Red eye to the universe

New Spitzer Space Telescope provide scientists with infrared images of space

By Amelia Williamson
THE BATTALION

Scientists now have a new way to peer into the vast universe and explore the heavens. Astronomers have examined the cosmos in visible light, using the Hubble Space Telescope; in gamma rays, using the Compton Gamma Ray Observatory; in X-rays, using the Chandra X-ray Observatory; and now, using the Spitzer Space Telescope, they can scan the universe in the infrared.

NASA launched the Spitzer Space Telescope on Aug. 25, 2003, and its first observations were released on Dec. 18. Spitzer studies parts of the universe that cannot be observed using other telescopes. It senses infrared radiation, or heat, and allows scientists to investigate areas of the universe that could not previously be observed because they were distant, cold or cloaked in dust, according to NASA. Telescopes on Earth cannot detect infrared radiation from space because water vapor, carbon dioxide and oxygen molecules in Earth's atmosphere absorb a lot of the radiation.

The Spitzer Space Telescope, formerly called the Space Infrared Telescope Facility, was named after Dr. Lyman Spitzer Jr. (1914-1997). Spitzer was a physicist at Yale, Columbia and Princeton universities and, in 1946, he put forward the idea that space telescopes would allow scientists to observe the universe in wavelengths of light that are absorbed by Earth's atmosphere and cannot be observed from Earth, according to space.com.

"Every time you have a quantum jump in technology, there's a quantum jump in the knowledge of our universe," said Dr. Roland Allen of the A&M Department of Physics.

"We have had two giant jumps (that led to advances in astronomy). Galileo gave us the telescope, and Spitzer is the one who, by hard work, got us above the Earth's atmosphere."

The first observations of the Spitzer Space Telescope amazed scientists. Spitzer revealed the interior structure of the emission nebula IC 1396 and discovered young stars that were hidden in the dusty inner parts of the nebula that astronomers had never been able to study before.

Spitzer also captured images of Messier 81, a nearby spiral galaxy that is similar to the Milky Way galaxy and is located near the Big Dipper. The images showed new features in the galaxy as well as star formation in the galaxy's arms. These new images allow scientists to study star formation on a galactic scale and give astronomers a better idea of how the stars in our galaxy might have formed, according to NASA.

"Infrared is a very valuable tool for looking into regions that are obscured by dust," Allen said. "The biggest impact of the infrared observation is being able to observe the star-forming regions to see how stars come into being."

Spitzer also uncovered an immense disc of debris around the nearby star Fomalhaut. NASA scientists believe this debris is the remnant from the formation of a planetary system. The debris disc had been previously observed by other telescopes, but only Spitzer was able to provide images of the inner region of the disc that is obscured by dust. Astronomers are now able to study the entire disc, which will help them learn how planetary systems evolve, according to NASA.

Along with the astonishing images, Spitzer collected notable data from a galaxy that is close to 3.25 billion light-years away. In this distant galaxy, Spitzer discovered traces of organic molecules and water that NASA scientists believe originated around the time the first signs of life started to appear on Earth.

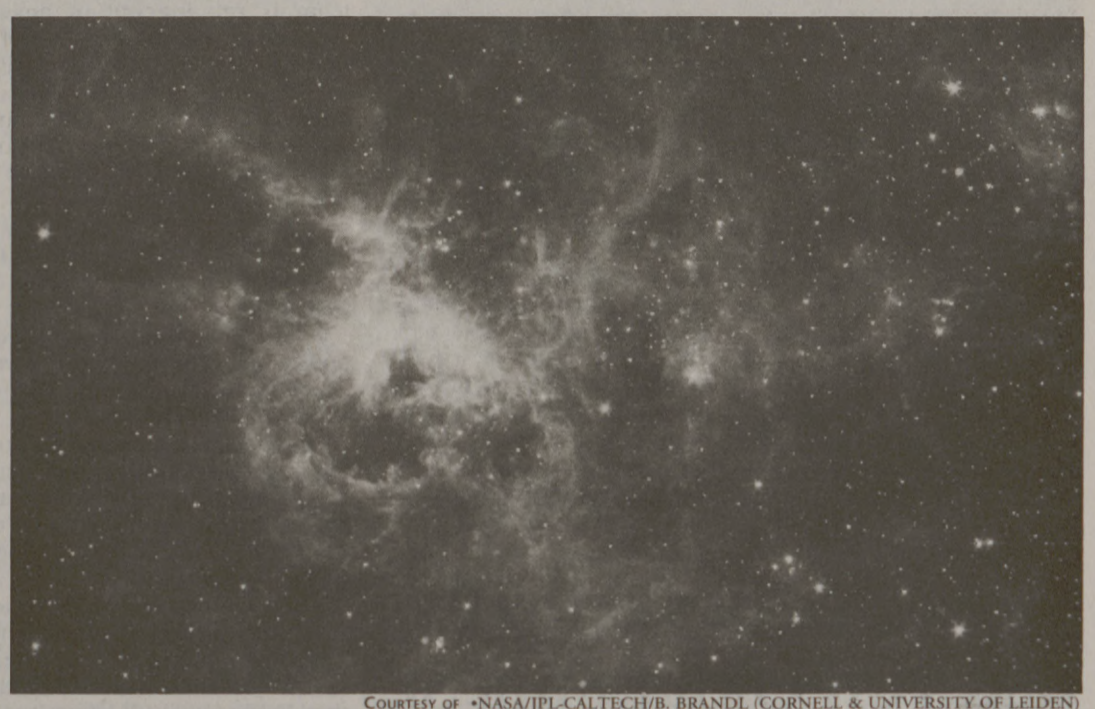
The organic molecules were detected by the infrared spectrograph, an instrument on the Spitzer Space Telescope. The spectrograph senses the infrared radiation of an object and produces a spectrum for that object. Astronomers can then analyze the spectrum and determine the chemical makeup of the object.

The Spitzer Space Telescope will change the way astronomers study the sky because it shows them what they cannot see in visible light.

"The infrared that does not get through the earth's atmosphere is the very light that does get through from places where you cannot see visible light," Allen said.

Spitzer will help astronomers to get a better idea of the universe around us and how it works.

"(The Spitzer Space Telescope) opens up a whole new range of wavelengths to look at and opens a new window (in the study of the universe)," said Dr. Ronald Schorn of the A&M Department of Physics. "The more windows you open, the greater the picture you get of the universe."



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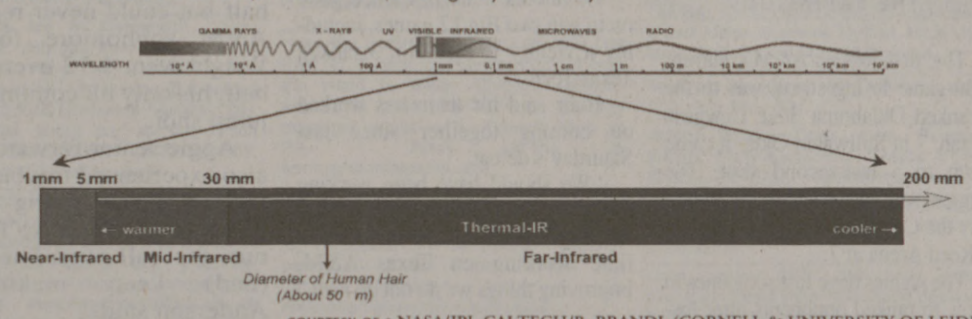
NASA's new Spitzer Space Telescope has captured this stunning image of the Tarantual Nebula, a rich star-forming region also known as 30 Doradus, which is 170,000 lights years away.



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