

UCFTI NATIONAL BUSINESS INCUBATOR OF THE YEAR

Cognoscenti Health Institute Named Top Client Company



UCF TECHNOLOGY INCUBATOR STAFF CELEBRATE RECEIPT OF NBIA AWARD. FROM LEFT: ROY MCCAW, KIMBERLY RUHGE, JULIE MATTHEWS, JESSEY SCHMIDT, TOM O'NEAL, CEO OF THE UCF TECHNOLOGY INCUBATOR, RENEE AYALA, CAROL ANN DYKES, JENNIFER OLDHAM.

The University of Central Florida Technology Incubator (UCFTI) has received the National Business Incubation Association's (NBIA) most prestigious honor in the technology category. The world's leading organization advancing business incubation and entrepreneurship, the NBIA presented UCFTI this global award April 26 during NBIA's 18th International Conference on Business Incubation in Atlanta. In addition, Cognoscenti Health Institute, one of UCFTI's participating companies, was also named 2004 Outstanding Incubator Client by the same organization.

Each year, the NBIA Incubation Awards honor the business incubators, client companies and graduates that exemplify the best of the industry. The UCF Technology Incubator, a university-driven community partnership founded in 1999, has supported 70 client companies and eight graduating companies, who together have created more than 450 new jobs, and generated more than \$140 million in revenue for the local economy. UCFTI is closely associated with the university's office of research and technology transfer.

"The team at the UCF Technology Incubator has demonstrated exceptional leadership in creating an entrepreneurial culture and high-tech industry base in central Florida," said NBIA President and CEO Dinah Adkins. "They have built strong partnerships in the community that pro-

con't page eight

TWO UCF RESEARCHERS RECEIVE NSF CAREER AWARDS

Engineer Developing Miniature 'Lab on a Chip'

Drug discovery is a world of miniatures that is reliant on some very large machinery. A UCF researcher has received a prestigious federal grant to bring that disparity down to size.

Hyoung Jin "Joe" Cho, assistant professor of mechanical, materials & aerospace engineering, has received a \$400,000 National Science Foundation (NSF) Career award to develop a miniaturized biosensor.

Currently, testing of new drugs is a convoluted process that involves big equipment and a separate test for each agent. The testing process for one new drug from lab to market can take 12 years.

The "lab on a chip" will give scientists a device the size of a credit card to gauge the reactions of new drugs as well as to analyze food, beverages and myriad agricultural and industrial products for contamination or other problems.

And a miniaturized testing tool could allow for testing of multiple assays at the same time, meaning much greater efficiency and, ultimately, less cost.

"The first computer was built with 17,468 vacuum tubes, 70,000 resistors, 10,000 capacitors, 1,500 relays, and 6,000 manual switches at the cost of a half million dollars. Now we have a pocket PC in our hand with greater computing power for \$299," Cho said.

He aims to apply the same thinking to the biomolecular world. The miniaturization is made possible by combining the work of multiple disciplines. Cho is working with researchers in fluid mechanics (Jay Kapat, Ranganathan Kumar), optics (Patrick LiKamWa), and biomolecular sciences (Beverly Rzigalinski and Daniel V. Lim at USF.)

joecho@ucf.edu

Mass Production to Make Optical Chips More Available

It is hard to imagine life before DVD or CD players, laser surgery or barcode scanners. But those devices, all made possible by a marriage of light signals and electrical processors, are just the beginning of what will be possible as a result of a University of Central Florida scientist's work.

Eric Johnson, assistant professor of optics at UCF's School of Optics/CREOL (Center for Research and Education in Optics and Lasers) is developing a method for mass producing optical chips. These photon-fueled processors are poised to challenge the silicon chip as the driving force of our information-based world. Because photons, which are directed by light, have the capacity to move much faster and carry much more information than chips fueled by electrons, the ability to make these chips available on an industrial level could be revolutionary for manufacturers.

con't page seven

IMPACT is produced by the Office of Research at the University of Central Florida. For more information about UCF's sponsored research activities, contact Tom O'Neal, Associate Vice President for Research, 12443 Research Parkway, Suite 207, Orlando, FL 32826. (407-882-1120). For information about stories contained in the newsletter, contact the editor or the appropriate website.

Opinions expressed do not reflect the official views of the university. Use of trade names does not constitute endorsement by the University of Central Florida.

