Spring 2010, Volume 2, Issue 2

Mechanical Engineering Newsletter

The Fu Foundation School of Engineering & Applied Science, Columbia University in the City of New York

Mechanical Engineering 2010 Graduates (L to R): Islam Shawki, Austin Brauser, Stanley Chen, Darren Pagan, Philippe Putzeys

Message from the Chair

Dear Alumni and Friends,

I am very pleased to update you once again on the outstanding progress that our students, faculty, staff, and alumni are making.

Austin Brauser won the school-wide Wendall Medal (voted by the entire SEAS Class of 2010). Rodney Chang is Salutatorian of SEAS Class of 2010. This is the first time in many years ME graduating seniors won such school-wide honors. Austin is headed to UK and Rodney to Stanford for graduate studies. ME senior Lauren Cooke was named Academic All-Ivy for achieving excellence athletically and academically. Four ME graduate students won prestigious graduate fellowships from NSF, NASA and DoD. We also have a Presidential Fellow to join us.

Professor James Hone and Qiao Lin have been granted tenure by the University for their extraordinary accomplishments. A number of faculty received significant research grants, awards and national recognition. We are very pleased to welcome Dr. Kristin Myers, who will join us as an Assistant Professor in the Fall.

Matt Berg, on research staff, made the *Time 100* List this year for his work on using technology to bring much needed healthcare information and healthcare monitoring in Africa. Walter Khan, whom many of you remember fondly, just celebrated his 25 year service with the ME undergraduate laboratory.

Last but not the least, distinguished ME alumnus, Dr. Albert Pisano, was awarded the Egleston Medal for his pioneering work in the field of micro-electromechanical systems (MEMS). Al is currently Professor and Chair of Mechanical Engineering Department at University of California at Berkeley. He also served as Acting Dean at College of Engineering at Berkeley the past year. He also serves on our departmental External Advisory Board.

Hope all is well with you and your loved ones. Please drop us a line or two and let us know what is going on in life.

Y. Lawrence Yao
Professor and Chair

In this issue

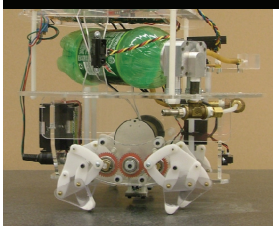
Austin Brauser wins George Vincent Wendell Memorial Medal

Austin Brauser, recent ME bachelor's degree graduate, was selected as the recipient of the George Vincent Wendell Memorial Medal for the graduating 2010 class of School of Engineering and Applied Science. Each of the nine departments nominates a student and the entire student body of SEAS votes. This is the first time in many years a ME senior won this prestigious school-wide award. Established in 1924 by the friends in the alumni and faculty of the late Professor George Vincent Wendell to honor and perpetuate his memory; a certificate and medal awarded annually by choice of the class and the faculty to that member of the graduating class who best exemplifies his ideals of character, scholarship and service. He was presented with this award at this year's Class Day on May 16. Austin is an active member of the Department participating i the SAE club and also works as Mechanical Engineering's work study student. Austin will be attending Oxford Brookes University in the UK to study Motor Sport Engineering. Congratulations, Austin! *Pictured left: Austin Brauser receiving award from **Kevin Shollenberger**, Dean of Student Affairs at Class Day 2010*

Rodney Chang is Salutatorian for SEAS Class 2010

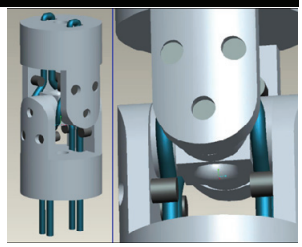
Graduating Mechanical Engineering senior, **Rodney Chang**, is the SEAS class of 2010 Salutatorian! Rodney has achieved academic excellence throughout his entire career at Columbia. He is the first ME student to win this honor in many years. In his Salutatory address Rodney states, "Our memories are a repository of knowledge and a valuable reference to our present selves. In hindsight, we should realize Columbia is very much like the subways that run underneath it; it provides an infinite number of places to take our academic, economic, and social lives. It's a great crossroads, but unlike many we are sure to encounter later in life, there is no lack of guidance." Congratulations, Rodney! Rodney is headed to Stanford for his graduate study. *Pictured is Rodney Chang, Salutatorian of SEAS class of 2010 giving his speech at Class Day*

