Welcome back everyone!! I am sure that the summer seemed too, too short. Things certainly were not all that quiet around here, at least in the department office.

We are welcoming two very big classes to the department. The grad class of 30 PhDs is a record and the sophomore undergrad class of 69 is the largest in a long time. It is certainly the largest in my memory. I hope that all of you are settling in easily.

As you can tell from some of the things around the department, the renovation of Doherty Hall is progressing. The shovel hit the dirt this summer and the area to the right of the building as you face the front door is being graded and prepared for the addition. At this point in time the University is soliciting bids for the work to be done on the interior of the building and my guess is that that work will begin in the early part of next year. If you want to take a look at what things will look like, there is a poster outside the front office door and there are some images on the website. The architects have produced some amazingly details renderings of the plans.

Needless to say there will be some disruptions as the work progresses. I hope that everyone bears with us on this. We will try to minimize the disruptions but they will be noticeable and there is no getting around that fact. As they say, it is always better to have renovated than to be renovating. The bottom line is that it is all for a worthy cause.

Andy
Department News

The 2006 Herbert L. Toor Chemical Industry Lectureship was held on September 5, 2006. The speaker was Dr. William F. Banholzer, Corporate Vice President and Chief Technology Officer of The Dow Chemical Company. The title of his presentation was “Personal Experience in the Application of Chemical Engineering, and Selected Research Topics at Dow.” A reception was held in Roberts Hall.

The 2006 Ethel Z. Casassa Memorial Lecture in Colloids, Polymers and Surfaces, will be held on Tuesday, September 19, 2006, Doherty Hall 1112. The guest speaker is T. Kyle Vanderlick, Professor and Chair, Department of Chemical Engineering, Princeton University. The title of his talk is “Marring, Merging, and Manipulating Lipid Membranes.”

Faculty News

Good Luck to Larry Biegler who is spending the Fall 2006 semester as a Fulbright Fellow at the Institute of Scientific Computing at the University of Heidelberg. His mini-sabbatical includes plenary talks at conferences in France and Hungary as well as a short course at the Technical University of Ilmenau.

Congratulations to Ignacio Grossmann who was elected as the next chair of the Chemical Engineering section of the National Academy of Engineering. He is also running as a candidate for Director of AIChE in this year’s elections. Ignacio will be a keynote speaker that the 3rd Interamerican Congress of Chemical Engineering that will take place in Buenos Aires on October 1-4, 2006.

Congratulations to Spyros Pandis who together with John Seinfeld (Caltech) just published the 2nd Edition of the textbook, Atmospheric Chemistry and Physics: From Air Pollution to Global Change (Wiley).

Congratulations to Dennis Prieve who has been elected President-Elect of the International Association of Colloid and Interface Scientists (IACIS). He will become President in 2009. IACIS is a scientific organization, centered in The Netherlands, whose main activity is to organize a tri-annual meeting. The last meeting was held in IguassuFalls (Brazil) in 2003. The next meeting is in October in Beijing.

Congratulations to Bob Tilton! The National Science Foundation has awarded a $1.075M Nanoscale Interdisciplinary Research Team (NIRT) grant to Bob Tilton (Biomedical Engineering and Chemical Engineering), Greg Lowry (Civil and Environmental Engineering), Kris Matyjaszewski (Chemistry) and Ned Minkley (Biological Sciences). The team is developing a system of block copolymer-functionalized reactive nanoparticles to provide efficient source-zone remediation of aquifers that have been polluted by industrial solvents. The proposed technology is intended to replace or augment current cleanup technologies that are estimated to require a century or even more to remediate individual sites. The key to the new strategy is to decorate reactive nanoparticles with polymers that promote their transport through
the aquifer and accumulation in the underground contaminant zones. This study will include an investigation of nanoparticle impacts on naturally occurring aquifer microbial communities. The nanoparticle delivery system will be engineered to minimize any potentially damaging microbiological effects and to promote synergistic interactions between the nanoparticle-based remediation chemistry and natural biological processes that may naturally degrade solvent contaminants.

**Congratulations to Jim Miller** who has been elected Vice-Chair of the Pittsburgh Local Section of AIChE for the 2006-2007 Program Year. By rule, he will serve as Chair of the Section in 2007-2008 as well.

**Erik Ydstie** spent a week doing volunteer work in Burkina Faso, West Africa. He taught English, computers, and internet to students at Ouagadougou University.

