The Florida Engineer

FALL/WINTER 2006

Materials Science & Engineering —
Truly Connected

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College of Engineering
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Truly Connected

On The Cover
Materials Science & Engineering Department Chair Kevin Jones.

The Department of Materials Science & Engineering serves as a catalyst for interdisciplinary research in the College. Without these interconnections between departments — it would be very much like working in the dark.

Cover photo by David Blankenship

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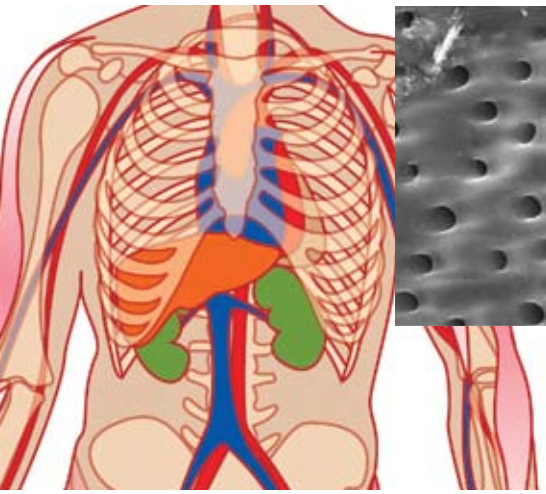
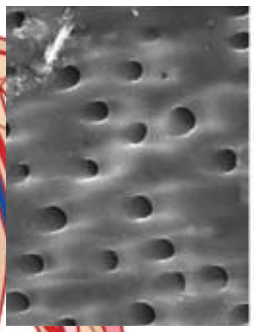
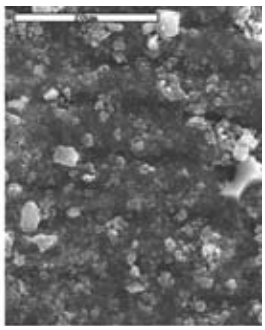
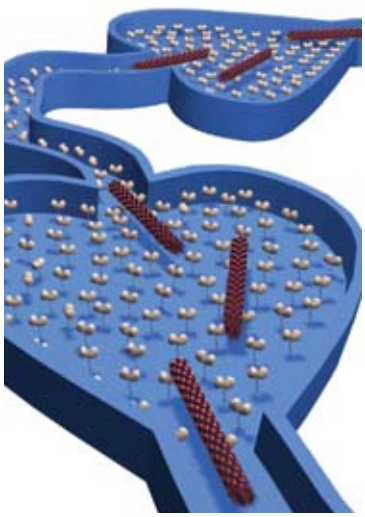




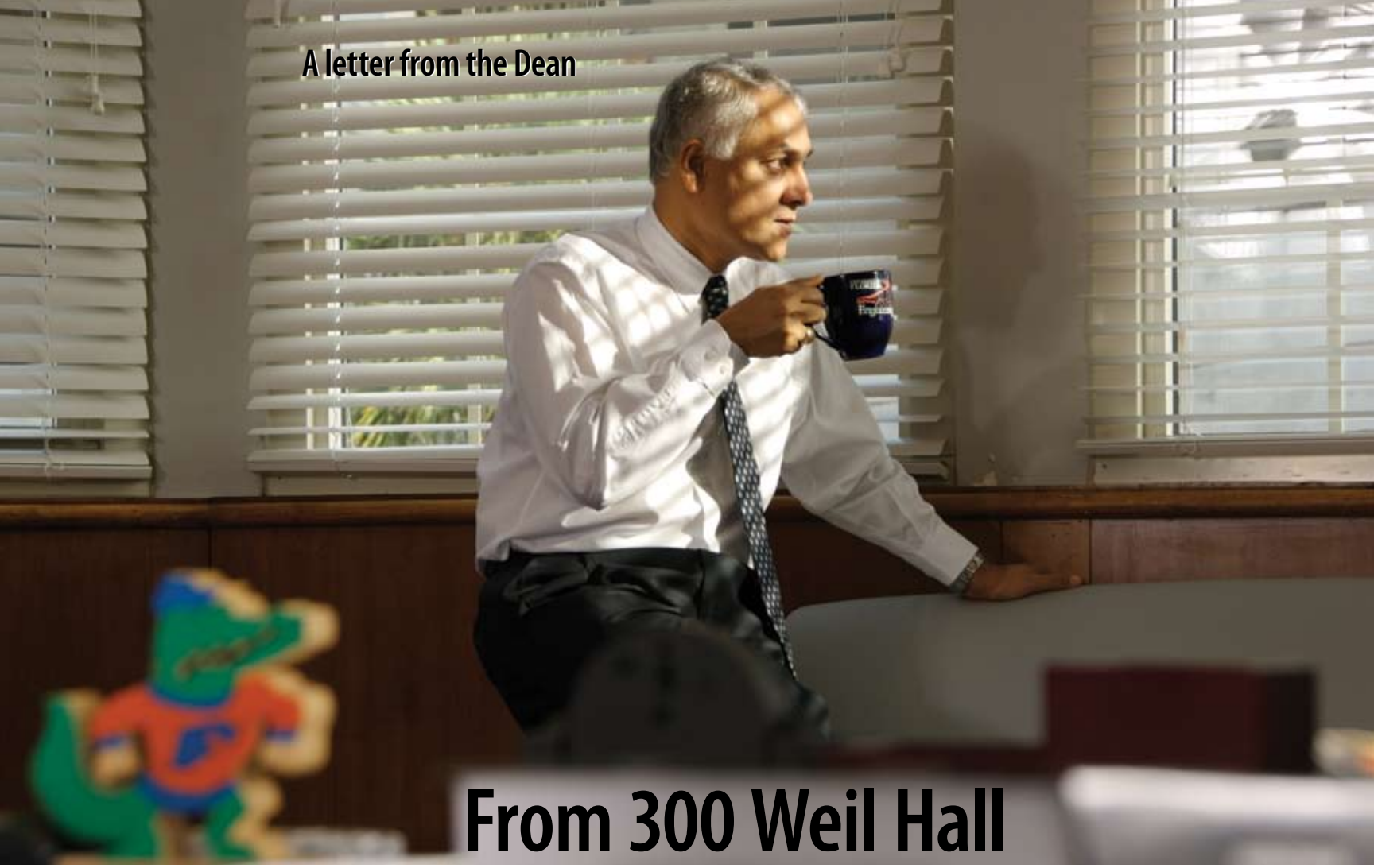




The People Pages

A Deeper Look

The Regular Stuff



A letter from the Dean

From 300 Weil Hall

Dean Pramod P. Khargonekar takes advantage of a quiet moment in his office and the view of Ben Hill Griffin Stadium.
Photo by David Blankenship

The caricature of engineers as pocket-protector-carrying nerds rarely evokes images of great artists such as Pablo Picasso or Miles Davis. Indeed, not too many people can achieve the artistic greatness of Picasso or Davis.

But engineers do have one thing in common with artists — creativity.

Engineering is traditionally viewed as applied science. With firm foundations in physics, chemistry, mathematics and biology, engineering science creates design and analysis procedures to produce useful products and processes. This is what has led us from the steam engine to the airplane to the pacemaker to the Internet. Fundamental science is descriptive and analytical, whereas engineering is creative and synthetic.

Science is aimed at discovering the universal laws of nature. They restrict what we can do. For example, there cannot be a perpetual motion machine. There cannot be a device that creates energy — energy must be conserved. An object at rest cannot start moving unless an external force is applied. No mass can travel faster than the speed of light.

Now, this leaves enormous room for things that *can* exist. Laws of nature do not say that steam engines cannot exist. But it took engineering creativity to put it together and convert heat into motion. Energy was conserved and all the laws of nature were obeyed. Similarly, the Wright brothers figured out how to get a machine to fly. The space of what is possible is enormous — and limited only by the laws of nature and human creativity. Even today, we have only explored a very small part of what is possible.

Creativity is deeply embedded in the engineering culture.

An analogy from literature — laws of the English language do not preclude Hamlet, but it takes Shakespeare's genius to put the words together just right. Have we seen all the great books that can be written? Likely not.

"I am always doing that which I cannot do, in order that I may learn how to do it." —Pablo Picasso

I'm always thinking about creating. My future starts when I wake up every morning. Every day I find something creative to do with my life." — Miles Davis

This issue of *The Florida Engineer* is focused on materials science and engineering — one of the best exemplars of creativity in engineering. It is also a discipline that connects well with many other parts of the contemporary scientific and technological landscape.

Materials have been around for a long time — well before human civilization developed. Metals such as iron, copper, gold and silver are profoundly connected with the development of society. Much of early science was devoted to measuring, analyzing, and understanding properties of materials.

Today's materials scientists and engineers are reversing the equation — specify the desired properties, and they will design the materials. Of course, things are a lot more complicated than this simplistic description. But in essence it is true.

Materials science is one of the newer engineering disciplines. New materials are critical to many things we take for granted: jet engines, computer chips, golf clubs, hip replacements and other things. And there is a tremendous promise for the future of new materials. Solid-state lighting in which ordinary light bulbs will be replaced by LEDs could have a big impact on energy consumption. Fuel cells will change the way we make electricity. Biomaterials and tissue engineering could create artificial organs. Nano-materials can create precise drug-delivery mechanisms. You will read about the exciting work being done by our faculty and students in this leading-edge field of engineering.

Materials science and engineering is an inherently interdisciplinary field. Advances in this field come from merging discoveries in physics, chemistry and biology with high-performance computation and the synthetic traditions of engineering.

At the University of Florida, we have a nationally and internationally prominent Department of Materials Science & Engineering. Indeed, by most measures, it ranks among the Top-10 materials science and engineering programs in the world. We take great pride in the creative work all our colleagues are doing.

I am writing this essay during the Thanksgiving weekend. I do have many blessings for which I am grateful. I am blessed with a wonderful family and good health. I am blessed to be working at a great university with superb colleagues and friends. The College is blessed with wonderfully supportive alumni and friends. We thank you for your constant support and encouragement. The thought that our work will help educate the next generation of engineers and leaders is deeply inspiring.

Wishing you and your family a joyous and peaceful holiday season,

Pramod Khargonekar

By Megan Gales

The Department of Materials Science & Engineering serves as a catalyst for interdisciplinary research in the College. Without these interconnections between departments — it would be very much like working in the dark.

Materials Science & Engineering — Truly Connected

It was an ordinary day in 1962.

Men gathered at a table. They were part of a select group of engineers who came to the University of Florida to start something greater than themselves. They asked for a department of their own — and that's what they got. They named it the Department of Metallurgical Engineering.

It grew out of the Department of Mechanical Engineering at the University of Florida. From the very first day, collaboration and friendship have been at the heart of what is now the Department of Materials Science & Engineering. Because of the nature of the field, materials science is at the center of engineering.

"If it's going to be real, if you're going to be able to touch it, it's got to be made of a material," said Tim Anderson, the College's associate dean for research and graduate programs.

Materials science winds through the College of Engineering, connecting researchers and departments with the outside world. The Department actively works with each of the College's 10 other departments.

"There is not a department where the science and engineering of materials are not core to the mission," said Bill Ditto, chair of UF's J. Crayton Pruitt Family Department of Biomedical Engineering. "Really, it is a core discipline that impacts all."

At UF, biomedical engineering sprung up from materials science and engineering in much the same way as materials science had come from mechanical engineering.

In the 1990s, faculty recognized that biomedical engineering was a rapidly growing field. MSE professors Chris Batich and Tony Brennan organized interest into a biomedical engineering program, and they developed a graduate-level curriculum. When Pramod Khargonekar became the College's dean in 2001, he made it a priority to establish biomedical engineering as its own department. Khargonekar made the program a department and hired Ditto in 2002.

Four decades earlier, another founding chair arrived in Gainesville. Leaving tenure and a lifetime position in metallurgy behind, Frederick N. Rhines came from Carnegie Technical Institute to create an empire. Professor emeritus Robert T. DeHoff was one of the emerging young researchers who came with Rhines. It was DeHoff's first real job. Almost half a century later, it's been his *only* real job.

"Rhines did such a good job of building up a department into something with national visibility that I have never felt the need to go anywhere," DeHoff said.

It was a time of nationwide change for the field. Traditional departments — metallurgical or ceramics departments, for example — concentrated on a narrow part of the bigger idea. The UF department, though traditionally named, was anything but conventional.

DeHoff said that in the early 60s, metallurgical researchers around the nation began to realize the broader field of materials science was the way of the future — and not metals alone.

"Rhines happened to be developing a department about the time when that became pretty clear," DeHoff said. "And so from early on, he began to hire people in areas besides metals."

This led to research of every variety imaginable in every department possible. Research proposals have a better chance of being funded when a novel use of materials — or an entirely new material — is part of the project.

"I think that's one of the reasons why we do collaborate with so many people," said MSE Department Chair Kevin Jones. "They want to have that kind of cutting edge — to say, 'I'm going to not only design and build this new engineering entity, but I'm going to build it out of a material no one's ever thought of before.' That's going to make it even better than anybody else who has previously designed or thought of this concept."

Anderson said there are several research centers on campus for that exact purpose.

Rooted in materials science, the Major Analytical Instrumentation Center was established within the Department more than 20 years ago. It's an always-busy, user-friendly place where researchers from around the state can analyze materials.

"From my perspective, it's probably the most important physical resource on campus," Anderson said. "It's probably the only place on campus — other than the emergency room — that you can go in at 3 a.m. and find it crowded."

In November, the Florida Board of Governors provided money for six centers of excellence throughout the state. UF — MSE specifically — will receive funding for two of the centers. Eric Wachsman will lead the Florida Institute for Sustainable Energy, which received $4.5 million. Brij Moudgil will lead the Center for Nano-Bio Sensors, which received $4 million.

Photo by David Blankenship

Materials science faculty eat lunch with researchers from all over campus at the Reitz Union.

Recent research trends almost eliminate the pure forms of traditional fields. Instead, Jones said, the focus is shifting.

"Now what you're finding is that the cutting-edge research is all done at the boundaries," Jones said.

These boundary areas bridge materials science to subjects like physics and biology. And research on the edge invites more collaboration than ever before.

"We've always had a very open mind about new materials and new directions," Jones said. "I think that's really helped us grow."

Clearly the growth hasn't stopped. Even in recent years, when national student enrollment averages are down, the Department's numbers are higher than ever.

"We're sort of bucking the trend, and I attribute it all to the faculty," Jones said. "We have really great faculty in this Department."

Hiring the right people is part of the strategy. When they interview candidates to fill a position, for example, they consider personality an important credential. If the faculty doesn't feel that the candidate will fit academically and socially, it doesn't extend an offer to hire the person, Jones said.

The result? A dynamic group of close-knit professionals.

"There's been a long-standing tradition in the Department of camaraderie. It's just always been there," Jones said.

This second-nature friendship leads the faculty to naturally formulate ideas and together turn them into project and funding proposals. With the proposals come researchers from many disciplines. Materials science faculty often serve as primary investigators, but they also often share this responsibility.

"There's always been this attitude of a multi-disciplinary, multi-PI approach," Jones said.

Materials science faculty members are themselves interdisciplinary investigators, Anderson said. Their educational backgrounds are wonderfully diverse, he said, which helps the college.

