



Listen Out Loud

Tetsuro Oishi MS '85, Phd '06

Chancellor Grossman visited Tetsuro Oishi at the Sonos Headquarters in Santa Barbara recently and was not surprised to hear that he credits his education and internships at UMass Dartmouth with his entrepreneurial career success.

The play on words in the Sonos slogan, listen out loud, aptly describes the music listening experience—at once personal and communal, passive and active. It’s a paradox befitting Tetsuro Oishi, who beneath a quiet demeanor has an enthusiasm for innovative acoustic design. After stops at some of the industry’s biggest brands, Tetsuro has found a home with the hottest name in wireless audio, Sonos, a company whose guiding principles are one with his own.

A graduate of Osaka Prefecture University in Japan where he received a BS in Electrical Engineering, Tetsuro came to UMass Dartmouth as a graduate student in 1997. For his thesis Acoustic Resonance Spectroscopy for Water Pollution, he received a MS in Electrical Engineering in 2000. Choosing to remain at UMass Dartmouth and continue his research, in 2006 Tetsuro became Dr. Oishi, earning

a PhD in Acoustics/ELE for his dissertation Underwater Directional Transducers and Arrays Using Baffled Piezoelectric Cylindrical Shells.

Since receiving his PhD, Tetsuro’s resume reads like a who’s who of audio acoustics. After leaving UMass Dartmouth, he worked at Bose as Senior Acoustics Engineer in their headphones and automotive divisions, then went on to become the Director of Electrical and Acoustical Engineering at the popular headphone company Skullcandy. Pursued by Sonos, Tetsuro was faced with the difficult decision of whether to relocate his wife and two young children to California. Impressed by the company’s entrepreneurial vision and innovative culture, and convinced that it shared his values, Tetsuro accepted Sonos’ offer. A Principal Acoustic Systems Engineer, he now leads a wireless HiFi speaker system project, designing, prototyping and developing premium home audio systems.

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Message from the Dean



Dear Alumni and Friends,

In this issue we highlight faculty research, multidisciplinary learning opportunities, and STEM outreach programs. We feature alumni such as **Tetsuro Oishi '00,'06** (electrical), **Scott Tingle '85** (mechanical) and **Mike Joyce '84** (textiles). These faculty and alumni accomplishments help explain why the college ranks so high in terms of

quality, satisfaction and post-graduation job success. We are once again noted among the “best in undergraduate engineering” by *U.S. News & World Report*.

The Chancellor has launched **UMassD Transform 2020** after a year-long collaborative process. Our vision is “UMass Dartmouth will be a globally recognized premier research university committed to inclusion, access, advancement of knowledge, student success, and community enrichment.” Specific goals include innovative and high-impact research, integrated student-centered experiences, excellence in research, scholarship, and innovation, highly productive collaborations, partnerships and community engagement; and infrastructure to support all of the above. This plan serves as a blueprint for the College as we continue to innovate.

This is an exciting time to pursue an engineering career. Emerging technologies and the need for products and systems to improve healthcare, communication, security, and clean energy have pushed the demand for outstanding graduates in these fields above supply. Total undergraduate enrollment in the College now tops 1200 and degree production is up nearly 50% from 7 years ago, which is helping to fill the talent gap. This past spring with honorary degree recipient **Dr. Ernest Moniz, United States Secretary of Energy** looking on, we awarded the first ever Bachelor’s degrees in Bioengineering and a Doctoral degree in the new Engineering and Applied Science Ph.D. program. To help our 300 new freshman students succeed, we have enhanced academic support through electronic tracking and added a professional advisor to the staff. Read about our redesigned freshman Introduction to Engineering course and enhanced senior capstone experiences. By collaborating with industry partners to sponsor client-based, multidisciplinary design projects we are giving our students real-world opportunities. Thanks to our generous friends and alumni supporters for helping us to **award over \$75,000 in scholarships** this past year.

Please join us as we embark on the journey of UMassD Transform 2020. Your suggestions for supporting and advancing the College are always welcome.

Sincerely,

Robert E. Peck, Ph.D.
Dean, College of Engineering

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Personally and professionally, the move west has been fulfilling. That Tetsuro made the right choice is readily apparent. During a recent trip, Chancellor Grossman had a chance to visit him at Sonos Headquarters in Santa Barbara. Touring the company’s main campus and Acoustics Lab, Tetsuro spoke of being on a professional journey. Reflective, meditative, the conversation had an almost spiritual tenor. “There is a Zen-like quality to being in his presence,” noted the Chancellor. Listening to Tetsuro speak about Sonos—the opportunity to be innovative and inventive—and about raising his children in Santa Barbara, it was clear that, in geography and life, he is precisely where he’s supposed to be.