**CPS News**

**SWE Outreach for Middle and High School Girls**

**Rosemary Frollini** and **Annette Jacobson** presented workshops about chemical engineering to 60 middle school and 50 high school girls participating in the SWE Engineering Your Future summer program in July. The middle school program included polymers and related consumer products from the toy, food and personal care industries. Hands-on experiments were performed by the girls.

The high school program was entitled "Rocket to Enceladus.” The students' challenge for a week was to design, build and launch a rocket to Enceladus (a moon of Saturn) using the experience gained in each CIT department session. Once successfully landed, the rocket would search for signs of life using its payload, a robotic rover. Chemical Engineering provided fueling options for the rocket. Students had to experiment with and optimize the proper amounts of liquid and solid fuel to power the rocket.

**Alumni News**

**Congratulations to Charlie Stanier** who won the 2006 Sheldon K. Friedlander Award for outstanding Ph.D. thesis in the field of aerosol science and technology. The title of his dissertation was “Ultrafine particles in the atmosphere: formation, emissions, and growth.” The award will be presented on September 14, 2006, in the International Aerosol Conference in Minneapolis.

**Undergraduate News**

**TOC Breakfast**

The TOC Breakfast for seniors and potential employers will be held on **Tuesday, September 19, 2006**, from 8:00-10:00 am in the Rothfus Lab. This is an opportunity for recruiters from companies to meet with seniors.
Members of 2006-2007 SAC – Student Advisory Council

Sophomores: Christine Adams, Lisa Augustyniak, Lisa Plimpton, Matthew Woodling
Juniors: Jessica Tsang, Siwei Chang, Estee Barbuto
Seniors: Justin Forbes, Rokhsana Safaai-Jazi, Sally Hayashi

2006 – 2007 Officers of AIChE Student Chapter

Justin D. Forbes President
Melissa Bartel Vice President
Ann Lukasiak Treasurer
Kristen Henry Secretary
Sabrina Dhanani Social Chair
Paras Doshi University Liaison
Alok Khetan Industrial Liaison
Carlene Ulish Lecture Chair
Michael Nigra Webmaster

Financial Board Members:
Natasha Sachdeva
Jason Tchao
Rhiannon Kolb

Faculty Advisor: Prof. Jim Schneider

Placement statistics for the 2006 Senior Class were as follows:
The average starting salary was $62,643. The high was $78,000 and the low $52,000.
Seniors were hired by the following companies:

Bank of America Merck & Co.
BOC Gases Microsoft
Exxon Mobil Procter & Gamble
Heinz Samsung Austin Semiconductor
Hemlock Semiconductor Corp. Schlumberger
Johnson & Johnson US Patent and Trade Office
Keystone Powdered Metal Co.

Members of the Class of 2006 went to the following graduate schools:
Cornell University Stanford University
Emory University University of Delaware
Johns Hopkins School of Medicine University of Florida
MIT University of Pittsburgh
Pennsylvania State University University of Virginia
Congratulations to the following students on the Spring 2006 CIT Dean's List:

**SENIORS**
Sally Hayashi  
Kristen Henry  
Christopher Klifto  
Zachary Martin  
Calvin Ng  
Michael Nigra  
Jennifer Njoroge  
Maureen Tang

**JUNIORS**
Harry An  
Melissa Bartel  
Katie Dolan  
Denver Faulk  
Hsiao-Wen Huang  
Alok Khetan  
KaWai Ko  
Monica Pheifer

**JUNIORS (continued)**
Thomas Saiget  
Amy Staloch  
Jason Tchao  
Jessica Tsang  
Carlene Ulish

**SOPHOMORES**
Chrystal Chan  
Elyse Coletta  
Amanda Diienko  
Brian Freeman  
Akshay Goel  
Arianna Gutierrez  
Wynee Lee  
Joel Palko  
Lisa Plimpton  
Peter Rodgers-Fischl  
Nicholas Wren

Welcome to our Sophomore Class!

