Honoring Efficiency and Dedication at the College Awards Banquet

The evening of February 6, 2015 was a celebration filled with laughter, gratitude, and excitement at the College Annual Awards Banquet—an evening to honor faculty and staff within the College of Physical and Mathematical Sciences.

“Each year at these college dinners...we have the opportunity to give out some college awards to people who have done some wonderful things in the college, and we appreciate all of your efforts,” Sommerfeldt said.

The announcements began with the University Service Awards, given to staff and administrative employees for every five years of service to the university. This year’s recipients were Linda Richards, Department of Chemistry and Biochemistry (10 yrs), Rod Scheetz, Department of Geological Sciences (10 yrs), and Lonette Stoddard, Department of Mathematics (30 yrs).

Sue Mortensen, department executive secretary in the Department of Chemistry and Biochemistry, was honored with the Outstanding Staff/Administrative Employee Award. Mortensen is respected by her colleagues both for her dedication and competence with her wide scope of responsibilities. As she interacts with others and seeks how best to solve a problem, she conducts herself with compassion and efficiency.

“Sue has the remarkable ability to make [people] she deals with think their issues or projects are the most important item on her agenda,” Sommerfeldt said.

Exploring the Future of Energy

BYU’s Department of Chemistry and Biochemistry and the Department of Chemical Engineering are pleased to announce that Alexis T. Bell of the University of California at Berkeley will visit BYU on March 19 to deliver the annual Reed M. Izatt and James J. Christiansen Lecture.

Bell will present two lectures, one general and one more technical. The general lecture is titled “The Case for Developing Renewable Energy Source and the Challenges Ahead,” and it will explore the current challenges and future opportunities in energy production. The lecture will be in room 140 of the Joseph Smith Building at 5 p.m. on Thursday, March 19.

In his technical lecture, Bell will use examples from his work to illustrate how a combination of experimental and theoretical research provides more progress than either method alone. The technical lecture, which will take place the same day at 11 a.m. in room W111 of the Ezra Taft Benson building, is titled “The Role of Experimental and Theoretical Methods in the Development of a Molecular Perspective of Catalysis.”

Bell is a faculty senior scientist at the Lawrence Berkeley National Laboratory and a professor of chemical engineering at the University of California at Berkeley. He is world-renowned in heterogeneous catalysis research, particularly in factors in catalyst structure that would limit them. He uses both experimental methods and quantum chemical calculations to make progress in his field.

After earning his bachelor’s and doctoral of science degrees in chemical engineering from the Massachusetts Institute of Technology, Bell began working at Berkeley in 1967. He has served as both the dean and assistant dean of the College of Chemistry and as the chair of the Department of Chemical Engineering during his time there.

By Jennifer Johnson
Announcements

Pi-Day
Friday, March 13, 12 p.m.–2 p.m.
Pi Day Carnival
Brigham Square

Saturday, March 14, 7 p.m.
Rugby Game for free pie
BYU Soccer Fields

Izatt-Christensen Lecture
Thursday, March 19, 5 p.m.
140 JSB

Student Research Conference
Saturday, March 21, 8 a.m.
1102 JKB

Quey Hebrew Lecture
Friday, March 27, 7 p.m.
B190 JFSB

Light and Lifelong Learning

Dr. Jeremy Johnson likes to travel for the same reason he likes science: he loves to learn about the many fascinating things in the world around us.

That love to learn has led Johnson and his family around the world and eventually back to BYU, where he is now in his first semester as a professor in the Department of Chemistry and Biochemistry.

Johnson earned his undergraduate degree from BYU, where he researched with Dr. Eric Sevy and was first introduced to laser spectroscopy, using light to study matter and energy. He graduated in 2006 with a bachelor’s degree in chemistry and then headed to the Massachusetts Institute of Technology (MIT) for his doctoral studies. While there, he and his wife, Rochelle, were able to travel together to international research conferences.