Please credit University of Central Florida IMPACT when reproducing content from the publication.

John C. Hitt
President, University of Central Florida
jhitt@mail.ucf.edu

Terry Hickey
Provost and Vice President
thickey@mail.ucf.edu

M. J. Soileau
Vice President for Research
mj@mail.ucf.edu

Tom O'Neal
Associate Vice President for Research
Executive Director, UCF Technology
Incubator
oneal@mail.ucf.edu

Editor
Barb Compton Abney
babney@mail.ucf.edu

Q&A WITH RANDALL SHUMAKER

DIRECTOR OF INSTITUTE FOR
SIMULATION AND TRAINING

Randall Shumaker is director of UCF's Institute for Simulation and Training where computer modeling and simulation are used to address real-world issues.

How critical is the modeling, simulation and training (MS&T) industry to Central Florida's economy?

There's a recent study out that found MS&T in Florida directly supports 304 companies and 16,041 jobs. Annual payroll is more than \$1 billion. Indirectly, 47,474 jobs are impacted. Over half of the companies (171) are located in the high tech corridor, a 13-county area from Daytona Beach to St. Petersburg. And 102 of those are right here in central Florida. If MS&T somehow completely disappeared overnight, the area not only would lose a large number of highly skilled modeling and simulation technical people but would also suffer from the loss of support industry revenues.

What advantages does this region have in attracting companies that utilize modeling, simulation and training technologies?

The most obvious is the number of companies already here. The critical mass required to establish a support infrastructure has already been achieved. An important part of this support is educational; the area boasts MS&T programs that begin in high school and continue through community college right on up to advanced degrees. Graduates of these programs are a highly skilled and knowledgeable pool of talent readily tapped by local industry.

What is the significance of having master's and Ph.D. programs in modeling and simulation at the University of Central Florida?

Universities are the home for a great majority of the cutting edge research in MS&T. Master's and Ph.D. programs attract students, scientists and faculty at



SHUMAKER

the highest levels. The results of this high level research return in the form of new technology, more knowledge and increased utility for the end user. Advanced, multidisciplinary MS&T programs also are an important part of that critical mass unique to the region.

What role is local MS&T research playing in homeland security?

Training people who deal with these issues is the biggest challenge we face in securing the U.S. from both internal and external threat. Locally, we're looking at how people work together to deal with crises. Learning how teams function effectively-and how you can train teamwork-is a large part of the current research emphasis.

What is the biggest challenge facing the MS&T industry now?

The biggest current challenge is moving from a "billable hours" artisan-based approach to an engineering discipline backed by sound science. The establishment of UCF's M&S graduate program and the identification of core competencies for M&S professionals are important steps in this direction. The other universities that have established programs in M&S are direct and indirect collaborators in making this leap, as are the M&S-oriented professional societies.

shumaker@ist.ucf.edu

COOKIN' WITH M.J.



"Research IMPACT starts with quality ingredients"

MIX VISION, SUPPORT, ENTREPRENEURS FOR WINNING INCUBATOR

Sometimes one is glad to be wrong. This is certainly the case with respect to the Central Florida Technology Incubator (CFTI). I thought that Tom O'Neal, associate vice president for research and executive director of the CFTI, was nuts when he proposed to start the incubator - with no money, no space, and no mandate. In true UCF spirit, we let Tom go out on a limb, way out on a limb. He parlayed \$10,000 each from the College of Engineering and Computer Science, College of Business, and the Center for Research and Education in Optics and Lasers (CREOL), into the nation's top technology incubator during the short span of four years! He did this while

leading the Office of Sponsored Programs to new levels of responsive, professional service to our faculty. And, in his spare time, Tom is completing his Ph.D. in industrial engineering.

Given all that, one would correctly assume that Tom had lots of help. Carol Ann Dykes, associate director of the UCFTI, and all of the incubator staff are to be congratulated. There are many outside partners, who also deserve our congratulations and thanks. The Florida High Tech Corridor Council, the City of Orlando, Orange County, the Mid-Florida Economic Development Commission, leaders from the central Florida business community who serve on the incubator board of directors, and, of course, the entrepreneurs, who are the UCFTI clients. Add to this list the faculty and students of UCF, who work in partnership with many of our clients, and the support of the National Science Foundation (NSF) and the Kauffman Foundation.