Tania Abedin  
Christie Adams  
Tatiana Aguiler  
Chisom Amaechi  
Ramsey Arnold  
Lisa Augustyniak  
Raphael Bertrand  
Daniel Brenner  
Crystal Chan  
Ting-Hsuan Chang  
Angela Chiang  
Shu-Yu Chou  
Elyse Coletta  
Mario Cruz  
James Dent  
Ruchi Desai  
Jodi Desak  
Amanda Diienko  
Frank Dinapoli Marzano  
Catherine Dorsi  
David Fox  
Andrew Frederickson  
Brian Freeman  
Sarah Gillmeister  
Akshay Goel  
John Grudzina  
Bo Gui  
Arianna Gutierrez  
Christine Ho  
Eric Hsu  
Rose Huang  
Nadir Hyder  
Jun Kang  
Stephanie Khuu  
Sanravee Kraisithisri  
Wynee Lee  
Hui-Lian Leo  
Ruosi (Tommy) Li  
Anna Lukasiak  
Chelsea Marsh  
Seena Mehrabanzad  
Krystin Meidell  
Youn Duk Nam  
Michael Niedzwiecki  
Olusheun Ogunsunlade  
Joel Palko  
Lisa Plimpton  
Jenna Pragel  
Peter Rodgers-Fischl  
Roxanne Rodriguez  
Dominic Scorza  
Rogaita Shafi  
Michael Shigemoto  
Philip Short  
Alyssa Siefert  
Kamy Somasundaram  
Akhil Srinivasan  
Reva Street  
Sarah Sukal  
David Sun  
Taha Udyawar  
Sudarsan Venkatachalam  
Jorge Villarreal Aguilera  
Nelia Viza  
Matthew Woodling  
Nicholas Wren  
Jay Yamamoto  
Ting-Yu Yeh  
Annie Zheng
Returning 2005-2006 Exchange Program Participants

**Imperial College, London**  
Brea Carlock  
Samantha Rosenthal  
Kristen Schell

**Aachen University, Germany**  
Serena Hanor  
William Nicoll

**Dortmund, Germany**  
Maureen Tang

---

2006-2007 Exchange Program Participants

**Imperial College, London**  
Denver Faulk

Welcome to our Exchange Students!

**Imperial College, London**  
Mark Carville  
Yii Leong Cheah  
Yves Modert  
Christian Tapolcai  
Yu Zhu

**Aachen University, Germany**  
Denis Oezdemir  
Achim Wechsung  
Inga Janina Wolf

Exchange Program Deadline: **January 12, 2007.** For an application, see Cindy Vicker in Doherty Hall 1101.

---

**Graduation 2006 Awards**

The **Mark Dennis Karl Outstanding Teaching Assistant Award** recipients were Andy Lambe Sooraj Nair and Parag Jain.

**AIChE Professional Promise Award** was presented to Kenneth Hu.

The **Ken Westerberg Award** was presented to Anita Shukla. The memorial fund "The Ken Westerberg Memorial Prize for Excellence in Chemical Engineering Research" has been established by the department with a generous contribution from Aspen Technology and other friends of the Westerberg’s and of the department. This prize is presented every year during the departmental graduation ceremony to a senior who has shown exceptional promise for research in chemical engineering. This prize has been established in the memory of Ken Westerberg who died of leukemia at the very young age of 35. Ken was the son of Art & Barbara Westerberg.

The **Ken Meyer Award** was presented to Shivakumar Kameswaran.

The **Geoffrey D. Parfitt Award for Excellence in Research** was presented to Lara Kovell.
The American Institute of Chemists Foundation Award “For Ability, Character, Scholastic Achievement and Potential” was presented to Mitchell Tai.

The Carnegie Mellon McCabe Society honors the memory of Warren McCabe, one of the great leaders in this department's history, by recognizing students who show an unparalleled dedication to their community. The inductees from the Class of 2005 are: Mary Catherine Mack, Anita Shukla, Sunil Raman, Lara Kovell, Thomas Sabram, and Ann Shchelokova

The Kun Li Award for Excellence in Education was presented to Professor Gary Powers.

Graduate News

Welcome to our new graduate students!

