

SCIENCE & LIFE

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MIARROR WORLD

Where science meets arts...

New antimatter particle



The antimatter particle was created at the Relativistic Heavy Ion Collider at Brookhaven National Laboratory in Upton, N.Y.

By smashing particles together at close to light speed inside an atom smasher, scientists created a never-before-seen type of matter: an anti-hypertriton.

This particle is weird in many ways. First, it's not normal matter, but its eerie opposite, called antimatter, which annihilates whenever it comes into contact with regular mass. Second, the anti-hypertriton is what's called a "strange" particle, meaning it contains a rare building block called a strange quark, which isn't present in the protons and neutrons that make up regular atoms.

The experiment was conducted at the Relativistic Heavy Ion Collider at Brookhaven National Laboratory in Upton, N.Y. The results were announced in March 2010.

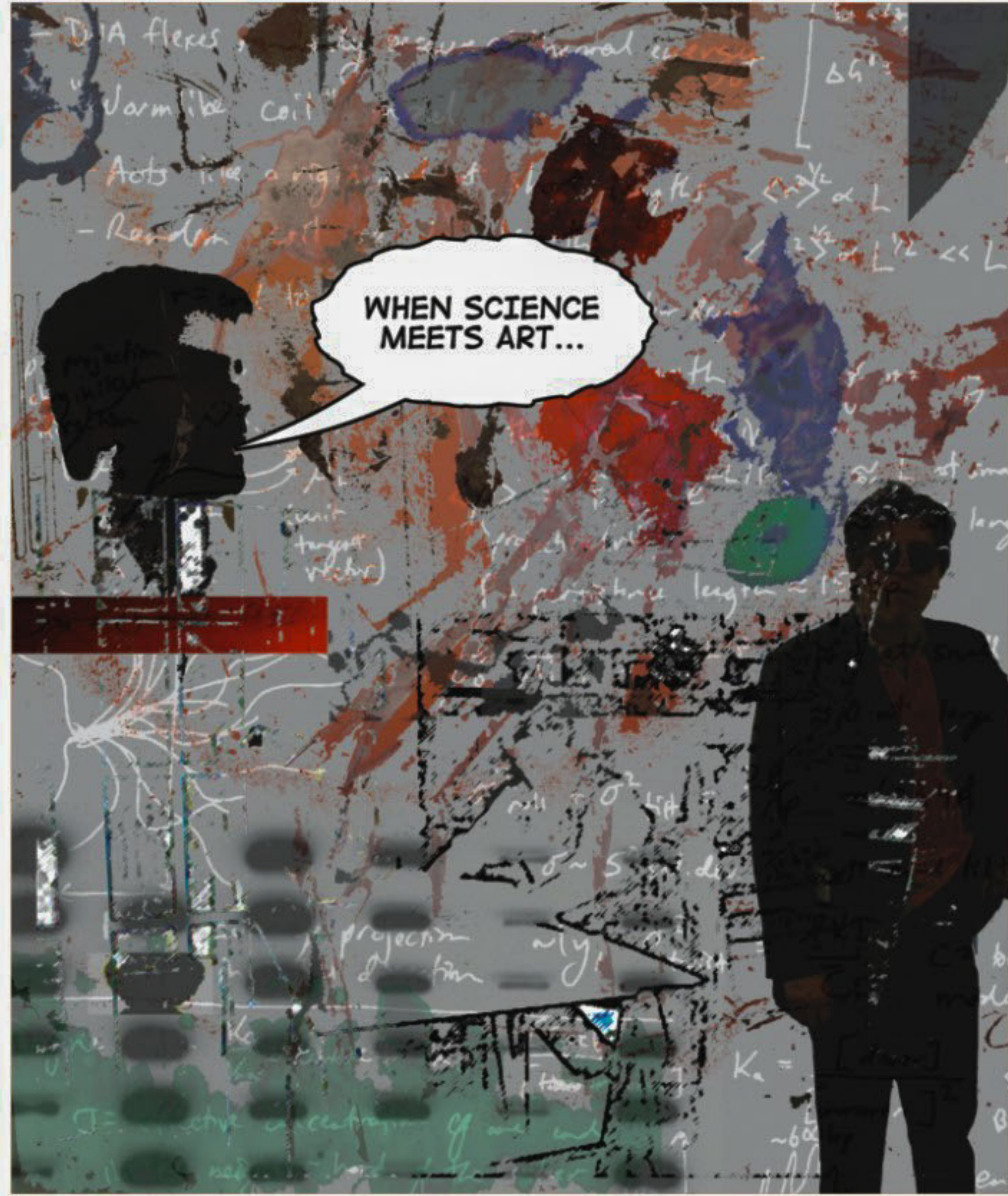
Source: LiveScience

S. ASHRAF AHMED, PHD

OUR usual concept of 'science' is completely different from that of 'arts'. Thus, a student of arts or literature thinks of science as full of formulae and theories which are difficult to understand. On the other hand, a science student may consider arts as full of unreal thoughts. We often forget that the ideal culmination of science and 'arts' as seen in the stage shows, movies and television programs, play the same roles in the lives of artists and scientists. If one defines art as 'visual expression of one's mind', then a scientist is also an artist. A careful analysis will show that a successful scientist must have an artistic mind and likewise, a successful artist must have knowledge of science to make his/her art appreciated.

The Art of Science - The work of a scientist is usually of practical importance. Whatever we know of science, it is an outcome of highly imaginative mind with the goal of achieving something that has not been known to us. One must 'dream' of any knowledge that is nonexistent in a particular time. Usually such a dream has a purpose of understanding an unexplained phenomenon or of solving a problem that he considers will improve the lot of the mankind or satisfy his curiosity. Once a scientist has such a dream or vision, he then tries to rationalize its practicability. He uses his knowledge of theories or properties of matter (as formulae, math, etc.) to make his dream come true. The result is a piece of work that is 'beautiful' for mind and mankind.

