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Art on the Nanoscale

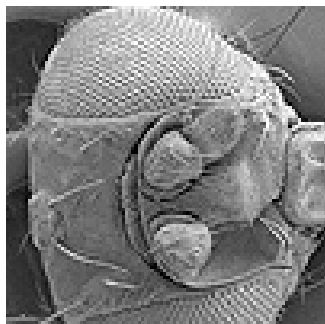
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Art on the Nanoscale

07.03.2008 | Faculty, Engineering, Fine Arts, Science Tucked away in the basement of a building at the University of Dayton is an award-winning photography studio that gives new meaning to a "close-up."

A microscopic image of a fruit fly head by Scott Streiker was one of 62 works chosen from more than 300 submissions for the "Images from Science 2" exhibition sponsored by the Rochester Institute of Technology's photography school.

Streiker, a research electron microscopist for the University of Dayton Research Institute (UDRI), zoomed in for a textured, highly-detailed, black and white view of the fly's eye and mouth parts.

Winning photography awards is just a sideline for the Nanoscale Engineering, Science and Technology (NEST) Laboratory, a laboratory equipped with electron microscopes and other equipment worth more than \$1.5 million for observing and working with materials on the atomic and molecular levels.

NEST is a teaching and researching lab with an important difference -- an open door policy that welcomes non-science majors, outside researchers and even K-12 school groups. Thomas Wittberg, who manages the lab for UDRI, believes it's the only center in Ohio that encourages outside use.

"It's a rare center that allows a student to touch the equipment. Here we allow non-scientists to use the machines after they've been trained," Streiker said.

Wittberg said other universities and research facilities in the state have similar equipment, but as far as he knows, access is restricted to their own researchers. The University's policy has led to collaborations with campus artists and partnerships with outside customers who are trained and can use the equipment for a fee, he said.

Streiker said some of outside users have included the regional blood and tissue bank, local manufacturing and industrial concerns and Wright Patterson Air Force Base researchers. Some companies hire NEST to do research and analysis, while others do all the work and analysis for themselves, he said.

Wittberg said demand is high for two of the machines that offer the highest resolution. The transmission electron microscope has a resolution as high as 0.2 nanometers, which is almost to the atomic scale. The scanning electron microscope offers a 1.0 nanometer resolution, with easier sample preparation.

Streiker especially enjoys grade school students who tour NEST and peer through the microscopes. Some days they might see a fruit fly or a tea leaf. On other days, they might look at the lacy globes on the surface of latex or the rough surface of a carbon nanotube.

"We let them put their hands on some of the equipment. We set it up and let them really see what it's like to do this kind of science," he said. "They get really excited."

Although he works on the nanoscale every day, Streiker hasn't lost his own sense of wonder and excitement at seeing the smallest of subjects and the tiniest of details.

With the powerful magnification, he focuses on the fly's head, then zooms closer and closer for a detailed look at the fly's multifaceted eye.

"Look at the structure, look how beautiful they are," Streiker said. "There are always surprises."

For more information on scheduling tours or reserving the NEST laboratory, visit the lab's Website or call Streiker at 937-229-5667.