



## U-Daily News

### **Exhibit mixes art, science to showcase small stuff**

**By Denise Roberts  
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**Wednesday, December 31, 2003** - To enter the world of the subatomic realm - to interact with the molecular level - surely seems the stuff of science fiction. But, in a new exhibition at the Los Angeles County Museum of Art, a unique convergence of art, technology and science aims to offer children and adults alike just such a participatory experience. In fact, at this exhibition, children are encouraged to touch everything.

Nano, which recently opened at LACMA's Boone Children's Gallery, is at once an abstract media arts exhibit and an opportunity to visually and viscerally delve into the world of the microcosm. The word "nano" refers to molecules too small to be seen by the microscope, with "nanoscience" being the groundbreaking study of this mysterious world.

Organized by LACMALab, a museum unit focused on developing experimental, family-friendly art presentations, nano is largely the brainchild of media artist Victoria Vesna and nanoscience pioneer and UCLA chemistry department professor James K. Gimzewski, who collaboratively designed eight of the nine installations. The exhibition is focused upon transporting the visitor from the human scale to the nano scale, making the invisible - yet real - world of the nano tangible and relevant to the human experience.

"When I was first listening to scientists explain nanoscience to me, it was so distant. I'd think, how can this possibly connect to a sense of our humanity?" said artist Vesna. "I wanted to blow up these molecules to a place where we can interact with them in a way that's not intimidating or foreign, and point out the message that we live in a world made of molecules and atoms. It's not something distant."

The architecture within the exhibition, designed by architects Sharon Johnston and Mark Lee, is characterized by modular, folded sculptural surfaces, representing cell-like enclosures. Most installations utilize a combination of visual projections, sound and sensory components that are interactive with the visitor's presence. No wires, equipment or computer elements are visible, thereby not distracting from the experience.

In the installation called "The Inner Cell," visitors enter a jewellike cell space where, thanks to computer technology, they can interact with simulated, enlarged molecular

forms through the visual, auditory and tactile senses. Shapes within the space represent the three forms of carbon - the main element of life. The faceted architecture represents carbon in diamond form. Hexagonal shapes representing carbon in graphite form are projected upon the floor, shifting in response to the movements of people within the space as they set off "gravity waves," further engendering rumbling sound effects. On the wall, projections of beachball-sized spherelike "Buckyballs," representing carbon-60, also interact, manipulated by the motions of visitors' shadows. Visitor movement and touch also mobilize plastic robot balls on the floor, further causing visual and sound reactions within the cell. Visitor "waves" likewise interact with each other.

"Within the 'Inner Cell' installation, in a sense, you are a bit like an atom and you are perturbing your environment," explained nanoscience professor Gimzewski. "The exhibits are all very interactive in the way that you change the environment, and in changing the environment, the exhibit changes."

Along various walls, text quotations from scientists, novelists and other writers address nanoscience concepts. However, in contrast to a conventional science museum exhibit, the texts do not attempt to explain concepts. Instead, a nearby educational resource area offers information for interested visitors.

"What we're trying to focus more on in the exhibition is a sense of interactivity, that sense of play and exploration. You ask questions - we don't just give you answers," said Gimzewski.

An important theme running throughout this exhibition - and a concept central to nanoscience - is the idea of connectivity.

"As I worked on the installations, it became important to me to convey the message of the connection between the visible and the invisible. They're not separate - everything is interconnected," said Vesna.

The sounds and images of visitors in one installation are transmitted and projected into installations in other areas of the exhibition, much like waves in quantum mechanics. Through this message of interconnectivity, nanoscience - and the nano exhibition - also touch upon social and cultural ramifications.

"The inherent lesson in nanotechnology is that you can't disconnect yourself from the environment," said Gimzewski. "What we do to this planet Earth influences us, and so on."

In the "Nanomandala" installation, a projection upon a tablelike platform evolves slowly from a metaphorically nano- scaled grain of sand, to a fully formed, complex Buddhist sand mandala. Analogous to atoms building upon each other, this colorful artistic rendering of a cosmic universal symbol was painstakingly created in sand by Tibetan monks. The original is on display at LACMA East.

In the "Quantum Tunnel," images of visitors traveling through opposite ends of a corridor juxtapose, alter and distort into projected abstract dots and waves, but do so only according to the laws of probability, with often different results - much as in quantum mechanics.

In another installation, designed by Steven Schkolne of Caltech, visitors can don 3-D glasses and manipulate a virtual-reality tool to "draw" molecular models in space.

"Nanoscience represents such a huge fundamental shift in thinking about the world philosophically," said Vesna. "Even scientists are just taking baby steps now in understanding nanoscience and its implications. So it's this incredible point in history where all of us are on level ground as far as imagination goes."

The message of nano in a nutshell is a simple yet profound one: nano is our world, and we are nano.

Where: Los Angeles County Museum of Art, West Boone Children's Gallery, 5905 Wilshire Blvd., Los Angeles.

When: Noon-5 p.m. Sundays-Tuesdays, Thursdays-Saturdays; Through Sept. 6. Tickets: Free. Information: (323) 857-6000.