

Welcome from the Chair



I extend a warm greeting to you on behalf of the faculty and staff of the Chemical Engineering Department at BYU. As we prepare for the on-rush of new students who will shortly arrive on campus (they will already be here by the time you read this) for Fall Semester, I am reminded of so many of you who we have gone forth from this great institution to serve in the church, your communities, and your professions. As you did, these new students arrive with trepidation, enthusiasm, great potential - and a feeling that four years will be such a long time! Several

years from now, dressed in caps and gowns as they bring parents by to meet department mentors and friends, the changes that this institution and department have made in their lives will be evident. In my "Exit Interviews" with graduating seniors, I try to probe how well the department does in developing within our students during those intervening years between matriculation and graduation the three C's of Competence, Confidence, and Character. Clearly the department excels in developing technical competence in its students, and our graduates are sought by the best graduate schools and employers of chemical engineers. However, as I wrote in last-year's newsletter, the department works to develop within its students additional professional abilities of leadership, innovation, global awareness, and ethics. Experiences in these areas combined with the technical and religious experiences of BYU help develop the other two C's. And I am convinced that these two C's, confidence and character, are important components of the overall qualities that distinguish our graduates in the eyes of recruiters and graduate schools alike. I sense from the Exit Interviews that our students are not only capable, but confident in their ability to make a difference. This quiet confidence is based on an understanding of the truth that they have been taught at BYU - unchanging truth in sound scientific and engineering principles and the eternal truths of the gospel of Jesus Christ.

While our commitment to these outcomes in students' lives remains constant, there are many things that continue to change. This year we celebrate with Professors Bartholomew and Oscarson their many years of service to the department, BYU and its students, and the chemical engineering profession. Professor Bartholomew retired July 1, 2008, after serving on the faculty for 35 years. His expertise and scholarship in catalysis is recognized around the world. He has guided over 175 students in research, producing over 120 peer-reviewed publications and 5 books. Professor Oscarson will retire January 1, 2009, after 34 years of service on the faculty. His ability to teach a plethora of chemical engineering topics and his internationally recognized expertise in calorimetry and high-temperature water are irreplaceable. This leaves the department short-handed while it conducts a search for three new faculty members. The third position is newly granted to the department by the university with the intent of increasing our expertise in energy-related fields. We are deeply appreciative of our part-time faculty who will so ably help teach the fall semester classes. Dr. Neil Giles will teach one section of the UO lab and Mary Rasband (MS, BYU) will teach ChEn 170.

In addition to the changes in our students and faculty, there are facility changes occurring. The largest change is a modification and a face lift to the UO lab which has needed TLC for some time. Phase 1 of the lab modification, scheduled to be done by the first of September, removes the process control center platform, moves a couple of walls to create much cleaner lines for the main part of the lab, and creates a new projects laboratory

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Faculty and Department News



Dr. Vince Wilding was honored with the Faculty Citizenship Award for 2007 by the College of Engineering and Technology. He was also voted by the students as the Outstanding Faculty in the ChEn Department for 2007.



The university recognized Dr. Bill Pitt's outstanding research with the ORCA Sponsored Research Award.



Dr. Merrill Beckstead was recently awarded a Lifetime Achievement Award from the Joint Army Navy Nasa Air Force (JANNAF) Executive Committee. This is in recognition of 44 years of significant contributions to the advancement of science, knowledge and understanding of solid propellant combustion chemistry and physics.



We extend our congratulations and appreciation to Dr. Ken Solen, who has recently received a renewal of his Jesse Knight Professorship,



At this year's University Conference, Dr. Tom Fletcher received the Karl G. Maeser Excellence in Teaching Award, which was given for outstanding teaching accomplishments. Dr. Fletcher was also awarded the Outstanding Faculty Award in the Chemical Engineering Department for 2007.



Dr. Larry Baxter was awarded the prestigious Wesley P. Lloyd Award, which pays tribute to his exemplary performance in teaching, research, and citizenship in graduate education.

AIChE: American Institute of Chemical Engineers

School begins and students anticipate intense chemical engineering classes, buying books, hours of homework, late nights, and more. At least one thing that Chemical Engineering students can look forward to are the fun events and interaction with AIChE, the American Institute of Chemical Engineers. Thursday, September 11, BYU's student chapter of AIChE held an opening social barbeque, consisting of recruiting ChE students to become members of National AIChE as well as BYU's student chapter. We had a large turnout of 80-90 students. AIChE will continue to have great events as we have in the past.

AIChE had a successful year last school year, including monthly instruction to teach students how to apply their knowledge in the real world. Jerry Hancock, owner of Sub Zero Ice Cream, taught students to develop entrepreneurship skills. Dr. Hotchkiss from BYU discussed being an expert witness in engineering. An engineer from ATK talked about engineering in the workforce and a patent lawyer provided chemical engineers with the option of law school. This school year, AIChE will continue to have educational monthly meetings with outside speakers to teach members about real life experience.

