



Global Friendship Through Space Education

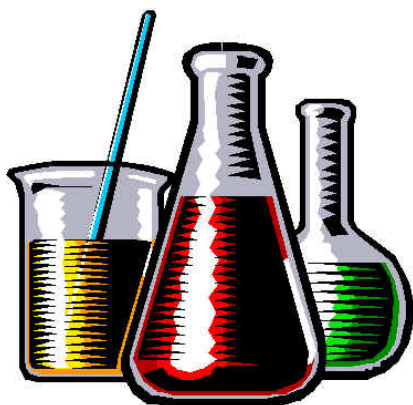
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# ASTRO

## The Partner School Science Program Newsletter

### 2011: The International Year of Chemistry



2011 is the International Year of Chemistry! Events are taking place around the world to celebrate this important discipline's contributions to humankind. In honor of those contributions, we've put together a short list of careers that use chemistry to help explore our Solar System and beyond. Check them out!

- **Lunar Geologists**

Lunar geologists study moon rocks to learn more about their composition. They also study the surface of the moon and the composition of its core. A lunar geologist often designs experiments for astronauts to perform during a moon landing and may even determine the safest place to land on the moon.

- **Astronomers**

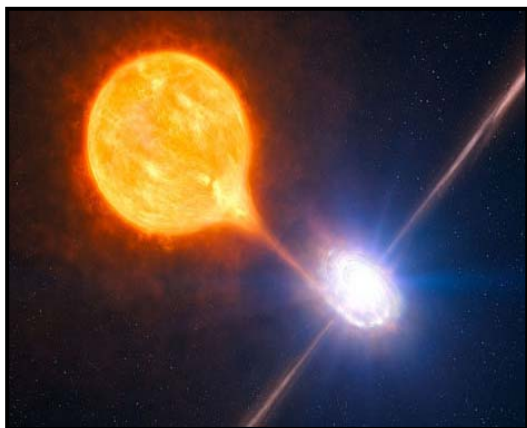
Astronomers require a strong background in chemistry to do their jobs. An astronomer studies distant stars and uses chemistry to determine their composition. She may also use chemistry in the study of molecular clouds in space, also called nebulae. The way an astronomer determines the composition of distant objects is by analyzing the spectral light that the objects emit. From the light spectrum, she can determine the different chemical components in the body she's studying.

- **Liquid Propulsion Systems Engineer**

Part of space exploration is finding ways to propel objects such as a space shuttle up and out of the earth's orbit. The propulsion system to accomplish such a feat requires very powerful fuel and an engine that is capable of burning such fuel without malfunction. NASA hires aerospace engineers to help design such systems.

To find out more about the International Year of Chemistry, please visit <http://www.chemistry2011.org/>.

### Black Hole Blowing Massive Fiery Space Bubble



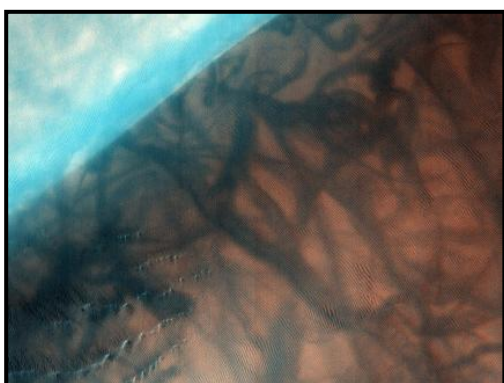
The ESO's Very Large Telescope, with help from NASA's Chandra X-ray Observatory, has found the most powerful pair of jets ever witnessed ejecting from a small, stellar-sized black hole. But while the black hole (by black hole standards, anyhow) is small enough to be classified a microquasar, the jets are anything but tiny, sufficiently powerful to spawn a giant, fiery gas bubble 1,000 light years across.

The gas bubble is twice as large and tens of times more intense than gas bubbles associated with other microquasars. The gas bubble feeds on the collimated jets emanating from the black hole, which pump fast moving particles into the interstellar gas surrounding the black hole. As that gas heats up and expands, the bubble inflates at a rate of nearly 621,000 miles per hour.

On a cosmic scale, those numbers may not seem so exciting, but it's the relative size of the black hole that's so astonishing. Robert Soria, one of the co-authors of the *Nature* article reporting the discovery, puts it into perspective: "If the black hole were shrunk to the size of a soccer ball, each jet would extend from the Earth to beyond the orbit of Pluto."

Judging from the size of the bubble, researchers determined that the hot jet activity must have been going on for at least 200,000 years.

### IMAGE OF THE DAY - Tatoed Mars



This image is of Mars' Russell Crater dune field, which is covered seasonally by carbon dioxide frost. This image shows the dune field after the frost has evaporated from solid to gas, with just a few patches remaining of the bright seasonal frost. Numerous dark dust devil tracks can be seen meandering across the dunes.

Image Credit: NASA/JPL-Caltech/University of Arizona

*Note: Image of The Day section's aim is to create curiosity in your mind and make you want to search about the image or topic, rather than us giving full details about the image. We are expecting you to ask yourself questions and to search for information about the image of the day to get answers and learn more.*