There has been much written about the success and failure of business incubators. The above list of participants and

sponsors is a strong clue as to why some fail, some succeed, and some soar. The recipe for success begins with the key ingredients of partnerships, vision, and focus on client success. Add a dedicated visionary, blend with strong community partners, and sprinkle with a dash of financial support. Spice with liberal amounts of entrepreneurship. Briefly simmer. Serves 60 companies, 450 employees, and the entire central Florida community.

This issue of IMPACT reports on significant recognition of UCF faculty scholars. Professor Henry Daniell received the prestigious UCF Pegasus Award, the highest honor for a UCF faculty member. This well-deserved honor salutes Professor Daniell for his contribution to research, teaching and service. We congratulate Hyoung-Jin "Joe" Cho, assistant professor of Mechanical, Materials and Aerospace Engineering, and Eric Johnson, from the School of Optics/CREOL/Florida Photonics Center of Excellence, for their selection by the National Science Foundation to receive CAREER awards. These exceptional young scholars are our future.

mj@mail.ucf.edu

BIOLOGIST RECEIVES UNIVERSITY'S TOP FACULTY HONOR

Henry Daniell, a well-respected molecular biologist who founded a biotechnology company and helps to train high school science teachers, won the 2004 Pegasus Professor Award on Wednesday.

Daniell is the seventh winner of the annual award that is the most prestigious honor the university gives to a faculty member. The Pegasus Professor Award recognizes excellence in teaching, research and service.

"Dr. Daniell is the gold-standard by which all faculty should be compared; he is an extremely accomplished scientist and scholar, a model university leader and citizen, and an effective and compassionate teacher," wrote Alexander Cole, an assistant professor in the Department of Molecular Biology and Microbiology.

Daniell received a statue of Pegasus, the UCF symbol, and a gold medallion

engraved with a Pegasus logo and his name. He also received a check for \$5,000.

A two-year member of the UCF Millionaires Club, which honors faculty members who bring in more than \$1 million of research grants, Daniell recently was selected as a foreign member of the National Academy of Sciences in Italy. The group's members include Albert Einstein, Benjamin Franklin and Louis Pasteur.

Daniell, the first Trustee Chair in the life sciences, helped found Chlorogen, the first biotechnology company established at UCF. He persuaded top companies to invest millions of dollars in Chlorogen's efforts to grow therapeutic drugs in plants such as tobacco.

"It really feels good that the university is recognizing the accomplishments of faculty and students, and I'm pleased to



UCF PRESIDENT JOHN HITT PRESENTS HENRY DANIELL WITH PEGASUS PROFESSOR AWARD

be part of it," Daniell said after the conclusion of the Founders' Day ceremony in the Student Union.

daniell@mail.ucf.edu

DATA-SHARING HELPS LAW ENFORCEMENT WORK TOGETHER

A new data-sharing system developed at the University of Central Florida has helped law enforcement officials make more than 70 arrests since October while shaving days off the length of some investigations.

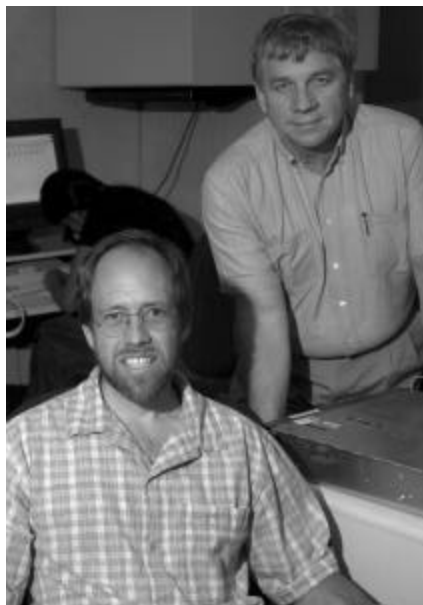
Criminal justice and computer science experts at UCF developed the system, which connects computers at law enforcement agencies and enables them to share information about property, people and vehicles. By sharing data, the agencies can quickly identify patterns of criminal activity and significantly reduce the time spent investigating crimes.

"For years, law enforcement agencies have sought ways to share real-time, operational-level data across jurisdictional boundaries," said Mike Reynolds, associate professor of criminal justice and co-director of the project.

Reynolds said the inability to quickly share data across county lines makes it easy for criminals and potential terrorists to go unnoticed.

