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MARY NG MAH LEE, JASON LEE, NATIONAL UNIVERSITY OF SINGAPORE

A surreal red and purple landscape of monkey cells is shown approximately 24 hours after being infected by the Severe Acute Respiratory Syndrome (SARS) virus. The virus particles appear here as bumps on the surface of the cells (size 1 x 1 micron).

Nano gallery

A previously unseen and eerily beautiful world is being opened up by the tools of nanoscience — the study of things very, very small. On these pages are works of science that are also art, from places where the visuals are truly out of sight

EMILY CHUNG
STAFF REPORTER

If you've never seen these beautiful works of art before, it's because they're usually much too small to see. The colourful masterpieces include extreme close-ups of unusual materials, human cells, nanoelectronic devices and other wonders of nanoscience that typically can't be seen under a conventional microscope.

These winning images from the 10th annual Veeco calendar contest were all produced with a special instrument called an SPM, or scanning probe microscope. The winners were announced last week. Those pictured here are featured in a promotional 2005 calendar being produced by Veeco Instruments Inc.. The company specializes in equipment used in nanotechnology and microelectronics research and manufacturing, including SPMs.

Veeco chose 14 out of 125 entries that came from around the world, including Canada.

While the contest doesn't earn the winners much fortune (they get some "corporate goodies" from Veeco), it's an opportunity for them to gain a bit of fame. "We're able to give them some good visibility, which is great for them because a lot of times, they're so buried in their experiments and doing what they're doing that people don't really know about it," said Mary McKeown-Christie, marketing communications manager for Veeco's metrology division.

But the images aren't just an opportunity for scientists and their science to been seen. They also let people outside science see into a small, small world. Just how small are the subjects of these images? Well, picture a millimetre. Then divide that millimetre into 1000 slices. Each slice is a micron wide. Now divide one micron into 1000 slices. Each of those slices is a mere nanometre wide. The captions appearing with each image note the actual width of each, revealing the minuscule scale of what you are seeing.

Conventional microscopes can't be used to look at things much smaller than the wave-

This striking golden feathering on a ic Table) depositing onto graphite i Greek word 'dendros,' meaning tre