"They do set some standards of excellence in research," Anderson said. "When they interact with other people, they bring these attitudes and standards with them. It permeates."

Today — just like 45 years ago — men and women gather at a table in the food court at the Reitz Union. They meet here for lunch several times a week, talking about football and kicking around ideas for research proposals. Faculty from other departments — inside and outside the College of Engineering — frequently join them. Because of the impact materials science researchers can have on a project, Jones says his faculty have long been in high demand. And that's the way they like it.

"If it's going to be real, if you're going to be able to touch it, it's got to be made of a material."

"Materials naturally reaches out. We recognize we can't do it all," Jones said. "There are going to be people that do a much better job of *x*, *y* or *z* on these things, but we really like taking on that leadership role."

Photo by David Blankenship

Janise McNair and Clarence, 2, look for alligators at UF's Lake Alice.

Baby, We've Come A Long Way — I Think

By Nicole Cisneros McKeen

When Janise McNair was in graduate school she was patient. She knew the responsible thing was to wait for the things she wanted. While all her friends were taking trips down the aisle, courting real estate agents for homes and picking out the perfect shade of pink for their nurseries — McNair waited.

She wanted a new car but drove a used one. She was eager to start her career but waited until she completed all three of her degrees. She and her husband, Clarence, wanted a house but lived in a student community.

Now she is an assistant professor of electrical and computer engineering in the University of Florida's College of Engineering. Her tenure clock is ticking, and McNair isn't waiting anymore.

In 2004 McNair and her husband welcomed *little* Clarence to their family. She gave birth to a baby girl, Abigail, on Sept. 29.

Women in engineering are a minority, even at the University of Florida. But being a woman isn't a big issue. The issue is motherhood.

Women in the sciences and engineering are less likely than men to get tenure, and having children makes it even more difficult, according to a 2005 National Science Foundation study. The study goes on to state that typically married women and women with children are less successful than men who are married and have children.

"In our culture we ascribe more parenting roles to women than men, and that makes it harder for women," said Angel Kwolleck-Folland, a women's history professor at UF. "If more men took an equal role in parenting than do currently, it would be a little bit easier for women, but it would be harder for men. It would equalize the problem, in a sense."

McNair went ahead and took the plunge. She and her husband started a family — before she earned tenure.

"I went to my department chair and told him I was pregnant," McNair said. "How do I do maternity leave? He said, 'I don't know. You tell me.'"

McNair was the first woman to need maternity leave during Department Chair Mark Law's term.

Tenure, the holy grail of academia, is one of the major milestones in an academic career. It is awarded for recognition of achievement in one's field and means lifelong employment. The tenure clock stopped for McNair twice.

Cammy Abernathy, the College's associate dean for academic affairs and a professor in materials science and engineering, took a different route when it came to having a family.

Abernathy and her husband, Steve Pearton — also a professor in materials science and engineering — welcomed their son, Max, in April 1999. Abernathy and Pearton went through the yearlong tenure process at the same time — one year before Max was born. They both were awarded tenure in June 1998.

"It wasn't planned like that," Abernathy said, referring to starting a family after she received tenure.

She says she is glad their son was born a little later because this gave her time to establish a research lab — a lab she couldn't go into for nine months because there were hazardous chemicals harmful to pregnant women. Because she already had tenure, it wasn't professional suicide.

Tenure aside, Abernathy has an even bigger concern that's been bouncing around her head like a pingpong ball for the past eight years.

Photo by David Blankenship

Janise, *big* Clarence, *little* Clarence and Abigail enjoy the Florida sunshine.

"We don't have paid maternity leave," Abernathy said. "You can take sick leave, which was fine for me because I had been here for long enough to accumulate sick leave. But what happens if you're new?"

There may be light at the end of a very long nine-month tunnel. The University has no maternity or family leave policy, but College of Engineering Dean Pramod Khargonekar is making it easier for new mothers and fathers to take time off. He has challenged a group of faculty to set guidelines covering issues like teaching load and working from home.

Luckily for McNair and her children, she already had the support of her department, the administration and a devoted husband. Her husband, who is a privately employed computer engineer, has the flexibility to stay home with the babies while McNair is at work. McNair is on leave right now by the grace of her department chair and the blessing of the Dean, but she still comes into work at least three times a week — even though her daughter is at the stage when you count her age in weeks.

"For the last two days I've been running down to the parking lot to feed her," McNair said. "My husband will call and say, 'I am on my way. I've tried everything and she's hungry.' I'm always afraid somebody will walk in on me in the office, and so I will go downstairs [to the car] and do my duty."

Kwolleck-Folland says breastfeeding is one area that the business culture has turned a blind eye to, and women could use more flexibility.

McNair and her husband may have the issue all figured out.

"No one can do it all," McNair said. "But I think some people are good at doing a piece, but not at the same time. So when you are at home you can be focused at home, and when you are at work you can be focused at work."

And that is exactly what she does. McNair has found balance that works well for her family.

And it seems balance and each parent doing their fair share is what makes being a mother *and* an engineer harmonious.

"Because as a culture, we have these expectations about motherhood," Kwolleck-Folland said. "We assume motherhood has a special importance and so the issue falls more heavily on women than men. If we had a situation where all women, all men, all fathers, all mothers participated equally in the parenting process — and our culture assumed that would happen — then things would be easier and more difficult for both of them."

Abernathy agrees that culture plays a vital role in family dynamics, and she and her husband benefit from equal parenting.

"I believe in priorities and goals," Abernathy said. "Sometimes there are things that aren't going to get done. I am much more efficient now that I've had Max. I think trying to have a balance makes you more productive. I don't travel as much. It is just something I decided to do and that has implications."

Abernathy has found the very delicate balance between engineering, academia, administration and motherhood, and says there are some things she is not willing to give up.

"There are certain things I do with Max that I am sure my husband would do," Abernathy said. "But I want to do them. I want to tuck my son in at night."

Abernathy also sees the advantages to being a woman in engineering.

"There are a lot of things that I think I have been able to accomplish because I was a woman," Abernathy said. "Not because there are special benefits, but because women are socialized to do certain things that make us very effective. Building consensus is something that women are traditionally encouraged to do and that is very useful in engineering."

A faculty profile

All He's Cracked Up To Be

By Nicole Cisneros McKeen

He and a colleague found themselves in a tunnel and then in a very dark room. They were standing in front of a sarcophagus destroyed by thieves 4,000 years ago. Others were just staring — probably pondering the disturbed sacred burial. He was fascinated.

He wanted to take a picture so he could see the fractured tomb, but the sarcophagus was veiled in darkness. So his colleague shined a laser pointer on the sarcophagus and made just enough light to capture a picture.

Jack Mecholsky couldn't believe what he saw.

Mecholsky figured out exactly how the ancient sarcophagus had been violated. Through the red-tinted picture he discerned that thieves slowly chiseled the sarcophagus along the top until a weakness in the stone was revealed and the sarcophagus cracked.

Photo by Andrew Stanfill

"You can use fractal analysis in archaeology and all sorts of things," Mecholsky said. "In court cases you may want to know why something broke, or in large disasters you would like to know if it was a failure of the materials or failure of design. This is the heart of what I do."

Mecholsky joined the University of Florida Department of Materials Science & Engineering in 1990 and has been breaking things ever since. He says that when he was a little boy he wanted to be a detective. Now when he thinks about it — he is.

"This is detective work with materials, only I don't get shot at." Mecholsky said. "I try to solve crimes of nature."

Mecholsky received his Ph.D. in 1973 from the Catholic University of America. Just before receiving his degree in materials science, he began working for the Naval Research Laboratory in Washington, D.C.

At the research laboratory a colleague, Roy Rice, was examining a fracture surface under the microscope and Mecholsky asked what he was doing.

"After I looked, I was hooked," Mechlosky said. "I knew at that moment exactly what I wanted to do."

In 1979, Mecholsky moved to Sandia National Laboratories in New Mexico. And after five years in the Southwest he needed to scratch an itch — a teaching itch. So when an opportunity arose at Penn State University he took it. And he loved it.

After a few cold — well, very cold — winters in Happy Valley, Pa., Mecholsky, his wife and four children made a move south. And 16 years later, Mecholsky is associate chair for the Department of Materials Science & Engineering, where he has established a smashing career analyzing how and why materials break.

Mecholsky's research focuses on biomaterials, fractal analysis, fractography and the application of fracture mechanics to the failure analysis of advanced ceramics and composites. But he's not all research. He teaches graduate and undergraduate classes, and he won UF's engineering teaching award in 2003.

He developed a freshman class called *Engineering Innovations of the 21st Century*. The purpose — to excite engineering freshmen by showing them the practicality of taking what may sometimes seem like daunting courses.

Mecholsky has the freshmen study patents. He challenges them to learn how the products get to the final stages. The students tackle this by dissecting the patents and learning the technicalities. Students end up with a road map illustrating every step of the patented products' journies to completion.

For the final project they study patent-infringement court cases.

"These are freshmen, you have to realize," Mecholsky said. "And it always amazes me that by the end of the semester they always get to the core of the problem."

Jack Mecholsky — even though he loves to watch things break more than a six-year-old boy, he *is* all he's cracked up to be. He is also considered the glue by many in his life.

"After I looked, I was hooked. I knew at that moment exactly what I wanted to do."

Mecholsky is a dedicated board member of the St. Francis House Homeless Shelter. He's a lector at St. Augustine Catholic Church. He is a Fellow of the American Ceramics Society. He's authored or co-authored 123 refereed journal articles. He's been married for 40 years to Sue, and he's the father of John, 33, Nick, 26, Chris, 24, and Sarah, 20. And, oh yeah, at 62, he climbed Tanzania's Mount Kilimanjaro in February.

"I was on sabbatical and we went to a party to support climb for cancer," Mecholsky said. "They had five people from Gainesville going and they had room for one more. So I did it. In retrospect I don't know if I would have done it. But we raised about $50,000…the problem was that I don't particularly like camping, and I had never climbed before. I made it. I made it to the top."

Faculty updates

You Oughta Know

Agricultural & Biological Engineering

Jonathan F.K. Earle, P.E., Ph.D., associate professor and associate dean for student affairs, is now a councilor for the board of directors for Tau Beta Pi, a national engineering honor society. He was cited for his work in water and wastewater management, solid wastes and pollution control.

J. Crayton Pruitt Family Department of Biomedical Engineering

William O. Ogle, Ph.D., assistant professor, received a New Scholar in Aging award from the Ellison Medical Foundation.

Chemical Engineering

Timothy Anderson, Ph.D., professor and associate dean for research and graduate programs, is now a Fellow of the American Society for Engineering Education. He was recognized for his application of chemical engineering to processing advanced electronic and photonic materials.

Tony Ladd, Ph.D., professor, has been selected to receive the Humboldt Research Award from the Alexander von Humboldt Foundation in Germany. This award recognizes Ladd's lifetime academic achievements.

Mark Orazem, Ph.D., professor, is now a Fellow of the Electrochemical Society. He was cited for his work on impedance spectroscopy and cathodic protection of buried pipelines.

Fan Ren, Ph.D., professor, is now a Fellow of the American Vacuum Society. He was cited for contributions to the development and integration of semiconductors.

Computer & Information Sciences & Engineering

Benjamin Lok, Ph.D., assistant professor, won an NSF CAREER award.

Electrical & Computer Engineering

Rizwan Bashirullah, Ph.D., assistant professor, won an NSF CAREER award.

Mark Law, Ph.D., professor and chair, won the 2006 Aristotle Award from the Semiconductor Research Corp.

Jenshan Lin, Ph.D, associate professor, has been selected to receive the 2007 N. Walter Cox Award from the IEEE Microwave Theory and Techniques Society.

Sanjay Ranka, Ph.D., professor, is now a Fellow of the American Association for Advancement of Science. He was cited for work on the theory and practice of parallel and distributed computing.

Scott Thompson, Ph.D., associate professor, is now a Fellow of the Institute of Electrical and Electronic Engineers. He was cited for contributions to common metal-oxide semiconductor technology for high-volume manufacturing.

Industrial & Systems Engineering

Ravi Ahuja, Ph.D., professor and co-director of the Supply Chain and Logistics Engineering Center, and his former doctoral students, **Krishna C. Jha** and **Jian Liu**, received the INFORMS Daniel H. Wagner Prize for Excellence in Operations Research Practice.

Panagote Pardalos, Ph.D., distinguished professor and co-director of the Center for Applied Optimization, is now a Fellow of The Institute for Operations Research and Management Sciences. He was cited for contributions to the field of global optimization.

Materials Science & Engineering

David Norton, Ph.D., professor, is now a Fellow of the American Vacuum Society. He was cited for his research on oxide thin films and superlattices.

Mechanical & Aerospace Engineering

Sivaramakrishnan Balachandar, Ph.D., chair and William F. Powers Professor, is now a Fellow of the American Physical Society. He was cited for his work in fluid and thermal dynamics.

Warren Dixon, Ph.D., assistant professor, won an NSF CAREER award.

In February, the University of Florida and Universidad Privada del Norte in Peru signed two collaboration agreements – one between the universities and one between each university's engineering college. These agreements serve as umbrellas to facilitate additional proposals between both universities.

In May, a proposal for the creation of an Industrial Assessment Center was presented at UPN by Cristian Cardenas, assistant in engineering at UF. The proposal was approved and is financed with $71,000. To finalize the arrangements for this project and to explore others under the collaboration agreements, on Oct. 18 – 20, UPN President Daniel Rodriguez Risco and UPN Vice President Alfredo Muñoz Gonzales visited UF.

During their visit they had a chance to meet with the College's administration and Dennis Jett, dean of the UF International Center and former U.S. Ambassador to Peru. In addition the visitors discussed faculty and student exchanges and research collaboration that will result in papers, thesis, research and teaching activities.

