



Innovations

THE NEWSLETTER OF THE FRANKLIN W. OLIN COLLEGE OF ENGINEERING

SUMMER 2004
VOLUME 4 ISSUE 2

OLIN SOPHOMORES WIN \$20,000 IN BUSINESS PLAN COMPETITION

Socially Responsible Entrepreneurial Venture Pays Off

OLIN SOPHOMORES Bret Richmond and Jeff Satwicz teamed up with two Babson College MBA students this spring to take the \$20,000 first prize in Babson College's Douglass Foundation Graduate Business Plan Competition. Their entrepreneurial venture, Seahorse Power Company, earned top honors for its plan for an innovative solar-powered trash compactor.

As the chief engineering support for Seahorse Power's signature product, "BigBelly," Richmond and Satwicz worked with Alexander Perera (Babson M'04) and James Poss (Babson M'03) to develop and market the compactor, which is ideal for remote and high-traffic areas such as ski areas, beaches and parks.

The company has already shipped its first BigBelly unit to Vail Resorts and is negotiating to sell more units to parks and other ski resorts – sites where operating a trash compactor in remote locations without power lines can save installation, maintenance and disposal costs.

"Most of the environmentally sound products currently on the market force consumers who care about the environment to put their money

where their mouth is," said Richmond. "We're designing products that make economic sense and help save the environment."

The Douglass Foundation Graduate Business Plan Competition was part of Babson College's Founder's Day activities. The competition drew nearly 20 business plan entries and featured three finalists. The three finalists made twenty-minute presentations to a panel of judges who chose Seahorse Power as the winner based on the plan's feasibility.

Satwicz has been impressed with the amount of support he and his teammates have received from the Olin Community, noting that it "has been one of the more rewarding aspects of this competition."

Expressing his pleasure with Richmond and Satwicz's success, President Richard Miller remarked, "The Olin College community is proud to congratulate Bret, Jeff and their Babson College teammates for their win in the Graduate Business Plan Competition. This award is proof that a partnership between business and engineering bears fruit for both sides."



Bret Richmond (left) and Jeff Satwicz after taking the first place prize in the Douglass Foundation Graduate Business Plan Competition.

A team of candidates brainstorms before the design exercise during Candidates' Weekend.

OLIN FINALIZES CLASS OF 2008

New class is academically gifted, multi-talented

WHEN OLIN kicks off the fall 2004 semester, 71 new students (33 women and 38 men) will have joined the college community. Representing 27 states, the incoming freshmen bring with them a wealth of talent, experience and excitement.

"With backgrounds as impressive as the students in the classes of 2006 and 2007, the class of 2008 will continue the important work of refining the curriculum and shaping student life at Olin," said Melissa Trotta, assistant dean of Admission.

Thirty members of the new class have been recognized by the AP (Advanced Placement) Program, including nine who received the program's highest honor of AP Scholar with Distinction and six who have been designated AP Scholars with Honors. The class boasts 24 National Merit Scholarship

Finalists, three National Achievement Scholars, two National Hispanic Scholars and 36 academic team members, 19 of whom were captains.

While academic achievement was an important criterion for admission, students' passions and involvement in activities outside the classroom also figured prominently into the admission decisions.

There are 34 high school athletes (seven captains) in the class of 2008, eight study martial arts, 40 are involved in community service, 31 are musicians, nine have participated in student government, 14 contributed to school publications (eight as editors), 11 have been involved in theater, seven have participated in FIRST (For Inspiration and Recognition of Science and Technology), and 11 earned Girl Scout Gold Award, or Eagle

Scout designations.

The class includes many students with unique accomplishments, including a nationally acclaimed synchronized swimmer, a U.S. patent holder, the 2003 Miss Teen Pacific Coast, as well as television and film directors.

Adding to the variety of perspectives, just over 20 percent identify themselves as students of color and over 46 percent of the class is female.

The incoming students will join Olin on August 28 for orientation activities. They will be welcomed by the classes of 2006 and 2007 on September 1.

"I met many of the incoming freshmen during Candidates' Weekends and am excited to see how they will contribute to the Olin community," said Dan Foran ('07).



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PRESIDENT'S MESSAGE:



Olin recently wrapped up another academic year and, as usual, there were many year-end activities and developments. A few are particularly emblematic of what Olin is trying to do and significant for the future.