Adam Steege Wins Fire Fighting Home Robot Contest



Adam Steege, a 2010 graduate of the ME Bachelors Program, won the walking division of the Trinity College Fire Fighting Home Robot Contest. The contest requires the robot to find a lit candle that is placed within a maze, the location unknown to the contestant. The winning robot must enter the maze, locate the room with the lit candle, and blow it out. The robot begins its journey with a button pushed by a judge. This starting button emits a sound that is recognized by the robot and it begins to move. Steege's eight legged robot utilizes two sets of four legs driven by one motor each. The linkage system is based on a Theo Jansen mechanism simulated in ProE and machined via laser cutter from Delrin and acrylic. The two motor control schemes allow the robot to be programmed much the same way a two wheeled robot would be programmed. Congratulations, Adam! *Pictured left: Fire Fighting Home Robot designed by Adam Steege*

Seniors Win Stipend for Design Concept from NCIIA



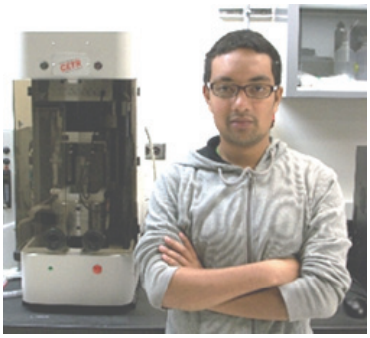
The National Collegiate Inventors and Innovators Alliance has awarded Mechanical Engineering ME 2010 graduates **Adam Steege, Kyle Cobb, Daniel Sievert, and Ian McKinley** a $500 stipend for their team entry in the NCIIA's BME idea competition. BME idea is the Biomedical Engineering Innovation, Design and Entrepreneurship Award, which is given out annually by the NCIIA. The competition encourages students to move their ideas from the lab to the market. The team's idea, conceived for the Mechanical Engineering Department's capstone Senior Engineering Design course, is an endoscopic surgery tool titled "Free Hand." The team states in its design mission: "We aim to produce an articulated device for Minimally Invasive Surgery (MIS) that is purely mechanical, wire-actuated, in nature i.e. no robotic components. It will have a simple manipulator and two degrees of freedom added to the movement of the end effect or by an articulated joint." The seniors received the award in January, and the funding is intended to help the team advance the project for submission to the final BME idea competition. Prizes of $10,000, $2,500 and $1,000 will be awarded at a ceremony at the MD & M trade show in New York City in June. *Pictured left: Preliminary images of the Free Hand's wrist joint, as depicted in Steege, Cobb and McKinley's BME idea proposal*

Formula SAE Club Shows Car at NY International Auto Show

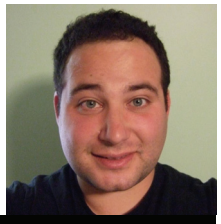
The Columbia University Formula Society of Automotive Engineers, now with the new name Knickerbocker Motorsports, had the honor of displaying the 2008-2009 car at the New York International Auto Show this April. Most members of Knickerbocker Motorsports, advised by ME Faculty member **Fred Stolfi**, are current Mechanical Engineering students, along with Columbia College, Barnard, and other SEAS departments. The 2008-2009 car, the Columbia *CFR-2009,* was in competition last year in Michigan. "At the beginning of this year, we repaired the car and reassembled it," says **Austin Brauser**, ME 2010 graduate and Chief Engineer for the *CFR-2009*. He emphasizes that this year has been "a building year" for the club. "We've really been branching out, starting our own brand, trying to create a more professional image," Brauser says. The club's new moniker is a part of that branding, as is their effort to use their resources to gain exposure for the club. The Auto Show and Columbia SAE have been in contact for a few years now; the 2007 car was a part of the Auto Show parade. This year, however, was the first year the group "really had the resources" to ready the car for display at the Javits Center, says Brauser. Building and readying a car, even for display purposes, is a major team effort. Brauser points out that the Auto Show was "great exposure for the club" and many alumni, who worked on the 2008-2009 car came back and took part in the event. **Alex Chang**, a APMA 2010 graduate and Knickerbocker Motorsports Vice President, designed and built a display with information about SAE and the car itself—the club wanted Auto Show attendees, many whom are automotive professionals, to learn more about what Columbia engineering students are doing. The Auto Show, held at the Jacob K. Javits Convention Center, went from April 2 through April 11. Columbia was the only University represented at the event, which showcased approximately 1000 vehicles from manufacturers all over the globe. The show proved to be a valuable learning experience for the club's younger members as they helped to answer questions from eager onlookers. The New York International Auto Show has been held annually since 1900, and has been located in the Javits Center since 1987.