**PhD Students**
- Abdulrahman Alattas, Colorado School of Mines
- Nicolas Alvarez, University of Florida
- Elizabeth Booth, Vanderbilt University
- Salvatore Farina, Cooper Union
- Danish Faruqui, Indian Inst. of Tech., Kanpur
- Nicole Green, Northwestern University
- Jeong Woo Han, Seoul National University
- Lea Hildebrandt, California Inst. of Tech.
- Rui Huang, Zhejiang University
- William Hum, Cooper Union
- Ravindra Kamath, University of Mumbai
- Seda Keskin, Bogazici University
- Ki Chul Kim, Yonsei University
- Viet Lam, Univ. of Calif. at Berkeley
- James Landon, Lehigh University
- Gregory Lapp, Lafayette College
- Adam Malacina, Illinois Inst. of Technology
- William Michalak, University of Utah
- Spencer Miller, Univ. of Minnesota
- Casey O’Brien, Univ. of Colorado, Boulder
- Shheetal Pai, The Ohio State University
- Julia Philip, Princeton University
- Teresa Phillips, Univ. of Wisconsin-Madison
- Deepika Priyadarshini, Indian Inst. of Tech., Kanpur
- Juan Ruiz, UTN – FRR (Argentina)
- Trishna Saigal, Stevens Inst. of Technology
- Raju Vetukuri, Jawaharlal Nehru Tech. Univ.
- Michael Wartmann, Universität Stuttgart
- Weijie Lin, Tsinghua University
- Zhixia Zhong, Zhejiang University

**MS Students**
- Gaurav Bansal, Coimbatore Inst. of Tech., Anna Univ.
- Sarthak Jain, Panjab University
- Marianne Mota, Univ. of Florida

**MChE Student**
- Manav Kumar, Indian Inst. of Tech., Bombay

Congratulations to our second year Ph.D. students who passed their qualifier exams:

Anshul Agarwal
Mohit Aggarwal
Congratulations to the following August 2006 Graduates. We wish them luck in their future endeavors.

Michael Bartkovsky, PhD
Advisors: T. Przybycien and S. Hauan
Title: “Development of an Acoustic-Wave Biosensing Device”

Bhawna Bhatia, PhD
Advisor: D. Sholl
Title: “Theoretical Studies of Adsorption of Chiral Molecules on Intrinsically Chiral Surfaces”

Sartaj Ghai, PhD
Advisors: M. Jhon and C. Amon
Title: “Sub-continuum Thermal Transport Modeling in Solids using Lattice Boltzmann Method”

Shivakumar Kameswaran, PhD
Advisor: L. Biegler
Title: “Analysis and Formulation of a Class of Complex Dynamic Optimization Problems”

Jieyuan Zhang, PhD
Advisor: N. Donahue
Title: “Nitrate Formation in the Atmosphere: Experimental and Theoretical Constraints”

Congratulations to JitKang Lim who received a 2006/7 Dowd Fellowship for his work on hybrid magnetic/plasmonic nanoparticles for cell and biomolecule sorting applications. JitKang is co-advised by Professors Bob Tilton and Sara Majetich (Physics Dept.).

CHEGSA News

This year's marks the 28th year for the CHEGSA Symposium. The symposium will be held on October 5 & 6, 2006. Professor Carol K. Hall from North Carolina State University the will be this year's Keynote Speaker. For more information see: http://symposium.cheme.cmu.edu/106/index.html

2006 AIChE Convention
The department will host the Alumni Reception at the Annual AIChE Meeting on November 13, 2006, at the Hilton San Francisco in San Francisco, CA. We hope to see you there.

Visiting Scholars – Welcome!
Dr. Jie Bao on sabbatical leave from The University of New South Wales in Sidney Australia, is visiting Prof. Erik Ydstie’s research group to work on passivity based control. Prof Bao is one of the worlds leading experts on passivity based control and robustness analysis.

Dr. Ki Jung Yong from POSTECH in Korea is working with Professor Andy Gellman’s group to work on surfaces chemistry studies of nanomaterials. Seongho Jeon from POSTECH in Korea is working with Prof. Andy Gellman’s group on surface science.

Mariano Martin from the University of Salamanca, Spain is working with Prof. Ignacio Grossmann’s group on systematic design optimization methods in process synthesis.

Prof. Hyung Min Kim from Kyonggi University, Seoul Korea is working with Prof. Myung Jhon’s group on computational fluid dynamics and nano/micro scale transport processes modeling via lattice boltzmann method.

Prof. DeHee Kim from POSCO, Korea is working with Prof. Myung Jhon’s group on computational fluid dynamics and nano/micro scale transport processes modeling via lattice boltzmann method.

Ricardo Lima from Portugal is working with Prof. Ignacio Grossmann’s group on optimal synthesis of separation processes.

Euclides Almeida Neto from Brazil is working with Prof. Larry Biegler’s group on dynamic optimization for chemical process operations.

