

# Roberts Hall **Review**

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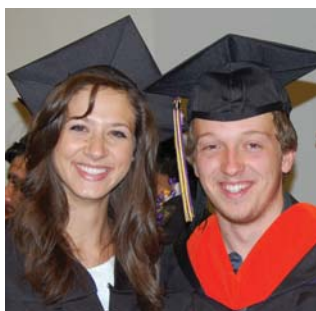
## MSE GRADUATION 2011

On June 11, 2011, the Department of Materials Science & Engineering held its annual Graduation Reception to honor our graduating student. This year recognizing 40 Bachelor of Science degrees, 5 Master's of Science degrees, and 11 Doctor's of Philosophy degrees. The event, held in Kane Hall, was attended by over nearly 300 graduates, faculty, and their guests.

MSE Chair Alex Jen presided over the morning's agenda, kicking things off by inviting all in attendance to partake of the brunch prepared by the MSE staff. Following brunch, the program opened with the presentation of the Distinguished Service Award to metallurgical engineering alum Larry E. McKnight (BS MetE 1960) for his outstanding professional accomplishments and contributions to the department (see McKnight article, pg. 3).

Dr. Ender Savrun (PhD MSE 1986) delivered this year's graduation address. Dr. Savrun is President of Sienna Technologies in Woodinville, Washington (see Savrun article). The theme of Dr. Savrun's speech was "Dreams and Communications." In his remarks, he said that with graduation, the students will enter a new land, "a dreamland where dreams are built, where dreams are realized. You will see in this dreamland you are only limited by your own imagination, by your own dreams." As materials scientists and engineers, they will have to communicate with many other disciplines because materials are the enabling elements for new systems and technologies, and the time spent in the MSE department has prepared them well for that task. He encouraged them to not be afraid of sharing their dreams to reach a common goal. He

*continued on pg. 3*



*Adna Seta & Adnan Kapetanovic*



*Dan Hutchins*



*(l-r): Larissa Miller, Yi-Cheng Lee, Matt Ferguson, Kannan Krishnan, Tianlong Wen, Twyla Sampaco*

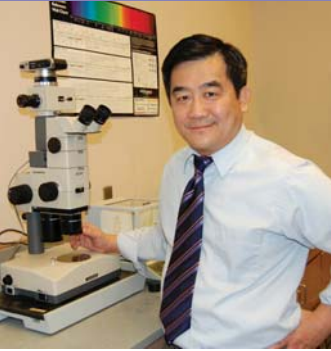


*Shane Boyd & Christine Luscombe*



*(l-r): Chen Fang, Miqin Zhang, Fareid Asphahani*

# Message from the CHAIR



Alex Jen, Chair

Dear Alumni and Friends,

I am happy to present the Spring 2011 issue of the Roberts Hall Review. Our department continues to grow. According to a recent report from Thomson-Reuters, the University of Washington led the world in impact of publications in materials science research during the period 2001-2011. The analysis focuses on papers published at the UW in the field of materials science, which were

collectively cited about 24,000 times, achieving a remarkable 30.41 citations per publication. The UW's performance was closely followed by a number of outstanding institutions in the world.

We have written before about the new and cutting-edge research directions our faculty has been pursuing during the past several years and now we are about make a huge leap forward with the addition of five new faculty members in the past year, bringing our total faculty to nineteen. They will bring in exciting research & education capabilities in interdisciplinary materials science & engineering. We are very excited about the future.

We open this issue with news and photos of the 2011 MSE Graduation Reception which was, as usual, an outstanding event for our graduates and their guests. Larry McKnight (1960, BS MetE) was a worthy recipient of the Distinguished Service Award and Ender Savrun (1986, PhD MSE) delivered a terrific address to the students, offering both humor and inspiration.

On a sad note, I am sorry to report that Professor Emeritus O. J. Whittemore passed away last summer at the age of ninety one. Prof. Whittemore, who retired from the Department in 1987, was a mainstay of our Ceramic Engineering program and will be missed by his colleagues and former students.

Finally, in this issue we spotlight two outstanding alums. The first is Stephen Ching (BS CerE '72), President and co-founder of Isolink, Inc. of Milpitas, California. Isolink is the leading supplier of high performance optoelectronic radiation tolerant components worldwide. Second, we offer a profile of Larry Watters (BS MetE '72), Managing Director and co-founder of Taggart Global LLC in Pittsburgh. Created as a startup in 1993, Taggart has grown into a major company building and operating state-of-the-art coal preparation plants and material handling systems around the world. Both of these men are examples of remarkable success stories.

I would be happy to hear from any of our alums, whether to discuss the state of MSE or just to say hello. If you find yourself in Seattle and have time to visit the Department, I would enjoy taking you to lunch. Just give me a call. One of the most satisfying aspects of being chair is to hear from and see our alums.