Somewhat shy, Tetsuro’s reserved manner belies a sharp and creative mind. It’s that subdued mix of humility and ability that impressed Chancellor Grossman: “UMass Dartmouth unleashed some quiet, powerful talent on the world in setting loose Tetsuro Oishi.” A rare individual, he possesses a striking balance of serenity and drive, equanimity and ambition. That dynamic, along with a lot of hard work and commitment, has propelled him to success. And yet consistent with his self-effacing nature, Tetsuro is quick to give others credit. “My academic training at UMass Dartmouth affected my professional career,” he says. “Especially, I think, it became powerful later on that I had excellent training in both theoretical and experimental work.”

Integral to Tetsuro’s development as an engineer was the training he received from Dr. David Brown, whom he considers a mentor. “He provided me a number of opportunities, including acoustic research in various topics, an internship at a local company, and [the chance] to attend various technical conferences.” As a Research Assistant under Dr. Brown, Tetsuro had the chance to work alongside faculty with top-of-the-field expertise. “I was able to work very closely with experienced scientists and engineers such as Dr. Aronov and Larry Reinhart. It was tough, but very exciting, a startup-like work environment.”

While honored to be considered a mentor, Dr. Brown emphasizes the importance of individual performance. “I think being an engineering mentor is a lot like coaching,” he says. “I help them, but they have to go up to bat, they have to get the hit, they have to make the plays.” Ultimately, success depends on hard work and an ability to rise to challenges. The reward for Tetsuro and students like him who are willing to take advantage of the expertise, training, and opportunities being offered is a career marked by personal and professional fulfillment.



Transitioning to a Common Understanding

Engineers today must be multi-skilled, multi-faceted and multi-disciplinary to enter their fields. Progressive industrial environments are such that every type of engineer is working side-by-side on collaborative projects. In an effort to emphasize skills such as communication and teamwork and provide a well-rounded understanding of all engineering disciplines, the College of Engineering is innovating. “With insightful recommendations from industry board members and successful alumni, we are implementing changes for our students that will give them the edge they need to compete in today’s career market,” outlined Dr. Ram Bala, Associate Dean.

During the fall 2013 a team of engineering faculty, led by Professor Karen Payton of the ECE department and Associate Dean Ram Bala, piloted a section of EGR 111 – Introduction to Engineering and Computing. Based on positive student and faculty feedback, the College of Engineering has rolled out EGR 111 to ALL incoming engineering freshmen this fall. This means all 315 students will take the same integrated freshman course. A primary focus of EGR 111 is the transition of high school seniors to the demands of an engineering or computer science college curriculum. EGR 111 takes the place of EGR 101 and 102 (Introduction to Engineering and Applied Science I and II) in the Impulse curriculum. The new course focuses more on skills essential to success in any engineering



major and on the design process as a whole rather than on fundamentals of just electrical and mechanical engineering as a starting point. Students learn about the different majors and professions and about integrating technologies in engineering systems.

Dr. Ram Bala notes that, “Similar to Freshman Summer Institute (FSI), EGR 111 positions students for success on campus, in the workplace and in working with their peers.” For years, the College of Engineering has welcomed a third of all incoming freshman to campus each August. Students participate in a week-long optional orientation to the College of Engineering while building confidence, working in teams and getting to know participating faculty and graduate TAs. EGR 111 mirrors FSI with hands-on experiences. Students are assigned to multi-disciplinary teams on two different

lab design projects. They can either tackle a robotics project or build a roller-coaster.

EGR 111 is taught using active and collaborative learning techniques and leverages students’ use of laptops, tablets and/or cell phones to solicit real-time feedback from students during class. This course will act as the first part of bookend collaborative team efforts, culminating in the senior capstone projects where students work on industry sponsored real-world engineering challenges (read more about these in this newsletter). A key goal of this course is to improve retention in engineering disciplines, a problem nationally, through early immersion of students into multi-disciplinary engineering activities. With common understanding, our students will have a leg up. EGR 111 faculty welcome alumni speakers—let us know if you want to guest lecture.





Out of This World

It is not often that a student comes up to a professor and tells him that his goal is to become an astronaut. Only once in my 37-year teaching career did that ever happen. Scott Tingle was that student.

It was in the spring of 1985 when I first met Scott. He was taking my Engineering Thermodynamics I, generally regarded as a killer of a course, a high hurdle standing in the way of an engineering degree. This was true on every campus, not just at Southeastern Massachusetts University. Students were predisposed to dread "Thermo" from comments by upperclassmen who had suffered through it. Scott knew all this but did not shrink from the



Astronaut Scott Tingle '87 visited campus on May 7 to serve as a judge for graduating senior design student projects. At his evening talk he impressed the next generation of scientists and engineers. Pictured at right (l-r) are David & Sheila Tingle, Scott's parents, and his mentor and former mechanical engineering professor, Dr. Ronald DiPippo.