For example, two months before the Sept. 11 terrorist attacks, police in Florida stopped Mohammed Atta and let him go. Atta was one of the pilots who flew an airplane into the World Trade Center towers. If the officer had been able to use his patrol-car computer to search law enforcement records in nearby counties, he would have learned there was a warrant for Atta's arrest because he had failed to appear in court after driving without a license in Dade County.

To develop an effective data-sharing system, the UCF team needed to overcome several major obstacles, Reynolds said. Agencies use different types of computers and record management systems, making it technically difficult to link their computers. They also want to retain control of their individual databases, rather than pool information into a centralized database.



RON EAGLIN AND MIKE REYNOLDS HAVE DEVELOPED A SYSTEM THAT ALLOWS SECURE INFORMATION TO BE SHARED

Reynolds and Ron Eaglin, an associate professor of computer engineering and computer science at UCF, used new software development tools to create a system that enables one agency to search the databases of many other agencies over a secure, dedicated network provided by the Florida Department of Law Enforcement. The structure of this system allows each agency to maintain control of its own data.

Reynolds and Eaglin launched the system in October by collaborating with five agencies along Florida's Interstate 4 corridor. Each member of the consortium agreed to provide a computer and in-house technical support and to pay an annual fee based on the number of sworn personnel who use the system (the maximum is \$10,000).

The agencies initially shared pawn shop records, which include the names, driver license identification and thumbprints of people who pawn property and the descriptions of those items. By law, pawn shops must submit this information to local law enforcement agencies.

The data-sharing capability quickly became a crucial tool for the agencies, Reynolds said. "One investigator using the system was able to identify a suspect, collect the supporting data to issue a warrant for arrest and arrest the suspect in a matter of hours. Normally, it would take three to four days."

Other investigators using the tool have found property in Seminole and Orange counties in Central Florida that was stolen in Hillsborough County on the state's west coast. "The property wouldn't have been found without using the multi-jurisdictional data-sharing capability," Reynolds said.

Currently, 13 law enforcement agencies in nine counties in Florida are members, and 31 others are in the process of joining. All members now share pawn shop records, as well as records on people and vehicles - a capability recently added by the UCF team.

Funding to launch the project was provided by UCF's College of Health and Public Affairs and College of Engineering and Computer Science. In addition, Orange County Sheriff Kevin Beary provided \$100,000 in seed money and assigned a full-time manager from his office to the project, which is housed at UCF. Reynolds and Eaglin are currently seeking state and federal funds to enhance and expand the data-sharing system throughout Florida.

The White House has identified information sharing as one of the critical foundations for homeland security, notes Reynolds. "The U.S. Department of Homeland Security has said that a huge top-down federal initiative to information sharing would fail. It advocates a bottom-up, agency-partnership approach."

Reynolds said the success of the project and consortium is the result of collaboration between the university and community partners who understand the need to enhance safety using the latest developments in information technology. "It's a win-win relationship that benefits the community" he said.

"Today, career criminals are sitting in jail as a result of our approach," Beary added. "Florida is becoming the first state in the nation to achieve President Bush's priority of data sharing to prevent terrorism. In my 27 years of law enforcement, it is possibly the single greatest advance in public safety that I've seen."

reaglin@mail.ucf.edu



WORLD LEADER IN WAVE DEVICES NAMED RESEARCHER OF THE YEAR 2004

Don Malocha, from the Electrical and Computer Engineering Department in the College of Engineering and Computer Science and the Advanced Materials Processing and Analysis Center, Received UCF's University Award for Distinguished Research at a ceremony in April.

You are recognized as a world-leader for your work in surface acoustic wave devices. Could you explain how such devices are used?

SAW devices are solid state components fabricated on a piezoelectric substrate using fabrication techniques similar to integrated circuits. A typical device consists of one or more transducers which convert an electrical signal into a mechanical wave, trapped near the surface of the wafer, which travels at the speed of sound - approximately 3,000 m/sec. The SAW is traveling 100,000 times slower than an electromagnetic wave which allows the energy to be sampled using structures fabricated in the .1 to 10 micro-meter range. Because of this ability to control the frequency of operation and the sampling of the wave, complex signal processing can be achieved in very small volumes and at very low cost. Devices range in frequency from a few mega-hertz to a few giga-hertz; this covers a broad range of frequencies used in communication systems.

What is the market in central Florida for products that will result from this technology?