Graduate Students win Fellowships from NSF, NASA, and DOD

Two of Mechanical Engineering's first-year graduate students, **Demi Ajayi** and **Kyoko Yoshida**, won this year's NSF Graduate Research Fellowship. The National Science Foundation's Graduate Research Fellowship Program (GRFP) helps ensure the vitality of the human resource base of science and engineering in the United States and reinforces its diversity. The program recognizes and supports outstanding graduate students in NSF-supported science, technology, engineering, and mathematics disciplines who are pursuing research-based master's and doctoral degrees in the U.S. and abroad. Demi received her Bachelor's degree from Harvard University in 2009 and completed her Master degree at Columbia in 2010. Kyoko received her BS degree from Notre Dame University in 2009 and completed her MS degree at Columbia in 2010. Demi and Kyoko will begin their PhD study in the Fall. Congratulations ladies! *Pictured left Kyoko Yoshida, pictured right Demi Ajayi*



Emil Sandoz-Rosado is one of 20 selected students nationwide for the NASA/UNCF Harriett G. Jenkins Pre-Doctoral Fellowship, securing funding for his PhD degree. Emil is currently part of **Professor Terrell**'s tribology research group. His accepted research proposal is to study the tribological properties and benefits of graphene at a nano scale (for fundamental science research) and macro scale (for application in the aerospace industry). This Fellowship is rooted in developing the skill sets necessary to advance the aerospace industry. This 7 year old program has put 131 scholars into NASA's educational work force and is recognized as one of the most prestigious federally-funded fellowships in the US. "I am proud of Emil and his accomplishments thus far. We are both grateful for the support of the NASA fellowship program for providing the helpful support for him to continue in his research efforts." states Professor Terrell.



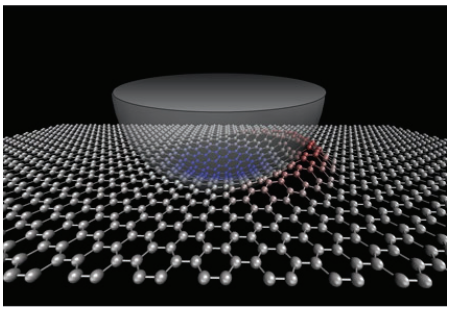
Incoming Fall 2010 PhD student, **Matthew Marko**, has been awarded Science Mathematics and Research for Transformation (SMART) Fellowship established by the Department of Defense (DoD) and administered by American Society of Engineering Education (ASEE). This particular sought after opportunity is offered by the Navy Postgraduate School, with which Matthew has had connections. Congratulations, Matt, and we are looking forward to working with you!

ME Student Lauren Cooke Named Academic All-Ivy

Growing up, **Lauren Cooke** was never one to be content indoors. She liked hands-on projects and an active lifestyle. Her environment included parents who were both engineers (material science and metallurgy) and soccer starting at the early age of 4. It's no wonder that Lauren pursued her passions of soccer and engineering all the way to the field and the Mechanical Engineering department at Columbia University. This year, Lauren was given the prestigious honor of being named Academic All-Ivy League. All-Ivy is a distinction given to a member of a University athletic team who the coaches decide is a both a consistent standout skill-wise and an influential player. Academic All-Ivy, however, is bestowed upon a student who is both a consistent and influential core member of their University's team *and* maintains a GPA upwards of a 3.5, a feat that Lauren recognizes is substantial. "It isn't easy sometimes," Lauren says, of being both a starting soccer player and an ME upperclassman. "Midterms, for instance, fall during the depth of soccer season. You have to make choices sometimes—should I prioritize training, should I prioritize studying today?" For Lauren, making those choices well has paid off. But, as she herself admits, she likes being both busy and facing a good challenge. One of those challenges was choosing the right path to begin with. Lauren always knew she wanted to be an engineer, and loved the hands-on, tangible attributes of Mechanical Engineering. She also wanted to keep playing soccer. In the end, choosing to come to Columbia would ensure that she could join a soccer team that would keep her challenged, and an academic program that would allow her to stretch in new directions. "I've always been such a hard math/sciences person," she says. "Columbia's core program forced me to do work outside of problem sets; I was reading and writing outside of my comfort zone." On the women's soccer team, she is the only Mechanical Engineering student; most players are humanities majors. "One day we were at practice and I just stopped and was staring at the spectator benches. I was trying to figure out which way the wind was blowing, and if the benches were designed properly to block the wind," Lauren laughs. In the ME department, Lauren has enjoyed work in the more fundamental courses, such as Mechanics, and Mechanics of Solids. She's currently working on an Engineers Without Borders project that involves designing a latrine for a community in Ghana. "Learning about stresses and forces in my ME courses has allowed me to pursue this project with a strong knowledge base," Lauren says. "Combining that with an elective such as Engineering in Developing Communities has also allowed me to take on the project with a broader scope." Lauren's future goals both as an academic and an athlete involve working in an engineering discipline or industry that allows her to directly make a difference in peoples' lives. *Pictured left: Lauren Cooke in the soccer field*

