

SCIENCE CENTRE NEWS LETTER

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SCIENCE CENTRE

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WHAT'S NEW IN SCIENCE?

Earth's magnetic poles have flipped 540 times. It will happen again

Earth's magnetic poles flip in a process called a geomagnetic reversal. The planet's magnetic field is generated by chaotic flows of molten metal deep inside Earth's core.

Earth's magnetic field, our planet's invisible shield against solar radiation, has reversed 540 times over 170 million years, with poles swapping places every few hundred thousand years on average.

Generated by swirling liquid iron in Earth's outer core, the field doesn't flip overnight. Poles wander, intensity wanes, and chaos reigns for millennia before settling oppositely. Sediments and Ocean floor rocks lock in these shifts magnetic minerals like magnetite, via creating a "barcode" timeline that scientists decode.

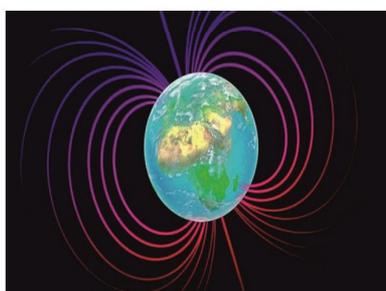
Earth acts like a giant magnet because of the "geodynamo" in its outer core. The outer core is made mostly of liquid iron and nickel, which move constantly due to heat rising from deeper inside the planet. These moving,

electrically conductive fluids create electric currents, and those currents generate the magnetic field that surrounds Earth. Scientists call this the geodynamo (a magnetic-field-generating system driven by fluid motion). Because turbulent flows of molten metal in Earth's outer core constantly change and sometimes weaken the planet's magnetic field, the north and south magnetic poles can gradually switch places over thousands of years, a natural process called a geomagnetic reversal that has occurred many times in Earth's history.

Weak fields let solar particles bombard higher latitudes, tweaking atmospheric chemistry and climate. This discovery, blending palaeomagnetism (the study of the Earth's ancient magnetic field preserved in rocks, sediment and archaeological materials) and core dynamics, refines forecasts for our shield's future.

Source: <https://www.indiatoday.in/amp/science/story/earths-magnetic-poles-have-flipped-540-times-it-will-happen-again-2866092-2026-02-10>

Author: Sibukumar Tripathi, Feb 10, 2026



SCIENTIST OF THE MONTH

Dr. Vasant Ranchhod Gowariker

Dr. Vasant Ranchhod Gowariker was born on the 25 March, 1933 in Poona, British India. After completing graduation from Kolhapur district in Western Maharashtra, he embarked on his scientific odyssey to England in the early 1950. He obtained M.Sc and Ph.D in Chemical Engineering, supervised by F. H. Garner. His collaboration resulted in the Garner-Gowariker theory, which was a novel analysis of heat and mass transfer between solids and fluid.

He had worked with the Indian Space Research Organisation. Gowariker was involved in space research in early career under Vikram Sarabhai when his office was in the building of the local St Mary Magdalene Church in Thmba in Kerala. He

pioneered solid propellant development and later served as Director of the Vikram Sarabhai Space Centre (VSSC) between 1979 and 1985.



Dr. Gowariker was an Indian scientist. He was a director in the Indian Space Research Organization and also the scientific advisor to the Prime Minister of India from 1991 to 1993. Dr. Gowariker made valuable contributions to the fields of space research, weather forecasting and solid propellant production. He was well known for his monsoon forecast model as he was the

first scientist to develop an indigenous weather forecasting model that predicted the monsoon correctly. He passed away on 2 January 2015.

Main Source: https://en.wikipedia.org/wiki/Vasant_R._Gowariker

SCIENCE FACTS MARCH 2026



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	:	French Physicist Albert Fert (Co-winner of the 2007 Nobel Prize in Physics for the discovery of Giant Magnetoresistance) was born.
7 March 1944	:	American Geneticist Michael Rosbash (Co-winner of the 2017 Nobel Prize in Physiology/ Medicine for their discoveries of molecular mechanisms controlling the circadian rhythm) was born.
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 Bio-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 effects) 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.
11 March 1936	:	German virologist Harald zur Hausen (Co-winner of the 2008 Nobel Prize in Physiology/Medicine for his discovery of human papilloma viruses causing cervical cancer) was born.
10 March 1941	:	American Biologist Bio-chemist George P. Smith (Co-winner of the 2018 Nobel Prize in Chemistry for the phage display of peptide and antibodies) 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 semiconductors superconductors) 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.
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.
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.
28 March 1949	:	American Biologist and Geneticist Michael W. Young (Co-winner of the 2017 Nobel Prize in Physiology/ Medicine for their discoveries of molecular mechanisms controlling the circadian rhythm) was born.