College facts and figures

Faculty Total	402

(Sept. 2006)

Total Tenured/Tenure Track	287
Professor	121
Aso Prof	94
Ast Prof	72
Non-tenure Faculty *	65
PostDoctoral Associates **	50

* Non-Tenure Faculty includes: Equivalent Faculty and Lecturers

** Post Doctoral Associates also include Research Associates

Not included in count are Ast & Aso in's

Members of the National Academy of Engineering 7

Robert G. Dean
Martin E. Glicksman
Larry L. Hench
Brij Mohan Moudgil
Chih-Tang (Tom) Sah
John H. Schmertmann
Charles E. Taylor

Enrollment	7,019

(Fall 2006)

Undergraduate	4,711
Master's	962
Ph.D.	1,262
Unclassified (0EGs)	84

Degrees Awarded	1,577

(2005-06)

Bachelor's	936
Master's	460
Ph.D.	181

Federal Research Expenditures

All Engineering Schools

Total Federal

UF ranks 18th - All Schools
UF ranks 12th - Public Schools

Data from ASEE - 2004-05

A Little Perspective

U.S. News & World Report Rankings

Public Institution Rankings
Graduate Engineering Programs

April 2006 UF ranks 15th
UF ranks 14th in research expenditures $92.1 million

UF has 10 ranked Engineering Specialties

Aerospace	21
Chemical	13
Civil	16
Computer Engineering	23
Electrical	18
Environmental	16
Industrial	10
Materials	3
Mechanical	19
Nuclear	8

Undergraduate Engineering Programs

August 2006 UF ranks 17th

UF has six top-ranked programs

Agricultural	6
Civil	14
Environmental	5
Industrial	12
Materials	6
Nuclear	9*

*Nuclear ranked in 2004

Public & Private Institution Rankings
Graduate Engineering Programs

April 2006 UF ranks 26th
UF ranks 20th in research expenditures $92.1 million

UF has 10 ranked Engineering Specialties

Aerospace	29
Chemical	21
Civil	24
Computer Engineering	39
Electrical	29
Environmental	28
Industrial	16
Materials	6
Mechanical	31
Nuclear	9

Undergraduate Engineering Programs

August 2006 UF ranks 30th

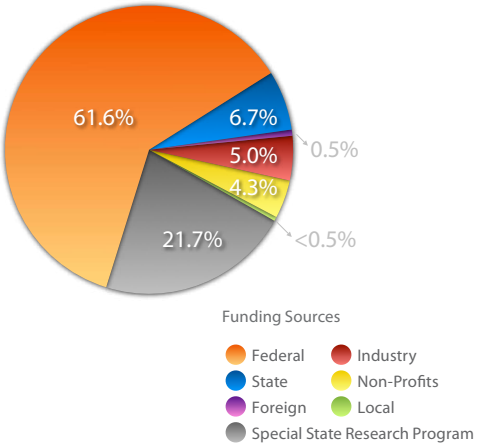
UF has six top-ranked programs

Agricultural	7
Civil	24
Environmental	10
Industrial	17
Materials	10
Nuclear	10*

* Nuclear ranked in 2004

Total Research Expenditures 2005-06

$107,762,954



A student profile

MATERIAL GIRL

By Reshelle Smith

Anika Odukale is a Ph.D. student in materials science and engineering.

Where are you from and where did you get your degrees from?

I'm from Minneapolis, Minn., born and raised. I went to North Carolina State University for my undergrad and got my bachelor's in chemistry. I got my master's from Michigan State in analytical chemistry.

The "Star Trek science" is what I call it. "Wouldn't it be cool if we could do this? Let's try it"— that's engineering.

How did you become interested in engineering?

What I found was I was more interested in engineering and the science and the applications of chemistry, more so than the hard-core, straight, traditional chemistry. People say "well, what does a materials engineer do," and I say it's everything. It's a hodgepodge. Materials engineering is chemists, physicists and chemical engineers. That's why I ventured toward engineering — the applications and the crazy science in engineering that you can do. The "Star Trek science" is what I call it. "Wouldn't it be cool if we could do this? Let's try it" — that's engineering.

What would you say is the proudest moment in your life?

I can't say that there is one proud moment in my life — there are several. I would say one of the proudest moments in my life would have been when my husband got his Ph.D. He worked very, very hard.

If you had one do-over in life, what would it be?

I would have listened to people older than me a lot more than I did.

What's the most fun you've had in your career?

I would say the most fun I've had is just working in lab. I love to work in lab — from morning to night — until my feet hurt.

If you had to choose another career, what would it be?

I would be a general contractor for building homes. I love doing that type of stuff on the weekends. Tiling, gardening, planting, putting in new light fixtures and new flooring, new sinks and countertops — I love doing all that type of home improvement stuff.

If you could describe yourself in three words, what would they be and why?

I would say motivated. Also, I'm not terribly outgoing, but friendly. Maybe easygoing would be a better word. Third, I would say I'm a giving person.

What's your favorite smell?

Nag-champa, an incense. It's a moving aroma. To me, it makes the energy in the room move. It's got some spices in it that are relaxing and stimulating at the same time, which is kind of weird.

What words or phrases do you most overuse.

"Like"— I say that all the time and I'm told that a lot too. And I say "you know." Unless you're around me a lot, you really don't know. I kind of make up words as well. They're very situation-fitting, but they don't mean anything. But, you get what they mean when I use them. Like "groovealicious" or "spunkadocious," those are my favorite made-up words.

Are there any talents you would like to have, but don't?

How much time do you have?

Do you have a talent?

I would say my gardening and my home construction stuff. I'm pretty good at that. My husband calls it the jungle because I have a yard full. I actually build things for people too — entertainment units, vanities. Every Christmas for the last four or five years, my list has been power tools. This year, my family says no more power tools. I got a miter saw and a wet saw for tile, so my family has put me on power-tool restriction.

What trait do you value most in your friends and colleagues?

Honesty. I think that is the basis not only for friendship, but for professionalism.

What would you say is the biggest misconception about engineers?

The biggest misconception about engineers is that they're all nerdy or braniacs and you can't relate to them. I also think engineers have a sense of humor that other engineers can enjoy, so maybe a goofy part as well. I'll crack up when I'm around a bunch of engineers. I think that sense of humor is very funny. My other friends do not.

What would you say is your guilty pleasure?

Ice cream, without a doubt. My favorite kinds have something to do with cookie dough. My recent favorite was coffee ice cream. That kicked in late this summer.

What are your plans after getting your Ph.D.?

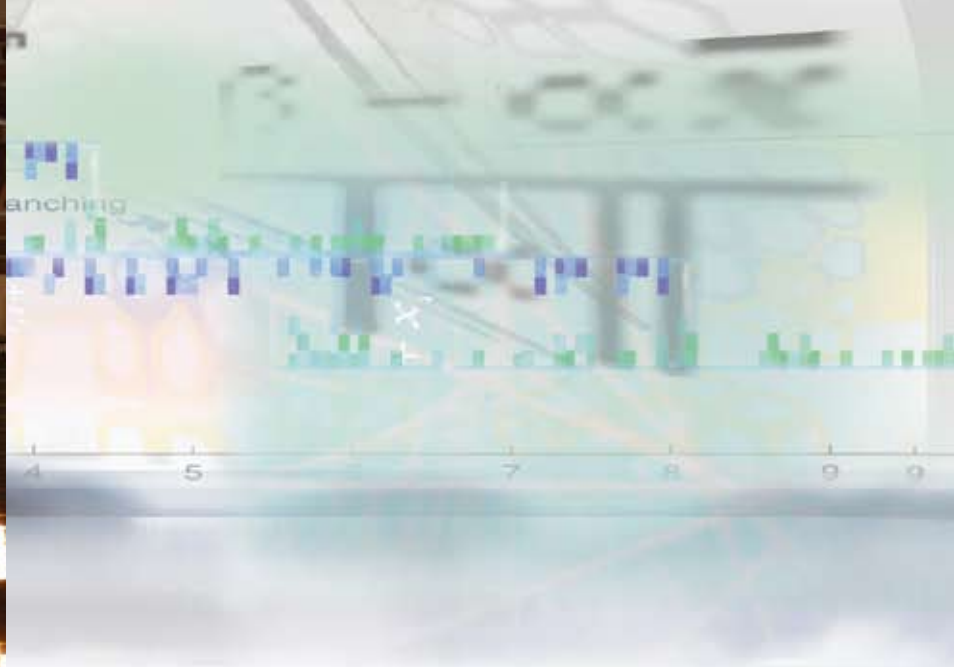
When I finish this school year, I would like to do a post-doc for a year or two, get some experience and then go on to teach.

Ideally, what kinds of classes would you like to teach?

I would love to teach general chemistry. We have a class here that is general chemistry for engineers and I really like the way that is taught — with the emphasis on engineering and real-world experiences.

Anika Odukale tries to tame the jungle —AKA her garden.

Photo by David Blankenship



Molecular motors, a body diagramming scores of potential life-improving devices, and organic lighting — this is some of the research in the College of Engineering.

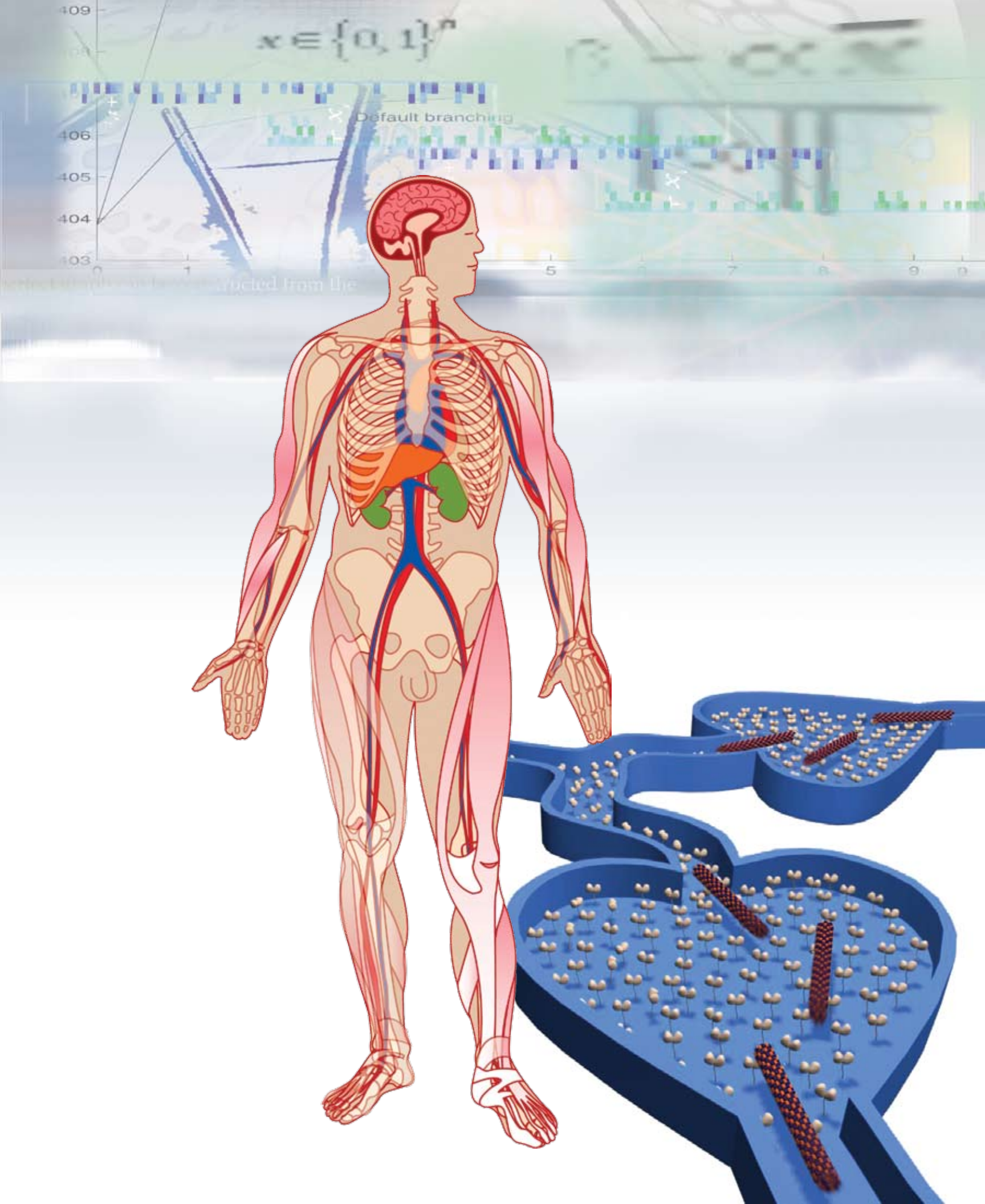
Through the study of molecular motors, researchers are figuring out how to harness chemical energy and turn it into mechanical energy.

The human body has become a sort of pegboard for our researchers. At almost any spot on the body, researchers are finding new ways to engineer the science of materials into medical applications — ultimately improving quality of life.

And in the future, organic lighting will be available at a fraction of today's energy costs.

The College spent more than $100 million on research this past year. The research that is conducted on this campus is something all Gator Engineers can be proud of and care about — it is too fascinating not to.

This is Gator Engineering.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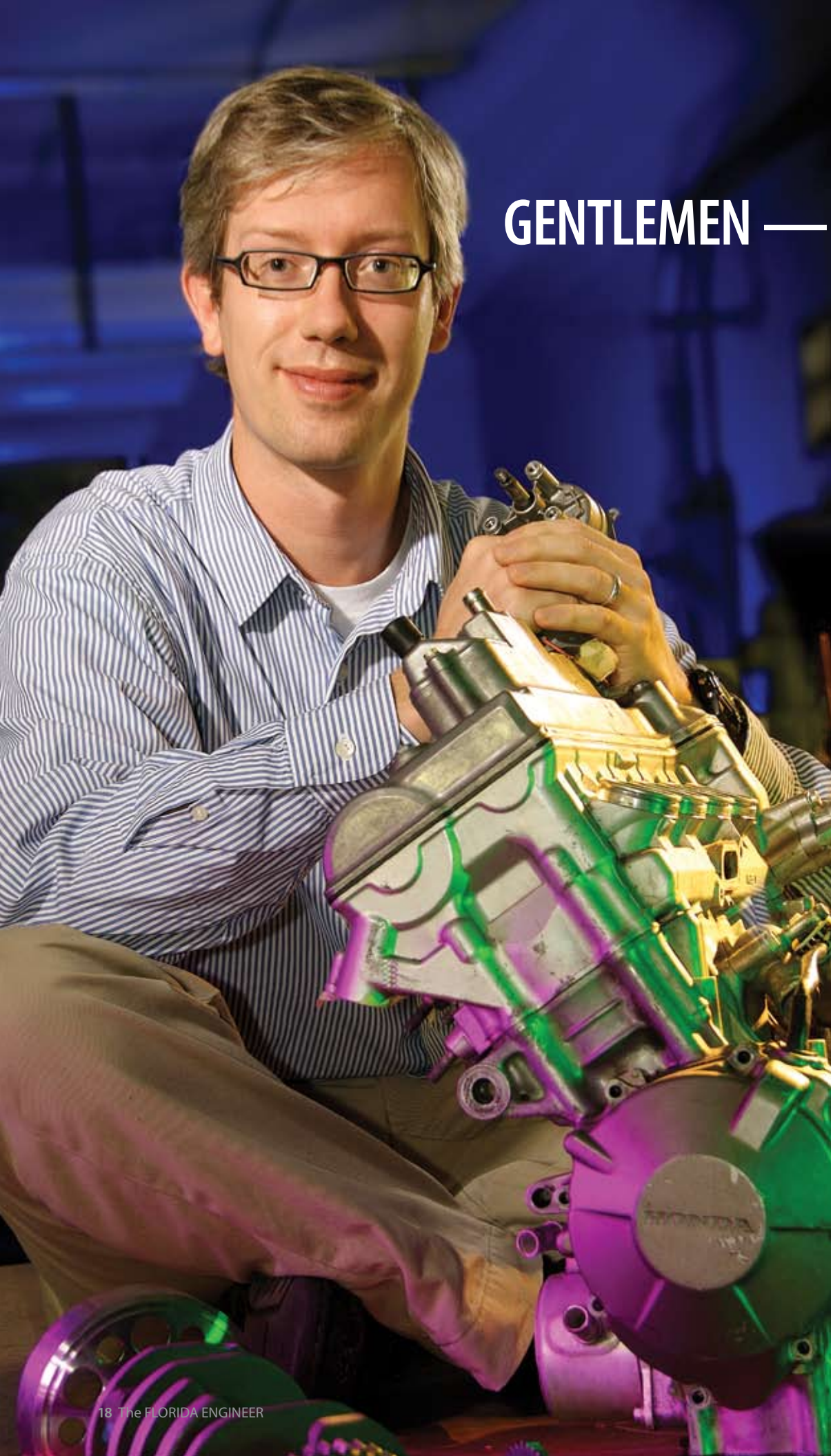


GENTLEMEN — start your molecular motors

By Reshelle Smith

In the last 150 years, technology has progressed from the steam engine to the tiny motors inside computers. But while engineers were out building these motors, lurking inside their own bodies were cells — cells with extremely efficient motors.