Professor James Hone and Coworker publish paper in *Science*

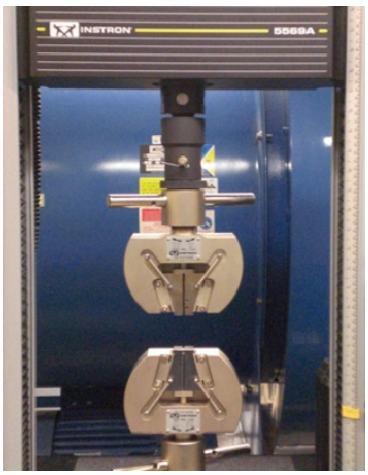
Dr. Changgu Lee, a post doctoral student, has been working with **Professor James Hone** on newly discovered graphene. The material has been studied by numerous physicists due to its excellent and novel electronic properties. However, its mechanical characteristics were barely studied mainly because few mechanical engineers know about the discovery. Since Columbia is the world hub of graphene research, he came to have interest in the material while working with other graphene researchers. As a mechanical engineer, Lee thought about using it for mechanical applications such as augmentation of mechanical properties of polymers and dry lubrication as a coating material. For those purposes, he had to know the basic mechanical properties of single crystal graphene such as Young's modulus, strength, and friction coefficient. Using AFM nanoindentation method, he measured Young's modulus and fracture strength in 2008 in collaboration with **Professor Jeff Kysar**'s group. It turned out that graphene has extremely high strength (stronger than any other known materials). For the first time, nonlinear elastic behavior of brittle material could be captured through the experiment. Recently, he has investigated the tribological properties of graphene because its bulk counterpart, graphite, is known as an excellent dry lubricant. Using an AFM, friction was measured on graphene and found that it changes with thickness, especially increasing with decreasing thickness. This means that single layer graphene has higher friction than bulk graphite. This is a new phenomenon not reported so far. In order to figure out the mechanism of this, Lee measured friction on three other layered materials, which exhibited exactly the same trend with graphene. He thought that the microscopic surface corrugation of the substrate, which was



SiO2/Si, influence the measurement. And so, he suspended graphene over nanoscale wells and measured the friction. Surprisingly, there were no differences between suspended and substrate-supported graphene. As Lee is not a tribology expert, he collaborated with **Professor Robert Carpick**'s group from the University of Pennsylvania. They performed atomic-scale friction measurement with an advanced AFM and mechanics modeling and found out that graphene deforms well and adhere to the tip due to the low bending stiffness and the contact area between the tip and graphene is higher than for graphite. At nanoscale, increase contact area means higher friction unlike macroscale, at which friction is linearly proportional to applied load regardless of contact area. This work established a new theory of tribology of atomically thin two-dimensional materials. These two works on graphene laid the groundwork for further graphene mechanics research.