For example, the writer, statesman and inventor Benjamin Franklin first must have had imagined that that lightning and electricity are same. He then went to prove it with his knowledge of conductive nature of electricity. The pianist Alexander Graham Bell, son of a deaf mother, must have had dreamt of sending his voice through wire. He then used his knowledge of the properties of metal in transmitting waves to make his imagination a reality. Many a time, a theory born from a scientist's head may not be



proven during his lifetime. For example, some particles called "Bosons" 'mathematically imagined' almost 90 years ago by the late Dhaka

University physicist Satyendra Nath Bose, helped two US scientists win Nobel prize 80 years later by proving their physical existence!

The Science of Art Imagination of an artist although can be very uncertain, it is nonetheless influenced by the particular environment he experiences. When we look at a painting or sculpture and become glued to appreciate the beauty of the work, we forget that the artist used his knowledge of properties of paints, clay and stones to express his mind. A painter must have had a detailed understanding of creating a complex color from mixing the basic ones, and of the suitability of paper, board or cloth to use with ceramic, water or oil paints. These are his knowledge of chemistry and science without complex scientific formulae. A sculptor must have learned or experimented with clay or rock and the tools he used to carve a figure. These are subjects of science technology. A singer must have knowledge of sound effects, and a stage actor must have knowledge of lighting and visual impact to create a successful impression on the audience. These are knowledge of physics. If you had watched the inauguration displays of the last Olympic games in Beijing you can have an appreciation of the friendship of arts and science. Our appreciation of art therefore, is the result of a combination of the imagination of the artist and his knowledge of science.

An artist's imagination may also inspire scientific discoveries and improvements. A nineteenth century artist had a painting showing many delicious foods emerging from pipes out of a petroleum mine. Our dependence on petroleum products today for supplies of food from industries is a testimony to the artist's contribution to the advancement of science. An artist's depiction of spaceships and space stations are not uncommon. Imaginary scientific gadgets in Hollywood movies become a reality several decades later.

Conclusions The creations of artists and scientists both are pieces of art. It is the emphasis of Science or Arts that make them different. There however, is a basic difference. An artist's imagination knows no bound. A scientist's imagination is restricted within the context of available knowledge.

The author, a former Dhaka University teacher, is a biomedical scientist working in the USA.