Devices are used in an enormous number of products which include cellular telephones, TV, radar, military communications, car door openers, sensors and others. It is fair to say that nearly every person in the world indirectly uses a SAW component when using a communication network. Sawtek Inc., located here in Orlando, is the largest U.S. producer of SAW devices, producing about one million devices per month.

What sparked your interest in this particular area of science?

I had begun my research as a graduate student while at the University of Illinois.



MALOCHA

SAW technology was in its infancy, and an opportunity to work with a new faculty became available. The technology is very broad in its implementation, requiring physics, math, communications, signal processing, RF technology and solid state device fabrication. The diversity has made it interesting and challenging.

Letters nominating you for this award recognized your diligence and the breadth of your work. You have received \$4 million as a principal investigator and attracted partners from industry and academia. What advice would you offer to beginning researchers, specifically those interested in developing a product for market?

Tough question. Lots of work and lots more luck! Taking a technology to market requires knowing your market. Some minimum requirements are: an excellent product, a good assessment of current and future technology competition, cost competitiveness and customer confidence.

You have worked closely with Orlando-based Sawtek Inc. as well as other companies. How did your research benefit from this experience?

Our interactions with Sawtek and Piezo Technology, both in Orlando, as well as national and international collaborations

have been fruitful in many ways. Just to name a few benefits: direct contract funding on industry-related projects, joint industry-university-government contracts, student internships, and student employment on graduation. Industry helps to provide relevance to research and provides a vital component in a graduate student's education. From the company's view point, high-risk projects can be accomplished with definable, non-recurring resources, and at a reasonable cost. In particular, Sawtek and Piezo Technology have hired a large number of students into their engineering and R&D groups. This is beneficial to the companies as well as to UCF students. Interactions also give industry a window into the university to see new ideas as well as future recruiting. Finally, international collaborations infuse new ideas and ways of approaching problems, as well as the broader impact of cultural exchange and diversification of views.

molacha@mail.ucf.edu

OFFICE OF RESEARCH ANNOUNCES NEW HIRES

UCF's Office of Research announces new hires in the areas of nanoscience, technology transfer and contract and grant administration.

James J. Hickman has been named as the director of UCF's nano-initiative. Hickman comes to UCF from Clemson University where he has served concurrently as the Hunter Endowed Chair of Biomaterials, associate professor in the Department of Bioengineering and president and director of research for Hespero, Inc., a company specializing in high-throughput functional genomics platforms. He also serves as adjunct associate professor of chemistry at The George Washington University in Washington, DC and adjunct professor of genetics and biochemistry at Clemson.

In addition, the Office has hired Al Marder from the University of Florida as associate director for technology transfer and Douglas Backman from the University of Alabama as associate director for contracts and grants.

CALENDAR OF EVENTS

MAY

Tuesday, 11, 5:30pm-7:30pm
Radisson Plaza Hotel Downtown
Emerging Business Network
Take the opportunity to meet local service providers and fellow entrepreneurs. Cost: \$15 to members who pre-register and \$20 for non-members who pre-register
Details/Registration: www.incubator.ucf.edu

17-18, Monday, Tuesday
The Hilton, St. Petersburg
Florida Tech Transfer Conference
This first annual event showcases emerging technologies and commercialization opportunities from the state's leading research universities in categories such as:

- * Homeland Security
- * Cancer Prevention and Treatment
- * Materials & Processes
- * Medical Treatment
- * Sensors

Details: www.floridaresearch.org

JUNE

Tuesday, 8, 5:30pm-7:30pm
Radisson Plaza Hotel Downtown
Emerging Business Network
Take the opportunity to meet local service providers and fellow entrepreneurs. Cost: \$15 to members who pre-register and \$20 for non-members who pre-register
Details/Registration: www.incubator.ucf.edu

Tuesday, Wednesday 15, 16
Radisson Report at the Port
Cape Canaveral
8th Annual Cape Canaveral Spaceport Symposium
The Air Force's 45th Space Wing, NASA-Kennedy Space Center, the Florida Space Authority and industrial suppliers and partners are sponsoring this event that will focus on the theme Cape Canaveral Spaceport - Partnerships for the Future.
Details: <http://ccs.ksc.nasa.gov>

JULY

Tuesday, 13, 5:30pm-7:30pm
Radisson Plaza Hotel Downtown
Emerging Business Network
Cost: \$15 to members who pre-register and \$20 for non-members who pre-register
Details/Registration: www.incubator.ucf.edu

UCF SOFTWARE, DEVELOPED FOR PILOTS, SHOWS WHAT USERS DON'T KNOW

Imagine getting on an airplane and overhearing the pilot joke that he really doesn't know how to fly - he lets the computer do that.