Since the paper *Frictional Characteristics of Atomically Thin Sheet* was published in *Science*, many theorists have been trying to simulate the experiments and confirmed the accuracy of our data. Hence, mechanical engineers can use our data for their designs of device and materials for various mechanical applications with confidence. Also we established new methods using AFM to characterize mechanical properties of other atomically thin layered materials. Graphene can find numerous applications in mechanical engineering because of its high thermal conductivity, high electrical conductivity, high mechanical stiffness and strength and low friction coefficient. In these properties, it exceeds almost all other materials. Using graphene, we can make low-wear coatings, conductive and strong composites, highly heat dissipating materials for maybe electronics cooling and etc. Considering its excellent material properties, mechanical engineers will find lots of good research opportunities. I hope that more mechanical engineers from various research fields have interest in this novel material and find exciting applications. "Nanotechnology examines how materials behave differently as they shrink to the nanometer scale," says Hone. "On a fundamental level, it is exciting to find yet another property that changes as material gets smaller." The results may also have practical implications for the design of nanomechanical devices that use graphene, which is one of the strongest materials known. Additionally, it may help researchers understand the macroscopic behavior of graphite, MoS_2, and BN, which are used as common lubricants to reduce friction and wear in machines and devices. Research was funded by the National Science Foundation through Penn's Laboratory for Research into the Structure of Matter and Columbia's Nanoscale Science and Engineering Center; DARPA; the Air Force Office of Scientific Research; and by the New York State Office of Science, Technology, and Academic Research. To read the paper please visit:
http://www.sciencemag.org/cgi/content/full/328/5974/76 *Pictured: AFM tip sliding across a graphene sheet*

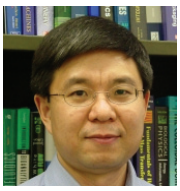
Instron Enhances ME Lab with Materials Testing System



This past year, Instron made a generous donation of a model 5569A materials testing system to the Mechanical Engineering department. This spring semester, the Instron is up and running in the ME undergraduate lab. **Darcy Hunter**, VP of Instron, assisted in making this a reality for the department. Darcy is an alum of this Department and currently serves on the Department's External Advisory Board. The 5569A is a Universal Testing System (UTS), designed to measure the tensile, compression, bend, shear, and/or adhesion properties of materials. Mechanical Engineers use the test results from an Instron UTS to measure materials property data such as tensile strength, Young's Modulus, Yield strength, strain/elongation as well as generate stress/strain diagrams for various types of materials. Lab Manager **Bob Stark** hails the testing system as a major asset to the Undergraduate lab; "the Instron material testing machine is capable of testing various materials by applying tensile or compressive loads up to 50 kN," Stark explains. "The Blue Hill Software that came with the machine can be used to select virtually any ASTM engineering testing standard as well as set up custom testing methods." Instron made this donation in an effort to insure Columbia's ME students had the very best equipment to enhance their education, and in support of the department's efforts to produce the best mechanical and aerospace engineers. This equipment is used extensively in industry and using it in the Mechanical Engineering program will provide undergraduate students with real-world experience on state of the art testing equipment. Instron is the world's leading manufacturer of materials testing systems that evaluate the physical properties of materials and components used in virtually every part of daily life. *Pictured Instron Universal Testing System*

Professor Daniel Attinger received two grants from the CBET division of NSF, for a total of $383K. A one-year grant is dedicated to investigate the activity of microorganisms in innovative microbioreactors with integrated sensing. Applications are in wastewater treatment. A 3-year continuing grant is focused on the self-assembly of nanoparticles from evaporating drops. Professor Attinger will lead this collaborative efforts involving faculty members from the four SEAS departments of Earth and Environmental Engineering, Electrical Engineering, Applied Mathematics and Mechanical Engineering.

Professor James Hone was granted tenure by the University this year for his extraordinary accomplishment. In addition, Professor Hone has been awarded a three-year, $300K grant from NSF to study the electronic properties of carbon nanotubes. The project, a collaborative effort with researchers from the University of Central Florida, seeks to study the electrical transport properties of carbon nanotubes of well-defined atomic structure while controlling the experimental environment down to atomic scale, eliminating any unwanted experimental variability. Such unprecedented approach enables this collaborative team to systematically investigate the intrinsic transport properties of carbon nanotubes, which remain poorly understood after years of intensive research.



Professor Qiao Lin was granted tenure by the University this year for his extraordinary accomplishment. In addition, Professor Lin has been awarded a three-year grant of $592,394 from the National Institutes of Health for a project titled “Microfluidic Selection of Aptamers for Biological Purification Applications.” In this project, Professor Lin’s research group will be developing an innovative platform that exploits microfluidics technology to select and isolate affinity nucleic acids known as aptamers. These aptamers will be capable of specifically isolating and purifying biological analytes in particular live cells, and have promising applications in basic biological sciences as well as clinical diagnostics and therapeutics. The project will be carried out in collaboration with Professor Milan N. Stojanovic at the Columbia Medical School.