“We really like to travel, so when I was a graduate student at MIT and had a few opportunities to go to research conferences abroad, we worked it out so that my wife would come out afterward and we could explore Europe,” he said.

As Johnson earned his doctoral degree in 2011, he and his wife determined that they needed a bigger European adventure. On a particular trip to sightsee and meet with professors about research opportunities, the Johnsons drove into Switzerland and it felt like coming home.

“That feeling I had when we drove into Switzerland—I had that again when I came to interview at BYU. I hadn’t thought that I would necessarily come back here, but things worked together and just worked out, and now I’m super excited to be here and be in the department,” he said. “We’re definitely going to do a lot of cool science here.”

It’s nice not only to return to BYU, but Johnson said his family is happy also to return to the United States.

“It’s also a plus to be back here and understand what everyone is saying,” he said.

Johnson teaches physical chemistry and continues to research spectroscopy. He specializes in terahertz spectroscopy, a relatively new research area that has applications in the study of everything from semiconductors to proteins.

Drawing a parallel between gospel light and scientific light, he said, “In the scriptures there are a lot of symbolic references to light and truth. We use light in our lab to learn more truth about how the world around us works.”

By Jennifer Johnson

Teaching Moment

Dr. Scott Grimshaw’s teaching tip is to be prepared, organized, and passionate about teaching. He gives the students opportunities to catch his passion in class by giving them opportunities to work with the data directly. In addition, he utilizes the laptops provided by the TMCB to students so they can have the opportunity to code during lecture.

“I think [having them work with real data] demonstrates what they will actually be doing as professional statisticians and gives them practice—which I hope improves their confidence,” Grimshaw said.

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Three Minutes to Victory

Lawrence Barrett was named the 2015 CPMS Three-Minute Thesis winner on Friday, February 20.

Three-Minutes Thesis (or 3MT) is an annual competition requiring participants to present their graduate research in three minutes or less, using just one slide and language the general public can understand.

This year marked BYU’s second annual 3MT competition, and 21 students from departments across the college described their research in subjects ranging from superalloys to geological rock records.

“This is a great opportunity for students and a great showcase for research in the college,” associate dean Thomas Sederberg said as he introduced the competition.

Barrett’s first-place presentation centered on his efforts to create longer lasting batteries for potential use in electric cars.

“Every year we burn a Utah Lake of gasoline in all our cars and trucks,” he said in his presentation. “I don’t know about you, but that doesn’t sound very sustainable to me. We need energy solutions.”

Barrett said that he practiced his presentation with multiple mentors but that doing quality research was the best preparation for 3MT.

“This is a great event,” he said. “I think you learn some really valuable skills that you don’t get sitting in the lab. Second place went to Jessica Alvey, who is studying the best methods of data imputation in understanding long-term temperature trends. Blaine Harker, who presented on sound localization in military jets, received the third-place prize.

Additionally, honorable mentions were awarded to Benjamin Hillery, Chandramouli Nyshadham, Jayson Pagaduan, Joseph Rowley, Mukel Sonker, and Devyn Woodfield.

“We thank all of you students who participated and all you advisors who work with the students,” said CPMS dean Scott Sommerfeldt. “It’s great to see you presenting your research in a very energetic fashion.”

The top two students, Barrett and Alvey, represented the college at the university 3MT competition on March 5. Alvey, a graduate student in the Department of Statistics received 3rd place in the competition.

By Jennifer Johnson

New Faculty Spotlight: Wolfgang Herfort

The College of Physical and Mathematical Sciences welcomes Wolfgang Herfort, a new visiting professor in the Department of Mathematics.

Herfort grew up near Vienna, Austria and attended TU Vienna where he studied mathematics and physics education. He received a PhD in mathematics from the TU Vienna in 1971. Following his doctoral work, Herfort began teaching at TU Vienna, where he has spent the majority of his career.

During his time at TU Vienna, Herfort led seminars on bifurcation and singularity theory and created lectures and tutorials designed to make mathematical theory more accessible for engineering students.