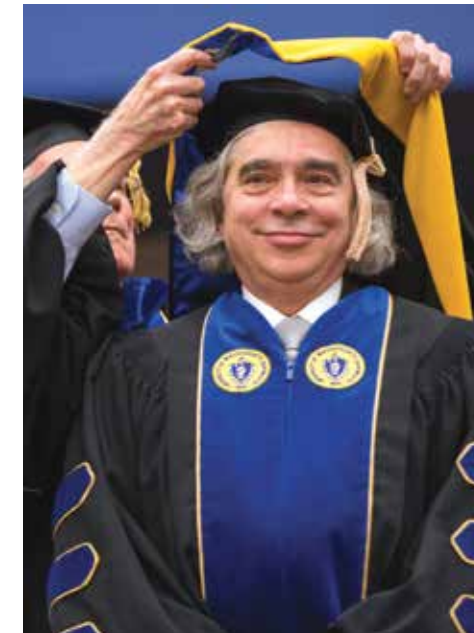
challenge. Later I realized that this was consistent with his outlook on life—no challenge was too difficult.

As a natural leader, Scott marshalled a team of his classmates to form a study group to conquer this hurdle. To hear Scott tell it, they spent hours upon hours working out homework assignments, learning concepts, and putting their new knowledge to work on solving energy-related problems. It paid off, particularly in his case. He steadily improved his performance on my four one-hour exams, and scored the highest grade on the final, earning a coveted "A" for the course. He continued his success the next semester by earning the highest grade in Engineering Thermodynamics II. He had met the challenge and demolished the obstacle that had been the bane of so many students, and was well on his way to achieving one major stepping stone on his career path. Upon earning his mechanical engineering Bachelor of Science degree in 1987, he enrolled in the master's program at Purdue University, well-known as a gateway to the astronaut corps. That he succeeded there as well came as no surprise to any of us who knew Scott.

From the perspective of a professor, it was a gratifying experience to help see the development of such a student. Early on Scott had a clear image of where he wanted to get to and nothing would deter him. He had been accepted to SMU as an Engineering Technology major because of his vocational high school education, but that major did not qualify as an entry to astronaut training. So Scott used his talents to persuade the powers that be to let him have a shot at an engineering degree. The fact that he was able to excel in a challenging professional curriculum for which he was apparently ill-prepared by "conventional wisdom" stands as a testament to his determination, which he has leveraged throughout his life.

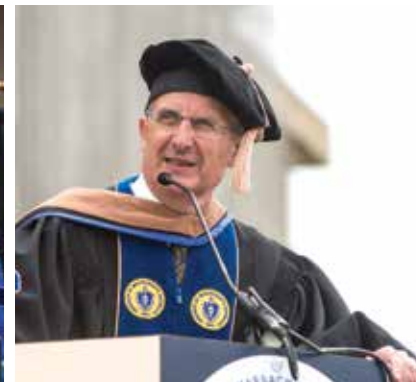
And he did it all with an infectious smile and an impish sense of humor. He did not shy away from poking fun at his professors, me in particular, at casual social events. I am proud to have been a part of Scott's life and will always regard him as one of the great success stories from my teaching career, and as a friend for life.

Written by Chancellor Professor Emeritus Dr. Ron DiPippo after Scott's return to campus to speak on May 7, 2014



A Winning Season...

Commencement 2014 was a winning occasion for UMass Dartmouth College of Engineering. We welcomed Dr. Ernest Moniz, U.S. Secretary of Energy (left) for the Obama Administration to campus. He was awarded an Honorary Doctor of Science degree from Dean Peck and gave the Commencement address on clean energy to our next generation of engineers. What a proud and memorable day for our students, their families and our faculty and staff to have celebrated with such a prestigious leader with roots in Fall River.



(left) Les Cory receiving the Chancellor's medal and (inset) training a client from the Center for Rehabilitative Engineering on an eye-gaze controlled communication device. (above right) Robert Leduc giving the Commencement address to the Charlton College of Business graduates.

Engineering alumnus and Professor Emeritus Lester Cory '63 and Engineering alumnus Robert Leduc '78 were honored for their contributions to society and our campus. Leduc co-founded with his wife Jeanne, the Leduc Center for Civic Engagement, allowing our students to combine their academic interests with hands-on impactful experiences in the region's schools, non-profits and municipalities. Leduc was awarded an Honorary Degree in Business, as former CEO of United Technologies' Pratt & Whitney business unit, and gave the Charlton College of Business Commencement address. Cory, co-founder of the SHARE Foundation and director of the UMass Center for Rehabilitative Engineering was awarded the Chancellor's Medal. His work assisting people with disabilities has impacted more than 3,400 people across the country.

Q&A with an Engineering Leader

Michael Joyce '85, CEO, PrimaLoft, Inc.