In addition to these meetings, AIChE has many exciting activities. Last year, AIChE's activities included flag football, a video game night, a ping pong tournament, and a talent show. We ended the year with a banquet and golf tournament sponsored by Dow Chemical. This year, AIChE will continue with these traditional activities, but we also are planning new exciting activities, such as going to Seven Peaks for a skating activity. Two plant trips to

locations or Rio Tinto are also planned, and we are looking for further ways to provide students with opportunities to interact with many different companies.

Last year, the National AIChE annual conference was held in Salt Lake City. BYU co-hosted this event with the University of Utah. BYU had 15-20 students attend the conference and volunteer at many of the events. Students received leadership instruction and the ability to network with professional engineers and students nationwide. We also sent 16 students to the Regional Conference held at Mexico Tech University last March. There was a competition held at this conference, allowing for the regional schools to compete and BYU did very well. Peter Jones received 2nd place in the paper competition, and our ChE car team placed 2nd, allowing them to compete in the National ChemE car competition in November in Philadelphia, PA. BYU also placed first in the Dodgeball Tournament, demonstrating we are not only great with books but also on the court! We currently have 15 members on our car team that plan to get ready for the National competition.

Service to the school and community is a large part of BYU. This year, we at AIChE hope to increase our involvement in service by looking at outreach opportunities with high school and elementary students. We plan to present fun experiments and instruct them on chemical engineering and its application in the world today.

~Alena Morgan
President, BYU AIChE student chapter

Engineers Without Borders

Recently completing its second full academic year, Engineers Without Borders hasn't lost any momentum in the projects being completed. The club sponsors a technical elective class where students have the opportunity to apply their engineering knowledge to real-life problems faced in third-world countries. The focus this year was on a small village named Salkantay, located outside of Cusco, Peru. This particular location presented some unforeseen challenges, especially due to the fact that Salkantay is situated at an elevation of approximately 14,000 ft.



The multi-disciplinary teams of engineering students worked on projects emphasizing water collection and distribution, water heating, efficient stove design, and biogas production. These projects challenged the students to research real world situations and propose solutions to issues that have been plaguing the underdeveloped world for years. Clean water is a luxury that many people in developed countries take for granted. Surprisingly, 1.1 billion people lack access to clean drinking water, and nearly 2 million people die each year due to waterborne-related disease (90% of which are children under the age of 5). Engineers Without Borders has been working this year to help the village of Salkantay not only have clean water and better stoves, but to be a model village used to instruct other Peruvian village leaders on how they can improve their own villages. The club is working in conjunction with Eagle Condor Humanitarian, a humanitarian organization based in Salt Lake,

to improve the living conditions of these local Peruvians according to their needs, instead of what American culture assumes they need. For more info, please visit <http://ewb.byu.edu>.

Dr. Randy Lewis and Dr. Vince Wilding, along with student leaders, are planning for projects next year in multiple locations such as Ghana, Mexico, and Peru. The potential projects currently being discussed include water purification systems, small-scale electricity-generating windmills, and heating water through a pipe passing through a stove.

Engineers Without Borders has a twofold mission. The first goal is to provide students with a well-rounded education by creating opportunities for them to work on projects internationally with other engineers. Secondly, EWB would like to provide service and engineering expertise to third-world countries where access to engineering knowledge may be limited or non-existent.



For more info or to see pictures, go to

http://www.et.byu.edu/groups/global/gallery2/main.php?g2_itemId=21

Homecoming Banquet 2007

On the evening of Friday, September 21, faculty, alumni and friends of the ChE Department had an enjoyable time meeting together and socializing. It was especially nice to sit with people who had graduated during the same time period, as the tables were organized by year of graduation. During the excellent banquet, we were shown a wonderful and highly entertaining movie produced by Marc Deru. The ChE seniors sang (lip sync) and danced to the tune, "The Eye of the Tiger." Who knew that there was such talent in the ChE department? The cameos of Dr. Oscarson and Dr. Rowley were especially entertaining. This movie proves once again that Chemical Engineers can do extremely well at anything they decide to accomplish.

The evening continued with the honoring of the 2007 outstanding alumnus award winner, Roger L. McCarty. During his 30-year career with Dow Chemical, he has been involved in and/or directed more than five new start-up businesses. He is currently the Director of Experiential Learning in the MBA program at BYU. Roger gave a very inspiring presentation on the importance of being true to your values and beliefs.



Chad Lewis was the keynote speaker of the evening. After his graduation from BYU, Chad had a very successful career in professional football, even helping the Philadelphia Eagles reach the Super Bowl. It was very enjoyable to know the man underneath the football pads. As he talked, his good nature and humor captivated the audience. His stories of his experiences as a football player were both entertaining and insightful as he discussed being a member of the church with high moral standards and his interactions and relationships with other professional athletes.

To sum up, the 2007 Homecoming Banquet was excellent! We look forward with anticipation to talking with friends again this year and encourage all our alumni to make every effort to attend this year's banquet. 3

Alumni Board Chairman's Corner

Greetings from the Chemical Engineering Alumni Society Board!