SPOTTED FROM SKY

Google Earth's feat

Researchers poring over Google Earth images have discovered one of Earth's freshest impact craters - a 45-meter-wide pock in southwestern Egypt that probably was excavated by a fast-moving iron meteorite no more than a few thousand years ago.

Although the crater was first noticed in autumn 2008, researchers have since spotted the blemish on satellite images taken as far back as 1972, says Luigi Folco, a cosmochemist at the University of Siena in Italy. He and his colleagues report their find online July 22 in Science.

The rim of the Egyptian crater stands about 3 meters above the surrounding plain, which is partially covered with distinct swaths of light-colored material blasted from the crater by the impact. These rays, which emanate from the impact site like spokes from the hub of a wheel, are what drew researchers' attention to the crater, says Folco. While such "rayed craters" are common on the moon and other airless bodies of the solar system, they are exceedingly rare on Earth because erosion and other geological processes quickly erase such evidence.

During expeditions to the site early in 2009 and again this year, scientists found more than 5,000 iron meteorites that together weigh more than 1.7 tons. The team estimates that the original lump of iron weighed between 5 and 10 metric tons when it slammed into the ground at a speed of around 3.5 kilometers per second, with most of the material vaporizing during the collision.

Source: ScienceNews



This 45-meter-wide crater in southwestern Egypt, was first spotted on Google Earth late in 2008