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Michael majored in textile chemistry and has spent most of his career marketing and selling products. He appreciates the interface of engineering and business and gets what it means to make an exceptional product and then brand the product so that we can't possibly live without it. We talked about raising his family today, paying his way through college years ago by bartending down on the docks of New Bedford and the life-saving aspects of PrimaLoft® fabrics. Military personnel complete run dry tests in Kodiak Alaska after submerging up to their necks in the newest fabrics. As CEO, he devotes his time to the critical brand partnerships that ensure PrimaLoft® is in your next winter coat.

You chose "SMU" back in the early 80s—did you have a career in Textile Chemistry or Materials Science in mind when you landed on campus?

No, not at all. I arrived on campus as undeclared. Soon after arriving I attempted to get into the college of business and industry to pursue a degree in marketing. Back in those days the textile department was part of the college of business and industry. So I took an introduction to textiles course in hopes of moving within the college into the marketing department. I never left the textile department and 4 years later received my degree in Textile Technology and a minor in Business Administration.

You are currently the CEO of PrimaLoft®, Inc. Could you outline the company's mission and focus?

PrimaLoft® is an ingredient brand. Our core business is providing consumer insulation and technical fabrics used in apparel, footwear, accessories and home furnishings. It all started approximately 25 years ago when the US military approached PrimaLoft® with a R&D project. The military used goose down in most of their cold weather outer wear. Goose down is a great insulator but loses much of its thermal properties when it gets wet. Our challenge was to produce insulation that had the warmth and compressibility of down while maintaining its warmth when wet. Needless to say we were successful and PrimaLoft® was born.

L.L. Bean read an article in *The NY Times* about our product and contacted us. That started our expansion into the outdoor market. L.L. Bean has been a major brand partner ever since.

Today we serve the outdoor, military, fashion, work wear, and home furnishing industries. Our brand partners should be very familiar to you: The North Face, Patagonia, Nike, Adidas, L.L. Bean, Cabela's, The Gap, Under Armour, Helly Hanson, Land's End, Bombardier, Timberland, Polo, The Company Store, Macy's, just to name a few.

We are a global company with offices in Albany NY, Venice Italy, and Munich Germany. You can find our product in all parts of the world. You can check us out at www.primaloft.com.

Our vision statement is very simple. PrimaLoft® provides ultimate comfort solutions consumers love to own. By doing so we will become the "must have" brand in each market we serve.

What are some of your major responsibilities?

As CEO my responsibilities are very simple yet very difficult to execute. They involve creating shareholder value through:

- 1) determining the long-term vision of the company
- 2) recruitment, retention, and placement of talent
- 3) fiduciary responsibility and
- 4) communication of the vision—communicate, communicate, communicate!

How would you describe your work with PrimaLoft® and before that Albany International, Inc. in terms of innovation?

What impact have you had, for example, on the world of home furnishings, outdoor apparel, or defense/military applications?

Albany International is a large industrial textile company that develops, manufactures and sells industrial belts for use in the paper, nonwoven, and filtration industries. In my 24 years there I was lucky to have had management positions in all aspects of the company except finance. In my last position I was president of the applied technology group globally. It involved managing 3 independent global businesses as well as global information systems, global R&D, and global procurement for the company. Innovation is meaningless unless there is an existing market for your innovation or your innovation creates a new market. Understanding the total value stream from R&D to supply chain through to logistics is critical to realizing the value to the customer as well as the company.

As CEO my job is to create a culture for innovation. Taking risk, embracing disruptive technology, setting the vision, making the investment, and aligning the organization so that the entire ideation to product launch process is effective. At PrimaLoft® we have broadened the meaning of innovation to include all products AND processes. Innovation to us means improving department processes, becoming more efficient, reducing waste, improving our customer's experience, while strengthening the PrimaLoft® brand.

Do you have any thoughts on how our science, engineering and business colleges can help prepare students for working in a new economy with ever-changing needs?

I find students are well prepared in the specific field of their major. What they often lack is experience working in teams, managing projects, and critical thinking. After hiring companies often invest further in training the employee. It often takes two years for a new employee to be fully productive and functional



in their job. These new job candidates are often competing with a displaced workforce already having 5 to 10 years of experience. Companies often have to decide between someone with experience versus a new graduate. Preparing the student to be more productive on day 1 would improve the reputation of the school within the business community as well as increase placement rates.

Looking back on your years at UMass Dartmouth, can you point to a professor, program or event that had a major impact on your life or career?

UMass Dartmouth has made a major impact on my life in many ways. I received an excellent education and made many lifelong friends. The biggest impact was that I met my wife at UMD. My wife Lisa (Lisa Zale, Textile Technology '84) was enrolled in the introduction to textile course I referred to earlier. We both lived in the "Green" dorm. We have been

married for 26 years and have three beautiful daughters together. I guess you know now why I never moved out of the textile department!

Your career has taken you throughout the U.S. and the world. Anything you miss most from our region where you lived and worked while going to school? Or a great memory of this area you'd like to share?

