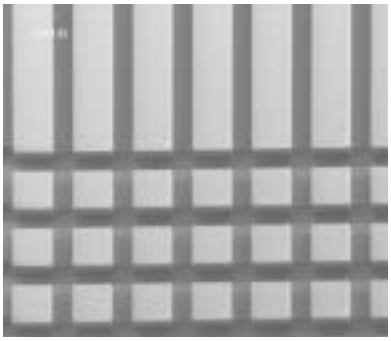
Versatile Electroforming Process Is Developed

NiCoForm, Inc., Rochester, NY, and the Alliance for Nanomedical Technologies (ANMT) based at Cornell University have demonstrated the use of electroplated Nickel-Cobalt alloy for high strength, hard stampers for low cost production of micro-fluidics and micro-optics devices. Electroplating the alloy on a silicon master forms the stampers, which are fabricated at the Cornell NanoScale Facility (CNF).

The electroform is a negative replica of the silicon master and a low cost reproduction of the master is obtained by embossing it onto plastic substrates. They are found to replicate structures from submicron dimensions, such as optical gratings, to those of hundreds of microns, e.g., micro-fluidic channels. The channels and optical elements constitute building blocks of many biosensors.

K. V. Madanagopal



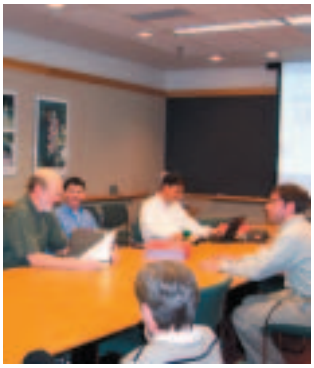
An array of deep grids and lines embossed into a plastic substrate for micro-fluidic applications.

Business Incubator Practices Are Studied

In anticipation of establishing a New Life Sciences Business Incubator, the staff in the Center for Advanced Technology in Biotechnology has begun a process to benchmark "best practices" in business incubator management. Center Director Steve Kresovich, Plant Breeding, in conjunction with the Johnson Graduate School of Management, formed a team to gather and process information on the operation of campus-based business incubators.

The New Life Sciences Technology Building, slated for construction beginning in 2004, will contain space for the business incubator. Issues related to governance, organization, and operation are the subjects of study by the team of Johnson School students, who receive course credit for their work on the project and are responsible for presenting their recommendations to a Business Incubator Working Group.

Biotech CAT



JGSM student team works with Steve Kresovich (far left) and includes (l. to r.) Erez Ben-Menachem, Yuji Nakahara, Tobin C. Schilke, and George Lo (not pictured).

New Microscope and Staff Arrive

The Cornell Center for Materials Research (CCMR) recently added to its microscopy family. The LEO 922 EFTEM (Energy Filtered Transmission Electron Microscope) will put CCMR at the forefront of electron imaging. This versatile tool will satisfy the imaging needs of the materials scientist, polymer chemist, food scientist, and biologist. The instrument purchase was proposed by Cornell researchers representing four colleges and two centers and was funded through an NSF Major Research Instrumentation award. Coordinated with the arrival of the instrument, a new expert has joined the Center's facility staff. John Grazul, from Lucent Technologies, is a specialist in TEM operation, training, and techniques and serves as the Transmission Electron Microscopy Facility Manager.

Gary Hodges/Jon Reis Studio

John Grazul, CCMR facility manager, with new LEO 922 EFTEM

Name Change Reflects Broad Research Focus

Cornell Nanofabrication Facility is now called Cornell NanoScale Facility, short for Cornell NanoScale Science and Technology Facility. The acronym CNF remains the same. What is in a name? Quite a bit. Over the years, research pursued in CNF has undergone many transformations—from the use of techniques and instruments that largely came from the semiconductor industry to a broader group including synthesis and chemical assembly. This reflects a broadening of what researchers accomplish at CNF: research in science and technology that utilizes dimensions from the atomic and molecular length-scale to the micro- and macro-scale.

Zimmer Gunsul Frasca Partnership

Duffield Hall

"Spirit" and "Opportunity" Successfully Launched

On June 10, 2003, the MER-A spacecraft launched into space carrying the Mars Exploration Rover and the Athena science payload developed by Cornell Astronomy faculty and their associates in the Center for Radiophysics and Space Research (CRSR). The companion spacecraft was successfully launched on July 7, 2003. Named "Spirit" and "Opportunity" in the days before their launch, both rovers are expected to start exploring the surface of Mars in January 2004. "Spirit" will land at Gusev Crater and "Opportunity" will touch down at Meridiani Planum. Once on the surface of Mars, the twin robotic geologists will explore Mars' climate history, searching for signs of water and life. For up-to-date information about the mission, log onto http://www.athena.cornell.edu

Dan Maas

Mars Exploration Rover

Workshop Explores "Physics First"

As part of its education and outreach efforts, the Laboratory for Elementary-Particle Physics (LEPP) hosted a workshop from June 30 to July 2, 2003, entitled "Exploring Physics First." Participants exchanged ideas and information about the philosophy and pedagogy of teaching physics first in the high school science sequence. The workshop agenda included presentations on science education reform efforts and physics as a foundation for other high school science courses. Representatives from schools that have implemented the program shared testimonials and firsthand experiences. In addition to exploring the scope and sequence of a physics-first based curriculum, participants addressed the National Education Standards, the NY State Physical Setting/Physics Core Curriculum, and the NY State Regents examination.

Lora Hine

Flo Turkenkoff, Packer Collegiate Institute, and Carl Preske, NYS Education Department, work on a lab activity using a balance made from a straw.

Brown Heads NAIC and Arecibo

Robert L. Brown, noted astrophysicist and observatory administrator, has been chosen to direct the National Astronomy and Ionosphere Center (NAIC), whose main facility is the Arecibo Observatory in Puerto Rico, the world's largest, and most sensitive, single-dish radio telescope. NAIC and Arecibo provide access to state-of-the-art observing for scientists in radio astronomy, solar system radar, and atmospheric studies, and the observatory has the unique capability for solar system and ionosphere radar remote sensing. Brown, who intends to spend "an appreciable amount of time at the telescope," wants to make the observatory even more accessible to the scientists who use it by providing enhanced levels of user support, including assistance with proposal writing, calibration, and data reduction.

CU

Robert Brown

REU Participants Pair with Younger Students

What do you get when you mix together a group of undergraduates, some middle school students, toothpicks, marshmallows, and dental floss? That's the question the Nanobiotechnology Center (NBTC) asked as their Research Experience for Undergraduate students arrived on campus for the summer simultaneously with 25 middle school students from an inner city school in Syracuse where the center hosts an after-school science club. The undergraduates, from Fort Valley State University, Johns Hopkins University, College of the Canyons, UC Santa Barbara, University of North Carolina, Princeton University, University of Virginia, and Alabama State University, led the students through a bridge-building activity.

Robert Barker/CU

Undergrads and kids design and build marshmallow bridges.

For more information:

Contact individual faculty members using the Cornell Electronic Directory at http://cuinfo.cornell.edu or (607) 255-2000; or find directory information for specific centers at http://www.osp.cornell.edu/vpr/CentersIndex.html