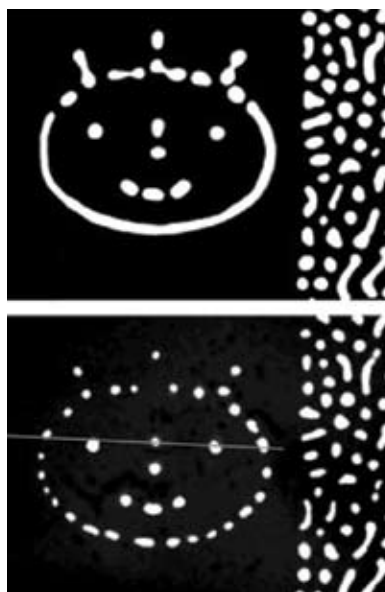


## FUTURE WATCH

# THE WATER DRIVE

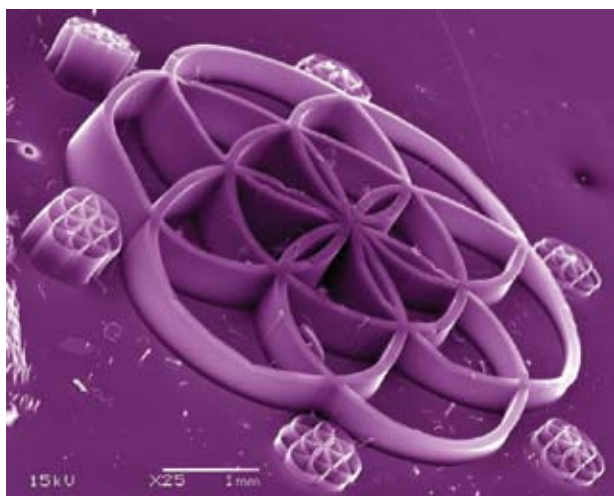
Is data storage going liquid? Professor Irving Epstein and other Brandeis University researchers found that when certain chemical reactions take place in a water-in-oil microemulsion, patterns can be stored and later recovered. Under an intermediate level of light intensity, the image (a smiley face, in this experiment) was maintained for more than an hour before beginning to fade.

In the PC realm, if you could maintain this system of reactions and address its nanodroplets individually, you could theoretically store a lot of information in a tiny space. But before you trade in your hard drive for a jar of salad dressing, keep in mind that such technology is a long way off. "You could, in principle, build a reaction-diffusion-based computer," Epstein says, "but you'd have a hard time trying to persuade investors that it would be competitive with silicon systems."—Anton Galang



# Miniature Masterpieces

For one scientist, carbon nanotubes become a way to create sculptures on the atomic scale.



**R**ARELY DO SCIENTISTS TRY TO harness the artistic possibilities of what they see under the microscope. But Anastasios John Hart, a mechanical engineer from M.I.T., has done exactly this by creating art from his research on carbon nanotubes, which are extremely strong, tensile structures typically used in next-gen circuitry and optics.

"As I studied carbon nanotube growth during my Ph.D. research at M.I.T., I recognized the beauty of these nanotube structures as viewed in the electron microscope, and then began to realize their artistic potential," says Hart.

In late 2005, Hart started experimenting with sculpting carbon nanotubes, one-atom-thick sheets of graphite (called graphene) rolled up into a seamless cylinder with a diameter of 1 nanometer. Because carbon nanotubes grow on a silicon substrate, he says, he began to sculpt them by altering the shape or thickness of the substrate.

Hart also has learned to modify the growth rate, which he says "causes the nanotubes to collectively bend, split, ripple, or to grow in unexpected shapes." Once they achieve the shape he wants, he captures the image by optically photographing or scanning it with an electron microscope. Recently, he has started adding color to some of the images using Photoshop.

Hart has started a Web site called Nanobliss ([www.nanobliss.com](http://www.nanobliss.com)) and joined an artists group called Collision Collective, whose members make art using new materials, interactivity, robotics, performance, time, and technological experimentation. Although Hart is passionate about his art, he is not about to trade in his lab coat for a beret.

"I'm still very much a scientist," he says. "But I now see how artistic endeavors can enhance the presentation and visualization of science, and how laboratory techniques such as fabrication and self-assembly can be a new art form. I think nanotube art is just the beginning."—Stanley Warren, freelance writer

## TOP 10 WII-RELATED ACCIDENTS

1. Crack in television
2. Hole in window
3. Wiimote-shaped dent in wall
4. Shattered 4-inch PDA screen
5. Severed blade from ceiling fan
6. Broken chair from Zelda fishing
7. Hole in mother-in-law's china cabinet
8. Four stitches in index finger
9. Black eye on girlfriend
10. Bruise on infant son's head

Source: [www.wiihaveaproblem.com](http://www.wiihaveaproblem.com), 2007