I am originally from Braintree Massachusetts. After graduation in 1985 I moved out of state. My career has taken me to New Hampshire, Michigan, South Carolina and now New York as well as extensive international travel. If I had to say what I miss the most about the area, it is the close proximity to the ocean. I have enjoyed living in different parts of the country and each location has its own uniqueness. However, there is nothing quite like the shores of Massachusetts.

Do you have any career advice you can offer students and young alumni as they get started?

I have two pieces of advice:

It is not necessarily about how much you know. Rather, it is about your ability to work with people that will advance your career.

Remember that reputation is what people think of you—character is who you really are. So don't worry what people think of you. Always maintain your good character.

Faculty Spotlights

Faculty in the College of Engineering continue to foster student-centered learning experiences and conduct innovative research to meet societal needs.

BIOENGINEERING

The Bioengineering Department welcomes **Dr. Milana Vasudev** who will begin the new academic year in September 2014. Dr. Vasudev's research focus includes bioinspired nanomaterials, biomimetics, vapor phase deposition of organic nanostructure arrays, synthesis and modification of semiconductor and polymeric nanostructures, interaction of nanoparticles with biological materials, self-assembled biomolecular networks, nanoparticle based drug delivery systems, real-time chemical and biological sensors, and nanobioelectronics. She holds both a Master's and a Ph.D. in Bioengineering from the University of Illinois at Chicago and a Bachelor's degree in Electronics and Communication from Visveshvariah Technological University.

CIVIL & ENVIRONMENTAL ENGINEERING

Congratulations to College of Engineering commencement speaker **Rola Hassoun '14** civil engineering for her Women in Leadership Award on campus this spring as well as her Pillar of Community Service Award. Rola starts a new full-time job with the Water Services Group at CDM Smith, Inc.

in September. CDM Smith, Inc. is a national engineering firm providing lasting and integrated solutions in water, environment, transportation, energy and facilities to public and private clients worldwide. Welcome to **Dr. Dan MacDonald** who has transferred to the Department from SMAST. Dr. MacDonald's research interests include stratified hydrodynamics, turbulence and frontal dynamics, with specific emphasis on estuarine flows, river plumes, and industrial discharges; marine renewable energy; coastal and environmental engineering. He holds a Ph.D. in Civil Engineering from the MIT/Woods Hole Oceanographic Institute Joint Program, an MA from Cornell University and a BA from University of New Hampshire.

COMPUTER & INFORMATION SCIENCE

Dr. David Koop will begin his career at UMass Dartmouth as assistant professor in the Department of Computer and Information Science as part of the interdisciplinary faculty cluster in Big Data. Dr. Koop devotes his research to visualization and visualization systems, reproducibility and provenance, and scientific data analysis and management. Supporting collaborative work in the areas of climate science, quantum mechanics and ecology is of importance to him. He holds a Ph.D. in Computer Science from the University of Utah, a Master's from the University of Wisconsin-

Madison and a Bachelor's degree from Calvin College. The department also welcomes **Clinton Rogers** to a position as full-time lecturer.

Dr. Ramprasad (Ram)

Balashubramanian (Bala) has led a college-wide effort to encourage pursuit of STEM careers for youth from the Southcoast region. Through a variety of partnerships with Fall River, New Bedford and Dartmouth public schools, he is working on creating pipelines for students in the region to pursue a college education. This summer, Dr. Bala worked with STEM faculty **Dr.**

Chandra Orrill, faculty from Bristol Community College and Normandin Middle School in New Bedford on a STEM summer initiative supporting 8th and 9th graders called Bootstrap. The Bootstrap World curriculum is used to teach students algebra and computer science concepts as they design videogames. He also helped coordinate summer robotics camps in Computer Science for middle school students and the Upward Bound program.

ELECTRICAL & COMPUTER ENGINEERING

This spring, eight UMass Dartmouth students in Electrical and Computer Engineering (ECE) competed in the Governor's Cyber Aces State Championship held in Boston. 76 contestants qualified for the championship out of last year's 1,000+ contestants. Of the top ten champions, four came from

UMass Dartmouth: Nolan Paduch (5th place), Elia El Lazkani (6th place), Sean Reid (8th place), and Daniel Noyes (10th place). Others who made it to the championship were Jesse Carter, David Goncalves, Keith Kevelso, and Jonathan Larcom. All eight ECE BS or MS students took ECE 489/549 Network Security in the Fall and/or ECE403/591 Special Topic: Cyber Threats and Security Management in the Spring, both taught by **Dr. Hong Liu**. Five of them engaged in cyber security research projects advised by Prof. Liu. The students endured three rounds of Cyber Aces online qualification tests last October, November, and December, respectively, before being invited to the May 3rd Championship.

