelectronics) was born.
16 March 1789	:	German Physicist Georg Simon Ohm (Known for Ohm's law) was born.
19 March 1900	:	French Physicist Frederic Joliot (Co-winner of the 1935 Nobel Prize in Chemistry for their discovery of induced radioactivity) was born.
19 March 1943	:	Mexican Chemist Mario J. Molina (Co-winner of the 1995 Nobel Prize in Chemistry for their discovery of the role of CFCs in ozone depletion) was born.
21 March 1932	:	American Chemist Walter Gilbert (Co-winner of the 1980 Nobel Prize in Chemistry for their contributions concerning the determination of base sequences in nucleic acids) was born.
22 March 1868	:	American Physicist Robert Millikan (Winner of the 1923 Nobel Prize in Physics for his work on the elementary charge of electricity and on the photoelectric effect) was born.
23 March 1881	:	German Chemist Hermann Staudinger (Winner of the 1953 Nobel Prize in Chemistry for his discoveries in the field of macromolecular chemistry) was born.
24 March 1917	:	British Molecular Biologist John Kendrew (Co- winner of the 1962 Nobel Prize in Chemistry for their studies of the structures of globular proteins) was born.
26 March 1951	:	American Physicist Carl Wieman (Co- winner of the 2001 Nobel Prize in Physics for the achievement of Bose-Einstein condensation in dilute gases of alkali atoms and for early fundamental studies of the properties of the condensates) was born.
27 March 1847	:	German Chemist Otto Wallach (Winner of the 1910 Nobel Prize in Chemistry in recognition of his services to organic chemistry and the chemical industry by his pioneer work in the field of alicyclic compounds) was born.
28 March 1930	:	American Physicist Jerome Isaac Friedman (Co-winner of the 1990 Nobel Prize in Physics for their pioneering investigations concerning deep inelastic scattering of electrons on protons, which have been of essential importance for the development of the quark model in particle physics) was born.

U.N. – United Nations

WHO – World Health Organization

UNESCO – United Nations Educational Scientific & Cultural Organization

Answers : (1) d (2) d (3) d

SCIENTIFIC QUESTION

Why Stainless Steel is used for making house hold utensils?

Stainless steel is an alloy made up of different metals. When these metals are mixed in different quantities, they produce several variations of the alloy. Each variation has its own features and uses. There are over 150 varieties of stainless steel and each of them has different properties, which are further split into grades.

For the food service industry, there are two types of stainless steel: SAE (Society of Automotive Engineers) Grades and (Flatware Grades). These two grades are commonly known as food-grade stainless steel. Stainless steel is a fantastic metal and that's why it's so widely used in the kitchen utensils. It doesn't break, bend or crack and stays shiny for years.



2. Non-reactive surface:

Unlike aluminium and iron, stainless steel is a non-reactive metal. It means person can cook acidic foods in stainless steel utensils without affecting the flavour of the food and without damaging the surface of the metal.

3. Strength:

Food grade stainless steel is strong and can be used in heavy-duty equipment or in shelving for storage areas.

4. Ease of Cleaning:

Cleanliness is an essential requirement of the food industry. Usually, wooden or plastic utensils have several openings where bacteria can grow if they are not cleaned properly. Compared to that, stainless steel has a smooth surface, and it doesn't have any room for bacteria growth in the

utensil.

Amongst lots of metals available in the market, stainless steel is considered as one of the best materials for kitchen utensils. It is incredibly useful in countless applications in different other industries as well.

Benefits of using stainless steel utensils:

1. Corrosion-resistance:

Stainless steel is a non-reactive metal alloy with 10-11% chromium. On being exposed to air, chromium forms a layer of chromium oxide over the surface. This layer prevents the steel from rusting by shielding it from moisture.

Main Source: Workbook-Standard 8th
Courtesy : Joyous English School

KNOW THE ENTERING INTO SPACE GALLERY EXHIBIT

Space Tools – Trenching Tool

This trenching tool or shovel is used when a large amount of lunar soil needs to be removed from an area. It was used by the Astronauts on the Apollo 14 mission to take trenches.

This exhibit is situated at “Entering Space Gallery” between Fun Science Gallery and Power of Play Gallery at the first floor of Science Centre.

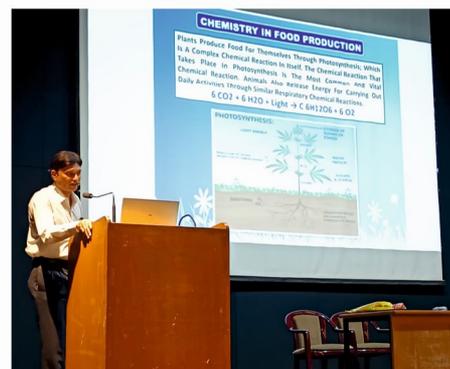


SCIENCE LECTURE

Surat Municipal Corporation had organized Science Lecture on 28th February 2025 to celebrate 'National Science Day'. Dr. Pareshbhai Patel, Professor, Department of Chemistry, Veer Narmad South Gujarat University, Surat had delivered lecture on "Chemistry in Daily Life" to Std. 8 and 9 at Auditorium, Science Centre Surat. Total 200 students and 11 teachers from 03



Schools of Surat have attended this lecture. Dr. Pareshbhai Patel has given information about how Chemistry is useful in daily life such as in Toothpaste, bread, coffee/tea, medicine, soaps, etc.

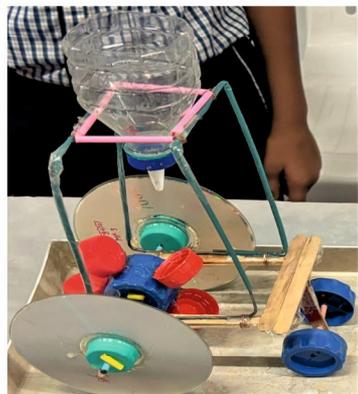


SCIENCE FAIR-2024

Surat Municipal Corporation had organized "Science Fair-2024" at Art Gallery, Science Centre Surat on 16th and 17th August, 2024 for the students of std. 8 to 12. Sant Tukaram Maharaj Nagar Prathmik School No.138 had participated in the Science Fair with their project on "Water Power Car" under the sub theme of "Indigenous Technologies for Renewable Energy Sources."



The aim of the project was to substitute the non-renewable energy sources to natural and cheap renewable energy sources.



For making the car that runs on water four CD (Compact Disk) are connected with rod to make a wheel for the car. Then a fuel tank is placed on top of the car and filled it up with the water. Tank and pipeline are connected together in such a way that water falls from it. Made a rotating turbine. The water passes/flows directly over the turbine and turbine will rotate. So the car gets push forward.

Advantages:

The fuel can be reused.
Being cheap and readily available fuel, it can be used more by people.
As this fuel is pollution free, it does not harm environment.

QUIZ

1. Which of the following elements is a metal?

- a) Carbon b) Sulphur c) Phosphorus d) Calcium

2. Which of the following is not used in extinguishing fire?

- a) Sand b) Water c) CO₂(Carbon dioxide) d) Oxygen

3. Which variety of Coal is ranked the best?

- a) Peat Coal b) Lignite c) Bitumen Coal d) Anthracite