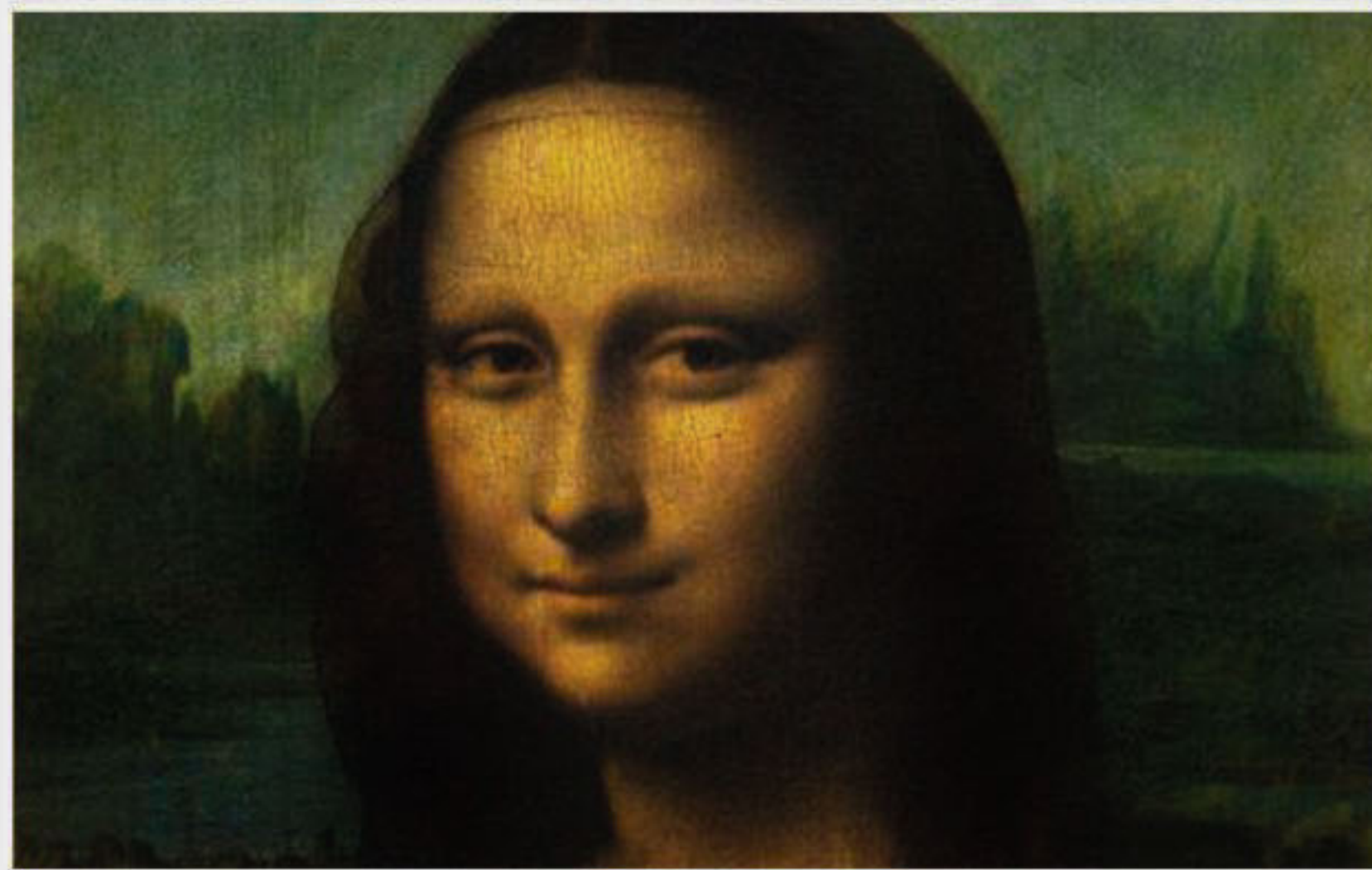
ETERNAL MYSTERY

Secrets of Mona Lisa smile

OBAIDUR RAHMAN

Mona Lisa. The immortal, captivating and the most wondrous creation of the renaissance maestro Leonardo Da Vinci. There is truly something enigmatic about this sixteenth-century portrait that has fascinated artists non-artists alike for generations. Presumably the portrait of Lisa Gherardini, wife of a wealthy Florentine silk merchant Francesco Del Giocondo, this painting has deeply influenced scientists, fiction writers, even conspiracy theorists. Thanks to the mystic facial expressions created by Vinci, the archetype renaissance painter. A team of French scientists have finally cracked the secret of Mona Lisa. Specialists from the Center of Research and Restoration of the Museums of France, in collaboration with European Synchrotron Radiation Facility and Louvre Museum, have studied seven of Leonardo Da Vinci's paintings in order to analyze the master's use of successive ultra-thin layers of paint and glaze, the technique that scholars believe gave Vinci's work their distinct dreamy quality. The paintings are Mona Lisa, Virgin of the Rocks, Saint John the Baptist, Annunciation, Bacchus, Belle Ferronniere, Saint Anne, the virgin and the child, all currently displayed in the famous Louvre Museum where the actual study took place.

Armed with a non-invasive technique called X-ray fluorescence spectroscopy, the distinguished team of scientists was able to study each layer of paint and their chemical compositions of each of the seven artworks. According to team leader, Philippe Walter, this equipment is so precise that "now we can find out the mix of pigments used by the artist of each coat of paint." Published in the latest edition of the journal Angewandte Chemie, international edition, the researchers found out that Da Vinci painted up to 30 layers of paint on his works to meet his signature standard of subtlety and all the layers are



Mona Lisa

less than 40 micrometers or about the half the thickness of a human hair. This is in fact a technique called "Sfumato" (common amongst the renaissance masters), which is the mixing of thin layers of pigment, glaze and oil to create lifelike shadows.

This "Sfumato" technique allowed Leonardo to give outlines and contours a hazy quality which eventually created an illusion of depth and shadow. According to the scientists, the shadows were built up by dozens of translucent layers of glaze where each layer was only one or two micro-meters thick, but each contained a carefully dosed pigmentation. It is believed that this in particular was a new technique during the Renaissance and part of the reason Leonardo and his contemporaries were able to make what had been once flat images of the Middle Ages which appear to leap from their frames into photo-like reality. And this "Sfumato" technique explains the mystic nature of the drawing of "Mona Lisa". Experts believe that, one of the key reasons

behind Mona Lisa's enormous appeal is the lifelike shadows and tones that give her enigmatically smiling face a sense of depth and reality. It was found that in the case of Mona Lisa, Leonardo used a mixture of oil and resins, a binder with a very low amount of pigments. And according to Philippe Walter, "with this mixture it was possible to create a very impressive aspect of the painting-a realistic, like a 3-D painting". It was also found that in the Mona Lisa, Da Vinci used manganese oxide in hid shadings whereas in others he used copper and often glazes. And regarding any hidden codes or clues, perhaps more patience is in order. This study may have answered how Leonardo Da Vinci illustrated the mystic smile in Mona Lisa, but as for the actual reason behind such mysterious smile, as the saying goes "there is more than what meets the eye"; surely we need to study her more innately.