Congratulations to Professor, **Dr. Honggang Wang**, who was recently awarded four NSF grants. The first grant totals \$656,583, for collaboration between UMass Dartmouth and UMass Medical School in the effort of designing a wearable biosensor system with a wireless network for the remote detection of life-threatening events in neonates. His second grant is for a total of \$424,596 and will be supporting his research efforts in developing a cyber-security system for mobile health (mHealth). This is a joint project among UMass Dartmouth, WPI and University of Arkansas Little Rock. UMass Dartmouth is a lead institute and Dr. Wang a lead PI. The third grant for

\$109,619 supports research into the Cross-layer End-to-End Performance Modeling Approach for Large-Scale Random Wireless Networks with Node Cooperative Behavior. The final NSF grant is for a total of \$274,494 supporting Acquisition of COMET, A Cognitive RadiO Multimedia Network Testbed for Multimedia Communication Research and Education. Dr. Wang is the lead, PI and Co-PIs are **Dr. Dayalan Kasilingam**, **Dr. Liudong Xing**, **Dr. Howard Michel** and **Dr. Yifei Li**.

Kudos to newly elected fellows of the Acoustical Society of America, Professors **Dr. David Brown** and **Dr. John Buck**, for working with colleagues across the country to plan the ASA's 167th Meeting in Providence, RI in May of this year.

MECHANICAL ENGINEERING

Congratulations to **Dr. Sankha Bhowmick** on his recent promotion to full professor. Dr. Bhowmick plans to continue his research in cell/tissue engineering and energy systems. And, congratulations to Professor Emeritus, **Dr. Steve Warner** and former department Chairperson, **Dr. Peter Friedman** on their retirements from the university after twenty and twelve years respectively. Both will be missed by colleagues and students alike.

PHYSICS

Associate Professor **Dr. Gaurav Khanna** has built an extremely low-cost supercomputer using 176 Sony PlayStation 3 (PS3) gaming consoles installed in a refrigerated shipping container "reefer" of large cooling capability located conveniently on the University's campus. This system's performance is comparable to nearly 3000 processor-cores of a typical laptop or desktop. The PS3 cluster is currently being used by UMass Dartmouth's Center for Scientific Computing and Visualization Research (CSCVR) to perform large and complex calculations in the context of black hole astrophysics, and also explore vulnerabilities in cybersecurity.

Congratulations to **Dr. Robert Fisher** on his recent promotion to associate professor with tenure. Dr. Fisher earned his B.S. in physics with honors from Caltech in 1994. He received his Ph.D. in physics from the University of California at Berkeley in 2002, where he received a NASA Graduate Research Fellowship. The primary theme of Dr. Fisher's research is the fundamental physics of turbulent flows, and its application to the two endpoints of stellar evolution—star formation and supernovae—using a combination of theoretical and computational techniques. Dr. Fisher leads a group of graduate and

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Dr. Mazdak Tootkaboni's research includes probability-based analysis methods used to predict buckling loads of laminated composite shell structures such as wind turbine shafts and in the next generation of space launch vehicles.

2014 NSF Career Award Winner

Dr. Mazdak Tootkaboni a faculty member in Civil and Environmental Engineering, received the prestigious National Science Foundation (NSF) Faculty Early Career Award. This award is one of the highest honors given by NSF to recognize young faculty in science and engineering who are effectively integrating research and teaching. The Award is accompanied by \$400,000 in funding over five years to conduct research in the area of predictive analysis of stability-critical structures. His award allows for an educational plan that consists of graduate and undergraduate research, outreach to freshman engineering students, and curriculum development for the newly established Ph.D. program in Engineering and Applied Sciences at UMass Dartmouth. Dr. Tootkaboni is PI or co-PI on three other NSF awards including "Uncertainty quantification and model validation in thin-walled structures" (\$215,255), "A comprehensive computational framework for analysis and optimization of wave energy converters" (\$368,221), and "Collaborative Research: Geometric flaw-tolerant optimal structures and material microarchitectures via stochastic topology optimization" (\$187,855). He holds a B.S. and M.S. degree in Civil Engineering from the University of Tehran (Iran) and a Ph.D. in Structural Mechanics from Johns Hopkins University.

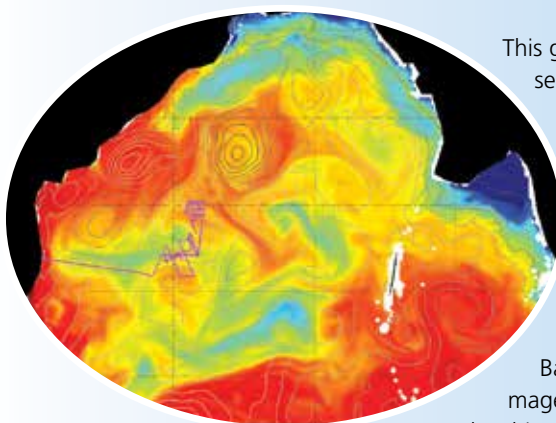


Dr. Amit Tandon (at left in photo) is leading the charge on the first-of-its-kind United States-India collaboration to Support Large Scale Research on Monsoon and Tropical Weather Event Forecasting. Dr. Tandon and the UMass Dartmouth Upper Ocean Dynamics Laboratory are part of a U.S. contingent participating in a joint oceanographic venture with their counterparts within the Indian government. The bilateral post-doc science team includes Dr. Tandon and Dr. Sanjiv Ramachandran along with scientists from 17 other U.S. and Indian institutions. Researchers from the two countries will be working together to understand ocean processes in the international waters of the Bay of Bengal and their relation to the annual monsoon, which is a dominant factor in the lives of the population of the Indian subcontinent.