Henry Hess, an assistant professor in the Department of Materials Science & Engineering, has been working to release the power of these microscopic motors for the past six years.

"We explore how molecular motors can enable new approaches to technology," he said. "Having these extremely small molecular motors might enable you to do completely different things, such as make materials which move by themselves, which you don't even recognize as a motor."

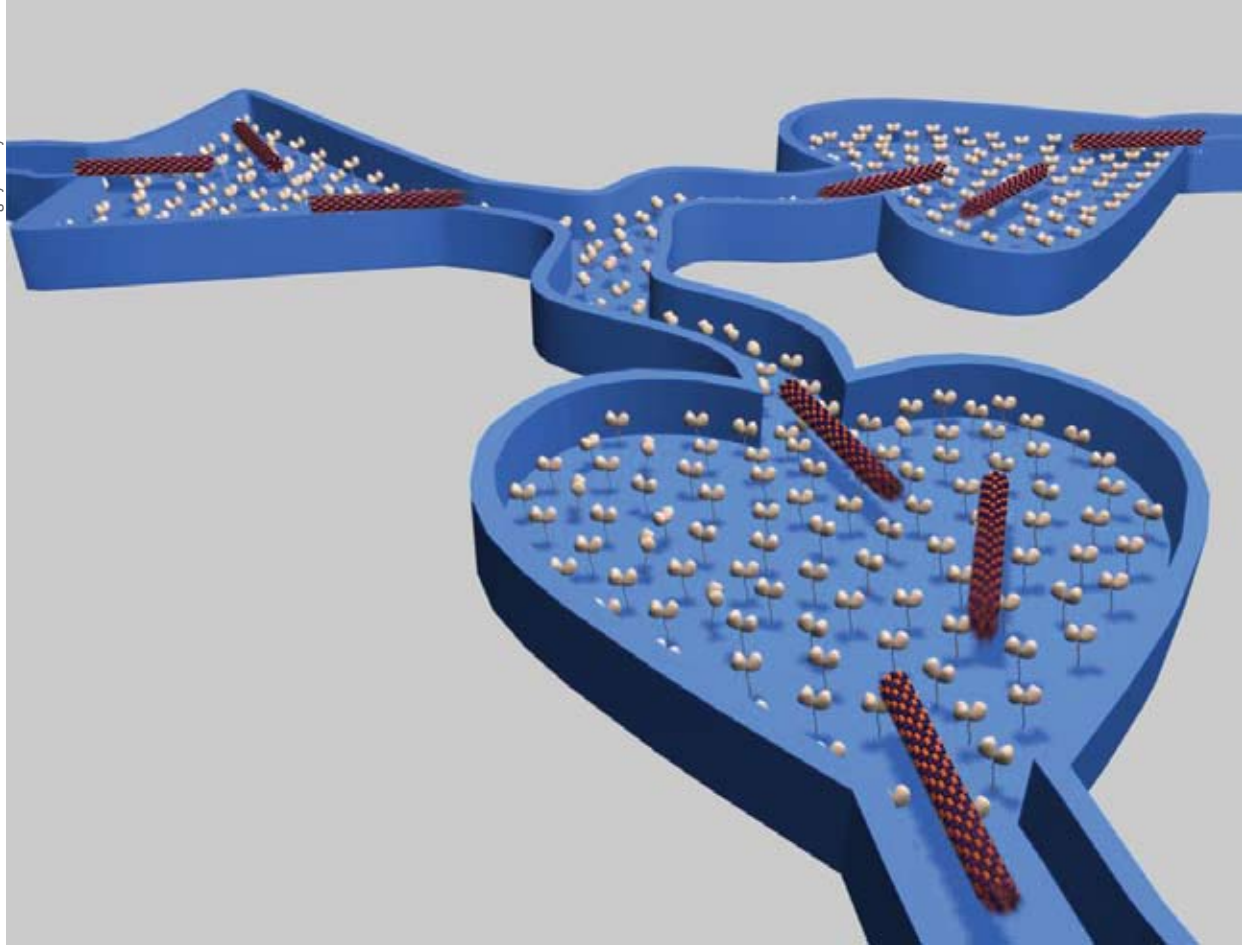
At this point, it is difficult to pinpoint the ultimate application of molecular motors, Hess said. Much research still needs to be done.

"Finding out what you can do with this ability to convert chemical energy to mechanical work is really the defining aspect of what we are doing," he said.

Photo by David Blankenship

Henry Hess, assistant professor in MSE, sits next to a motorcycle motor. If a molecular motor was the size of a person, this motorcycle motor would extend all the way to the moon.

Rendering by Bobby Bruckart



Mircofabricated channels coated with kinesin motors can guide the transport of microtubules. The microtubules can capture proteins and viruses and transport this cargo to defined locations. This ability permits the design of "smart dust" biosensors which utilize microtubules as nanoscale transporters.

Hess has been studying kinesin motors, one of the many types of motors in cells. These motors can be found in most human cells, pond scum bacteria and other single-celled organisms. These motors walk along the skeleton of the cell, transporting essential cellular components. Depending on the cell, kinesin motors participate in many different cellular activities. For instance, they can separate replicated chromosomes during cell division or transport neurotransmitters from one end of a cell to the other.

Hess wants to use kinesin motors outside their natural, cellular environment to create a nanoscale method of transportation.

"It's this beautiful ability to utilize what nature has provided us and actually harness it and then direct it toward an engineering application," said Kevin Jones, the chairman of the Department. "The potential is there to do some really amazing things down the road."

Hess is currently working on creating "smart dust" biosensors that use molecular motors to analyze microscopic amounts of fluid — now, the same type of analysis is done by a credit card-sized microfluidic lab connected to peripheral elements that take up a whole desktop. Molecular motors, which get their fuel from the surrounding solution, could remove the need for any type of external pump or batteries. The molecular motors are doing the transporting rather than the pumps and are powered by ATP fuel in the solution rather than batteries.

Another possible application of molecular motors is in nanoscale manufacturing. Hess envisions creating a microscopic assembly line where motor proteins in a specific pattern create a molecular conveyor belt that transports materials along a sequence of processing stations.

To Hess, the process of learning to work with molecular motors is just as important as the end result.

"Understanding how we engineer molecular motors also helps us understand how molecular motors are used in biology — what the functions and limitations for molecular motors are," Hess said. "For example, why exactly is a muscle put together the way it is put together, or how exactly do you use biological molecular motors to affect cells?"

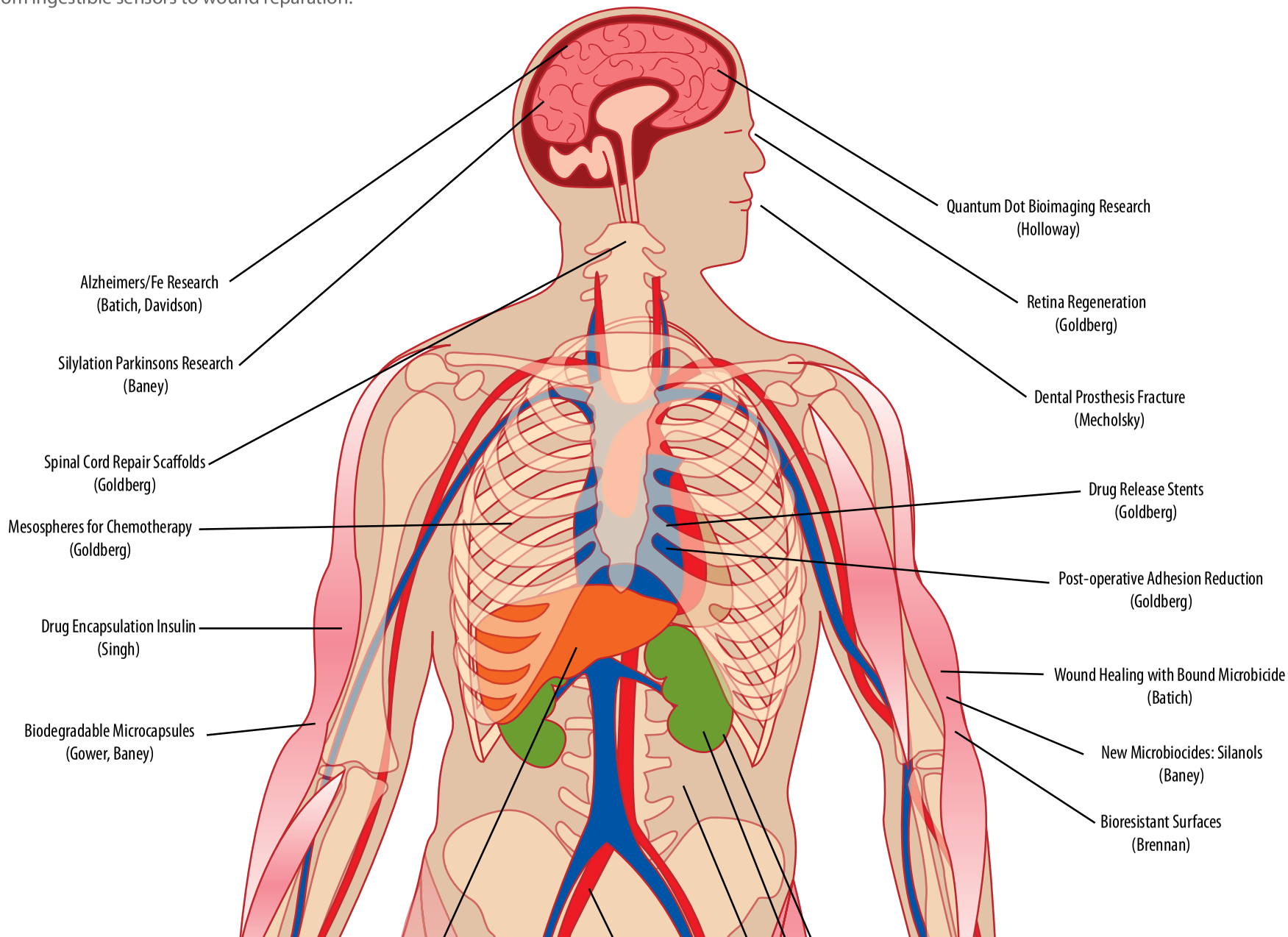
Studying these molecular motors requires knowledge from many branches of science, Hess said.

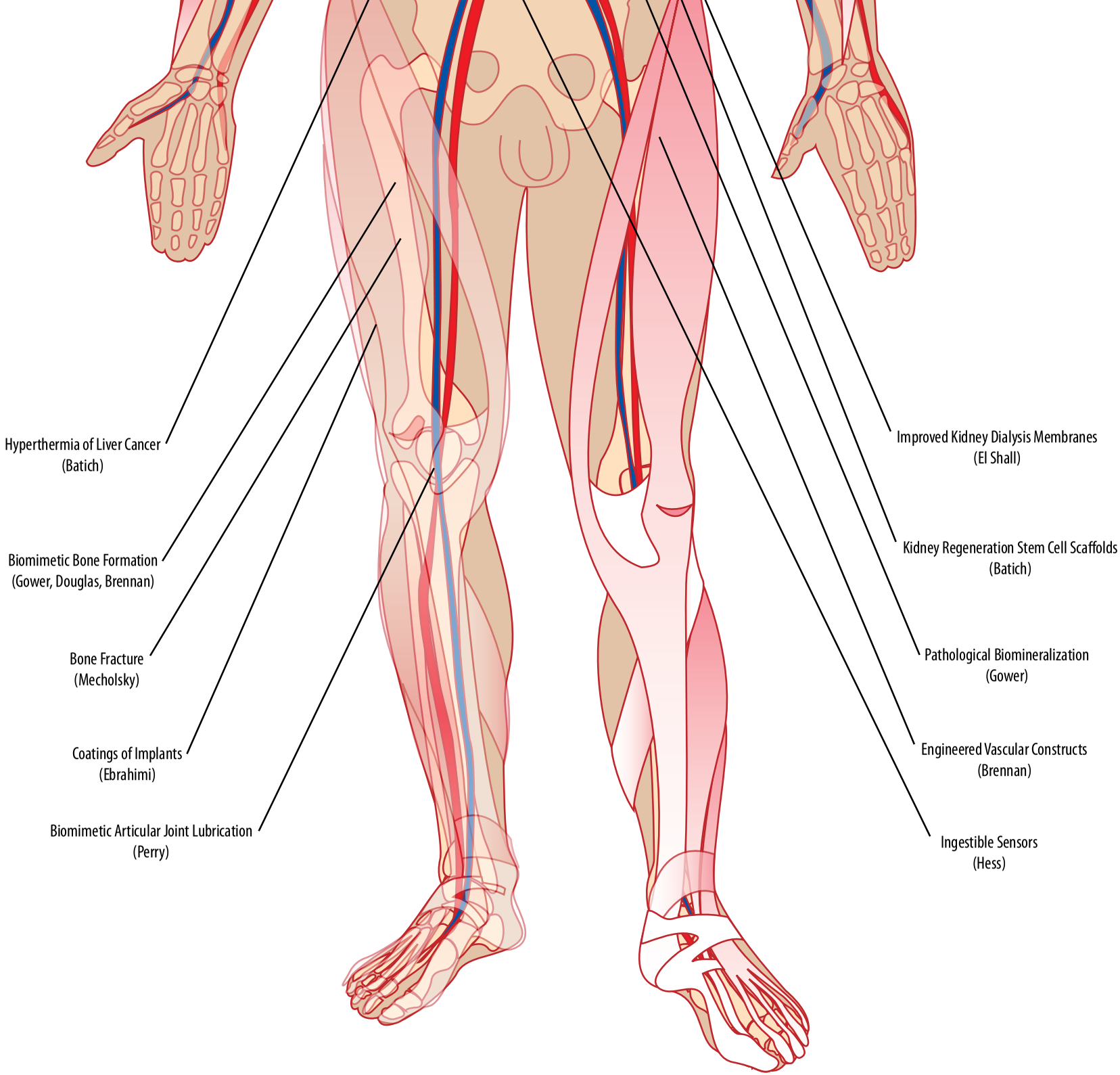
"I think what makes this research interesting is that it is truly interdisciplinary in the sense that it covers aspects from engineering to chemistry, physics, and also biology," Hess said. "This makes it interesting and a challenge because you cannot be a specialist in just one of these things and expect that you will make it work."