Professor Kristin Myers joins the faculty this fall semester. She received her PhD in Mechanical Engineering in 2008 from MIT and conducted her post-doctoral research at Johns Hopkins University from 2008 to 2010. Her research focuses on the mechanical behavior of solid materials with a specific interest in the structure-property relationships of hydrated biomaterials. Her lab investigates the mechanical behavior of soft tissues, assays for biochemical properties, and builds material models based on biochemical structure-function relationships of the tissue. A more detailed article will be published in the next issue. Welcome, Dr. Myers!

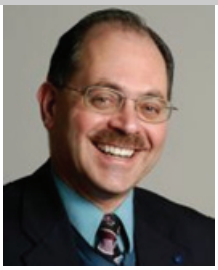
One of **Professor Nabil Simaan**’s students, **Jian Zhang**, has accepted a job at Intuitive Surgical, a leading company in the medical robotics industry. He has recently completed his PhD with distinction and will be working as a Mechanical Engineer in their vision group. Congratulations, Jian!

At this year's SEAS Class Day, **Professor Terrell** was honored with the Rodriguez Family Junior Faculty Development Award , which is an award established by Marcos Rodriguez and his sister, Anna, in 2008 to help support the professional development of pre- tenured faculty. The award provided a $10,000 fund to support Professor Terrell’s research in the Energy & Tribology Lab. Professor Terrell joined the Department of Mechanical Engineering in 2008 and is pursuing research interests in the field of thermal-fluid sciences, focusing in hydrodynamic lubrication, surface engineering, and contact mechanics as applied to MEMS devices, energy systems, biomedical devices and sustainable manufacturing. *Pictured is Prof. Terrell (left) receiving the Award from* ***Dean Feniosky Pena-Mora*** *(right).*

Professor Wong and his research group received a DARPA grant to advance the interactions of nanoscale optomechanical oscillators for fundamental studies of laser cooling and derived applications in state-of-the-art reconfigurable RF filters. In the subwavelength and nanoscale regime, radiation pressure (the force per photon) exerts a significant force that can not only actuate (amplify) mechanical vibrations into a coherent acoustic wave, but also suppress (damp) thermal motion into the ground state. This is a joint effort between Columbia and Yale.

Professor Larry Yao has been elected Chair of the Manufacturing Engineering Division (MED) in American Society of Mechanical Engineers (ASME). In that capacity, he heads the Executive Committee of MED and oversees six Technical Committees under MED. He is also appointed to two ASME Honors Committees. In that capacity, he will help solicit, evaluate, and recommend potential recipients of the ASME Blackall and Ennor Awards as well as the ASME/SME Eugene Merchant Medal.

ME Alumnus, Dr. Albert Pisano Wins Egleston Medal



The Thomas Egleston Medal for Distinguished Engineering Achievement is of the highest honor given to alumni by the Columbia Engineering School Alumni Association. It is given in recognition of the notable application of engineering principles, the development of processes or technique, or the furtherance of a specific branch of the profession. It is named for Thomas Egleston Jr., who founded SEAS (as the Columbia College School of Mines in 1864), and was first given in 1939. This year's Alumni Weekend kicked off with a reception where the Columbia Engineering Alumni Association presented the Egleston Medal to Dr. **Albert P. Pisano**. Dr. Pisano has received his Bachelors, Masters and PhD from the Mechanical Engineering Department at Columbia. Dr. Albert Pisano currently serves as Professor and Chair of the Department of Mechanical Engineering at the University of California at Berkeley and is also Director of the Berkeley Sensor & Actuator Center (BSAC). He recently served as the Acting Dean of the College of Engineering at UC Berkeley. He is a recognized pioneer in the field of micro-electromechanical systems (MEMS). He also serves on the External Advisory Board of the ME Department at Columbia. "Dr. Pisano's extraordinary achievements and continued support for the Mechanical Engineering Department as a member of the External Advisory Board has exemplified the caliber and virtues of graduates from our department. He is someone for whom everyone including current students can model after in terms of success and being an active and influential alumnus" says **Professor Yao**, the ME Department Chair.

Nick Chbat, class of 1995 (PhD in ME) and current External Advisory Board (EAB) member in the department, is a Researcher at Philips Research North America. Philips Research is one of the world's largest corporate research organizations, developing new technologies and explores potential growth areas. After only 4 ½ years working with Philips Research, Chbat was promoted from Senior Researcher to Principal Researcher. This accomplishment, which is the second highest rank, is reserved for few and Chbat has achieved this success in remarkable time. In addition, his first NIH grant has been awarded with the Pulmonary Critical Care division at the Mayo Clinic. Worth $1 million, it is part of ARRA for acute lung injury modeling and prediction.