In April came the news that two Olin students, Brett Richmond and Jeff Satwicz, had teamed up with two Babson MBA students to win the \$20,000 Douglass Foundation Business Plan Competition at Babson College. Their proposed business, built around an innovative solar trash compactor, is proof that the cross-pollination of engineering and entrepreneurship adds value to both institutions.

Seventy-one new students (33 women and 38 men) representing 27 states will join the student body this fall. They bring a wealth of talents, interests and perspectives to Olin, as well as impressive academic credentials. The class includes at least 24 National Merit Finalists, 15 AP scholars, three National Achievement Scholars, two National Hispanic Scholars and 36 academic team members (the numbers were still coming in at press time).

Olin faculty members continue to earn distinguished honors. Sherra Kerns became president of the American Society for Engineering Education in June, and Steve Holt will receive a prestigious medal recognizing his leadership in international scientific cooperation in July.

Many Olin students are spending their summer building their resumes. The list of internship sites includes Tokyo Institute of Technology, NASA, Raytheon, Los Alamos National Lab and IBM. Others are pursuing research opportunities at such academic powerhouses as Princeton, Northwestern, Texas Tech, Stanford, Boston University, MIT and Tufts. Forty-three percent of all Olin students are currently involved in either corporate internships or summer university research projects involving science and engineering.

This issue contains a list of fiscal year 2004 contributors to the college. It is certainly encouraging to see so many people supporting the college in the spirit of Franklin W. Olin, the industrialist whose acts of philanthropy led to the creation of this institution.

All in all, it's been another year of remarkable progress toward our goals. As we welcome the class of 2008 and terrific new faculty to the Olin community, next year looks bright with promise as well.

Richard K. Miller
President

Students Spend "Vacations" Working, Researching and Studying Abroad

Tokyo Institute of Technology, NASA, Natick Soldier Center, MITRE Corporation, Raytheon, Los Alamos National Lab and IBM are just a few of the places Olin students are spending their summer vacations in lieu of other vacation hot spots. In addition to these corporate internships, Olin students are pursuing research opportunities at some of the nation's best known universities, including Princeton, Northwestern, Texas Tech, Stanford, Boston University, MIT, Tufts and (of course) Olin College.

After completing only their freshman and sophomore years, an impressive 49 percent of the class of 2006 and 35 percent of the class of 2007 are engaged in summer research opportunities or working in corporate internships. A handful of Olin students are spending their summer abroad, participating in foreign research programs or beginning their study away in countries such as Mexico, New Zealand, Australia and Sweden.

"Most college students don't start thinking about summer internships or research until after the junior year," said Leslie Larocca, director of Corporate Relations. "That over 40 percent of Olin freshmen and sophomores explored these interests this summer speaks to an educational experience that gives them the confidence – and enthusiasm – to test their interests early on."

Drew Harry ('06) is spending his summer interning in IBM's Collaborative User Experience lab. Working with the lab's director, he is carving out a project for the summer and leaning toward work in the area of social networks and the visualization of collaborative communities.

"Olin's focus on teamwork, communication, problem solving, creativity and technical skills has prepared me well for this summer opportunity," said Harry, who noted that, as a sophomore, he still has some learning to do on the technical side. However, his technical limitations have been more than made up for by "the ability to be confident and comfortable in all the other areas."

Olin professors Steve Holt and Gill Pratt are leading ten Olin students as they work with scientists and engineers from NASA's Goddard Space Flight Center in Maryland. In early June, the group traveled to Goddard to meet with the scientists and engineers, tour the facilities and begin their work with Goddard's X-ray and infrared astrophysics programs.

NASA research isn't the only exciting work being done on Olin's campus this summer. Erin McCusker ('06) and four classmates are working with Dr. Debbie Chachra, assistant professor of materials science, on biomaterials research. The group is studying bone and collagen.

"Summer research appeals to me because I get to work in a hands-on environment on a short-term and intensive project," noted McCusker. "It's great to be able to finish the summer with a sense of accomplishment."

Sylvie Boiteau ('07) is spending ten weeks at Texas Tech University researching the ethanol sensitivity of the receptors in various regions of the brain. Boiteau is working with a Texas Tech professor and medical students from other universities.

"The staff and faculty at Olin were helpful and supportive while I was trying to find a summer internship," said Boiteau. "Because of the fast paced and project-based courses that I took my first year at Olin, I was able to get an internship that is not usually offered to first-year students."



Molly Trombley-McCann (right) works with Professor Debbie Chachra on biomaterials research.