From Head To Toe

By Holly Franklin and Jin Young Yi

From top to bottom, inside and out, materials science and engineering has it covered. The Department of Materials Science Engineering has been very successful in the realm of biomaterials. This diagram depicts ailments of the human body that our engineers are working to help heal, from ingestible sensors to wound reparation.




Hyperthermia of Liver Cancer
(Batich)
Biomimetic Bone Formation
(Gower, Douglas, Brennan)
Bone Fracture
(Mecholsky)
Coatings of Implants
(Ebrahimi)
Biomimetic Articular Joint Lubrication
(Perry)
Improved Kidney Dialysis Membranes
(El Shall)
Kidney Regeneration Stem Cell Scaffolds
(Batich)
Pathological Biomineralization
(Gower)
Engineered Vascular Constructs
(Brennan)
Ingestible Sensors
(Hess)


UNIVERSITY OF
FLORIDA
DAKTRONICS
DAKTRONICS
The future is
so bright, he's
gotta wear sha

Photo by David Blankenship.

By Aaron Hoover

Laptop screens are clearer than they used to be, but they are still relatively thick and inefficient. And today's fluorescent light bulbs use less electricity than their incandescent predecessors, but they still require a fair amount of energy.

For these useful — if somewhat flawed — products, there may be light at the end of the tunnel in the form of a single technology known in science and engineering circles as organic light-emitting diodes — OLEDs for short.

Photo by David Blankenship

MSE Associate Professor Franky So.

That's the assessment of University of Florida materials science and engineering researchers Franky So, Jiangeng Xue and Paul Holloway. Supported by a $1.2 million grant for lighting research, from the U.S. Department of Energy, So, an associate professor, Xue, an assistant professor, and Holloway, a professor, are striving to solve many of the technical challenges that will allow relatively obscure OLEDs to become commonplace in next-generation consumer products.

"Devices made from organic light-emitting diodes offer a number of advantages, including that they are inexpensive to manufacture and use very little electricity," So said. "I think the potential for OLEDs is huge."

Seeing the Big Picture

Laptops and other flat-screen displays and florescent lights tap different technologies today, which would seem to suggest that they will evolve along separate technological lines. But organic light-emitting diodes may conjoin their fates. OLEDs have unique properties that open the door for the diodes to play a starring role in these applications — and not only that, but also make lights and display screens flexible.

To get a grip on OLEDs' potential, it helps to understand what they are. OLEDs share part of their acronym with the much more familiar light-emitting device — LEDs. They are organic because they use carbon-based compounds, or compounds that are generally obtained from plant or animal sources.

LEDs are pencil-eraser-sized lights widely used as indicators, as well as light sources in products ranging from flashlights to traffic lights to stadium giant screens. Like computer chips, LEDs are semiconductors. Organic-light-emitting devices also emit light from a large area. But instead of semiconductors, they tap long-chain molecule polymers — polymers or organic because they come from petroleum, which is produced by bacteriological decay — or small organic molecules as their primary light sources. These polymers are printable, either on a large piece of glass or a flexible material. They can even be printed using newspaper printing process — similar to a roll-to-roll process.

OLEDs are tantalizing commercial products for several reasons. One reason is inorganic semiconductors are difficult and relatively slow to manufacture — OLEDs much less so. There are many stumbling blocks to printable electronics, including finding ways to print all the transistors, connections and other electronics that would actually make the screen function. But, in theory, success would mean printers could churn out display screens with nearly as much ease and speed as today's printers produce newspapers and fabrics.

"If you want a low-cost big-screen TV, the idea is print the display," So said. "You can lower your manufacturing costs significantly if you can just click a button and print it."

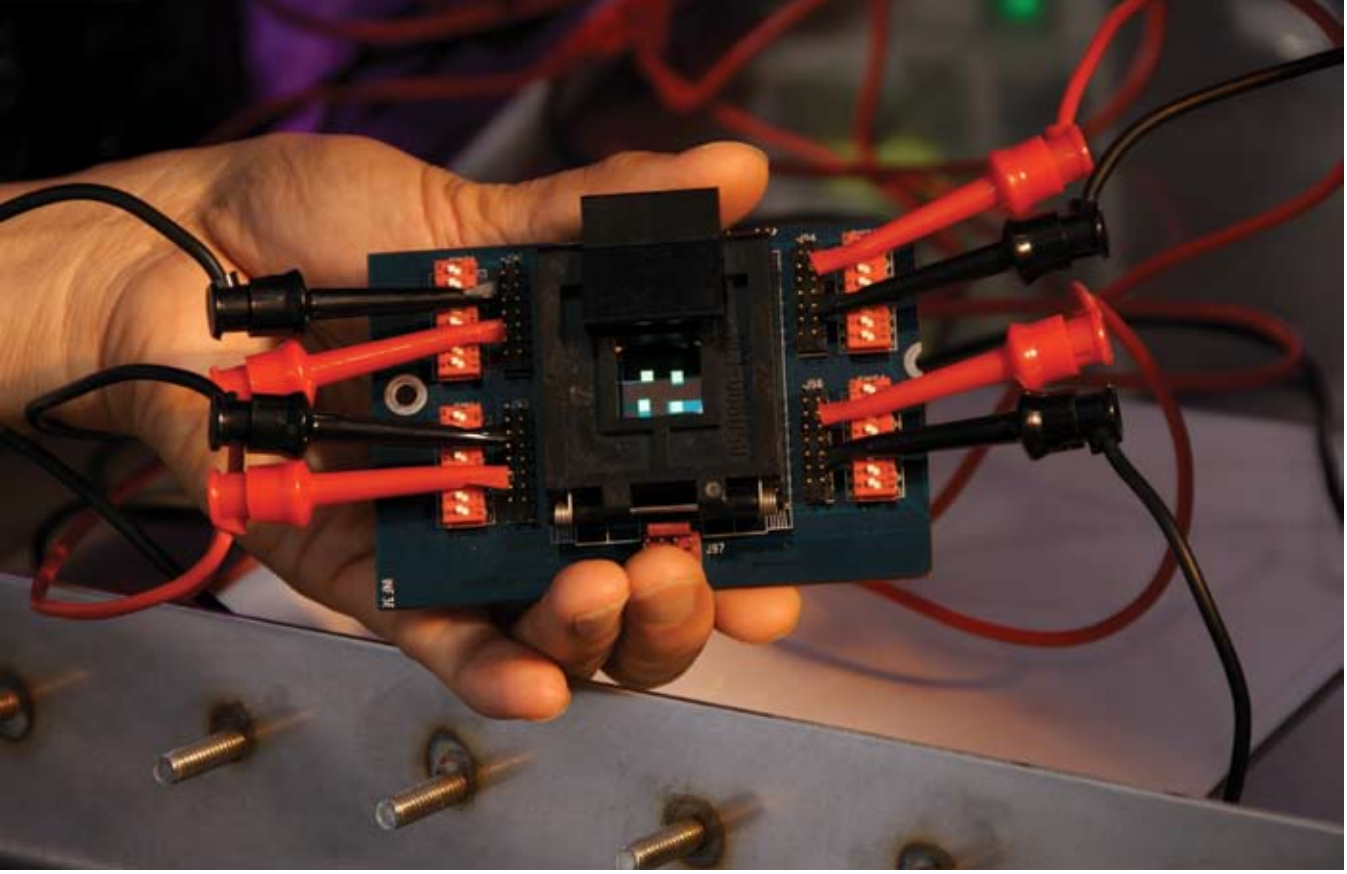


Photo by David Blankenship

Organic green-light-emitting device of fabricated on a glass substrate. These devices can be fabricated onto flexible plastics. So is working on a unique device structure that will give a very high efficiency of 100 Lm/w.

Energy efficiency is another OLED plus. Today's standard technology in laptop and cell-phone displays is the LCD, or liquid crystal display. In an LCD, the display consists of two polarizing transparent panels, with a liquid crystal surface sandwiched between. The display is lit from the back, with the liquid crystal working as a light valve. Regardless of the image on the display, the backlight is always on, and that process hogs electricity. OLEDs, which require no backlight, are a lot more energy efficient.

"OLED screens would use 50 percent to 75 percent less power," Xue said. "That would give you much longer battery life for laptops and similar devices."

Third among OLEDs' promises is flexibility. Flexible display screens would have obvious utility. Electronic newspapers as portable and user-friendly as traditional ones — but with updatable text and photos — have long been a dream of the newspaper industry.

As promising as these applications are, there are significant hurdles ahead. Thanks in part to So's previous research at Motorola and other companies, engineers already know how to make small OLED display screens — indeed, the crisp screens noted for their visibility from any angle are already widely available on cell phones in Asia. But making larger OLED display screens is far tougher. Xue says the problem is that larger areas contain more flawed pixels, which mars the display.

OLEDs — *the great white light*

For the moment, the DOE-funded research at UF is on making OLED white lights for room lighting. Xue and So believe that the lights have the potential to produce as much as 100 lumens per watt, about a third more brightness than achieved by the most efficient florescent bulbs on the market today. But challenges, such as limiting the wavelengths produced by the devices to only those needed for white light, are many.

Xue said current OLEDs produce around 30 lumens per watt — double that of incandescent bulbs but less than commercial florescent ones. But he is optimistic that he and So can push this number much higher.

"I think based on our estimation by the end of the project we should be able to get to 100 lumens per watt," Xue said. "Because I think the pathway we have to get there is a pretty strong one."

Xue is also working on a related technology, organic solar cells. These are solar cells based on organic materials that are cheaper to manufacture than traditional silicon-based cells. Like OLED screens, they can flexible. Xue envisions flexible solar cells that would, for example, wrap around curved surfaces on a home or car — doubling as an attractive exterior and energy source.

Photo by Linda Corsair

Alumni updates

Hey, What's Going On?

Sachio Semmoto (Ph.D. EE '71), an entrepreneur in the telecommunications industry, on Nov. 9 gave the inaugural presentation of the College of Engineering's *The Weil Lectures*. The series is intended to provide students and faculty an opportunity to learn from entrepreneurs, CEOs and successful leaders. Lecture attendees learned about Semmoto's experiences and discussed the formation of his companies.

Semmoto is recognized worldwide for his leading role in developing Japan's telecommunications system. He has founded several very successful companies. The newest one, eMobile, focuses on broadband technology.

This lecture was sponsored by the College of Engineering and the Warrington College of Business.

David Nelms (B.S. ME '83) returned to the College on Sept. 1 to share his story about how he went from UF undergrad to chief executive officer of Discover Financial Services. He shared his perspective on the credit-card industry and what engineering students need to know to succeed.

Nelms studied engineering to emulate his engineer father — and to get his foot in the door at Harvard Business School, where about 25 percent of MBA candidates are engineers.

Though, Nelms' engineering background didn't hurt his efforts to lead Discover Financial Services. Those skills made the towheaded Nelms a golden boy of the credit-card industry.

"I certainly wouldn't remember thermodynamics — I'd be totally lost," he says. "But engineering teaches you problem-solving skills, analytics. That helps."

1963

Robert H. Miller, B.S. ISE, was a panelist at the 90th Florida Engineering Society/Florida Institute of Consulting Engineers Summer Conference and Exposition. His panel was entitled *Things to Know Before Graduating*. He retired in 2004 after serving as president of Miller Legg for more than 25 years.

1965

Otis P. Lutz, B.S. EE, M.S. EE, '69, received patent US 6827333 for a hammer with an extendable fulcrum. He is now retired from owning a computer business that designed and built systems for NASA, Lockheed Martin and other large companies.

Cornelius Patrick McKenzie, B.S. ME, is now a fifth-degree black belt in Tae Kwon Do.

1980

Dan Tintner, B.S. CE, has been promoted to senior vice president of engineering at Miller Legg after more than 17 years with the company. He now oversees the firm's engineering departments in all six offices.

1983

William E. Schaefer II, B.S. CE, has founded Dominion Engineering Group in Jacksonville Beach, Fla. He is the father of five children.

1990

Steven J. Thomson, Ph.D. ABE, was the keynote speaker for a session of the First Asian Conference on Precision Agriculture, held in Toyohashi, Japan. He is a research agricultural engineer with the USDA-ARS Application and Production Technology Unit in Stoneville, Miss. He studies crop irrigation techniques.

Glenn A. Shiller, B.S. CE, is now a project engineer at the Lakeland office of Nodarse & Associates Inc.

1995

Andrew T. Schmid, P.E., B.S. ABE, is now the branch manager of the Ormond Beach office of Nodarse & Associates Inc.

2005

Carolina Cubides DeGreiff, B.S. CE, has joined Miller Legg's land development sector of the civil engineering department. She will be developing site plans for pavement, drainage and sewage.

Benjamin Ellis, B.S. CE, now works at the Lake County, Fla., office of MSCW Inc. as a staff engineer on the planning and engineering team.

2006

Laure Fluriach, B.S. CE, has joined the Lake County, Fla., office of MSCW Inc. as a staff engineer on the planning and engineering team.

Michelle Lightbourne, B.S. CE, has joined Miller Legg's traffic and transportation sector. She will work on transportation-related projects such as traffic analysis and conceptual designs.

James C. Wright, B.S. CE, has joined Miller Legg's land development sector of the civil engineering department. He will be developing site plans for pavement, drainage and sewage.

Photo by Andrew Stanfill

Grand Guard Meets *Green* Gators

Benton Engineering Council President Roberto Hernandez speaks at the Grand Guard luncheon. Engineering Ambassadors President Danni Hirsch and Associate Dean Cammy Abernathy watch.

By Christopher Davis

College of Engineering alumni gathered with a couple of current students for a luncheon at the University of Florida Nov. 17.

The event was an opportunity for members of the College's Grand Guard — those who graduated at least 50 years ago — to reminisce about UF.

Much of the talk focused on changes in the curriculum, particularly the notorious thermodynamics class, and the impact of new technology on students. Senior engineering students Danni Hirsch and Roberto Hernandez discussed their experiences in the College. The crowd asked questions and shared their own stories, too.

"I just want to know, where's your slide rule?" Ken Safko (B.S. ME '56) asked while Hernandez spoke.

Hernandez, a 23-year-old mechanical and aerospace major and president of the Benton Engineering Council, had an answer ready.

"What's a slide rule?" he joked.

Dick Vinchesi ('56) reached into his pocket and pulled out a slide rule. He held it up for Hernandez to see.

Photo by Andrew Stanfill

Dick Vinchesi, a College of Engineering alumnus class of 1956.

Vernon Shaffer (B.S. EE '44, M.S. EE '60) talked about trying to complete his degree as a member of UF's then-mandatory ROTC program during World War II.

"Infantry ROTC was like basic training," he said. "They had you crawling under barbed wire… [with] simulated fire."

It was not uncommon to see engineers wary of being drafted, Shaffer said. Many increased their normal course loads from 19 hours to 23 hours in an attempt to graduate as quickly as possible.

FRIENDS WE WILL MISS

'31 J. L. Sanders, BS EE, of Frankfort, Ky., died Dec. 25, 2005.

'32 Harold M. Gulick, BS CHE, of Hollywood, Fla., died Dec. 28, 2004.

'35 C. Addison Pound Jr., BS ME, of Gainesville, Fla., died March 24, 2006.
Leopold M. Toribio, BS EE, of Tampa, Fla., died Jan. 10, 2006.