It might get a nervous laugh but chances are it wouldn't instill a lot of confidence. To prevent such imaginary scenarios from becoming anything close to reality, researchers at the University of Central Florida have developed software to help the Federal Aviation Administration (FAA) identify critical knowledge gaps in potential pilots long before they ever set foot in a cockpit.

The Team Performance Laboratory-Knowledge Acquisition Tool Set (TPL-KATS) is the first program to incorporate all the benefits of traditional card sorting techniques in a user-friendly automated fashion. Through TPL-KATS an administrator can control the task, record the outcome and analyze the results, all on a computer screen.

"TPL-KATS gives us a framework in which to gauge an individual's understanding of the relationship between things," said Florian Jentsch, a UCF psychologist and director of the Team Performance Laboratory.

Jentsch and his colleagues, Clint Bowers and Eduardo Salas, have received \$1.8 million from the FAA to conduct research and development to support air carrier training, and part of this grant funded the development of a tool for training commercial airline pilots to respond to unexpected situations.

"As long as everything is routine, pilots right out of flight school know what to do," Jentsch said. "When you introduce variables you find that pilots don't always understand what the airplane is going to do."

The challenge faced by the researchers was to come up with a method of extracting response information from experts and



FLORIAN JENTSCH, LEFT AND MICHELLE HARPER WORK WITH THE CARD SORTING SOFTWARE

identify where the novices were missing knowledge.

Jentsch and his team used concept matching techniques to compare the way novices and experts organized information. He compares using the tool set to playing the computer game of Solitaire: "You move cards and concept into piles based on whether they are related or not; if you can play Solitaire, you can use our tool." By asking an individual to group concepts in categories, a testing administrator can see what associations a novice might make that an expert would not.

For instance, an expert pilot would know that altitude and speed indicate the potential energy related to available time to take evasive maneuvers, while a novice might put them in the category of time to arrive at the destination.

Michelle Harper, a Ph.D. student in Applied Experimental and Human Factors Psychology who helped develop the program, said the computerized test offers advantages over traditional card sorting.

The scoring mechanism can record sequence, to gauge the order which questions and answers were selected, and specific areas of knowledge can be isolated, to determine precisely where the gaps are. While geared toward pilots the software could be customized to be used in a variety of fields and has been requested by the National Academy of Sciences for potential future applications.

The TPL-KATS software is available for download from the TPL web site.

www.tpl.ucf.edu



UCF RESEARCHERS RECEIVE DURIP FUNDS

Three University of Central Florida projects have received funding from the Department of Defense for the purchase of research instrumentation. The Defense University Research Instrumentation Program (DURIP) has issued awards the following awards:

- Charles Hughes of the College of Engineering and Computer Science (CECS): \$351,000 for a Mixed Reality System project in concert with the Media Convergence Laboratory (a partnership between Computer Science, IST, College of Business Administration and College of Arts and Science)

- Ratan Guha (CECS): \$270,000 for his project: "High Performance Cluster Computing for Collaborative Large Scale Simulation"

- Eric Van Stryland of the School of Optics: Center for Research and Education in Optics and Lasers and the Florida Photonics Center of Excellence (FPCE) is receiving \$167,243 for a project: "Near Infrared Spectrofluorometer for Characterization of Optical Limiting Materials."

from page one

While some applications, such as DVD drives and bar code scanners are already mechanically produced, they rely on a combination of light-based transmission and sometimes bulky electronic processing devices. Johnson and his UCF colleagues are among the first researchers to develop a process for mass production of much smaller and faster optical processors.

Johnson has received more than \$4 million in funding over the last year to manufacture integrated photonic devices, using the same equipment used by the integrated circuit industry. In addition to perfecting the production process, Johnson is focused on educat-

ENGINEERING DEAN NAMED

Neal Gallagher, dean of the College of Engineering at Colorado State University for the past five years, has been appointed dean of the College of Engineering and Computer Science at the UCF.

