

SCIENCE CENTRE NEWS LETTER

May 2026
Issue 122



Published by

M. Nagarajan

I.A.S.
Municipal
Commissioner

Editor

D.B. Mistry

Dy. Municipal Commissioner

Sub Editor

Divyesh Gameti

I/C Chief Curator

Co-ordinator

Dr. Pruthul Desai

Principal
P. T. Science College



SCIENCE CENTRE

Volume 11, Issue 02

WHAT'S NEW IN SCIENCE?

India now has a nuclear reactor that makes more fuel than it burns.

India's prototype Fast Breeder Reactor at Kalpakkam, Tamil Nadu has attained a historic milestone. The 500 MW reactor, which produces more fuel than it consumes, puts India on course to harness its vast thorium reserves.

The splitting of a heavy nucleus into two or smaller nuclei, releasing massive amounts of energy, is known as nuclear fission.

The prototype Fast Breeder Reactor at Kalpakkam attained critically on 6th April 2026 and India's long nuclear dream moved one decisive

step close to reality. Critical state is the precise state in nuclear reactor where the chain reaction becomes self-sustaining. This means each fission event produces exactly enough neutrons to trigger a subsequent one at a steady rate.

The PFBR (Prototype Fast Breeder Reactor) has a capacity of 500 MW (megawatts), which is enough electricity to power roughly four to five lakh average Indian homes simultaneously. Unlike conventional nuclear reactors, which use water as a coolant or the fluid that carries away the intense heat generated inside the reactor, the PFBR circulates liquid sodium. Sodium metal kept molten at around 200 degrees celsius, transfers

heat far more efficiently than water and critically, do not slow down the fast-moving neutrons that make this reactor special.

It runs on uranium-plutonium mixed oxide fuel, known as MOX. These are ceramic pellets made by blending uranium and plutonium oxides together. The plutonium in these pellets comes from the spent, used-up fuel of India's existing first-stage reactors. This MOX fuel sits in the reactor core, where the nuclear fission, takes place. Surrounding that core is a blanket of uranium-238.

When the intense neutron bombardment from the core strikes this blanket, it converts the otherwise inert uranium-238 into fresh plutonium, which can be extracted and used as new fuel.

The reactor, in other words, makes more fuel than it burns. That is the defining trait of a breeder reactor. Once operational, India will become the second Country after Russia to have a commercially operating fast breeder reactor.



Source: <https://www.indiatoday.in/science/story/india-prototype-fast-breeder-reactor-kalpakkam-critically-nuclear-programme-thorium-2892521-2026-04-07>.

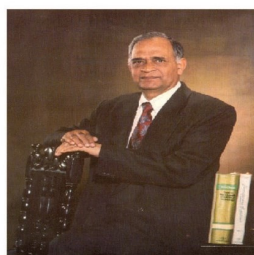
Author: Radifah Kabir on 7th April 2026

SCIENTIST OF THE MONTH

Dr. Manmohan Sharma

Dr. Manmohan Sharma was born on 1st May 1937 at Jodhpur in Rajasthan. He did Bachelors in Chemical Engineering, Masters in Science (Tech.) from Bombay University and Ph. D from Cambridge University in 1964.

Dr. Sharma brought to light certain unique features of gas-liquid, liquid-liquid and liquid-solid reactions and reactors. He put forward new theories and concepts on



these aspects. He worked as a member of the Editorial Board of many journals and also served as an Editor.

Dr. Sharma received the Shanti Swarup Bhatnagar Prize for Engineering Science in 1973, the Herdillia Award for Excellence in Basic Research in 1979, the Padma Bhushan in 1987, the Meghnad Saha Award in 1994, the Outstanding Citizen Award in 1994 and the Leverhulme Medal in 1996. He received the Padma Vibhushan in 2001.

Main Source: 101, Great Indian Scientists Book, by Shyam Dum

SCIENCE FACTS MAY 2026



Timings

Tuesday to Sunday
& Public Holidays
9.30 am to 4.30 pm

Address

Science Centre
City Light Road,
Surat - 395 007

Contact

0261 - 2255947
+91 97277 40807

Fax No.