Alex Jen, Chair

## Larry McKnight: 2011 Distinguished Service Award

Larry McKnight (BS 1960 MetE) has had a successful career as a consulting metallurgical and corrosion engineer for the past 50 years after graduating with a BS in Metallurgical Engineering from UW in 1960. After working as a metallurgical engineer for Boeing, Eagle Picture Corporation, and Testing Engineers, McKnight went on to own three companies: Mettek Laboratories (1979-1986, LM Laboratories (1986-1993) and, most recently, McKnight Laboratory, which he founded in 1993.



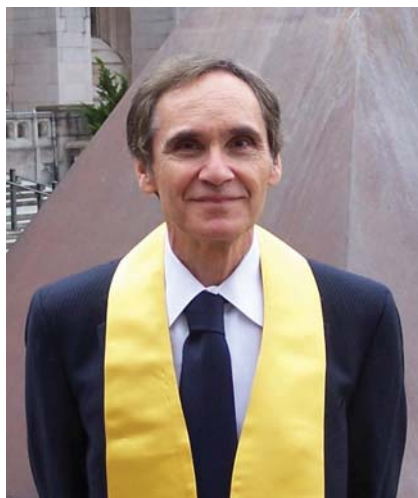
Corporate clients of his consulting business include CALTRANS, Toyota Racing & Development, Boeing, Southern California Edison and Bertea Corporation. He frequently serves as a forensic analyst for litigation and has participated in over 500 litigations and 50 court appearances as an expert witness. His area of expertise is metallurgical failure analysis, corrosion, fractography, scanning electron microscopy and sequences and manufacturing control. As an expert in metallurgical engineering, Mr. McKnight has taught classes at Chapman College, Cal Poly Pomona and Long Beach State College, among others. While working at Boeing from 1959-60, he patented "Electrolytic Deburring of Metals".

Among his many professional affiliations, McKnight was elected a fellow of the American Society of Metals in 1976 and is a member of Tau Beta Pi Engineering Honor Society. McKnight is receiving the 2011 Distinguished Service Award for his contributions to the MSE department. This includes being a member of the MSE Industrial Advisory Board under former MSE Chair Thomas Stoebe and serving on the committee for the Materials Science and Engineering Initiative which raised \$2.5 million for the equipping of the undergraduate laboratories in Mueller Hall, and student and faculty support.



## Dr. Ender Savrun: 2011 Graduation Speaker

Ender Savrun (PhD 1986 Materials Science & Engineering, Ceramic) came to the United States from Turkey to attend graduate school at University of Pennsylvania. He received his PhD from the University of Washington in Materials Science & Engineering in 1986. He was the Vice President of Keramont Corp, a fully owned subsidiary of Italian petrochemical giant Montedison until he founded Sienna Technologies, Inc. in 1992 in Tucson, Arizona. He moved the company to Woodinville, Washington in 1997.



Dr. Savrun serves as Sienna President and his wife, Dr. Canan Savrun, also an MSE alum (MS MetE 1985, PhD MSE 1995), serves as Vice-President.

Sienna Technologies is dedicated to the research, development, manufacturing, and marketing of advanced materials. Sienna Technologies is the only vertically integrated manufacturer of aluminum nitride ceramics. Sienna Technologies, Inc. is a privately held company with close working relationships with National Laboratories and many large U.S. Companies.



*Evan Shairbaum*



*Kasim Siddiqui*

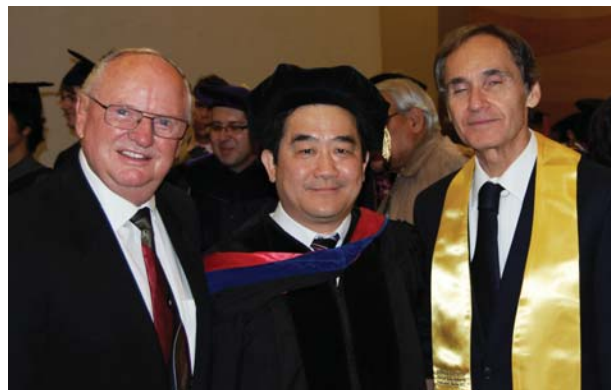


*Chastity Dunlap (center) & guests*

## Graduation, cont. from pg. 1

pointed to Werner Von Braun and MSE alum Bonnie Dunbar as examples of dreamers who never gave up pursuing their dreams. "In this dreamland you have to be awake all the time to catch the opportunity when it comes." Savrun then quoted David Henry Thoreau who wrote, "Tomorrow never comes unless you are fully awake to it".

Following Dr. Savrun's inspiring address, the Class of 2011 was presented to the audience by Prof. Jen. Each BS recipient was introduced by Kathy Elkins, the MSE Academic Counselor, who offered personal comments acknowledging each student's accomplishments and activities. MS and PhD recipients were introduced by their faculty advisors who spoke of their students achievements and plans for the future. All graduates were presented with gifts as remembrances of their time in the Department. The day's program ended with the traditional graduation cake and adjournment in time for the UW Commencement ceremony in Husky Stadium.