Through his research, Herfort has had the opportunity to collaborate with colleagues all over the world, in particular with Josip Seke and Winfried Auzinger at TU Vienna, Zvi Arad in Tel Aviv, Israel; Luis Ribes in Ottawa, Canada; and, Pavel Zalesskii in Brasilia, Brazil. While advising a PhD student at TU Vienna, Herfort became acquainted with Greg Conner in the BYU Department of Mathematics. Their collaboration brought Herfort to BYU, where he is spending a year working with the BYU mathematics faculty and researching profinite simplicial sets and wild topology.

“There are questions I feel can be answered here,” he said.

While he is at BYU, Herfort and his wife, Anna, look forward to enjoying Utah’s beautiful landscapes and visiting national parks, such as Yellowstone, Zion, and Bryce Canyon. Other than the opportunities for outdoor activities, Herfort’s favorite part of Utah is the friendliness of the residents.

“In Europe it takes much longer to become comfortable with someone, but in Utah everyone is so open and friendly!” he said.

When he is not working on research, Herfort enjoys listening to classical music, reading, learning about history, hiking, and playing soccer.

By Meg Monk
Being a mother is hard enough; being a professor is just as difficult. Dr. Amanda Francis, a visiting professor in the Department of Mathematics is juggling both.

“I love math, and there aren’t very many people who I can talk to about things like equations, polynomials, and matrices,” Francis said. “I love teaching math because I get to discuss some of my favorite topics with my students. It’s their first time seeing these elegant concepts, and I remember how miraculous it all is, watching through my students’ eyes. I find that so fulfilling.”

Francis, originally from Salt Lake City, received her BS in mathematics from the University of Utah. After Francis completed her undergraduate work, she came to BYU to receive her masters and PhD in mathematics. Now, after taking a two-year break to stay home with her toddler and newborn twins, Francis is back and excited to teach and research once more.

“There are so many great people to work with here in this department. They are very welcoming and helpful, and many are working on really interesting projects,” Francis said.

When Francis isn’t talking math with her students, she spends her time researching algebraic geometry and mirror symmetry. In mirror symmetry, researchers compare two different mathematical structures that are created in different ways, and yet turn out to be the same when actually computed.

“We’re trying to verify a conjecture that these two different mathematical models really are the same,” Francis said. “The whole idea of duality—that you have these two objects that should somehow be dual to each other and then they turn out to be isomorphic [equal]. It is fascinating—why are they isomorphic, these dual objects?”

Balancing motherhood and academia isn’t all a walk in the park, and Francis knows all too well how hectic that life can be.

“It’s hard to balance it all and try to think about the needs of my kids and my husband, and then also, have the other part of my mind thinking about some complicated problem I’m working on or something that I’m going to teach in my next class,” Francis said. “I really admire families and women who succeed at balancing everything because it is definitely tough.”

Despite the sometimes stressful schedule, Francis said that she wouldn’t give it up for anything, and she is very grateful to her colleagues in the college for their support.

“Students and faculty in the College of Physical and Mathematical Sciences here at BYU should know what rare and valuable opportunity they have,” Francis said. “At other universities there are people who are brilliant in their fields of study, but at BYU you get people who are brilliant in their field of study and are also amazingly commendable people who serve in the church, who love their families, and who are just shining examples of how to be a great person—including how to excel in scientific scholarship. I just so appreciate their examples.”

By Mackenzie Brown
Historic Church Sites Curator to Present on Remote-sensing Technology

Dr. Benjamin C. Pykles, the Historic Sites Curator for the LDS Church History Department will present on “Using Remote-Sensing Technologies at the Church Historic Sites” on March 27. Pykles, the Department of Geological Sciences’ 2015 Quey Hebrew lecturer, will illustrate the value of remote-sensing technologies ranging from specialty-trained canines to ground-penetrating radar at the Priesthood Restoration Site, Historic Nauvoo, Hawn’s Mill, Far West Burial Grounds, and the Original Provo Tabernacle.