91-261-2255946

E mail

sciencecentre@suratmunicipal.org

Web Site

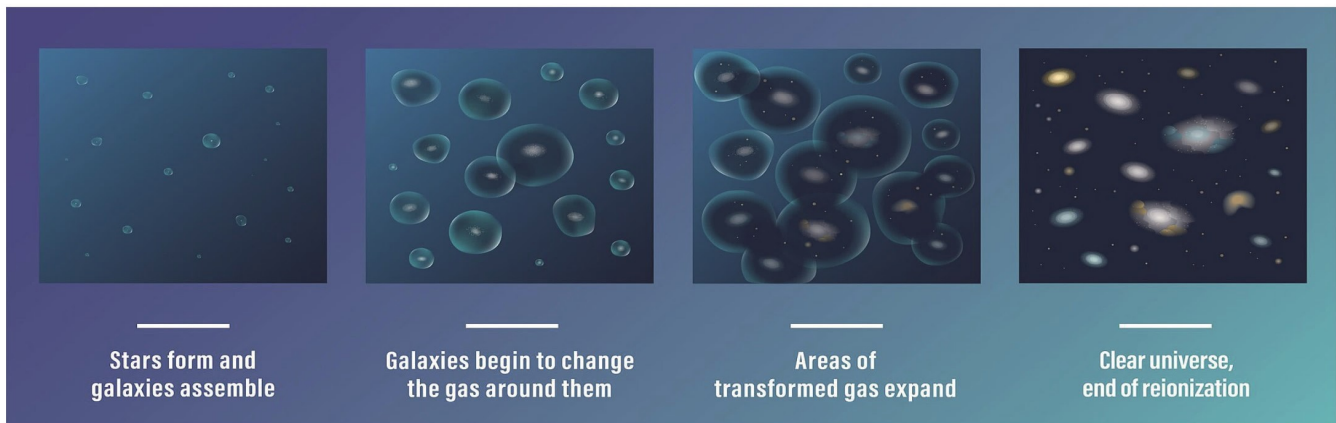
www.suratmunicipal.gov.in

1 May 1852	:	Spanish histologist, neuroscientist Santiago Ramon y Cajal (Co-winner of the 1906 Nobel Prize in Physiology /Medicine in recognition of their work on the structure of the nervous system) was born.
3 May 1892	:	English Physicist George Paget Thomson (Recognised for discovery of the wave properties of the electron by electron diffraction) was born.
3 May 1902	:	French Physicist Alfred Kastler (Winner of the 1966 Nobel Prize in Physics for the discovery and development of optical methods for studying Hertzian Resonance in atoms) was born.
3 May 1945	:	American geneticist Jeffrey C. Hall (Co-winner of the 2017 Nobel Prize in Physiology/ Medicine for their discoveries of molecular mechanisms controlling the circadian rhythm) was born.
5 May 1961	:	The first piloted Mercury space craft "Freedom – 7" launched by America.
6 May 1871	:	French Chemist Victor Grignard (Discoverer of the Grignard Reagent and Grignard Reaction) was born.
7 May 1939	:	Canadian born Molecular Biologist Sidney Altman (Worked on the catalytic properties of RNA) was born.
8 May 1902	:	French Microbiologist Andre Michael Lwoff (Co-winner of the 1965 Nobel Prize in Physiology/ Medicine for their discoveries concerning genetic control of enzyme and virus synthesis) was born.
8 May 1947	:	American Biologist H. Robert Horvitz (Co-winner of the 2002 Nobel Prize in Physiology/Medicine for their discoveries concerning the genetic regulation of organ development and programmed cell death) was born.
13 May 1857	:	Sir Ronald Ross (Inventor of medicine for Malaria) was born.
15 May 1859	:	French Physicist Pierre Curie (A pioneer in Crystallography, Magnetism, Piezoelectricity and Radioactivity) was born.
17 May 1749	:	Sir Edward Anthony Jenner (Inventor of smallpox vaccine) was born.
18 May	:	World AIDS Vaccine Day.
18 May 1939	:	Czechoslovakian Physicist Peter Grunberg (Co-winner of the 2007 Nobel Prize in Physics for the discovery of Giant Magnetoresistance) was born.
19 May 1910	:	Halley's Comet brushes the Earth with its tail.
19 May 1971	:	Soviet Union had sent "Mars-2" for journey to Planet Mars which was crashed at Mars's Land on 27 Nov,1971.
21 May 1860	:	Dutch Inventor William Einthoven (Inventor of the first practical electrocardiograph ECG) was born.
22 May 1954	:	Japanese Physicist Shaji Nakamura (Co-winner of the 2014 Nobel Prize in Physics for the invention of efficient blue light- emitting diodes which has enabled bright and energy saving white light sources) was born.
24 May 1942	:	British Chemist Sir J, Fraser Stoddart (Co-winner of the 2016 Nobel Prize in Chemistry for the design and synthesis of molecular machines) was born.
25 May 1865	:	Dutch Physicist Pieter Zeeman (Co-winner of the 1902 Nobel Prize in Physics for his discovery of the Zeeman effect) was born.
27 May 1959	:	Canadian Physicist Donna Strickland (Co-winner of the 2018 Nobel Prize in Physics for their method of generating high-intensity ultra-short optical pulses) was born.
30 May 1971	:	America launched space craft "Mariner – 9" to Planet Mars.