The U.S. Office of Naval Research is funding the participating U.S. scientists. In addition to the scientists' time and expertise, the U.S. is contributing the sea time of the R/V Roger Revelle, which made a call in the port of Chennai earlier this summer, the first U.S. research vessel to call at an Indian port since the 1980s. The Indian scientists are funded by the Indian Ministry of Earth Sciences' Monsoon Mission. Dr. Tandon and several U.S. colleagues returned to India in July to teach a two-week training workshop at the Indian Institute of Science Bangalore on upper-ocean dynamics in the Bay of Bengal.

Data Tracking in international waters

U.S. Consulate General Nicholas Manning addresses dignitaries, scientists and guests aboard the R/V Roger Revelle during its port call in Chennai, India, for a joint research operation June 14-16. Behind him, from left to right, **Dr. Amit Tandon**, of the University of Massachusetts Dartmouth; and co-chief scientists Dr. Emily Shroyer, of Oregon State University, and Dr. Andrew Lucas, of Scripps Institute of Oceanography. All played instrumental roles in leading the ocean science study in the Bay of Bengal with the Indian research vessel, *ORV Sagor Nidhi*. Dr. Tandon's work is part five-year multinational effort to understand the South Asian monsoon, a defining torrential rain that is essential to the economic life of the countries that ring the Bay of Bengal.



This graphic depicts sea surface salinity and sea surface height anomaly from the HYbrid Coordinate Ocean Model (HYCOM) plotted over the Bay of Bengal. The magenta line shows the ship-track of US

global class research vessel Roger Revelle during June 2014 cruise out of Chennai India, with both US and Indian scientists aboard from many different institutions, including UMass Dartmouth. Data such as this aids Dr. Tandon and other researchers in identifying regions where the data can help us better understand monsoons.

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undergraduate students pursuing research projects in star formation and supernovae and is the Director of Graduate Studies for the department.

LEADERSHIP CHANGES IN THE COLLEGE OF ENGINEERING

Dr. Walaa Mogawer has been named Chair of the Department of Civil & Environmental Engineering in addition to his position as Director of the Highway Sustainability Research Center (HSRC). Dr. Mogawer takes over from Dr. Suku Sengupta.

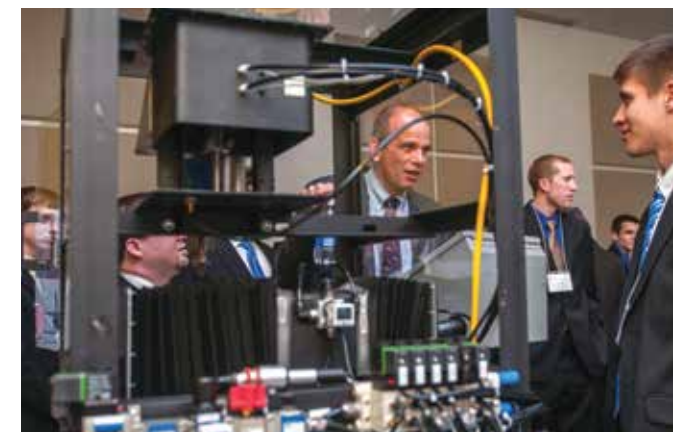
Dr. Grant O'Reilly is the incoming chairperson of the Physics Department in addition to his service as President of the Faculty Senate. He replaces Dr. J.P.Hsu.

Dr. Sankha Bhowmick has been elected chair of Mechanical Engineering. He replaces Dr. Peter Friedman who retired.

Dr. Antonio Costa is the new chair of the Electrical and Computer Engineering department. He replaces Dr. Dayalan Kasilingam.

Dr. Jan Bergandy and **Dr. Qinguo Fan** will continue as chairs of Computer and Information Science and Bioengineering departments respectively.

We are indebted to the outgoing chairs for their dedicated service and look forward to working with the new leadership team to continue the progress underway.



Return on Investment

Yesterday I had the privilege of attending the UMass Dartmouth, Science & Engineering Capstone presentations and competition. Every graduating senior is assigned to a team. Each team selects a project. These projects are submitted by industry sponsors in the area. Only 10 mechanical engineering projects were chosen. Rex-Cut was one of these, along with such companies as Raytheon, Aquapoint, United Technologies, MA MBTA and Phillips Lighting.

