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## The lighter side of nano: moleculariums and the *real* small world

By Candace Stuart and David Forman  
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Mar. 16, 2005 – Move over, George Lucas. You and your Star Wars crew are in for a galactic battle this year, although the smash-bash for animation supremacy won't be in any old ho-hum theater.

Instead, it will take place in planetariums whose domed ceilings surround an audience with sights and sounds from a digital projection system. And while Wookiees, Ewoks and special effect creatures from the soon-to-be released "Episode III: Revenge of the Sith" are undoubtedly cool, they're ... well, so Macro Age.

Not the "Molecularium." In February, Rensselaer Polytechnic Institute debuted a 20-minute animated show that places viewers amid molecules. The ultra-modern animated program showing in the Children's Museum of Science and Technology near Troy, N.Y., lets kids hang with the nanokind as oxygen and hydrogen characters form water molecules and morph from gas to solid to liquid.

"Once I looked at the (planetarium) dome I knew we could immerse people in the material," said Linda Schadler, a materials science professor at RPI and team leader for the project. "That's how materials engineers think. They picture themselves inside the material."

The show fulfills RPI's requirement to provide an educational outreach component in its National Science Foundation-funded Center for Directed Assembly of Nanostructures. RPI partnered with the museum, NSF and a creative team that included students, teachers, animators, programmers and entertainment professionals. They hope to distribute the digital show worldwide in a few months, and already have a sequel in mind.

Schadler, who spoke at the show's opening on Feb. 4, said it was a hit with kids as they lay flat on their backs in the planetarium's reclining seats and watched characters like Hydro, Hydra and Oxy zoom around them. But she kind of expected that. She pilot-tested the show about two years ago on her daughter and son, who are now 6 and 8.

"I knew my daughter got something from it the next day when she said, 'Mom, my orange juice is made of molecules but you can't see them.'"

Her son, on the other hand, took in more of the jokes, such as Oxy's proclivity to bang into things. And although the target audience is kindergarten through fifth-graders, the storytellers borrowed a trick from writer-director Lucas and added a few quips for a more sophisticated crowd, too.

At one point the characters, trapped in a coin, ask a computer where they are. A penny, it responds. What's that, they wonder aloud.

"An obsolete monetary unit."



Illustration courtesy of Rensselaer Polytechnic Institute

"Molecularium" star Oxy, in red, is on the celeb track with a second show already in the works.

### **There really is a small world, after all**

For about three years there has been a standing rule at Small Times: no plays on "small." No more allusions to how tiny technology will have a big impact. No more photos of ants crawling on top of microstructures. And absolutely not one more comparison between a microsize device and the thickness of a human hair (which varies, you should know).

So it is with no little fanfare that we break that rule in the tiny space allotted here and acknowledge the profoundly huge impact of a cute little café in Small Times' hometown of Ann Arbor, Mich. – appropriately dubbed the "Big City Small World Bakery Café."

The landmark eatery in the city's Old West Side neighborhood is housed in a bright yellow corner storefront surrounded by metal statuary. It is, shall we say, an intimate space. Inside can usually be found local artists, students, parents and their kids, young professionals and the occasional Small Times staffer cooling off in summer with a mint limeade.

"What we do here is very low tech," said owner Scott Newell. "We're the old resisting Luddites. We make everything from scratch. We make everything on the premises. Everything uses about six ingredients."

The result is a profitable business that is adored by its neighborhood – only Newell doesn't know where the name came from. He inherited it from the previous owner when he bought the business three years ago.

So while the link to Small Times is purely coincidental, you can bet that one concern will always remain shared by both the magazine and the bakery cafe: hair and ants are not allowed by either.