The contributor is a freelance science writer

BAD OR GOOD SCIENCE?

Cosmic Watergate!

Stanton Friedman is convinced that extraterrestrial aliens are visiting us, and have been for a long time. There's nothing odd about that; many people believe in UFOs and aliens.

But Friedman is not your typical tin foil-hatted UFO nut. For one thing, he has a Master's degree in nuclear physics and worked for decades on fusion and fission rockets for some of the world's top aerospace companies.

Friedman joins other famous people with advanced degrees who are firmly convinced about things for which there is little hard evidence. Former Apollo astronaut Edgar Mitchell, for example, shares Friedman's beliefs about UFOs and alien cover-ups (Mitchell admits that he never saw any UFOs during his time with NASA, but believes that in 1947 Roswell, New Mexico, "There was a UFO crash. There was an alien spacecraft").

Another respected UFO believer was the late Harvard psychiatrist John Mack, who spent years studying people allegedly abducted, probed, and experimented upon by aliens.

Friedman has cultivated an image of a maverick, a renegade scientist brave enough to tell the world what he knows about flying saucers.

He has spent the last half-century researching UFO claims, and his conclusion is that "Some UFOs are intelligently controlled extraterrestrial spacecraft, and this is the biggest story of the millennium.... I'm convinced we're dealing here with a cosmic Watergate," he told AOL News this week. "A few people within major governments have known since at least 1947 that some UFOs are alien spacecraft."

According to Friedman, there are two main reasons that the hard evidence of alien presence is not better known:

The first is that a decades-long global conspiracy is afoot; high-ranking officials have carefully covered up all the hard evidence of UFOs. The second that scientists who are in a position to help expose the truth are afraid not just of those enforcing the conspiracy, but of admitting they were wrong. Friedman believes that the real truth about UFOs will be revealed soon.

"I'm still optimistic that, within my lifespan and I'm 75 we'll get at least a part of the story, that we're not alone in the universe," he said.

He may be right. It's possible that next week, next year, or next decade the long-sought and ever-elusive hard evidence proving that aliens exist will finally surface. However, Friedman might note a "curse" on UFO conspiracy theorists that famed skeptical UFO investigator Phillip Klass issued in his last will and testament:

"No matter how long you live, you will never know any more about UFOs than you know today," Klass wrote. "You will never know any more about what UFOs really are, or where they come from. You will never know any more about what the U.S. Government really knows about UFOs than you know today. As you lie on your own death-bed you will be as mystified about UFOs as you are today."

Klass died in 2005, and so far his curse remains in effect.

Source: LiveScience



What hard science says about UFO sightings?



NEW ENERGY SOURCE!

Levitating magnet



The Levitated Dipole Experiment (LDX) reactor

Nuclear fusion - the melding of atomic nuclei that happens inside stars - is a long-sought goal on Earth. If scientists can achieve it, it could offer a powerful source of energy with few negative environmental consequences.

Scientists took a step closer to this goal in January 2010 when they announced they'd built a levitating magnet that created some of the conditions thought to be necessary for fusion. By suspending a giant donut-shaped magnet in midair, researchers were able to control the motion of an extremely hot gas of charged particles contained within the magnet's outer chamber. The density of this gas was close to what's needed for nuclear fusion, the researchers said.

Source: LiveScience



DO YOU KNOW?

What is Green Energy?



Green energy, or renewable / sustainable energy, is derived from a source which meets the needs of the present without getting depleted. Green energy is looked upon as the answer to climate change and as a saviour of the world. Sources of green energy - bio-fuels, solar power, wind power, wave power, geo-

thermal power and tidal power - have begun to be utilized only recently. Green energy includes technologies that improve energy efficiency and are split into first-generation (hydroelectric / geothermal), second-generation (solar/wind energy) and third-generation (biomass gasification, solar thermal) technologies.