*(l-r) Larry McKnight, Alex Jen, Ender Savrun*



*(l-r) Mustafa Gungormus, Mehmet Sarikaya, Karen Hinckley, Christopher So*

# Recent Additions to the MSE Faculty

## Peter Pauzauskie: Assistant Professor



Peter Pauzauskie joined MSE in September 2010 after our search for an assistant professor in the field of molecular engineering and science (MoES). Peter received his PhD in Chemistry from Berkeley in May 2007 and continued his work as a postdoctoral researcher in the Berkeley Chemistry Department, followed by an October 2007 appointment as Distinguished E.O. Lawrence Postdoctoral Fellow at the Lawrence Livermore National Laboratory. Peter will use his exceptional knowledge and skills to establish a world-class research program in molecular engineering. Research projects in the Pauzauskie group are focused on the emerging field of Nanoscale Opto-Mechanical Systems (NOMS) to pursue challenging experimental questions in the molecular engineering of advanced materials for biosensors and nanomedicine. Experimental efforts are aimed at answering the question, "How can optomechanical materials be used to control

molecular interactions at nanometer length scales?"

## Candan Tamerler: Research Professor

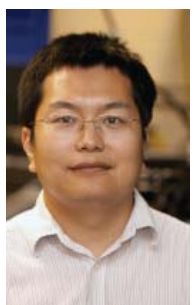


Candan Tamerler was appointed Research Professor in September 2010. She received her PhD in 1997 from Bogazici University in Turkey and joined the faculty of Istanbul Technical University in 1999, eventually being promoted to full professor. At ITU, she established the Molecular Biology and Biotechnology Research Center. She has also been a member of the Materials Science & Engineering Department at the University of Washington since 2002, as a Visiting Scientist and a Visiting Professor.

Candan is an integral part of our GEMSEC research program, developing vibrant research programs which are truly interdisciplinary and helped greatly by her chemical engineering and molecular biology background. Her research concerns the interaction of materials science, biology, biotechnology, medicine, and chemical engineering and she has built an international reputation. She is involved in international programs

not only through her projects but also through her assignment as national expert for European Union Framework Program Committee on Nanosciences.

## Xiaodong Xu: Assistant Professor



Xiaodong joined us as Assistant Professor on September 16, 2010, with a primary appointment (two-thirds) in Physics and a joint appointment (one-third) in MSE. He received his PhD in Physics from the University of Michigan in 2008. Xiaodong's newly established Nanoscale Optoelectronics research group is focused on understanding the optical, electronic and quantum properties of novel solid state nanostructures by nanoscale device design, optical spectroscopy, electrical transport, and scanning photocurrent measurements. Xu says that "in the last decade, there has been tremendous progress in the nano-materials synthesis and device fabrications, which expands the horizons of scientific and engineering research. On the other hand, there has been dramatic improvement in the measurement techniques too, which allows us to probe and understand quantum confined nano systems better, and to discover novel physics and also push the development of the material synthesis. There are exciting opportunities when the physical measurements and material synthesis

merge together.

## Qifeng Zhang – Research Assistant Professor



Research Assistant Professor, Qifeng (Jeff) Zhang joined the MSE faculty September 16, 2010. Jeff received his PhD in 2001 from Peking University after completing an interdisciplinary program in electronics, physics and materials science. In 2007 he joined the research group of Prof. Guozhong Cao as a postdoc, doing work in the areas of functional and nanostructured materials. Since then, Jeff has become a leading member of Prof. Cao's group. Jeff's work includes "New Approaches for the Synthesis of Nanomaterials such as Oxide Nanowires, Nanotubes & Oxide Nanoparticle Aggregates"; "Nanomaterials for Energy Harvest and Storage Application in Dye-Sensitized Solar Cells (DSCs) and Lithium Ion Batteries". His innovative research led to the 2009 founding of a start-up company LivinGreen Materials which received the 2009 Pacific Northwest Clean Tech Open award.



## Kyocera Chair Becomes Two Kyocera Professorships

The Kyocera Chair in Ceramic Engineering has been a valued part of the Department of Materials Science and Engineering since 1985 when the endowment was created by the Kyocera Corporation to provide a natural bridge linking materials scientists and engineers to an institution dedicated to developing new research techniques and training graduate students in the field of ceramic engineering.

In November 2010, the Kyocera Corporation and the College of Engineering agreed to convert the Kyocera Chair into two Kyocera Professorships and, in recognition of how the field of ceramics has changed over the years, to expand the definition of who can hold the professorships. One professorship will be reserved for internal MSE candidates and the other will continue to be filled via external faculty search. The new agreement will provide more flexibility to recruit new professors and retain exceptional ones.

The professorships will encourage continued discovery in materials science that influences current technological growth, and will attract people who are expected to make contributions to the advancement of structural ceramics or related fields such as nano materials, environmental materials, molecular biomimetics, organic electronics, or photonics and optoelectronics.

## Miqin Zhang Named to Kyocera Professorship

On March 14, 2011, Matt O'Donnell, Dean of the College of Engineering, announced the appointment of Prof. Miqin Zhang as the new holder of the Kyocera Professorship (Internal) in the Department of Materials Science and Engineering, effective April 1st.