Glenn Wattley, '75, has joined USA Synthetic Fuel Corporation, OTC-USFC, as Chief Executive Officer. USA Synthetic Fuel is a "green company" developing advanced, clean energy production facilities across the US. Glenn Wattley, who has a particular expertise in the area of Ultra Clean BTU Conversion technology, which is a cornerstone of USA Synthetic Fuel's business, has been working in the energy and environmental industry for over 35 years. Glenn also serves on the EAB of the department.

1995 alum (BS in ME) **Elly Bachrach** works in Autodesk Consulting developing solutions that automate sales, order and production processes that rely on engineering effort. These solutions can automatically produce 3D models, drawings, customized documents, etc. based on specific inputs, by capturing the customer's rules for their creation in a "knowledge model". Managing this team, Bachrach works directly with customers, Autodesk's technical reselling partners, and consultants to deliver projects to customers. Obtaining his masters at MIT, he studied companies developing these kinds of automation solutions, which were then known as knowledge based engineering (KBE) solutions. After graduation in 1997 he went to work for a small consulting firm developing rules based design solutions using a software toolkit called Intent, along with AutoCAD's CAD and programming tools. Later as the toolkit expanded, he began doing this kind of work around Unigraphics's Parasolids and Autodesk's answer to ProE, Inventor. Bachrach did undergraduate research on response surface methodology with **Professor Yao** in 1995.

Matt Berg Makes The Time 100 List of 2010

Matt Berg, Director of Emerging Applications in the Modi Research Group, is the driving force behind ChildCount+. ChildCount+ uses the technology of texting on a cell phone to bring much needed healthcare and healthcare monitoring in Africa. His work put him on the prestigious Time 100 List. First published in 1999 as a result of a debate among several academics, the Time 100 List has become an annual event listing the 100 most influential people in the world. The accompanying force that makes the success of ChildCount+ possible is the community of health workers in Africa. Text messages are sent to register patients, report status, prescribe treatment, all the while keeping a live track on the healthcare of a specific community. ChildCount+ is one of the many projects under the umbrella of the Millennium Villages Project at Columbia University's Earth Institute. The achievement already produced by this project is indicative of its overwhelming potential impact on healthcare. More than 20,000 nutrition screenings, 500 cases of malnutrition, and 2,000cases of malaria have been documented/ treated in the short nine months of its labor. Berg made number 19 in Time's roster of "leading thinkers", the list that puts artist Zaha Hadid at number 1, Apple CEO Steve Jobs at number 11, and Supreme Court Justice Sonia Sotomayor at number 25. A reception was given to celebrate the announcement of Berg's accomplishments. "Engineers have always been problem solvers- and they require us to understand the problem first and then use the best tools to solve them. Matt's work exemplifies this thinking." says **Professor Modi.** For full article in TIME go here: http://www.time.com/time/specials/packages/article/0,28804,1984685_1984745_1984832,00.html

Pictured above: Matt Berg.

Walter Khan Celebrates 25 Years

Mechanical Engineering's **Walter Khan** has been a devoted member of the department for 25 years. Since 1985, Walter has been working with and teaching undergrads, graduate and PhD students in the Machine Shop. His persona, knowledge, and dedication to the caliber of this department have made him one of MECE's most memorable components if not one of the longest. "It did not take me long to realize that here is where I belong, working alongside some of the most professional, supportive and efficient faculty and staff." He said his, "home away from home", provided the best years of his professional life. He shares and attributes his success to his students, colleagues, faculty and staff; a true sign of a humble educator. "Today as I reminisce, I consider myself very fortunate and blessed to be an integral part of such a dynamic Department, and without sounding too cliché, I would not have had it any other way." Walter was inducted into the 25 Year Club at a reception held in June. He was also recently promoted to Senior Lab Technician.