Ans: 1. b 2. c 3. d 4. b 5. b

SCIENTIFIC QUESTION

What is Big Bang? (part-5)

6. Radiation Era and Epochs

This Epoch is preceded by the hadron epoch, which ended when most hadrons (like Protons and Neutrons) and antihadrons annihilated each other

7. Lepton Epoch

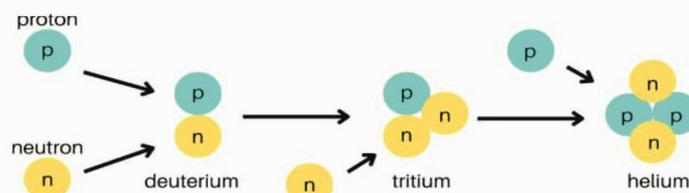
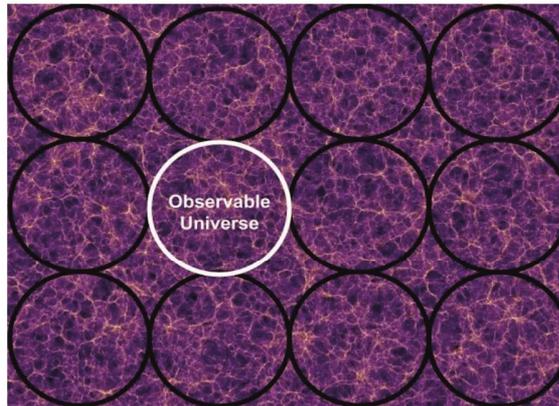
Time Period

From 1 second to 3 minutes

After the majority (but not all) of Hadrons and antihadrons annihilate each other at the end of the Hadron epoch, Leptons (such as electrons) and antileptons (such as Positrons) dominate the mass of the universe. As electrons and positrons collide and annihilate each other, energy in the form of photons is freed up and colliding photons in turn create more electron - positron pairs.

The temperature of the universe falls to the point (about a billion degrees) where atomic nuclei can begin to form as protons and neutrons combine through nuclear fusion to form the nuclei of the simple elements of hydrogen, helium and lithium this whole

process is called Nucleosynthesis which starts from 3 minutes to 20 minutes. After that the temperature and density of the universe has fallen to the point where nuclear fusion cannot continue.



interact frequently with charged protons, electrons and nuclei.

Main Source and Image:

https://www.physicsoftheuniverse.com/topics_bigbang_timeline.html

8. Photon Epoch (Radiation Domination)

Time Period

From 3 min to 2,40,000 years)

This epoch was a critical phase in the early universe where Photons dominated the total energy density.

During this long period of gradual cooling, the universe is filled with plasma, a hot opaque soup of atomic nuclei and electrons. After the most of the leptons and antileptons had annihilated each other at the end of the lepton epoch, the energy of the universe is dominated by Photons which continue to

NIGHT SKY OBSERVATION

Moon Gazing

On the occasion of 'National Science Day', Science Centre Surat had organized an event to view 'Moon' through the telescope at Science Centre on 29/02/2026 from 07:00 pm to 8:00 pm. In this event, Moon was shown through Refractor Telescope to visitors. Total 263 visitors have participated in this event.



SCIENCE FAIR-2025

Surat Municipal Corporation had organized "Science Fair-2025" at Art Gallery, Science Centre Surat on 22nd and 23rd August, 2025 for students of Std. 8 to 12. Ahilyabai Holkar Nagar Prathmik kanya shala No-185 had participated in Science Fair with their project on "Smart Home" under the Subtheme of "Building Sustainable future of Digital India for Global Leadership".

The aim of the project was to use the technology in the house and try to find a solution to the problems arising in the modern era.

Smart Homes are designed to combine convenience with technology. Kitchen garden, Rainwater harvesting, Solar Panel, IR Sensor, etc. have been used. Rain water harvesting is used in Kitchen garden. Vegetables grown from a kitchen garden can be used for cooking. Solar Panel Saves electricity. If a stranger or thief comes, the sensor can alert with an alarm by IR sensor. It is designed to automatically turn on the light when it gets dark.

Advantages-

- 1) One can get pure quality vegetables from kitchen garden.
- 2) Electricity can be saved by using Solar Energy.
- 3) Water wastage can be prevented by storing rainwater.
- 4) Home Security can be provided through the use of technology.



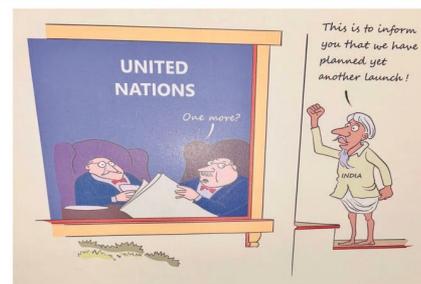
KNOW THE ENTERING INTO SPACE GALLERY EXHIBIT

International Space Laws(Selected)

Each launching Country shall inform the Secretary- General of the United Nations, Public and International Scientific Community, when a space object is launched into the Earth orbit or beyond. The launching Country will inform about

- i) Name of launching State or States,
- ii) An appropriate designator of the space object or its registration number,
- iii) Date and territory or location of launch,
- iv) Basic orbital parameters, including:
 - a) Nodal period,
 - b) Inclination,
 - C) Apogee,
 - d) Perigee,
 - e) General function of the space object.

This Exhibit is situated at "Entering Space Gallery" between Fun Science Gallery and Power of Play Gallery at First Floor of Science Centre.



QUIZ

1. What is the closest layer of the Earth called?
a. Stratosphere b. Troposphere c. Mesosphere d. Chromosphere
2. What is the layer located 50 km above the Earth's surface called?
a. Troposphere b. Biosphere c. Stratosphere d. Mesosphere
3. Where is the Ozone layer located?
a. In the Troposphere b. In the Biosphere c. In the ionosphere d. In the Stratosphere
4. What radiation does the ozone layer prevent from reaching the Earth?
a. Visible light b. Ultraviolet c. Infrared d. X-rays
5. What is the Chemical formula for ozone gas?
a. O₂ b. O₃ c. O₄ d. Ar

Main Source: Navneet MCQs Science and Technologies. Std 10