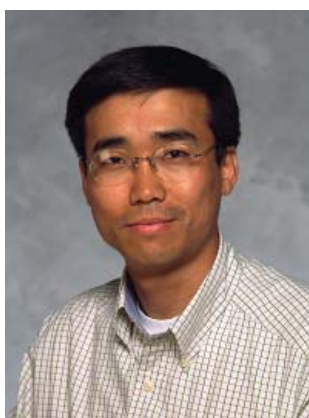
Miqin, who received her Ph.D. in 1999 from UC Berkeley, has been with the Department of Materials Science and Engineering since 1999 and was promoted to full professor in 2008. She holds three adjunct professor appointments, in the School of Medicine (Departments of Radiology, Neurological Surgery, and Orthopedics & Sports Medicine) and is affiliated with the Fred Hutchinson Cancer Research Center.



Miqin specializes in biomaterials and bioengineering with expertise in nanomedicine, biosensing, and tissue engineering. Her research interests are in exciting areas impacting modern science and health care. Miqin is an exceptional faculty member whose contributions to bioengineering and biomaterials are significant not only because of the depth of the results but also because of their relevance to practical problems.

## Dr. Jihui Yang Appointed to Kyocera Professorship

In late June 2011, Dr. Jihui Yang accepted our offer to join the Materials Science & Engineering Department as Kyocera Associate Professor (External) and plans to arrive in August. This exciting new hire came as a result of a national search begun in 2010. Dr. Yang comes to us from the Electrochemical Energy Research Laboratory at the General Motors R&D Center in Warren, Michigan, where he was Lab Group Manager and GM Technical Fellow. After receiving a 1989 BS in physics from Fudan University in China, Dr. Yang earned a 1991 MS in physics from the University of Oregon, a 1994 MS in radiological physics from Wayne State University, and a 2000 PhD in physics from the University of Michigan. He began work at GM while a PhD student and became a Research Scientist there after receiving his degree. Since 2007, he has also been Adjunct Professor at the Shanghai Institute of Ceramics, Chinese Academy of Sciences where he has been supervising several graduate students and postdocs. Dr. Yang says that he has had a longtime goal to move into academia after a distinguished career in industry.



Among Dr. Yang's recent honors are the 2008 National Academy of Engineering U.S. Frontiers of Engineering Symposium, the 2008 US Department of Energy Innovative and Novel Computational Impact on Theory and Experiment (INCITE) award, the 2007 The John M. Campbell Award for outstanding contributions to pure or applied science, the 2007 Spontaneous Recognition Award from the GM R&D Center, and the 2001 Kent M. Terwilliger Prize for Best Doctoral Thesis from the Department of Physics, University of Michigan.

In the past 5 years (2005-2010), he has authored and co-authored 34 papers (Adv. Funct. Mater., Phys. Rev. Lett., J. of Am. Chem. Soc., Appl. Phys. Lett., Phys. Rev. B, MRS Bulletin, etc.) with nearly 1000 citations (H-index is 18) and 3 book chapters; presented 41 invited talks at the Materials Research Society, American Physical Society, International Conference on Thermoelectrics, MS&T, NSF workshops, universities, national labs, government agencies, industries, and other international conferences; and has been granted 8 Patents (20 patent applications).

*continued on pg. 12*

## Christine Luscombe: College of Engineering Junior Faculty Innovator Award

On June 1, 2010, Assistant Professor Christine Luscombe added another honor to her young career when she received the College of Engineering Junior Faculty Innovator Award for her outstanding performance in teaching and research. The award committee's said of her work, "Christine is recognized internationally as a leader in the areas of polymer design and synthesis for organic photovoltaic and organic thin film transistors. In her work, she is developing materials for use in organic photovoltaic (OPV) and organic-inorganic hybrid devices that hold significant advantages over current inorganic-based technology. The ease of fabrication and potential use in a wide variety of applications make OPVs an attractive target for next-generation solar-energy technology. In addition, Christine has been "successful in creating a classroom environment where students are encouraged to think deeply about the subject matter presented and she is consistently innovating new approaches in her teaching to explore the best ways to communicate ideas to students. Christine is also seen as "a



complete educator- she is an internationally recognized scientific leader, has developed a well-funded and highly productive research group, is focused on student learning, and has made significant contributions to enhancing the reputation and image of the department."

### Luscombe Wins Sloan Fellowship

Christine was also among 118 recipients of Sloan Research Fellowships for 2010. The award is made by the Alfred P. Sloan Foundation, which "seek to stimulate fundamental research by early-career scientists and scholars of outstanding promise." They are awarded in recognition of fellows' distinguished performance and the potential to make substantial contributions to their field.

## MSE Retired Faculty Lunch

On April 20, 2010, seven former MSE faculty members gathered for a lunch organized by Tom Stoebe and sponsored by the MSE Department. The lunch was held at the UW Club and Tom reports that the "old timers" enjoyed catching up on what everyone had been doing since in recent years. For some, it had been several years since they had last had an opportunity to meet. We hope such get-togethers can become a regular event. The group has been invited to attend the May 2011 College of Engineering Diamond Awards dinner, where Tom Stoebe will receive the Distinguished Service Award.