In April, a group of 30 students taking the Propulsion Course visited Pratt & Whitney located in East Hartford CT with **Professor Akbari**. Pratt & Whitney is a world leader in the design, manufacture and service of aircraft engines, space propulsion systems and industrial gas turbines. (*Pictured left*)

The ME juniors taking the Manufacturing Processes course went with **Professor Yao** on a field trip to Sikorsky Helicopter in Stratford, CT in May. They toured the precision machining cell, composite blade making, assembly and of course final testing in the hangar. (*Pictured right)*

IN MEMORIAM

Marilynn Danitz-Longman, wife of **Professor Richard Longman**, died suddenly of a heart attack this past May. Marilynn accomplished many things in her life both at Columbia and abroad. She was an MS student in Chemical Engineering, wanting to audit Professor Longman's course– a course in FORTRAN programming, then required of all engineering undergrads. She was doing bioengineering, studying the very complicated mechanism of blood coagulation, and published a paper in the International Journal of Clinical and Experimental Pathology. She was one of Professor Somasundaran's first students and they wrote a paper in the Journal of Colloid and Interface Science – he comments that it is a classical paper on dynamic surface tension to simulate breathing, and is still cited and not surpassed. Her main love, however, was for dance. And so, after getting a BS in chemistry, she ran off to Geneva, Switzerland and studied ballet – at a very advance age to start such a thing. She won a gold medal, and became a professional ballet dancer in the Geneva Ballet and later in the Strasbourg Ballet in France. After some dance accidents she came to New York to do modern dance. It is then that she started doing research at Columbia. Eventually, she created her own dance-theatre performance-art company, High Frequency Wavelengths, Inc., that did multi-media works long before that became common. In May, yet still after her death, her company performed using their award from Chashama, in an unused store window on 37th Street, performing for all passers-by. Only in New York. One of her most important works is a video art work called New York Post Wave. It is a collaboration with the famous Columbia alumnus, Allen Ginsberg, the original beat poet of protest. She also collaborated with Computer Science Professor, Oussama Khatib, of Stanford University. Oussama had created a video using short takes of many research robots over the last 50 years, for the International Conference on Robotics and Automation that he chaired. He dropped frames to make the robot motions timed with traditional ballet music. Marilynn put in a real dancer, doing some of the correct moves to the music, and somehow simultaneously living in this robot world. Sometimes, she was a tiny being among funny crawling machines. It is in the Lincoln Center Library for the Performing Arts, where it is still viewable. Marilynn also spent many years as President or Board Member of the American Dance Guild, putting on dance festivals, editing books and magazines. She did things in the US and Hawaii, Italy, Portugal, Russia, Belarus, Poland, Japan, Australia, the Philippines, Taiwan, China, Colombia, Venezuela, Canada, Cyprus (the opening work at a UN conference on dance, shown on television in Greece), and Sweden. A week before she died she presented a paper at a conference in Doha Qatar. Some comments about her work from reviewers give a small picture of what she was about: "Beautiful – the images were so riveting that I didn't know where I was. Quite original." "The images were very strong, very inventive." "An exciting, sexy, and beautiful surreal dream – the effect was spellbinding." "Mesmerized by the visual impact….held speechless…one of the most innovative and beautiful theatre pieces that we have seen in recent years." All done with passion on a shoestring budget.

Department of Mechanical Engineering Fund

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SWE sponsors Speed Networking Event

On February 17, Columbia's Roone Arledge Auditorium was packed with both engineering students and SEAS alums with one objective: getting to know each other. The first Speed Networking Event for Engineers, which took place as part of National Engineering Week in February, was conceived by Society for Women Engineers-Columbia chapter president Jennifer Hui, who was inspired by a similar event at the SWE National Conference in California. The idea of "speed networking" provides an atmosphere where students can connect with many different professionals (and vice versa) in one night. The goal was to pair undergraduate engineering students with alums working in different engineering industries. Besides many of our Mechanical Engineering undergrads in attendance, two ME alums, **Santiago del Puerto**, BSME'82 MSME'83, and **David Antonio**, BSME '95 met with interested students. Santiago is a Systems Design Engineer in Photolithography Semiconductor Manufacturing Equipment at ASML (Wilton, CT), and David is a Project Engineer at Andron Construction (Goldens Bridge, NY). The networking event, planned by Hui and Sarah Glazer of SWE, and co-sponsored by the Center for Career Education and the Office of Alumni and Development, was a success, with over 120 students attending, and plans to establish the networking night as part of SEAS' yearly programming.

We welcome submissions for our department newsletter.

Please send your news and your contact information to the address below or send an e-mail to:

seasinfo.me@columbia.edu

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