'36 Max S. Cleland, BS CHE, of Ormond Beach, Fla., died Nov. 15, 2005.

'37 William A. Glass Jr., BS EE, of Palestine, Texas, died Feb. 1, 1990.
Charles D. Mason, BS ME, of Clearwater, Fla., died Oct. 13, 2005.

'38 Sam P. Goethe, MSE ME, of Crystal River, Fla., died Oct. 1, 1986.
Harbert S. Gregory, BS EE, of Covington, La., died Feb. 13, 2006.
James E. Overall, BS CHE, died April 7, 1997.
George H. Whiteside, BS CHE, of Fernandina Beach, Fla., died Sept. 21, 2006.

'39 Yoshikazu W. Yamauchi, BS ME, died June 1, 1984.

'40 Burney B. Cowden, BS CE, of Winter Haven, Fla., died Sept. 18, 2004.
John E. Graham, BS, of Jacksonville, Fla., died Nov. 1, 1985.

'41 Thomas F. McGlynn, B IE, of Tulsa, Okla., died April 13, 2002.
Frank W. Zander Jr., BS EE, of Saint Petersburg, Fla., died May 22, 2006.

'42 Lynn E. Lightbown, B ME ME, of San Diego, Calif., died Dec. 13, 1996.

'43 Ely H. Grossman, B ME, of Pittsburgh, Pa., died June 1, 1974.
E. Stuart Lofberg, B CE, of Miami, Fla., died Oct. 14, 2005.
Hugh B. Summers Jr., BS CHE, of Lake City, Fla., died Oct. 20, 1998.
Harper E. Whitaker Jr., B IE ISE, died July 1, 1974.

'44 Richard D. Eastman, BS CHE, of Urbana, Ill., died Aug. 21, 2002.

'45 George F. Schrader, B EE, of Freiburg, Germany, died Jan. 1, 2003.

'47 Harold Cherner, B ME, of Newton, Mass., died Feb. 19, 2005.
Claude W. Coffee Jr., BS IE, of Newport News, Va., died Sept. 7, 2005.
George W. Hoover Sr., B CHE, of Morehead City, N.C., died Dec. 19, 1989.
Maurice P. Wexler, B EE, died March 1, 1986.

'48 Edward M. Edmonson, BS CE CE, of Gainesville, Fla., died Oct. 1, 2005.
Henry A. Pickle Jr., B EE, of Murfreesboro, Tenn., died April 15, 2004.
Robert G. Poage, B IE, of Jacksonville, Fla., died Aug. 26, 2006.
David E. Russell, B ME, of Jacksonville, Fla., died Jan. 17, 2006.
James A. Stinson, B EE, of Tampa, Fla., died Dec. 14, 2005.

'49 Maynard T. McGurn, B IE, of Port Orange, Fla., died Nov. 24, 2005.
Charles F. Philips, B CE, of Charleston, S.C., died Oct. 5, 2006.
James B. Sasser Jr., BS IE INE, of Jacksonville, Fla., died June 26, 2006.

'50 Ralph H. Carper, BS EE, of Johnson City, Tenn., died June 1, 2002.
John R. Feldman Jr., BS CE CE, of Pensacola, Fla., died Feb. 7, 2006.
Thomas A. Fridy Jr., B CE, of Spartanburg, S.C., died April 11, 2006.
Charles J. McCarthy, BS EE, of Melbourne, Fla., died April 1, 2002.
John A. McKay Jr., BS CE, died July 9, 1994.
Clayton A. Morrison, MSE, of Gainesville, Fla., died Jan. 23, 2005.
Jack H. Smith, B ME, of Goldsboro, N.C., died Jan. 11, 2006.
Jerome T. Taylor, BS ME, died Oct. 1, 1977.

'51 Charles E. Bedford, BS ME, of Tampa, Fla., died Sept. 15, 2006.
Burton T. Datson, B IE, of Orlando, Fla., died June 13, 1988.
Cecil H. Rowland, BS CE CE, of Jacksonville, Fla., died May 1, 2006.
Gerald J. Spolter, B CE, of Boynton Beach, Fla., died July 7, 2006.
Eugene V. Whittle, B IE, of Jacksonville, Fla., died Feb. 15, 2006.
Nancy S. Whittle, BS IE, of Hilliard, Fla., died Oct. 24, 2005.

'53 Donald K. Curry Jr., BS CE CE, of Miami, Fla., died June 9, 2006.
Lawrence W. Porter, BS EE, of Algiers, Algeria, died June 11, 1992.
Thomas S. Walters, B EE, died June 1, 1975.

'54 Eugene F. Dearing Jr., BANE, of Port Saint Joe, Fla., died May 2, 2005.
Frank K. Durden, BS EE, of Willow Grove, Pa., died Aug. 12, 2005.
Eugene K. Dyson, BS ME, of Oceanside, Calif., died June 30, 2005.
Robert B. Fendick, BS, of Leesburg, Fla., died Aug. 25, 2005.
Arthur Fine, BS EE, of Atlanta, Ga., died April 1, 1995.
Harold G. Moore, B ME, of Bay Minette, Ala., died July 13, 2006.
Richard K. Snelling, B IE, of Alpharetta, Ga., died Nov. 14, 2001.

'56 Lloyd W. Cover Jr., B ME, of Wilmington, Del., died Oct. 1, 1985.
Celestino F. Fernandez, BS CE CE, of Tampa, Fla., died Dec. 7, 2005.
Wasfi A. Hijab, PHD CE, of Beirut, Lebanon, died Sept. 16, 2004.
Russelle R. Lacy, BS CE, of Mobile, Ala., died Sept. 17, 2004.
Charles H. Moore, BS EE, died May 1, 1971.

'57 Charles N. Campbell, MSE, of Friendswood, Texas, died Dec. 28, 1995.
Orelan R. Carden Jr., BS EE, of San Antonio, Texas, died Nov. 3, 2005.
Donald T. Hamilton, MSE, of Jacksonville, Fla., died May 29, 2006.
Leif Harris, B EE, of Live Oak, Fla., died Aug. 7, 2006.
William S. Hogan, BS CE, died Sept. 1, 1970.
Herbert S. Hovey Jr., B EE, of Jacksonville, Fla., died April 16, 2004.
George T. Lohmeyer, MSE, of Jacksonville, Fla., died June 1, 1986.
J. Norman Mitchell, MSE, of Potomac, Md., died May 20, 2006.
Claude S. Moses Jr., BS EE, of Edgewater, Fla., died Feb. 12, 2006.

'58 James R. Boyett, BS EE, of Annapolis, Md., died Aug. 2, 1993.
David L. Dean, B EE, of Indian Harbor Beach, Fla., died March 23, 1994.
Peter E. Hastings, B IE, of Gainesville, Fla., died Sept. 29, 2006.
Donald H. Hicks, B CE, of Houston, Texas, died May 2, 2006.
Jack E. Jones, B ME, of Casselberry, Fla., died Jan. 28, 1998.
William K. McManus, B EE, of Gainesville, Fla., died July 15, 1988.
Dermot M. Pogson, B CE, died July 15, 1992.
Donald E. Stanaland, B CE, of Lakeland, Fla., died May 14, 2005.
Thomas C. Ware, BANE, of Scottsdale, Ariz., died Oct. 29, 1999.

'59 Jack E. Bond, B EE, of Richland, Pa., died Nov. 18, 2005.
Carl R. Fears, BS EE, of Minneapolis, Minn., died May 26, 2005.
Earnest L. Patrick Jr., BS ME, of Perry, Fla., died Oct. 4, 2006.
Donald D. Schenk, MSE, of Arley, Ala., died Feb. 19, 2005.
David A. Twiddy Sr., B CE, of Oviedo, Fla., died March 15, 2006.

'60 John K. Crawford, B CE, of Boca Raton, Fla., died June 6, 2006.
John E. Ebelink, BS EE, of Annapolis, Md., died July 1, 1990.
William D. Huggins, B EE, died April 24, 2005.
Henry E. Kamman, BS IE, died July 1, 1983.
John R. Menear, BS AGE, of Lakeland, Fla., died March 8, 2006.
Donald A. B. Mills, MSE, of Montgomery, Ala., died Aug. 8, 2006.
Arthur L. Sawyer, B EE, of Merritt Island, Fla., died Dec. 22, 2005.
Thomas A. Segree, B EE, of Arnold, Md., died Sept. 29, 2006.

'61 John D. Charles, B EE, of Saint Petersburg, Fla., died July 16, 1999.
Ernest E. Erickson, PHD EE, of Longwood, Fla., died Jan. 21, 2006.
Ralph H. Keen, B EE, died Oct. 2, 1999.
Meng M. Li, MSE, of Silver Spring, Md., died Jan. 24, 2002.
Richard W. Lincoln, B ME, of Miami, Fla., died July 17, 1991.
James E. McKinnon, B EE, of Gadsden, Ala., died Jan. 7, 2006.
Rufus S. Tidwell, B ME, of Pensacola, Fla., died Jan. 9, 2006.
Vernon M. Vogt, BANE, died Aug. 21, 1997.

'62 Harry F. Smith Jr., B CE, died July 15, 1989.

'63 Bernard B. Burklund, B EE, of North Palm Beach, Fla., died May 19, 2006.
Bob F. Henderson, B ME, of Lancaster, Pa., died April 22, 2006.

'64 Richard B. Cox, B EE, of New Orleans, La., died April 19, 1993.
Bernard Deleman, B ME, of Panama City, Fla., died Feb. 5, 2005.
Myron M. Fiedler, MSE ME, died Feb. 6, 1999.
Robert H. Hartley, MSE, of Albemarle, N.C., died Jan. 9, 2006.
James C. Mailen, PHD CHE, of Oak Ridge, Tenn., died Jan. 28, 1994.
Frederick K. McCann, B EE, of Spring Hill, Fla., died Nov. 26, 2005.
William H. Naylor, BS EE, of Monticello, Fla., died Aug. 11, 2006.

'65 Harland H. Ehlers, BS CHE, of Athens, Ga., died Jan. 18, 2005.
Howard W. Jewett, ME, of Winter Springs, Fla., died Nov. 20, 2003.
Wayne B. Poutinen, B IE ISE, died Aug. 1, 1972.

'66 Renny H. Berson, BS EAE, of Marietta, Ga., died July 2, 2003.
Robert W. Bongers, ME, died Sept. 1, 1981.
William C. Choate, PHD, of Dallas, Texas, died Aug. 12, 2006.
James N. Crenshaw, BS CE, of Kenneth City, Fla., died May 15, 2006.
Richard M. Goss, BS IE, of Daytona Beach, Fla., died July 21, 2006.
James H. Nichols, BS CHE, of Knoxville, Tenn., died Aug. 19, 2000.

Abbas Zaman

Abbas Zaman, vice president of engineering at Nanotherapeutics Inc., died July 25, 2006, in Gainesville. He was 49.

Zaman received his B.S. and M.S. degrees in chemical engineering from the University of Tehran in Iran. He received his Ph.D. in chemical engineering from the University of Florida in 1993. He served as a research associate in the Department of Chemical Engineering until 1997, when he joined the Particle Engineering Research Center. He was promoted to associate engineer in 2002. He left PERC in 2005 to join Nanotherapeutics Inc.

His work resulted in a number of patents and publications in well-known peer-reviewed journals. He had a very strong theoretical background in the areas of fluid mechanics and rheology, numerical methods, thermodynamics and heat transfer, and statistics.

Zaman is survived by his wife and his daughters.

Welch McNair Bostick III

Welch McNair Bostick III, a graduate student in the Department of Agricultural & Biological Engineering, died Aug. 28, 2006, after being struck by a car while cycling on Williston Road in Gainesville. He would have completed his PhD this semester. He was 34.

Bostick was born in Charlotte, N.C., and earned his undergraduate and master's degrees in agricultural engineering at Clemson University. At the University of Florida, Bostick was known as a committed leader, talented researcher and kind husband and father. He served as the mayor of his graduate housing community, and he was an emerging star in the crop modeling research area.

Bostick is survived by his wife, Carmen Valero Aracama, and their now 1-year-old son, Luca Bostick-Valero.

The ABE department has established a fund to commemorate Bostick. Mail contributions to the Department of Agricultural and Biological Engineering, c/o The University of Florida Foundation Inc., P.O. Box 14425, Gainesville, FL 32604-2425. Mention the McNair Bostick Memorial on the check's memo line. Also, there is an education fund for Luca. To contribute to it, send donations to Bank of America, Private Bank, 101 North Main St., Greenville, SC 29601, FBO Luca Bostick-Valero Education Fund.

Giuseppe Basile

Giuseppe Basile, an emeritus professor in the Department of Electrical & Computer Engineering at UF, died Sunday, April 16, 2006, in an airplane accident at Gainesville Regional Airport. He was 69.

Italian by birth, Basile loved to fly airplanes. He dedicated his entire adult life to aviation research. He was a pioneer in the field of geometric approaches to linear systems. Basile was a certified pilot for more than 38 years and conducted flight control research for more than 34 years. He held at least two patents. In 1975, Basile came to UF to work under the direction of Rudolf Kalman. Basile retired from the University of Florida in 1999. He is remembered as an inspiring teacher who loved his students.

He is survived by his wife, Yesha Brill, daughters Anna Basile and Margarita Carrera, and son, Stefano Brill.

Stephen M. Varosi

Stephen M. Varosi died Sunday, April 16, 2006, in an airplane accident at Gainesville Regional Airport. He was 40.

Varosi was born in Rockledge, Fla. He received his bachelor's degree in 1987 and his master's degree in 1991 from the UF Department of Electrical & Computer Engineering. He collaborated in Basile's autopilot research. He worked for several local engineering companies. Most recently, Varosi led a research effort at Convergent Engineering in Gainesville. He collaborated with Rizwan Bashirullah, an assistant professor in the Department of Electrical & Computer Engineering.

Outside of the University, he was known for his love of percussion instruments. As a talented drummer, he was a member of many local bands.

He is survived by his parents, Joseph and Katalin Varosi, brothers, Frank Varosi and Otto Varosi, and sister, Linda Varosi.

George W. Olsen Jr., MSE, died Oct. 2, 1990.
Leroy N. Schafer, BS EE, died May 20, 2001.
Louis I. Wilson, BS IE, died March 1, 1973.

'67 Edward C. Poston Jr., ME ISE, died Oct. 26, 1994.

'68 John J. Dunn, BS IE ISE, of Day, Fla., died March 1, 1981.
Joseph H. Pearce Jr., BS EE, of Sarasota, Fla., died March 18, 2002.
Leon H. Toups, MS ASE, of Largo, Fla., died Sept. 5, 2006.
Ross H. Woods, MSE, died May 1, 1989.

'69 John K. Emond, BS EE ISE, of Fort Walton Beach, Fla., died Dec. 25, 2005.
Hans R. Fuehrer, PHD ENM, of Casselberry, Fla., died Feb. 18, 2006.
Robert H. McVay, BS EE, died Aug. 22, 1992.