SCIENTIFIC QUESTION

What is Big Bang?(part-7)



8. Matter Era and Epochs

The period after the formation of the first atoms and before the first stars is sometimes referred to as the Dark Age. Photons exist and the universe is literally dark, no stars having formed to give off light. Matter remaining with very low energy levels and very large time scales.

A period with no stars where the universe was filled with a "fog" of neutral gas.

Re-ionization

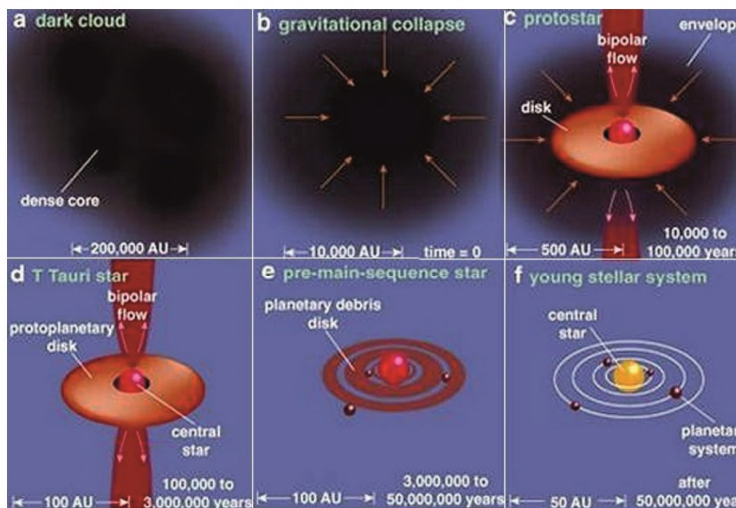
Time Period:

150 million to 1 billion years

During which the first stars and galaxies formed and re-ionized the neutral hydrogen gas filling the universe. This process ended the "Dark Ages" transforming the universe from an opaque, neutral state into the transparent, ionized plasma.

The history of reionization is closely tied to the growth of the first structures in the universe.

UV light from stars and early galaxies created "bubbles" of ionized gas that grew and eventually overlapped. Most of the universe goes from being neutral back to being composed of ionized plasma.