Dr. Pykles has worked as a professor of anthropology at the State University of New York at Potsdam and is the author of Excavating Nauvoo: The Mormons and the Rise of Historical Archaeology in America, which won the Best First Book Award from the Mormon History Association in 2011.

During his years as an archeologist, Dr. Pykles has utilized his passion for LDS Church archaeology in order to bring to light valuable, historic Church sites, including the ghost town Iosepa, historic Nauvoo, and the original Provo Tabernacle.

According to Dr. Pykles, “The Church of Jesus Christ of Latter-day Saints operates twenty-three historic sites in the continental United States and Great Britain. These sites are crucial to the Church’s mission, serving as tangible, three-dimensional witnesses of the Restoration of the gospel of Jesus Christ.”

College Awards Banquet  
Continued from page 1

said, “She is the wizard that makes the seemingly impossible, probable.”

Matt Heaton, an assistant professor in the Department of Statistics, received the Faculty Young Scholar Award. Sommerfeldt noted that Heaton’s research productivity is remarkable for a young statistician. He has already published 21 papers in top-level journals in the past four years and has a number more waiting for review. In addition, he is an excellent teacher, consistently getting high reviews on BYU’s student rating system.

“Matt is a productive faculty member who has already made several contributions to the department in the areas of scholarship, teaching, and citizenship,” Sommerfeldt said.

Roger Harrison received the Distinguished Citizenship Award for his work within the Department of Chemistry and Biochemistry. Harrison has demonstrated his willingness to serve and to improve the department. He has served as the chair of the department curriculum committee for eleven years and as the area chair for the inorganic chemistry area. Harrison is also a dedicated teacher and mentor to his undergraduate and graduate students. He recently discovered that many undergraduate students were leaving the chemistry program after their first year. He and his committee identified the issues surrounding this finding and implemented a plan to address the issues.

“Roger is a quiet, dependable member of the faculty who is an outstanding citizen,” Sommerfeldt said. “His attention to detail and work ethic have exceeded department expectations and show genuine initiative in a number of goals for the department.”

Natalie Blades, an associate professor in the Department of Statistics, received the Excellence in Teaching Award (3-10 years of service). Blades consistently gets high ratings from the students with comments like, “the best teacher I’ve ever had,” and is praised for her timely and applicable feedback. Blades works with the department’s undergraduate curriculum to meet the needs of graduates.

“Natalie exemplifies a faculty member who is engaged in the process of educating BYU students with tools and experiences that will prove useful in the emerging technical, data-centric world,” Sommerfeldt said.

Tom Morris, a professor in the Department of Geological Sciences, was also honored with a Faculty Excellence in Teaching Award (10 or more years at BYU). Morris engages the minds and hearts of his students in both non-major and major classes, and inspires them to learn and become passionate about geology. He also developed the career pathway seminar lecture series, which is devoted to exposing students to professionals in the industry.

“Tom has had a profound impact on the teaching and career development of many appreciative undergraduate and graduate students,” Sommerfeldt said. “His legacy will be the graduate students he has mentored, the hundreds of students who’ve benefited from his heartfelt teaching, and all who’ve incorporated his passion for geology into their own lives.”

By Mackenzie Brown
College Publications

Chemistry & Biochemistry


Andersen, P; Braida, B; Coote, M.L; Danovich, D; Ess, D.H.; Ho, J; Mitoraj, M.P; Petit, A; and Shaik, S. (2014). Protonated alcohols are example of complete charge-shift bonds. Journal of Organic Chemistry Vol. 79, 9998-10001.


Computer Science


Rojas, I; R.A.; M; Lund, C; Reimschissel, B; Farrell, R.M.; Franke, K; Hedengren, J. D. (2015). Optimized terrain surveillance with UAV flight path planning.

Smith, R; Prince, J. T; Ventura, D. A. (2015). A coherent mathematical characterization of isotope trace extraction, isotopic envelope extraction, and LC-MS correspondence extraction. BMC Bioinformatics.

Physics


Statistics