*l-r: Dave Fischbach, Doug Polonis, Tom Stoebe, Henk Dawson, Bill Scott, Bob Stang, John Jones*

## Affiliate Professor John W. Cahn to Receive Kyoto Prize

On June 24th, 2011, the Inamori Foundation announced that Dr. John W. Cahn, Emeritus Senior Fellow at NIST and UW Affiliate Professor (MSE and Physics), will receive its 27th annual Kyoto Prize for Lifetime Achievement in Advanced Technology, which focuses on Materials Science and Engineering for 2011. The award is \$625,000. Dr. Cahn, 83, will receive the award for his outstanding contributions to alloy materials engineering through his establishment of the theory of spinodal decomposition. He currently serves as Emeritus Senior Fellow at the U.S. National Institute of Standards and Technology and as an Affiliate Professor at University of Washington in the Departments of Materials Science & Engineering and Physics. The award will be presented in Kyoto, Japan on November 10th





## Faculty News

### Alex Jen

March 2011 | Named an editor of the IEEE Journal of Photovoltaics with responsible for manuscripts in the Organic /Hybrid Photovoltaic Cells area.



### Alex Jen, Hong Ma, and Mehmet Sarikaya

August 2010 | Their latest work, "Cooperative Near-Field Surface Plasmon Enhanced Quantum Dot Nanoarrays", was featured on the inside cover of the August 2010 Advanced Functional Materials.



### Kannan Krishnan

November 2010 | Elected to a 3-year term on the Administrative Committee of the IEEE Magnetics Society.

June 2010 | Named Faculty of the Year by the MSE Senior Class.

February 2010 | Received the Distinguished Lecturer Award of the IEEE

Magnetics Society at the joint InterMag and Magnetism & Magnetic Materials conference in Washington DC.

January 2010 | Selected to serve on the editorial board of AEEE Magnetic Letters.

January 2010 | Selected to serve as a candidate on the Fulbright Specialist Roster in the fields of Education and Materials Science. His first assignment was in Egypt.



### Marco Rolandi

November 2010 | Marco and research group made the cover of the Advanced Materials journal with their article "Writing Nanostructures: Scanning Probe Direct-Write of Germanium Nanostructures".

June 2010 | Named Faculty of the Year by the MSE Junior Class.

March 2010 | Awarded a 3M Untenured Faculty Grant which recognizes outstanding new faculty for the quality and pertinence of their research.

## In Memoriam: Osgood J. Whittemore, Jr. Professor of Ceramic Engineering 1964-1987

Emeritus Professor O.J. Whittemore died on July 20th, 2010, at the age of ninety-one. He received his 1941 Masters degree in Ceramic Engineering from the University of Washington, followed by a 1950 Professional degree in Ceramic Engineering from Iowa State. He joined the Department (then called the School of Mineral Engineering) as an Associate Professor in 1964 following a distinguished career at the Mellon Institute, MIT and the Norton Company. He brought honors with him, including the Admiral Earle Award of the Worces-

ter Engineering Society and the Trinks Industrial Heating Award for his work on pure oxide refractories, and election as a Fellow of the American Ceramic Society in 1960. At UW, his research area was ceramic processing which was growing in importance; the MSE ceramics program had just added a PhD degree program the year before. In 1976, he went to Brazil on sabbatical to help establish a new ceramic engineering

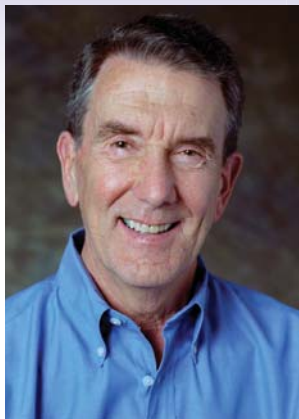
program. During that sabbatical he helped developed a set of NSF-sponsored collaborative programs for the study of sintering which helped to establish the scientific basis for sintering of ceramic particles. In 1982, he was appointed director of the Mining and Mineral Resources Research Institute at UW. The Institute (1980-91) conducted investigations, demonstrations, research, and experiments related to mining and mineral resources. Whittemore retired in 1987.

Emeritus Professor William Scott recalls that Whittemore "was very proud of his contributions at Norton, developing sintered abrasives that became important standard materials in the industry. He held several patents from Norton days. He was also proud of this work on the Manhattan project (at MIT) where he developed the process to make high purity ceramic crucibles for melting Plutonium - not a trivial task. He was a good engineer who knew how to make things and how to teach the students to make things."



## Tom Stoebe: 2011 Diamond Award for Distinguished Service

Can the United States continue to lead the world in innovation? If Thomas Stoebe has a say, the answer is a resounding “yes!” Engineering is a key component of the innovation engine and participation by young people, particularly girls and under-represented minorities, helps drive the field. Tom has been a tireless education advocate working to attract more students to the engineering profession, the University of Washington (UW), and to materials science.