In 2007 the board voted to create one endowed scholarship and two direct-donation scholarships (all full-tuition scholarships) beginning Fall semester of 2008. No small feat considering it takes \$80,000 to fund an endowed scholarship. The other related goal was to raise \$145,000 over the next five years. The Alumni Society has raised \$106,000 in the first year (compared to the \$10,000-12,000 normally received during the annual fund) and beginning this Fall 2008 semester there will be one endowed and two direct-donation scholarships. This will also be the first year that the Society will fund the homecoming banquet.



Once or twice a semester I get an inquisitive student who wants to know what it's really like to be a chemical engineer. Is it really something he or she will enjoy after so much effort (the word pain is used a lot)? They already know about the monetary rewards but the question is really "what will my life be like? Will I be able to handle the tough questions?" In short, "will I be able to compete intellectually?"

These kinds of inquiries help me remember it's all about the students. What are the obstacles and what can we do to let them know it's worth it? I can't imagine a more gratifying profession if you enjoy solving problems. I remember the first really big project I was assigned as a process engineer. I had to take a prototype process and bring it up to full scale manufacturing a new high impact, hydrocarbon resistant thermoplastic polyester resin. The division vice president came by while I was knee deep in alligators – millions of dollars in equipment were strewn across the floor. Things weren't going well. He reminded me that the success of the business depended on the outcome and it was obvious he was worried. I remember bringing a cot and sleeping in my office so that I could babysit the new process. The pressure was immense but the gratification when the first successful product came through that extruder was just as immense. It was worth it. I want every student who asks me that question, "is it worth it?" to have that feeling.

As an alumni society we have helped address one of the deterrents to a successful experience at BYU – financial support. However, the dream we have as a board and department is to take the next step and help the students catch a vision of their future career and that it's well worth the sacrifice. Wouldn't it be great if a student could sit down for about an hour and ask any question he or she wanted about the adventure they are about to embark on. Picture a student in a conference room and three or four engineers on a conference call talking about their projects, their successes, things they wish they would have done to prepare themselves better. I know this happens to some extent but it's time to take it to the next level. Make it part of the culture at BYU. We all know about the infamous attrition rate – where the freshman class gets whittled down to a tenth of the original size. How big would that attrition be if we could somehow get them to catch the vision of what lies ahead?

Once the student has the technical tools to enter the workforce, which path matches the personality and interests?: process or project engineering?, sales?, marketing?, research?, management? We have the bases covered and the contacts. I believe we can do a lot more than provide scholarships and that is what we would like to focus on in the coming years. I will propose that at least half of the Alumni Board during the next term (2008-2009) be dedicated to putting together a program, under the direction of the department, that will facilitate and drive this kind of interaction between experienced engineers and students.

In addition, we are pushing to fund one more endowed scholarship, further the alumni networking, and increase the student employer networking. Would you like to help? Email, call or talk with us at the banquet about some ways that you can help.

Best Regards,
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A Special Tribute



Dr. Cal Bartholomew retired on July 1, 2008, after 35 years of service on the faculty and 38 years of research in catalysis and combustion. He has been the principal investigator or co-investigator on over 60 grants and contracts, guided over 175 students in research, and is the author or co-author of 5 books and 120 peer-reviewed publications. He helped establish the BYU Catalysis Laboratory in 1973 and was also active in the establishment and management of the Advanced Combustion Engineering Research Center at BYU and U of Utah. His knowledge and research in catalysis will be well remembered. We appreciate his hard work over the past years and wish him the best in his future endeavors.

We will soon be saying farewell to Dr. John Oscarson, who will retire on January 1, 2009, after 34 years of service on the faculty. He has mentored 13 graduate students and over 40 undergrads, as well as been the author of 85 papers and 1 book chapter. He has been both a Board Member and Chairman of the Calorimetry Conference, and was also honored as Professor of the Year in Chemical Engineering and as the Outstanding Faculty in Chemical Engineering. His expertise in and ability to teach a variety of chemical engineering topics, especially calorimetry and high-temperature water, will be sorely missed. We appreciate his service on the faculty and wish him well.



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that will be used in support of student innovation work including group projects done in many of the core classes as well as more individual work from elective courses including the ChemE-car and Engineers-Without-Borders classes. Phase 2 of the UO remodel is scheduled for next year and will be a face lift of new paint, drop-in ceiling, and some new experiments for the large area of the UO lab.

These are just a few of the large changes happening in the department; you will see many more as you read through the Newsletter. Even so, the Newsletter only provides an overview of events in the department. If you are interested in more detailed updates of changes, I invite you to peruse the department website (<http://www.et.byu.edu/cheme/>) where you will find interesting news clips of department events as they happen. I also invite you to keep up to date with the faculty through a repository of monthly updates at <http://www.et.byu.edu/cheme/FacultyNews/>. We appreciate your involvement in alumni activities, in promoting our students, and supporting our initiatives that will further enrich the educational experience of our students. I hope that you will consider personally letting us know of your challenges and successes because you continue to be an important part of what the BYU Department of Chemical Engineering is all about.

Richard L. Rowley, Department Chair

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If you have moved recently or changed any of your contact information, we would appreciate an email to us at cheme@byu.edu letting us know. Please include your full name, mailing address, phone number, email, and year of graduation.

You may also update this information yourself at the ChemE website: <http://www.et.byu.edu/cheme/>.