'71 Charles J. DeBrosse, PHD CHE, of Strongsville, Ohio, died April 6, 2001.
Milan James, ME, of Orlando, Fla., died Dec. 5, 2005.
Reapard A. Justice Jr., BS EE, of Albuquerque, N.M., died March 8, 2006.

'72 John J. Farkas, BS EE, of Gainesville, Fla., died Jan. 15, 2001.
William R. Staples, BS ME, of Palatka, Fla., died March 14, 2005.

'74 John Snell, MS ISE, died Feb. 1, 1989.
James E. Swander, PHD NES, of Knoxville, Tenn., died June 1, 1974.

'80 Louis F. Blum III, BS ME ME, of Farmington, Mo., died Oct. 8, 2006.

'83 Mary J. Lewis, BS ENE NE, of Mahomet, Ill., died Nov. 23, 2005.

'86 Rafael F. Diaz, BS EE, of West Palm Beach, Fla., died April 28, 2006.

'87 Nitin B. Joshi, MS EE, of Millbrae, Calif., died July 7, 2002.

'89 Dale A. Pope, BS CE CE, of Atlanta, Ga., died April 30, 2006.

'90 John H. McKinnerney, BS CHE, of Fernandina Beach, Fla., died Jan. 7, 2003.

'91 Stephen M. Varosi, MS EE, of Gainesville, Fla., died April 16, 2006.

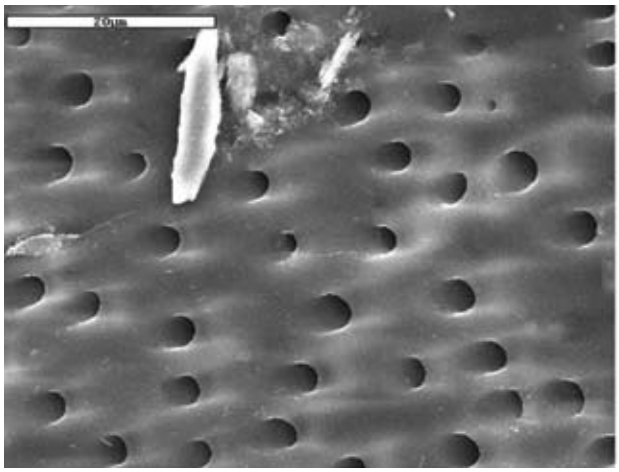
'93 Li-Hang Wang, PHD CE, of Sacramento, Calif., died April 14, 2004.
Abbas A. Zaman, PHD CHE, of Gainesville, Fla., died July 25, 2006.

'95 Brian A. Simpson, ME ASE, of Edwards, Calif., died Jan. 23, 2006.

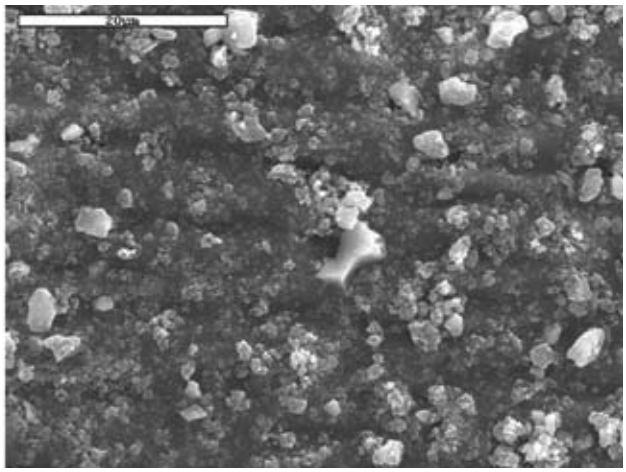
'06 Jonathan A. Hack, PHD MTL, of Gainesville, Fla., died April 6, 2006.

Finding Fate At Fourteen

The picture on the left shows a bunch of tiny holes, or tubules, on a tooth surface. These tubules become exposed due to the breakdown of enamel and then the nerve becomes vulnerable. When a hot or cold substance finds its way into the tubules, there is tooth sensitivity. The photo on the right is a tooth treated with DenSheild. The tubules are sealed — ice cream is in the very near future. Images courtesy of David Greenspan.



Untreated Dentin Surface



DenShield Treated Dentin Surface

By Nicole Cisneros McKeen

Few people find fate when they're teenagers — David Greenspan found it twice at Marine Park Junior High, P.S. 278, in Brooklyn, N.Y.

The first time he was blind sided by fate he was in seventh grade. Fate sat down next to him — her name was Alice. He and Alice dated through school and eventually married.

The second time Greenspan was whopped upside the head by the fist of fate, he was 14. He and his family were on vacation and made a stop by the Corning Glass Museum in Corning, N.Y.

"I found it fascinating," Greenspan (Ph.D., MSE '77) said. "And when I saw the glass blowers at the Steuben Glass exhibit, I was totally hooked. All I wanted to do from that moment on was be a glass blower."

Luckily for Greenspan and for those who would be helped by his work, he chose a different career. It was his fascination with glass that led him straight to Alfred University, in Alfred, N.Y., where he earned his B.S. in glass science.

After graduation he and his wife, Alice, moved to Gainesville. Alice had just graduated from Pratt Institute with a degree in interior and environmental design and Greenspan promised her they would only be in Florida for a year and a half, maybe two — tops. Alice agreed and they moved from the progressive north to what seemed to be the very Deep South.

Greenspan remembers going to play basketball with a friend and being dumbfounded by remnants of segregation.

There were segregated water fountains, probably holdovers from years before, Greenspan said. They just hadn't been removed yet. That was wild. He had never seen or felt anything like that before.

Gainesville may not have a whole lot to offer in the early 70s by way of cosmopolitan city-fare. It did however have two things — the University of Florida and Larry Hench. Hench is a ceramic engineer and he invented Bioglass®.

"I came here to study with Larry because he was the best," said Greenspan, who is vice president and chief technology officer of NovaMin Technology Inc.

Greenspan arrived at UF right when Bioglass was taking off — a great time for the Department of Materials Science & Engineering.

Bioglass is a material that bonds to human tissue and promotes healing by releasing small amounts of soluble silica and calcium.

And now, years after he first studied with Hench, Greenspan has taken some of the principles of Bioglass and incorporated them into dental products.

Using the technology developed at UF, Greenspan found new uses that changes the way the world brushes its teeth. This became NovaMin.

NovaMin is a compound made from elements critical to bone and tooth mineralization. Calcium, phosphorus, silica and sodium delivered together in their ionic forms make a dominating force of dental protection.

The NovaMin particles are the delivery system for the ions, and the particles react with saliva or water. This process rebuilds tooth enamel.

Four different product forms are available. Soothe Rx is a product prescribed by dentists for home use to treat tooth sensitivity. DenSheild is toothpaste available to patients and sold in Europe and the Far East. Oravive is for in-home use to combat tooth sensitivity and available online. NuCare is a form of prophy paste — the gritty-paste dentists use during teeth cleaning — but it's not as abrasive on teeth and gums.

Even though Greenspan was one of the forces behind bringing the technology of Bioglass to NovaMin, he has another success that means a lot more to him — his family.

Thirty-five years later he and Alice have two children. Geri, 29, is studying law at Yale University. Before that, she was in West Africa with the Peace Corps. Adam, 26, is an aerospace engineer who attended Embry-Riddle University.

"Without a doubt, I consider my biggest success to be my family," Greenspan said. "I really owe whatever success I have had to Alice, and I definitely believe that our partnership and our children are my biggest success."

Photo by David Blankenship

David Greenspan

How We've Developed

The College of Engineering is fortunate to have the support of many generous benefactors. Their vision and financial leadership help the College continue to be a world leader in engineering education, research and service. Only 34 cents of every dollar needed for engineering programs comes from state funding. The rest comes from gifts, donations and grants like those from the following supporters.

George and Rolande Willis gave $1.4 million in the form of an irrevocable charitable remainder trust. The proceeds of the trust will be used to support professorships in engineering economics. The spendable income from the endowment will provide salary, research support and other resources for faculty. The professorship in engineering economics will enhance our students' understanding of engineering's contribution to the economy and show them how to use engineering to benefit economic performance.

"Obviously the University of Florida is one of the great universities in the nation, so without question it was the stature of this institution that led us to approach the University of Florida, with the result that you see," George Willis said.

A charitable remainder trust allows the donor to name beneficiaries — including the donor and his/her spouse — to receive payments from the trust for a lifetime or for a fixed period of time up to 20 years. Upon termination of the specified time, the remainder of the trust is given to the University to be used as specified by the donor.

James and Cathy Spoto made a gift of land valued at more than $900,000 to fund an irrevocable charitable remainder trust. Using an appreciated asset to fund a charitable remainder trust provides many tax benefits to the donor. The trustee will sell the land, pay no capital gain tax on the appreciation and in turn the proceeds fund the trust. Upon termination of the trust, the Spotos' gift will be used to support the Department of Electrical & Computer Engineering.

"It's my way of saying thanks and contributing to the future success of the College of Engineering," Spoto said. "I'm proud to be a Gator and proud of my education … I want to be part of the University forever."

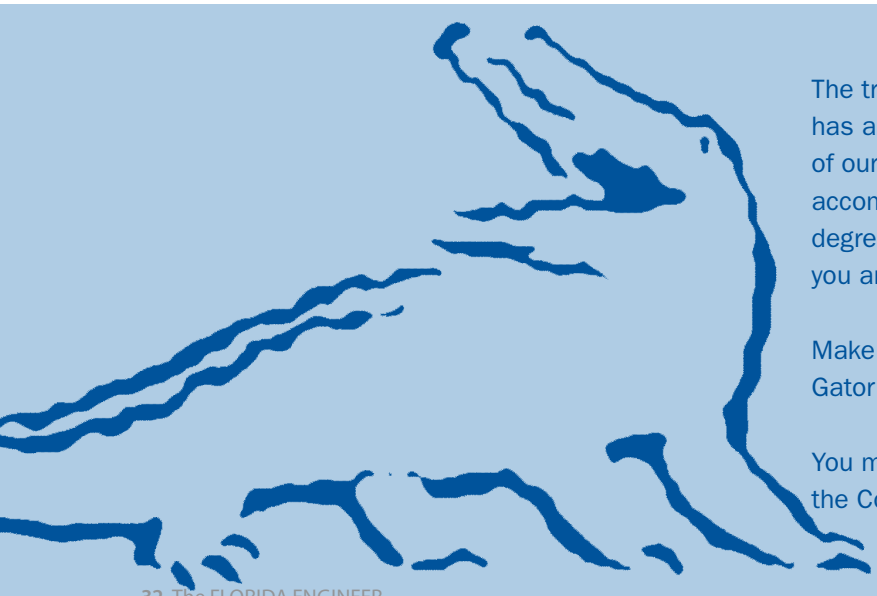
Lenny Bernstein chose to support the College through a gift to the chemical engineering building campaign. A teaching classroom will be named in his honor. His gift will be eligible for a 100 percent match through the Courtelis Facilities Enhancement Challenge Grant program, in which private gifts are matched 1 to 1 by the state of Florida. Bernstein graduated in 1962 from the chemical engineering department.

"There is a saying, that chance favors the prepared mind," Bernstein said. "The chemical engineering education I received at U of F was excellent preparation. I was able to take advantage of the chances that came my way, and the result has been an interesting and satisfying career."

If you have further questions about gifts to the University of Florida College of Engineering, the development office is ready to assist you.
For more information please contact

Ann McElwain
352.392.6795
amcel@eng.ufl.edu

With the help of alumni and friends, the College will continue to be ranked among the best engineering colleges in the United States.



The tradition of support from alumni, families and friends at UF has always been a keystone. Your support bridges the future of our students, faculty and research with recognition of our accomplishments. Your investment enhances the value of your degree and illustrates to potential students and donors that you are proud of UF.

Make UF proud as you continue this tradition and show your Gator Engineering pride.

You may make a gift by going to www.uff.ufl.edu and specifying the College of Engineering.

Photo by James Garrett


Photo by Ron Franklin

Left: Alice Holt in her office in 2006. Right: Holt and Wayne Acree in 1982.

A staff profile

Alice Holt — She's Got It Covered

By Nicole Cisneros McKeen

The University of Florida Department of Materials Science & Engineering, country music, church on Sundays and the Florida Gators. They all have one thing in common — Alice Holt.

Holt, a program assistant in MSE, has dedicated her life and fingers to the Department.

She began her tenure with the University of Florida — and materials science — in 1968 as a 20-year-old secretary. Led by Founding Department Chair Frederick Rhines, the Department was young, too — just six years old. History unfolded around Holt as she worked for now-legendary faculty members like professors Rolf Hummel and Larry Hench, former Department Chair Reza Abbaschian, and current Department Chair Kevin Jones, just to name a few.

She's chronicled it all on her typewriter, too. Decades ago, it was part of her job to help professors and graduate students by typing up all of their technical articles, proposals and books. In the 38 years she's been with the Department, her fingers have keyed every stroke of more than 300 research reports, more than 100 academic proposals and more than five books.

Now nearing retirement, Holt said she looks at her time at UF and recognizes the tremendous changes that have come in four decades.

"I remember when I used to have to go to another building to use the copy machine," Holt said. "And then when we finally got a copy machine [in MSE], they kept it under lock and key. You had to go check the key out to use the copier."

The people who know her best say that through all of the change, Holt has been the one constant.

Class of '82 Gator Engineering alumnus John W. Sheets Jr. said he remembers Holt as "the one who really ran the show" for professor Larry Hench, research principal and inventor of Bioglass. Sheets, now worldwide vice president and advanced research and development chief technology officer for ETHICON, said Holt always had a smile on her face and truly filled the room with happiness.

Sheets said that during graduate school, he and his friends goofed around a lot by playing practical jokes on each other. He said the joke that sticks out the most is one that involved Holt.

"I remember one time, as a practical joke, I pulled the chair out from behind her," Sheets said. "I thought she saw me do it. She didn't and she fell on the floor. She didn't get mad, we just sat on the floor laughing and laughing. Alice has a personal warmth [about her]. It didn't matter who you were — student, professor or staff."

When Holt retires, there is no doubt that a little bit of the Department's history, warmth and laughter will leave with her.

Holt, though, said she isn't sad about moving on — she has plans.

She'll travel to all parts of the country, she said, especially the mountains in North Carolina. And she'll take a little bit of country singer Alan Jackson and some Baptist hymns along too. No matter where she is, though, one thing is for sure — she'll never be too far away to see her Florida Gators win SEC championships, and materials science will always be as much a part of her as she is of it.

Larry Hench's

Web Of Greatness

Douglas Eric Parsell
University of Mississippi
Oxford, Miss.