During their visit to NASA's Flight Center Olin students toured the clean room to examine micro sensors.



Left: Dr. Robert Langer spoke to the Olin Community about biomaterials. Right: Freshman Zach Broch (left) and sophomore Janet Tsai (right) worked with machine shop staffer Jay Patten to build playhouses for Habitat for Humanity.



END OF SEMESTER WRAP-UP

Leader in the Field of Biomedical Engineering Shares Insights with Olin Community

On **April 15**, Dr. Robert Langer, a scientist known internationally for his work in biomedical technology and materials science, spoke to the Olin community about biomaterials and how they will change our lives. In his talk, Langer discussed new drug delivery technologies and elaborated on how these technologies promise to create new treatments for cancer, heart disease and other illnesses. Langer is the Kenneth J. Germeshausen Professor of Chemical and Biomedical Engineering at MIT. In 2001 *CNN* and *Time Magazine* named Langer one of the 100 most important people in America and one of the top 18 people in science or medicine.

Habitat Playhouses Built

On **April 24**, Olin faculty, staff, students and their families turned out to build playhouses for Habitat for Humanity. The playhouses are being sold to raise money for the charity. Habitat for Humanity at Olin College sponsored the event. The Olin chapter, which is affiliated with Habitat for Humanity of Greater Boston, has sponsored several fundraising events on campus to raise money for the affiliate.

Student Activities Committee (SAC) Holds Field Day

During the SAC Field Day on **April 30**, students had the chance to socialize, relax and have fun before final exams. The afternoon featured several amusements, including a bouncy castle, music, ice cream, a dunk tank and an inflatable jousting pit. Faculty, staff and students were nominated by their peers to sit in the dunk tank. Proceeds from the dunking benefited Needham Domestic Violence Action Committee.

Olin Exposition (Expo)

May 4-6, Olin marked the end of the semester with the Olin Expo. During the Expo, student-created posters were displayed in the Academic Center that showcased the coursework, community service, Passionate Pursuits, independent study, research and cocurricular activities conducted throughout the semester. The Expo also served as an opportunity for formal community discussions and assessment.

Express-O

On **May 6**, students showcased their talents during the Express-O open mic talent show that was held in conjunction with the Expo.

President's Council Meeting

The **May 10** President's Council meeting focused on "Preparing for Success: Maximizing Opportunities for the Inaugural Graduating Class at Olin College." Council members, many Board of Trustees members and several distinguished guests from industry and academe were in attendance.



Above: Team members (left to right) Char Laughlin ('07), Jon Pollack ('07), Ali Badala ('07), Kristen Dorsey ('07), Joles Arnold ('06) and Matt Broulliard ('07) demonstrated their research on the energy efficiency of mice at the poster display during the Expo.



Above: Laura Stupin ('07) capped her Passionate Pursuit, "A Study in Voice," by performing three songs for the Olin community.



Above: Emma Goodman ('06) and several classmates who participated in the belly dancing co-curricular showcased their abilities during the talent show.



Above: Olin faculty, staff and students joined members of the President's Council and Board of Trustees for break-out sessions to discuss launching the class of 2006.

Honors/Awards/Recognition

Kerns Becomes President of ASEE



On June 23, 2004, Dr. Sherra E. Kerns, vice president for Innovation and Research at Olin College,

assumed the presidency of the American Society for Engineering Education (ASEE). ASEE is the nation's premier organization for the advancement of technical education. For the last year she had been serving as the president-elect.

Kerns is the organization's 108th president and only the second woman to serve in the role. In her speech at the annual ASEE conference, Kerns outlined an ambitious agenda and promoted the idea that engineers should view themselves as "heroes" with unique qualifications for bettering society.

Kerns' career has been devoted to improving engineering education. Her involvement with ASEE includes serving as a member of the Board, as first vice president, and as vice president of professional interest councils. She has also been active with ABET, the engineering accrediting body, where

she served as member of the Committee on Engineering Accreditation Activities and as a member of the Engineering Accreditation Commission representing ASEE, among other posts.

Holt Receives Prestigious Award for International Scientific Leadership



Dr. Stephen S. Holt, a faculty member at Olin and Babson colleges, will receive the International

Cooperation Medal from the Committee on Space Research (COSPAR) at COSPAR's 35th Scientific Assembly in Paris in July 2004.

The medal is awarded every two years to a scientist whose work has contributed significantly to the promotion of international scientific cooperation. Holt is the eleventh recipient of the medal since its initial award in 1984, and is the first American to be so honored.