Tom built a distinguished academic career at the University of Washington as a materials science and engineering professor and played a key role in the development of the department. For many students though, it is not his work on lattice defect properties of semi-conducting and insulating materials, but his educational programs they will remember. In the early 1980s, he founded Washington Mathematics, Engineering, Science Achievement program (MESA), a state-wide program for K-12 minority and disadvantaged students. This program is thriving today with over 90% of MESA students graduating from high school and 60% going to college.

Stoebe also developed an educational program for secondary teachers highlighting hands-on science for direct use in their classes. Based on materials science, this program is now national with 30 one-week programs being held at 30 locations across the U.S.

Other educational outreach programs initiated by Stoebe include the founding of the UW's Minority Science and Engineering program and the development of materials technology curricula for community colleges. Stoebe is an active member of several professional organizations and a Fellow of ASM International promoting materials science and engineering to national and international audiences.

The award was presented at the Diamond Awards Dinner on May 13, 2011.

## Student News

**Guy Guday** received the autumn 2010 Lewis C. Hoffman Scholarship from the American Ceramic Society, Electronics Division. The award is a \$2,000 tuition award.

Several MSE students were able to attend the October 2010 MS&T meeting in Houston. **Twyla Sampaco** won the Keramos Mug Drop Contest with a 150 cm-drop, and the Putting Contest, also organized by Keramos, was won by the MSE team consisting of **Dan Buck, Jill Kuchman, Andrey Maslov** and **Twyla Sampaco**. Maslov also won most aesthetic ball and closest to the hole (75 cm), and Kuchman won most aesthetic putter.

**Tianlong Wen** (PhD Dec-2010) was awarded a travel grant from the 55th Conference on Magnetism and Magnetic Materials to attend their conference in November 2010.

**Wei Zhang** was awarded a GSFEI Graduate Student Travel Award to attend the Nov 2010, 55th Conference on Magnetism & Magnetic Materials in Atlanta.

Four MSE students have been chosen as finalists in the 2011 SAMPE Student symposium. As finalists, each student received an all-expenses paid trip to the May 2011 SAMPE International Symposium & Exhibition in Long Beach, CA. **Jake Plummer** will present his paper in the BS category, **Ashley Tracy** and **Curtis Hickmott** will present in the MS category, and **Ryan Toivola** will present in the PhD category. The National SAMPE organization selects only four finalists for each category, so UW is well-represented. The student symposium is a competitive program that sponsors selected SAMPE student members to present the results of their technical research at the SAMPE meeting each year. The best papers presented in each student category are awarded cash prizes, while winners in the PhD student category are further sponsored to present their papers at SAMPE conferences in Europe and Japan.

Three MSE seniors were selected to present papers at the February 9, 2011, ASM Puget Sound Chapter Student Night. **Jake Plummer, Dan Buck** and **Min-Tih 'Ted' Lai** presented papers. Plummer talked about adhesive bonding of composites, Buck about the Ceramic Mug and Putter Contest at MS&T (which was won by UW) and Lai discussed materials for a solar turbine for operation in third-world nations. Each received \$100 awards.



*l-r: Len Reid (ASM Chapter Chair), Jake Plummer, Dan Buck, Min-Tih Lai*



## Student News

### MSE Team Wins UW-Business Plan Award

May 26, 2011 | MSE graduate students Matt Ferguson and Amit Khandhar, along with their team members Shivang Dave (Bioengineering) and Garrett Leischner (MBA), have received the \$5,000 Fenwick & West Finalist Prize in the 2011 UW-Business Plan Competition sponsored by the UW Foster School of Business. Ferguson and Khandhar's plan was for a start-up company called LodeSpin Labs to commercialize tracers for Magnetic Particle Imaging, a new medical imaging technology capable of replacing CT and MRI for imaging patients with heart disease and cancer. This new company was founded last year with their faculty advisor Kannan Krishnan.

This year's BPC competition had a record 104 student teams from 11 universities. Over the period of one month, judges reviewed plans and listened to pitches, gradually whittling the competition down to 16 teams who then made full presentations to a second set of judges. Out of the 16 came the 5 finalists who presented to a panel of 7 entrepreneur judges who then selected the 4 award winners on May 26th.

This competition was looking for the next generation of start-ups and the winning plans will focus on bringing low-cost solutions for clean drinking water to the developing world, providing fresh produce and pantry staples to urban food deserts, producing resistant starch from potatoes that will lower glycemic index response in people with diabetes and, for the LodeSpin team, developing new medical imaging technology. Winning one of the 4 awards was a great accomplishment for our team.