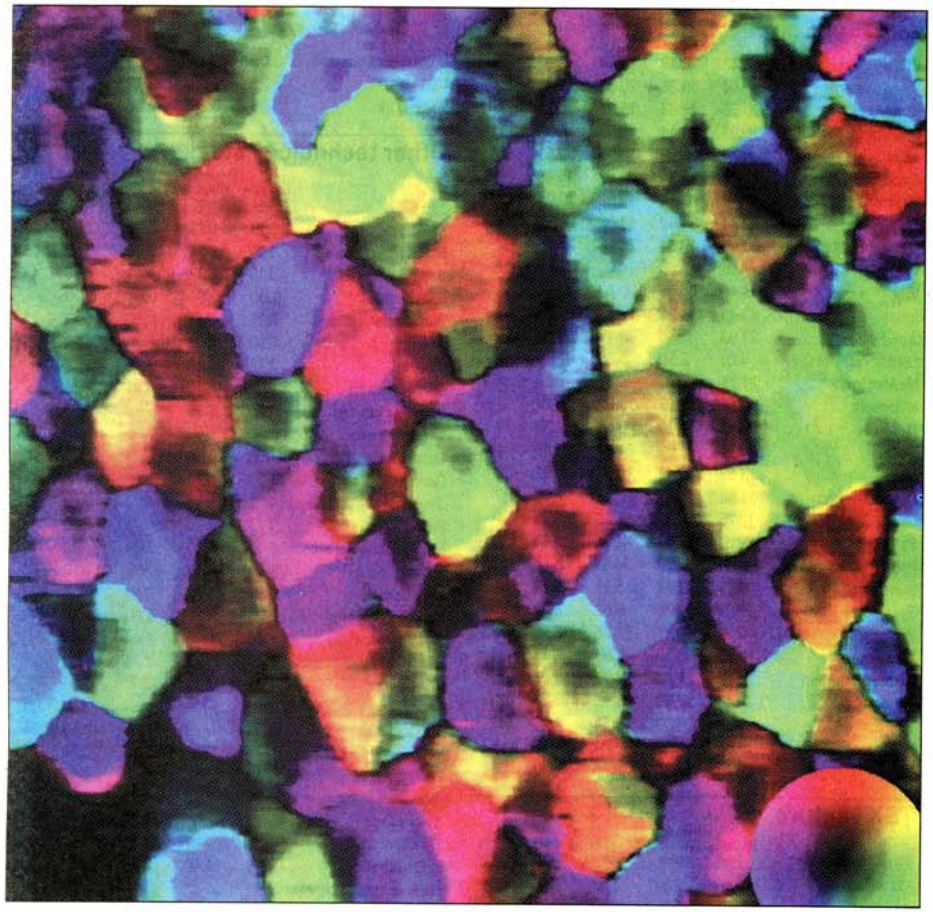

IMAGE BY A. GRUVERMAN, B.J. RODRIGUEZ, NORTH CAROLINA STATE UNIV.; S. V. KALININ, J. SHIN, A. BADDORF, OAK RIDGE NAT'L LAB., USA.

The look of colourful impressionist brushstrokes is produced in a thin film of lead titanate. Individual grains change their length when a voltage is applied, with the colours representing the direction of expansion and compression. (size 1.9 x 1.9 microns)

Nowadays, they can be purchased for between $50,000 and $200,000 (U.S.).

and the surface, and converts it into an image. The interaction can consist of simple physical or

for maximum aesthetic impact, giving their science a personal, artistic touch.

NAT'L LAB., USA.

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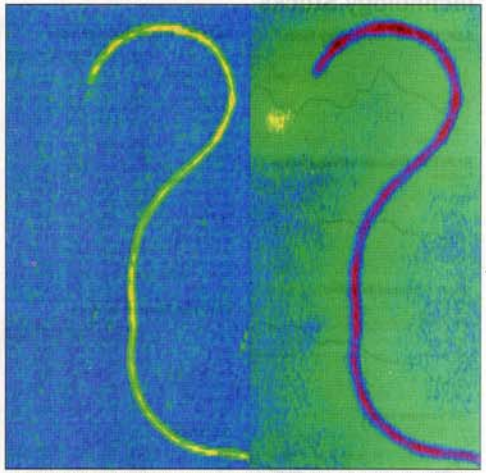

IMAGES BY T. MÉLIN, M. ZDROJEK, AND D. STIEVENARD, INSTITUT D'ELECTRONIQUE DE MICROÉLECTRONIQUE ET DE NANOTECHNOLOGIE, FRANCE.

The question-mark shape is of a carbon nanotube that has been electrically charged. The right-hand image depicts its electrical properties, including a green halo of electrons. (size, 1.4 x 3.5 microns)

ISITY OF QUEBEC

Dark and light bands wrap around tiny bismuth ferrite spheres. The spheres are ferroelectric, meaning they have electric dipoles similar to magnetic dipoles in ferromagnets. The contrasting features show areas where dipoles point up and down respectively. (size 5 x 5 microns)

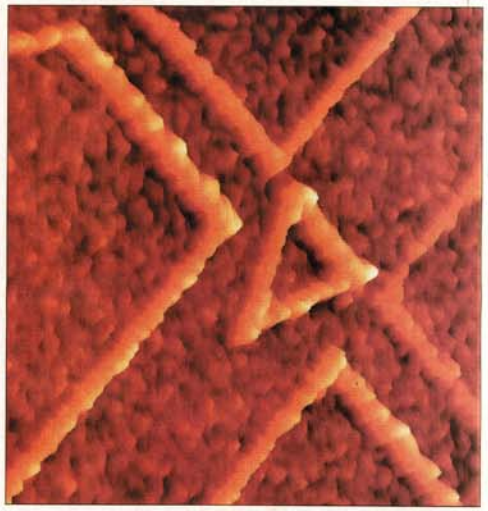

IMAGE BY AIMIN SONG, UNIVERSITY OF MANCHESTER, UNITED KINGDOM

Lines and a triangle much finer than a human hair are drawn on a titanium surface using a conductive microscope tip to create a nanoelectronic device called a ballistic rectifier, which converts alternating current into direct current. (size 640 x 640 nm)