Holt joined Olin and Babson in September 2000 after a 34-year career at NASA. During his last 10 years at NASA, he was the director of

Space Sciences at the Goddard Space Flight Center. A specialist in high energy astrophysics, Holt was the project scientist for cooperative space missions with the UK, Germany, Japan and Russia.

An acclaimed researcher with numerous scholarly presentations and publications, Holt also received NASA's highest award, the Distinguished Service Medal, in 2000.

President's Council Member Honored



Dr. Kwan Rim, chairman of Samsung Advanced Institute of Technology in Korea and a member of

Olin's President's Council, received the Commander of the Most Excellent Order of the British Empire Award in a ceremony in Seoul this past June. Rim is also head of the Korean Delegation to IMS, an international consortium on intelligent manufacturing, and was recently named to chair its International Steering Committee.

Final Report of Annual Giving, 2006

Olin College is grateful to the many supporters who have chosen to join us in building our outstanding institution -- parents who demonstrate their confidence in Olin's program; friends who are united in their appreciation for Olin's influence on their lives; faculty and staff who provide evidence of their enthusiasm for Olin College; and organizations who play essential roles in supporting the college's work. Through this report, we acknowledge and

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NEW FACES AT OLIN



David Barrett, Ph.D.

Associate Professor of Mechanical Engineering and Design and Director of the Capstone Project Program

Prior to joining Olin, Dr. Barrett was vice president of engineering at iRobot Corporation, where he was responsible for identifying new

business opportunities and establishing strategic partnerships, among other duties. Before iRobot, Dr. Barrett founded and directed a division of the Walt Disney Imagineering Corporation. Dr. Barrett received his Ph.D. and M.S. in ocean engineering and M.S. in mechanical engineering from MIT. He received his B.S. in mechanical engineering (summa cum laude) from the University of Lowell. In addition to his many published articles, Dr. Barrett holds eight patents with previous colleagues on a variety of robotic systems.



Mark L. Chang, Ph.D.,

Assistant Professor of Electrical and Computer Engineering

Dr. Chang received his Ph.D. in electrical engineering from the University of Washington. He received his M.S. and B.S. in electrical and computer engineering from Northwestern University and

his B.S. from Johns Hopkins University. Dr. Chang has earned numerous awards for his scholarly activities, including an Intel Foundation Graduate Fellowship. He received excellent reviews as a teaching assistant and instructor while at Northwestern and the University of Washington. His research interests include FPGA arithmetic and architecture, computer-aided design tools, reconfigurable computing and VLSI design.



Rebecca Christianson, Ph.D.,

Assistant Professor of Applied Physics

Dr. Christianson will be joining the Olin College faculty in January 2005 after completing her post-doctoral research at Harvard University. Her research interests include light scattering and microscopy studies of

self-assembly kinetics in two-component colloidal systems, anisotropic colloids and surfactant systems. Dr. Christianson recently received a teaching award from the Derek Bok Center for Teaching and Learning at Harvard University. Among published journals and reviews, she and her colleagues have recently submitted "Crystallization Kinetics of Binary Colloidal Alloys," which contains results from the Physics of Colloids in Space experiment which flew on the International Space Station in 2001. Dr. Christianson received her Ph.D. from MIT and her B.S. in physics and B.A. in music, both from Stanford University.

INNOVATIVE ENGINEERING COURSE FOCUSES ON DESIGN

Budding Designers Look at Products from User's Point of View

INSPIRED by a new vision of engineering highlighting the role of design, two Olin faculty members collaborated last semester to lead an innovative course that asks students to consider something too often overlooked in the traditional product design process: the actual users of a product.

“The traditional product design approach often overemphasizes technology and features at the expense

of understanding people,” says Benjamin Linder, an assistant professor of mechanical engineering at Olin, who teamed up with visiting professor Chris Heape to offer “User-Oriented Collaborative Design” to Olin sophomores in spring 2004. “It’s too common for engineers involved with the design of a product never to have talked to the users of that product.”

In contrast, Linder, Heape and others are helping Olin produce engineers whose designs are informed by a detailed knowledge of the people who will be using their products—not only the end users, but also the many colleagues of those users.

Toward that end, they asked students to get to know the needs and habits of various “user groups” very well before they even thought about designing a product. Students met users in their homes and workplaces and talked with them at length about their activities and backgrounds.