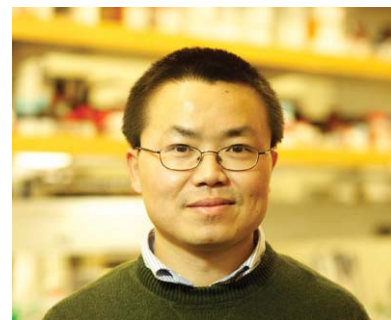


(l-r) Shivang Dave, Garrett Leischner, Kannan Krishnan, Matt Ferguson, Amit Khandhar

## Alumni News

### Yadong Yin Named #2 Top Materials Scientist

On March 2, 2011, Thomson Reuters released data identifying the world's top 100 materials scientists based on the citation impact scores for their papers (articles and reviews) published since January 2000. MSE alum Yadong Yin (PhD MSE 2002) was number two on the list. Prof. Yin is an Assistant professor in the Department of Chemistry at the University of California, Riverside.



The Thomson Reuters list represents data on high impact researchers in materials science, a realm that overlaps with chemistry as well as with physics, engineering, and other areas. Once again, this field was defined by a set of discipline-specific journals and papers dealing with materials science from multidisciplinary titles.

Citation Impact is a weighted measure of influence that seeks to reveal consistently superior performance. To ensure that a high score could not be achieved by a few highly cited papers, a threshold of 25 papers was used in the analysis.

The average citation impact in materials science for the period was 6.93. The 100th person listed in the top 100 researchers achieved an impact of 42.14, more than six times the average. In comparison, Prof. Yin's #2 citation impact was 199.59.

Since approximately a half million materials scientists were recorded in the journal publications indexed by Thomson Reuters during the last decade, these 100 represent the top fiftieth of one percent. Dr. Yin also ranked #50 on the Chemistry list.

# ALUMNI PROFILE: Stephen Ching, BS CerE 1972

by Sandy Marvinney, COE Marketing & Communications

Geography has strongly shaped Stephen Ching's path through life — from Hong Kong, where he was born, to Hawaii, where he moved at age 10, to Seattle for his UW education, to Silicon Valley for his career ... to Saturn ... extending his impact far into the Solar System.

Ching's company, Isolink, makes an optoelectronic coupler that is a mission-critical part in NASA's Cassini probe, which has been orbiting the ringed planet for the past seven years. In fact, his company's products are can't fail, mission-critical components used in technology all over our globe, from heart defibrillators to radiation treatment machines, circling it in satellites of all kinds, and flying in radar systems in B1 and 2 bombers and F16/18 jets.

"We're a niche company with products that have such diverse applications," Ching said. "They go into equipment that could kill or cure." Or transmit your TV signals or GPS coordinates, or those amazing photos of Saturn's rings and moons. It's been quite a journey for a Hong Kong boy who experienced culture shock when moving to rural Hawaii and a family dairy farm with 300 cows in the backyard. On the farm he learned to fix anything that broke, "engineering in its rawest form," he noted.

Ching enrolled at the University of Hawaii, but soon contracted "island fever" and a longing to see the other side of the ocean. He worked three jobs during freshman year to save

enough money to transfer to the UW. Civil Engineering later offered a work-study program scholarship, so he took an internship doing drafting and false work design for the South Bellevue 405 interchange. "It was a great experience but I realized civil engineers worked on projects from Alaska to Montana and I wanted a more settled professional base," he said. "An ac-

"... products that have such diverse applications. They go into equipment that could kill or cure" *Stephen Ching*

let's try something else."

He found a small, friendly department and fondly recalls interesting courses and enjoyable hands-on projects such as making porcelain bricks in "mud lab." After graduating in 1972, he accepted a job offer from Fairchild Semiconductor in Mountain

View, Calif., in the company's first cohort of 14 college recruits. While working on an MBA through a company-supported program, Ching worked in electronic packaging and offshore coordination. Still in his early twenties, he became "the American

expert," traveling to Korea, Hong Kong, and Singapore to set up operations, at the time one of the few Asians in such a role. Two years later he landed at Hewlett Packard, making LEDs for the HP35 calculator and optical couplers.

"Back then, you could barely see the light, but that's how I got into optoelectronics," Ching said.

He moved on to General Instruments and also worked in Malaysia for a year, but by 1987 the difficulty of getting ideas for new products through the corporate bureaucracy spurred him and two co-workers

to establish Isolink, based in Milpitas, Calif. Early on, winning customers in such a tightly knit market required a lot of missionary work.

"One of the aerospace companies had a big problem with part failure for the Star Wars military system," he said. "I told them we guaranteed it would work at temperatures of - 55 to 125 degrees Celsius. They said if it didn't, I'd be the first Chinese person up in space — with no helmet."

Ching never blasted off, but Isolink's reputation for quality did. JPL used its optoelectronic coupler to control the Cassini craft's heater circuit. After seven years of bombardment with gamma rays, the part had to kick in to warm the capsule to correct temperature for powering up the electronic instruments for analyzing Saturn's atmosphere. "If our part didn't work, the heater wouldn't work, and nothing else would work," Ching said. On the Mars Phoenix Lander, their technology controls the ovens that heat dirt samples for analysis.

Only two or three companies in the world make similar components, and after more than two decades in business Ching has

a solid history of success, what he calls "space heritage." The company has parts in almost every single satellite, and on earth, every pair of night vision goggles includes a component that only his company makes.