"I'm really pleased to have hired someone with such exceptional credentials," UCF Provost Terry Hickey said when making the announcement. "Neal Gallagher brings a wealth of knowledge and experience to UCF. He is well respected as a scholar, researcher and administrator."

Gallagher started at UCF April 23. He replaces mechanical engineering professor Louis Chow, who has been acting dean since August, when longtime Dean Marty Wanielista stepped down to return to teaching and to head up the Stormwater Management Academy.

Gallagher specializes in optics, lasers, and holographic information as well as digital signal processing and microwave science. His research efforts include a \$3.5 million grant from the Army Research Laboratory; grants from the Department of Defense to work on missile detection and tracking, and holographic microwave elements; and nearly a dozen grants from the



GALLAGHER

National Science Foundation. He has also served on a special DOD committee to study the effectiveness of federal research laboratories and a panel for the Defense Advanced Research Projects Agency on the military needs from the space program.

He has served as a consultant for many organizations, including McDonnell Douglas Corp., Boeing Aerospace Corp. and Honeywell; served in leadership and editorial positions for the Optical Society of America, the Society of Photo-Optical Instrumentation Engineers and for major electrical engineering organizations; and published 79 serial journal regular articles.

nealg@mail.ucf.edu

ing the next generation of optical engineers with this unique technology.

"We are moving into a new era of communication technology," Johnson says. "It is critical that we develop a trained workforce to meet industry needs in advancing these processes."

In Johnson's view, the mass production capability is the only thing keeping photonics from realizing the large volume applications such as those realized by electronics industry.

The rapid development of nanotechnology makes the transition inevitable, Johnson says. A large portion of his

funding (\$3.8 million) is from the Defense Advanced Research Projects Agency (DARPA) for developing specific technologies for advancing the state of the art in micro and nano-optics fabrication and, most recently, he was awarded a prestigious National Science Foundation CAREER grant to train engineers to carry nanotechnology into the next generation for photonic applications.

While the transistor has been called the most important invention of the 20th century, optics scientists such as Johnson think the optical chip will contend for that distinction in the 21st.

ejohnson@mail.ucf.edu

UCF Office of Research

12443 Research Parkway
Suite 207
Orlando, FL 32826

Non-Profit
Postage
PAID
Permit # 3575
Orlando, FL

from page one

vide an incredible network of business development resources for their client companies that is second to none." "Partnerships are what make us a success," said UCFTI Director Tom O'Neal. O'Neal also oversees technology transfer and research as associate vice president for research at UCF. "Our mission at UCFTI is to provide early stage technology companies with the enabling tools, training and infrastructure to create financially stable high-growth companies. We accomplish this in a large part through partnerships with other units at UCF, the City of Orlando, Orange County, the Florida High Tech Corridor Council and other leading economic development organizations, and local professional business services."

Named 2004 Outstanding Incubator Client by the NBIA, Cognoscenti Health Institute is an excellent example of one of UCFTI's successful client companies. Cognoscenti is a health-care service and technology company

using advanced information technology and emerging biotechnology to deliver laboratory medicine to patients, physicians, clinics and hospitals, and is among the first to put "Nanochip" in clinical diagnostic services.

Cognoscenti came to the UCFTI in 2001 with \$4 million worth of investments and a seasoned scientist as its CEO. After completing the incubator's required 21-hour entrepreneurship course, CEO Philip Chen worked diligently with incubator staff and mentors to get up to speed on running his business. Cognoscenti opened its door in early 2002 with seven employees. Today, it has 47 employees and company revenues have reached \$3.8 million annually.

"We're very proud of our initial success, and grateful for the support UCFTI has provided us for the past two years," Chen said. "The UCFTI staff helped us develop a strong business plan, as well as recruit and retain top

talent. They even turned a large portion of the Incubator into a high-tech wet lab for our company. "

The University of Central Florida Technology Incubator has become an entrepreneurial hub in central Florida. Incubator clients and graduates currently provide work for more than 450 employees and 48 UCF students, and collaborate with more than 50 UCF faculty members. UCFTI offers its client companies modern office and lab facilities in three separate Central Florida locations. Facilities and equipment include a 6,500 sq ft. wet lab, a clean room and a nanofabrication facility (under construction), a machine shop and two rapid prototyping company service providers.

Each location offers Internet access, conference rooms, fax machines, copiers, projectors and other AV equipment, free parking, office furniture, and utilities.

www.incubator.ucf.edu