Back in the classroom, students created depictions of their users pasted with notes about their characteristics. They wrote up “mood cards” describing their users and how they felt. They came up with a set of “design values” shared by the users and the student designers. The process of creating new product ideas was marked by extensive interaction, discussion, negotiation and reflection.

“Our goal was to identify with the users and design and model some sort of good or service that would help make their lives and work environment better,” says Steven Krumholz, who was part of a three-person team that worked with emergency room nurses.

Krumholz and his teammates spoke to doctors, nurses, patients and administrators, in addition to visiting an ER, to get an idea of life in a hospital. Their product idea was a bar-code reader to be worn on the wrist that could be linked to the hospital’s information system to ensure the patients received the proper medications. They also came up with “fast user switching” to



Students created detailed depictions of their users, such as this one of a “typical” bartender.

“You will not find many programs in the world where students are grappling with such advanced, user-oriented collaborative design issues.”

- Professor Chris Heape

enable nurses to quickly log off and on computers at different locations while maintaining their data.

Nick Zola was part of a team that looked at the needs of the elderly residents of a local retirement home. Zola found himself fascinated by the lives of the retirees, who had lived through wars, depressions and boom times. “It was a fun and emotionally charged course because it was so people-oriented,” says Zola. “It involved professors, users, your team members and others.” His team proposed easy-to-buckle seatbelts and band-aid dispensing pens.

Students say the course fits in perfectly with Olin’s hands-on educational approach. “Letting us get out there and try something was invaluable,” says Krumholz “We learned from our mistakes and our successes, and gained a great deal of experience in the process. I wouldn’t trade that for anything.”

The course also fits well with the college’s plans to elevate the role of design in the curriculum. The

college recently completed a major curricular revision which, among other things, solidified a “design stream” throughout Olin’s four-year program. “Many elements of our curriculum, such as engineering, creativity and collaboration, come together in design,” says Michael Moody, dean of faculty. “We hope design will become a hallmark of our program.”

The course puts Olin on the leading edge of a movement to inject more design thinking into engineering. “This is an approach that intentionally emphasizes the human aspect of design early in the curriculum. It’s an approach that’s going to grow and expand,” says Linder, who co-founded a software company focused on product development tools.

“What the sophomores are doing at Olin is unique,” states Heape, a senior researcher in product innovation at the University of Southern Denmark. “You will not find many programs in the world where students are grappling with such advanced, user-oriented collaborative design issues. Their energy, motivation and resourcefulness enabled them to come up with an exceptionally broad range of truly innovative concepts.”



Julie Connelly (left) and Steve Krumholz try out a model of their bar-coded bracelets for patients.



A proposed tablet PC for ER nurses.



A model, in foam, of an easy-to-buckle seatbelt designed with elders in mind.



Photos: Nicholas Zola and Chris Murphy



EAST HALL NEWS

Despite some rainy conditions this spring, favorable progress was made on the construction of East Hall. The crew completed the structural steel erection, poured remaining floor slabs and began installing utility connections, including electric, emergency electric, tel/data and firewater services. The underground site drainage system is being installed and exterior wall framing, roofing and installation of stairways has commenced. In the next few months the crew is expected to complete these tasks and will begin the installation of the exterior masonry and the interior walls, ceilings and floors.



Olin College again took top honors at the Needham Fourth of July Parade for its creative float, modeled after a county fair attraction and titled "Aiming for Excellence."
Photo: Sergio Marino

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Office of Communication:
Joseph Hunter
Jennifer Thomas
Kristina Raposa
781-292-2261
e-mail: communication@olin.edu

Photography:
Michael Maloney

Design:
Vergara Design

UPCOMING EVENTS *(Save the Date!)*

- | | |
|-----------------------|---|
| July 25 | WOMEN'S ADMISSION OPEN HOUSE |
| August 28 | ARRIVAL DAY FOR CLASS OF 2008 |
| August 29-September 1 | ORIENTATION |
| August 31 | UPPERCLASS ARRIVAL |
| September 2 | CONVOCATION: A panel discussion of summer reading assignment "Phantoms in the Brain" |
| October 7 | CAREER INITIATIVES DAY |
| October 22-24 | FAMILY WEEKEND 2004 |
| October 24 | ADMISSION OPEN HOUSE |
| November 3 | BIG CONVERSATIONS |



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Franklin W. Olin College of Engineering
Olin Way
Needham, MA 02492-1200

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