"From an engineering standpoint, this business is a lot of fun and the growth is nice and steady — not like iPads, but profitable," he said.

As the 2010 MSE graduation speaker, Ching's primary advice to departing students was to "have a passion for what you do because that provides direction and focus and keeps you going during tough periods" — and keeps your parts going, even on long, hazardous journeys through space.



NASA Cassini probe



quaintance mentioned ceramic engineering, and I said 'Okay,



## ALUMNI PROFILE: Larry Watters, BS MetE 1972

by Sandy Marvinney, COE Marketing & Communications

Larry Watters is in the coal preparation business — designing, constructing and training operators of coal-processing facilities worldwide. The material may be deep, dark, and dirty, but Watters offers up a veritable geyser of clear advice for students hoping to succeed in diverse engineering careers.

He is the managing director and co-founder of Pittsburgh-based Taggart Global, the largest company in the world specializing in coal preparation and material handling, with clients in China, India, Indonesia, Russia, South America, South Africa, and elsewhere.

His first piece of advice for students as last June's MSE Distinguished Service Award recipient was that they better know how to solve problems, because that's what his company and others pay them to do. "College grades are secondary to practical problem-solving skills and the ability to learning a lot quickly because projects change all the time," Watters said.

After his own UW freshman year heavy on partying, he buckled down to make Dean's List grades, exercise leadership wings as president of his fraternity, and earn his BS in metallurgical engineering in 1972. After a year of graduate work at UC Berkeley he took his first professional position at Kaiser Industries, then worked for several companies from Pennsylvania to Denver, interspersed with other stints at Kaiser. In 1973 he co-founded Sedgman USA with a Sedgman-Australia colleague he met on a project in Indonesia. The company began as a joint venture to upgrade U.S. coal-preparation plants. For three years he and co-partners worked 24/7 to get the business established and on solid footing. They also built a client base abroad and became fully independent as Taggart Global in 2008.

Watters has a bag of funny stories from his experiences abroad. Imagine him standing shoulder to shoulder for a photo op with a huge orangutan ("arms like Popeye") holding a big branch on a rural road in Kalimantan, Indonesia (Did we just do that ????) ... to playing touch football with colleagues in Tiananmen Square in Beijing and Red Square in Moscow. The Beijing police watched with amusement while the Moscow police told them to beat it. Amusements aside, running your own company and serving clients abroad is a serious, high-stakes endeavor.

"For the first five to ten years of my career I was learning the business, for the next ten years I kept thinking I could do it better, and for the last 17 years I've been praying I was as good as I thought I was," Watters said. "You have to take care of your clients and treat their business like its money coming out of your own pocket," Watters emphasized.

He advises students that choice of an engineering career is a global decision and that versatility and flexibility are essential to working on projects abroad. Equally important everywhere is to be a well-rounded person with interests outside engineering (like sports) and the communications skills and social skills necessary



"You have to take care of your clients and treat their business like its money coming out of your own pocket." *Larry Watters*

to build strong, enduring relationships with clients. "If you can't write well and make convincing arguments you will never get into management," he declared.

Watters said Taggart grew fast because they "had the best technology, hired the smartest guys in the business, significantly decreased plant construction costs, and crushed the competition."

And yes, additional advice to students who want to be successful entrepreneurs is to be a risk taker, have confidence in yourself, and hire people smarter than you and who you think can take your job. "That's essential and also very difficult for managers to do that, but as an owner, I don't have to worry," he laughed.

In addition to exuding enthusiasm, infectious humor, and confidence, Watters is a Seattle area native who bleeds purple. "Enrolling at the UW was the best thing that ever happened to me. I've been a Husky my whole life and I love it," he said.

### Roberts Hall Review

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## Roberts Hall Review

### Alumni News

Jan and Tom Stoebe met with MSE alum Jen-E Wu (PhD, MSE, 1995) at Waikoloa Village in Hawaii in January. Jen-E was attending a conference of technical and marketing personnel from his company, ATMI (Advanced Technology Materials, Inc). ATMI is headquartered in Connecticut and has branches throughout the U.S., Europe and Asia. Jen-E is Applications Manager at the ATMI facility in Hsin-chu City, Taiwan. The Stoebes were vacationing on the Big Island.



*l-r: Jen-E Wu, Jan Stoebe, Tom Stoebe*

### Jihui Yang, Kyocera Professor

*(continued from pg 3)*

At GM, Dr. Yang specialized in automotive energy efficiency and fuel economy improvement and was leading GM's advanced thermoelectric materials study, GM's advanced battery electrodes and electrolyte development, and battery post-mortem analysis. He is also the PI or co-PI for several energy-related DOE grants. In the next several years at the University of Washington, Dr. Yang plans to study materials for energy storage and conversion. Specifically he will be focused on three areas, 1) Novel materials for high efficiency thermoelectric energy conversion, 2) Design and implementation of next generation automotive thermoelectric generator, and 3) Advanced battery electrode materials.

We are pleased to welcome Dr. Yang to the Department and expect that he will establish a long and fruitful career in research and student education.