The Rex-Cut Capstone Team was comprised of 5 engineers – 4 mechanical and one electrical. They chose to design and build a fully automatic reaming machine for small Type 1 wheels. The design incorporates a pick and place system they developed, taking a 2" or 3" wheel from an indexing magazine, moving the wheel by suction, delivering the wheel to a retractable pin that centers the wheel, boring the ID to the appropriate size, and removing the wheel. The process then repeats itself.

The Rex-cut team competed against a team that was charged to develop a new MBTA wheelchair ramp, a team creating portable butane fuel cells, a team developing a transportable bio-cube that utilizes bacteria to generate clean ground water in industrial septic systems, a team building a thermal radiator for a spacecraft and one developing a magnetic thermal annealing oven. Needless to say this wasn't your typical science fair where you learn about the life cycle of a frog or are taught how to grow crystals!

The Rex-Cut team did an unbelievable job. The number of hours dedicated to designing and building the equipment and the degree and complexity of circuitry, electronics, and pneumatics involved is incredible. Each team of seniors had to present their project to the engineering department chairs and their peers. There was a panel of independent judges as well as high profile guests, including NASA astronaut, Scott Tingle '87.

In the end, the Rex-Cut project was judged as "the best of the best" and our team took 1st prize, a real achievement considering the talent of the graduating seniors and other corporate sponsors involved. There has been resurgence in U.S. manufacturing in the past five years and based on what I've seen, the future manufacturing sector of our economy is being left in good hands.

Claude Gelinis, President, Rex-Cut Abrasives



Team Leader Alex Brown with multi-disciplinary team-mates Alexis Pena, Andrew Bednarz, Matthew Pladsen and Kevin McBarron.

Adhering to Great Advice

Our Senior Capstone team had the opportunity to work with Nye Lubricants, Inc.; a Massachusetts based Synthetic Lubricants Manufacturer. The goal of the project was to design an Automated EMCOR dynamic bearing corrosion (ASTM D-6138) tester as well as a Machine Vision software package to determine the amount of corrosion on the bearings. I had come to know Nye, through working for Jason Galary '01, as an intern in their ADVT Lab (Application Design & Validation Testing).

The purpose of the Automated EMCOR bearing corrosion test is to be able to measure the ability of a lubricant to protect a bearing surface from corrosion while under dynamic conditions and exposed to either distilled water, synthetic sea water, or a sodium chloride solution. Nye challenged us to determine the amount of corrosion and classification of the results. Currently common industry methodology is based on the subjective human eye which can obviously change from person to person. Our goal was to develop a Machine Vision system and an algorithm to determine the exact and repeatable amount of corrosion on a bearing surface.

Our multi-disciplinary team, comprised of two computer scientists, one electrical engineer and two mechanical engineers, had several meetings with the customer to define their goals, needs, and requirements. Next we moved onto our actual design, prototype, and construction phases. Our entire team felt this to be the most exciting part of the project. We took all of the skills and knowledge we had been building over the past four years and used it to bring our design to life. It is an understatement to say this was an extremely gratifying experience to see our vision come to fruition while solving an industry-sponsored project.

Our team placed first in the ECE Engineering Department competition. We are currently working on a patent for some of the technology we developed. The Capstone Project, although frustrating at times, was the single most rewarding experience in our academic lives. Thanks to Nye Lubricants, Inc. for sponsoring the project, Professor Dr. Raymond Laoulache for his guidance, and Jason Galary '01 and Gus Flaherty of Nye Lubricants for all of their support.

Alex Brown '14, Team Leader



Another Winning Formula...



Together, we can make a difference

Congratulations to Joshua Stuckey '15, an exceptional mechanical engineering student. Josh was awarded the first Dr. Jay Hansberry Excellence in Mechanics Prize Fund Award in May of 2014. More than 50 donors contributed to help endow this Fund in Dr. Hansberry's name. Thank you!

Dr. Peter Friedman (right) was thrilled to be able to honor the legacy of a professor that for 37 years brought his knowledge, enthusiasm, warmth and humor to the classroom. The Jay Hansberry Scholarship in Mechanical Engineering will be awarded annually to a UMass Dartmouth mechanical engineering student in his or her junior year.

Betsy Hansberry, Jay's sister, could not be present on the day Joshua received his award but, she had these remarks, "My brother took great pride in the accomplishments of his students and was a great cheerleader when they excelled in their academic and work careers. Teaching and engineering were indeed his passions, in addition to cars and car racing! Jay would be extremely proud to be able to recognize and encourage his passion for engineering through the award of this fund to a deserving student. I thank all who made this possible. To Joshua: Go forth and make a difference."

To find out more, please visit www.umassd.edu/donate or contact Lara Stone, Senior Philanthropic Officer for the College of Engineering lstone@umassd.edu or 508.999.8372

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