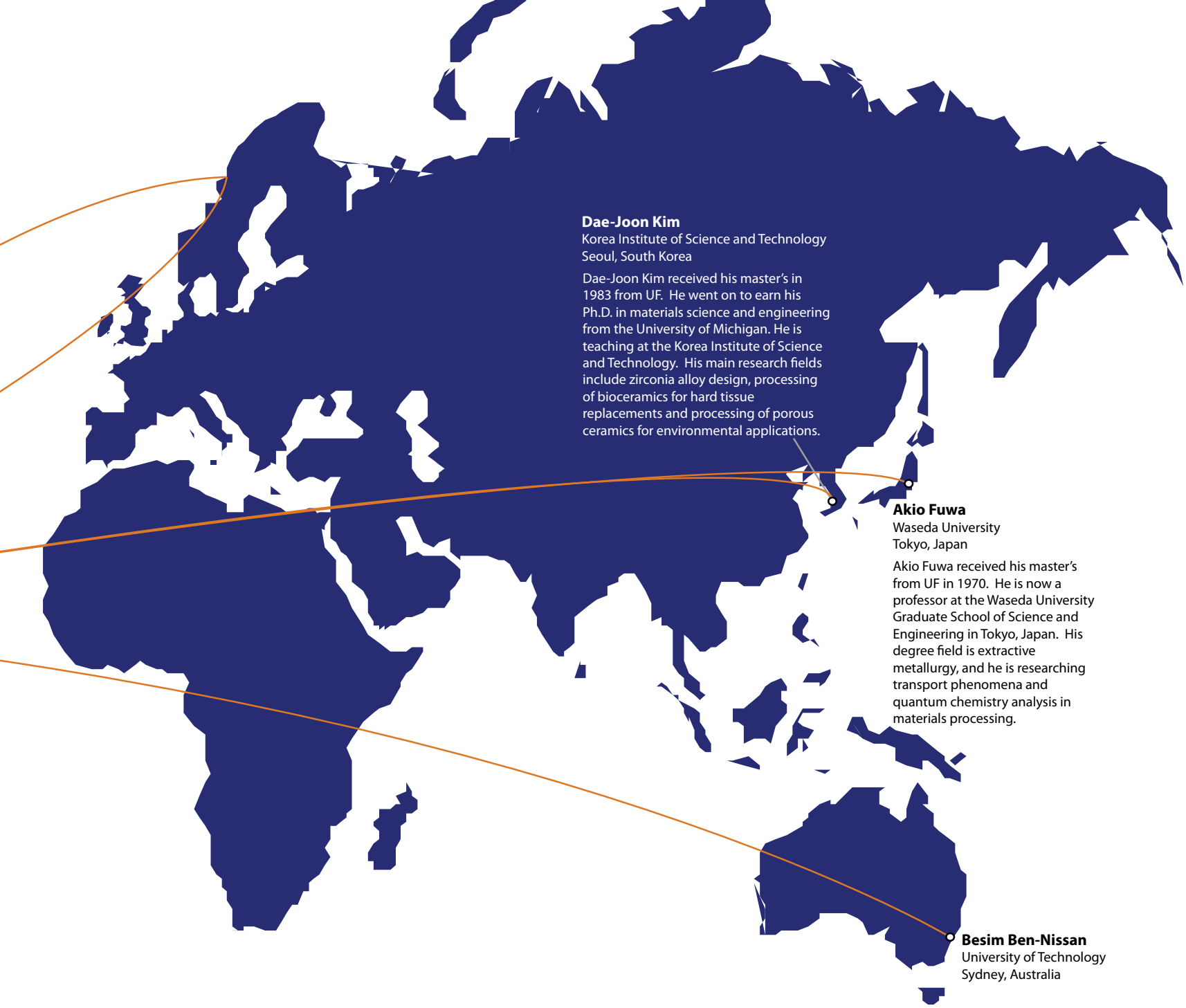
Douglas Eric Parsell earned his Ph.D. in materials science and engineering from UF in 1994. In 1995, he joined the faculty at the University of Mississippi Medical Center, where he is currently a professor in the School of Dentistry and adjunct appointed to the Department of Orthopedic Surgery. Parsell's research is focused on developing novel ionomeric cements and bulk amorphous materials for dentistry and orthopedic use.

Gary Messing
Penn State University
State College, Pa.

Gary Messing was Hench's student in the late 70s. He is now the department head for materials science and engineering at Penn State. His research focuses on powder synthesis by spray pyrolysis and spray drying, among other topics. This affects industries that require phase pure, submicron powders or particles of specific morphology.
"He took time to know the people around him at a personal level," Messing said in an e-mail.

Burtrand Lee
Clemson University
Clemson, S.C.

Burtrand Lee received his Ph.D. in materials science and engineering from UF in 1986, joining the faculty of Clemson University soon afterwards. He also spent time as a Fulbright Professor at the Norwegian Institute of Technology in 1989. Lee is researching the synthesis and processing of ceramic materials to obtain superior performance and properties in the final product.
"As a research adviser, professor Hench gave me all the freedom I needed to be creative," Lee said in an e-mail. "I learned and matured much more that way."



By Andrew Stanfill

Diagramming a legacy

Larry Hench is a man who stands out in the history of UF Engineering. He joined the faulty in 1964 and is now a professor emeritus. His many projects created new arenas of research and processes of design.

In 1967, Hench took a career-changing bus ride. An Army colonel who was a passenger on the bus challenged Hench to create a better prosthesis material to repair limbs shattered by bullets in Vietnam.

This conversation led Hench to research the use of glass as a material for repair. After several years, he came up with Bioglass®. It was a material the human body didn't reject, and it even broke down over time as healthy bone grew in its place.

Hench's 1991 paper, Bioceramics — from concept to clinic, is among the 10-most-cited papers of the 90s, according to Thomson Scientific's Essential Science Indicators. The paper details the evolution of bioceramics, simplifying research for those in the field.

His work over the years has led to numerous patents in the ceramics field, many of which also bear the names of his graduate students.

Hench's students have carved out research and teaching careers all over the world. A sampling of them — at least the ones we could find — are diagrammed above.

A letter from the Editor

From 349 Weil Hall

I never pictured myself as a science writer.

I figured I'd freelance for a parenting magazine, maybe write a few short stories and stay home with my four children. But I was kidding myself. I wanted — no, I needed — to work. I wanted to work at *a place* — not at home in my baby-slobber-stained pajamas. It was fate that there was an opportunity to write and edit in the College of Engineering. I would be able to use my journalism degree, run a magazine and work with great people who respected that I had almost birthed a basketball team. And the best part was that I would get to learn — learn about things I never would have been exposed otherwise. My husband gets a phone call at least once a day with an excitable — and somewhat superior — inflection in my voice.

"Hey, guess what we're doing over here," I say.

And of course when I say *we*, I mean the engineers. It is truly remarkable to be immersed in a place where ideas are not just lofty daydreams, they're potential world-changers.

And as Gator Engineering alumni, I'm sure you see where I am coming from. Engineers are inspiring, and contrary to stereotypes, they aren't just for wearing pocket protectors. I plan on using this magazine to shout it from the rooftop. Some may say I am preaching to the choir, but that's OK — I think the choir likes it.

In this issue of *The Florida Engineer*, you'll notice some changes. The goal is to get more information to you by covering more of the College, more research and more people — the students, the faculty, the alumni and the people who work in the background making sure the pulse of the College keeps beating — the support staff.

With the redesign in full swing, pictures of my kids collecting their first layer of dust and my chair sufficiently dented, there is one issue that I haven't been able to get a handle on — alumni interaction. Basically, we need more.

I challenge you to become a part of *The Florida Engineer*. Write and tell us what you want to see in your alumni magazine. Send us pictures. Keep us up to date with news in your circle. Be a guest columnist. Adopt a decade and help us stay informed about the Gator Engineers from that time. Pitch story ideas. Tell us what you like, tell us what you hate — just tell us.

The College of Engineering is an amazing place. I feel very blessed to be a part of it. I hope you enjoy this issue and start your countdown to the next issue of *The Florida Engineer*, arriving in summer 2007.

Nicole C. McKeen

Nicole Cisneros McKeen

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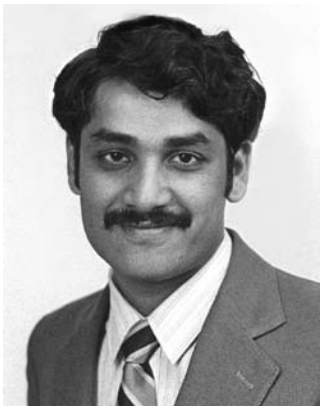
cisneros@eng.ufl.edu

Time Warp

1981	2006
Endless Love, by Lionel Richie and Diana Ross, tops the U.S. Billboard Hot 100 list for nine weeks, the longest of any song that year.	*SexyBack*, by Justin Timberlake, is number one on the U.S. Billboard Hot 100 list for seven weeks, the longest of any song that year.
The average price of gas in the U.S. is $1.38 per gallon.	The average price of gas in the U.S. is $2.20 per gallon.
Chariots of Fire, starring Nicholas Farrell, Nigel Havers, and Ian Charleson, wins the Academy Award for best picture.	*Crash*, starring Matt Dillon, Don Cheadle and Sandra Bullock, takes best picture at the Academy Awards.
IBM introduces the first personal computer that uses what will become the standard disk operating system, or DOS.	Computers can now be found in nearly every household, and there are more than 205 million Internet users in the U.S.
UF student enrollment is 33,772.	UF student enrollment is 50,785.
MTV debuts, offering music videos 24 hours a day, starting with *Video Killed the Radio Star* by The Buggles.	Videos of all sort are sold for download to portable players, such as Apple's iPod — common accessories for college students.
AIDS is identified by the Center for Disease Control after five men in Los Angeles are diagnosed with a very rare form of pneumonia.	The average life expectancy of people with HIV has increased dramatically to 24 years, compared to just seven years in 1993.
The 236-mph TGV, Europe's first high-speed passenger train, is built.	Magnetic-levitation trains push the boundaries of speed, such as Japan's JR-Maglev, MLX01, which was clocked at 361 mph.
Sandra Day O'Connor becomes the first woman on the Supreme Court.	O'Connor retires, leaving Ruth Bader Ginsburg as the sole woman on the court.
NASA's first shuttle, Columbia, carrying astronauts John Young and Robert Crippen, is launched.	The Department of Agriculture & Biological Engineering has experiments at the International Space Station studying interactions between light and gravity influence on plant architecture.
Pramod P. Khargonekar finishes his Ph.D.	Khargonekar now serves as the dean of the College of Engineering.
Only two members of the UF engineering faculty are women, out of a total of 263.	Thirty-two women are members of UF engineering's 402-member faculty.
The research budget is $11.1 million.	The research budget is $107.8 million.

Thirty-two faculty members present in 1981 are still here in 2006




Khargonekar arrived in 1978 to study with Rudolph Kalman. After receiving his Ph.D., he was hired as an assistant professor and is pictured here in 1981. After teaching at the University of Minnesota and running the Department of Electrical Engineering and Computer Science at the University of Michigan, Khargonekar returned home to Gainesville as Dean.


Chris Batich arrived at UF in 1981. He is a professor and co-graduate coordinator of the Department of Materials Science & Engineering. Batich was also instrumental in establishing the J. Crayton Pruitt Family Department of Biomedical Engineering.


Jacob Jones, assistant professor in materials science and engineering, joined the faculty in July. Jones, left, is pictured in 1981. He was 4. His research specialties include ceramics, crystallographic texture, anisotrophy and electromechanical behavior.

Ultimate Frisbee

Photo by David Blankenship

When you think UF national champions, you think Gator basketball and Florida football — not so fast my friend. UF has a new champion on campus — the Ultimate Frisbee team.

Florida qualified for its first Ultimate Frisbee college nationals since 1989. Florida's sole loss this season came from Wisconsin in the finals of Centex, an earlier tournament, which they only lost by one point. However, Florida would not be denied a championship. They beat Wisconsin 15-12 and finished the season with a 49-1 record.

Kevin Jones, materials science and engineering department chair and an avid Ultimate Frisbee player himself, is the team's faculty adviser. Tim Gehret, an MSE Ph.D student, won the 2006 Callahan Award, which is the equivalent Hesiman Trophy for Ultimate Frisbee.

For more information about the team visit www.ufultimate.com

Left to right, top row:
Russell Hall, Matthew Deavenport, Cyle Van Auken, Kurt Gibson, Brodie Smith, Jon Windham, Gray Kirkmyer, Timothy Gehret
Left to right, bottom row:
Joseph Cutrono, Dustin Travaglini, Nate Stewart, Tommy Rush, Zach Floyd.

Champions

In the Hopper

What to expect in the next issue

All the snow will have long been melted, the front-porch rockers will be singing their squeaks, fresh lemonade — and perhaps a margarita or two — will be savored, and the summer issue of *The Florida Engineer* will arrive in your mailbox.

The Florida Engineer, summer 2007, will delve into the very raw nature of engineers — their humanity.

At their core, engineers help people. They make things work better and more efficiently. They improve quality of life. And while their work is purpose driven, it is only a natural step for their personal lives to reflect the nature of their professional lives.

James Klausner, interim director of UF EDGE, and his wife started a school for children with cerebral palsy and neuromuscular disabilities. Engineers Without Borders is an undergraduate group dedicated to helping with sanitation issues all over the world. And *YOU*, alumni — we need your stories. Because after all, this an alumni magazine.

"My skill and knowledge shall be given without reservation for the public good."— *an excerpt from the Order of the Engineer oath.*

This spring the College will be sending a survey to the graduates of classes '99, '02 and '04. Please take the time to fill it out. We promise we won't ask for a dime. We just ask for your candor.

Are You A Good Gator Engineer?

1. How many Gator Engineers have you hired?

a. My company bleeds orange and blue thanks to me.

b. Those decisions aren't up to me, but if I could, I'd make my coworkers eat Burrito Brothers for lunch every day.

c. I give everyone a shot — I've even hired some FSU/FAMU grads.

d. I hide my Gator heritage at work.

2. Have you kept in contact with your favorite professor?

a. When I call, all I have to say is "Hey, it's me again."

b. My cell phone plays *Mr. Roboto* when he calls.

c. I stop in and say hello every few years. I think he remembers my name.

d. It's been so long that his junk filter would probably mark my e-mails as spam.

3. Have you mentored a Gator Engineering student this year?

a. Yes

b. No

4. Have you updated your contact information with the College?

a. I update it so often that you guys ought to have my address memorized by now.

b. Funny you should ask — I'm back here doing this quiz because it caught my eye as I filled out the address update form in this magazine.

c. I've been meaning to do that. I'll get around to it eventually.

d. Heck yes, I've "updated" it. But I gave you fake information...hey, how did this magazine find me?!

5. Have you written *The Florida Engineer* with updates about your career and family?

a. You look forward to my holiday card—complete with pictures of my kids.

b. I try to keep up. Every few years or so, I send in an update.

c. You want to know that kind of stuff? I didn't realize that.

d. I go out of my way to hide my true identity from you.

6. Have you done the Gator Chomp lately?

a. Yes

b. No

7. Who is the dean of the College of Engineering?

a. Win Phillips

b. Ringo Starr

c. Pramod Khargonekar

d. John Benton

8. How old is the College of Engineering?

_____ years

9. In the last five years, how many times have you come back to campus for a Gator game and the Homecoming alumni barbecue?

a. Six times! One year, I just couldn't wait for Homecoming, so I came in mid-April. They wouldn't give me any free barbecue, though...

b. I wouldn't miss it for the world. There's a seat in the stadium with my name on it.

c. I've come a couple of times — whenever it's convenient.

d. Barbecue? What barbecue?

10. Did you know that *The Florida Engineer* really wants to hear from you?

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