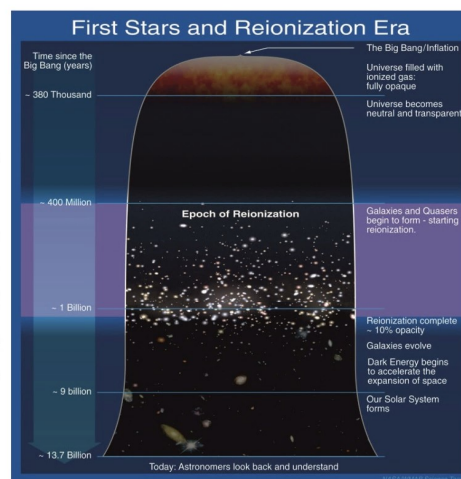
Star and galaxy formation Time Period:

~ 300-500 million years onwards

Gravity amplifies slight irregularities in the density of the primordial gas and pockets of gas become more and more dense, even as the universe continues to expand rapidly. These small, dense cloud of cosmic gas starts to collapse under their own gravity, becoming hot enough to trigger

nuclear fusion reactions between hydrogen atoms, creating the very first stars.

The first stars are short-lived super massive stars, a hundred or so times the mass of our Sun known as population III (or "metal-free") stars. Eventually population II and then population I stars also begin to form from the material from previous rounds of star-making. Larger stars burn out quickly and explode in massive supernova events, their ashes going to form subsequent generation of stars. Large volumes of matter collapse to form galaxies and gravitational attraction pulls, galaxies toward each other to form groups, clusters and superclusters.



Main Source and Image:

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

SUMMER CAMP 2026

Summer Camp - 2026

Science Centre has organized Summer Camp at Science Centre Surat from 10/05/2026 to 20/05/2026 for students of age group 7 to 17 years. There will be two groups in this summer camp. Group A is for 7 to 12 years old students and group B is for 13 to 17 year old student.

Group – A – 7 to 12 years Age Group

Sr. No.	Subject	Time	Days	Fees
A-1	Paper Art, Key chain & Envelop Making, Diya & Bag Painting, etc.	10:00 am. to 12:00 am	10 Days	Rs.1200/-
A-2	Robotics	10:00 am. to 11:00 am	10 Days	Rs.1500/-
A-3	Drone	11:00 am. to 12:00 am	10 Days	Rs.4000/-

Group – B – 13 to 17 years Age Group

Sr. No.	Subject	Time	Days	Fees
B-1	Timeline of Astronomy, Journey through Solar system, Zodiac Constellation, Phases of Moon, Seasons, Day Time Astronomy, Telescope Training, Astronomy Software Training, Night Sky Observation.	10:00 am. to 11:00 am	10 Days	Rs.1500/-
B-2	Basic Physics, Experiments, Automatic Hand wash model, Transfer of Energy model, Basic of Optics	10:00 am. to 11:00 am	10 Days	Rs.1500/-
B-3	Embroidery and Quelling	1:00 pm. to 2:00 pm	10 Days	Rs.1500/-
B-4	Art (Lipan, Warli, Mandala, Madhubani, Handmade Jewellery)	1:00 pm. to 3:00 pm	10 Days	Rs.1500/-
B-5	Artificial Intelligence and Machine Learning*	11:00 am. to 12:00 pm	10 Days	Rs.2500/-
B-6	Robotics	10:00 am. to 11:00 am	10 Days	Rs.1500/-
B-7	Drone	11:00 am. to 12:00 am	10 Days	Rs.4000/-
B-8	Electronics: Basic Electronics Circuit, Paper Circuit, Electric Motor, Electromagnet, Arduino & Basic Sensors	1:00 pm. to 3:00 pm	10 Days	Rs.1500/-

* Students of B-5 group - Artificial Intelligence and Machine Learning, should bring their own laptop

Summer Camp will be held between Dt.10/5/2026 to Dt.20/5/2026. Surat Municipal Corporation will be the final authority to do the changes. The interested students should submit their forms between Dt.01/04/2026 to Dt.05/05/2026 (Except Monday) during 10:00 am to 4:00 pm at Science Centre Surat, City light Road, Surat. One can download this form from: <https://www.suratmunicipal.org>