Jose Maria Ponce-Ortega from Instituto Technologico de Celaya, Mexico is working with Prof. Ignacio Grossmann’s group in the area of optimal heat exchanger network design and synthesis.

Arturo Jimenez from Instituto Technologico de Celaya, Mexico is visiting with Prof. Ignacio Grossmann’s group for one year as a Fulbright Scholar.

Rosanna Franco from Petroleos de Venezuela is working with Prof. Ignacio Grossmann’s group in the area of optimization of process systems.

Dr. Shiqiang Hao has joined Prof. David Sholl's group as a postdoctoral researcher. Shiqiang is applying material's modeling to the development of complex oxides for simultaneous clean up of multiple gas contaminants at high temperatures as part of a collaborative project involving CMU, the University of Pittsburgh, and NETL. Prior to coming to CMU, Shiqiang has performed research at the University of Tennessee, the University of Sydney, and Imperial College.

Dr. Pawel Szabelski is visiting Prof. David Sholl's group for five months as a Fulbright Fellow. The Fulbright program is a prestigious fellowship that funds travel exchanges between the US and other countries. Pawel is from the Department of Theoretical Chemistry at the Maria Curie-Skłodowska University in Poland. He works on chiral separations and is collaborating with Prof. Sholl's group on this topic.
Faculty Profile: John Kitchin

I joined the chemical engineering faculty at Carnegie Mellon University in January 2006. I was not always a chemical engineer by title, although I have arguably showed engineering tendencies since I was very young. I started my undergraduate degree at North Carolina State University in chemical engineering, but I switched to chemistry in my first semester after taking organic chemistry (I didn't even get to take Intro before I switched!). I did a co-op at a pharmaceutical company doing drug synthesis development and at the same time did undergraduate research synthesizing organic magnetic molecules. I graduated with a B.S. in Chemistry from North Carolina State University in 1996.

In my last year as an undergraduate I decided I was not interested in a career in organic synthesis but I had not yet decided what to do next, so I moved to the mountains of North Carolina to live with my grandparents who owned a cattle farm. While I considered my future, I made a living as a white water raft guide, UPS delivery man and a rock climbing instructor, although I still baled hay, cleared pastures and helped my grandfather raise cattle to pay the rent. It took about a year before I was so bored that I actually tried to join the Navy! Luckily, I managed to find a job at Lord Corporation in their Materials Division before that happened. I thought Lord would be temporary - just for six months before I went to graduate school, but I was still not sure what I wanted to do next. I stayed there almost 2 years developing magnetorheological fluids and devices. In that time, I worked with many chemical engineers and began to realize that what I wanted to do was combine my chemistry background with the quantitative skills of an engineer. I also noticed the engineers got paid a lot more to do the same work I was doing. In 1999, I went to graduate school at the University of Delaware to get a chemical engineering degree.

Chemical engineering isn't as easy as it sounds, and I needed to take some undergraduate ChemE courses to get caught up before taking the course work for a PhD in Chemical Engineering. It was in this time that I began learning about catalysis, and for my dissertation I studied the chemical properties of alloy surfaces using various surface science techniques and quantum mechanical calculations. After finishing at Delaware, I moved to Berlin, Germany for 18 months to do postdoctoral work at the Fritz-Haber-Institut. Here I focused exclusively on the use of quantum mechanics to study chemical interactions at catalyst surfaces. Specifically, I developed a thermodynamic analysis to investigate segregation effects in alloys under reaction conditions and their impact on the surface chemical properties. I also learned a little German and traveled around Europe drinking beer and wine in six or seven different countries.

My research at CMU is primarily focused on the use of electrochemistry and catalysis in energy applications. Our research will utilize a variety of experimental techniques in our labs, as well as in University research facilities. In addition, we also employ theoretical methods such as quantum and statistical mechanical calculations to investigate reaction mechanisms in atomistic detail. Our current projects are investigating alternative fuel cell fuels such as glycerine and the electrocatalytic synthesis of liquid fuels from carbon dioxide, as well as detailed modeling of surface reactions using quantum chemistry.

On the more personal side, my interests and hobbies have included (in no particular order and may not be currently active): rock climbing, philosophy of all kinds, whitewater kayaking, computer programming, scientific biographies and history, pottery, science fiction, backpacking, mountain biking, wine drinking, and traveling in foreign countries. In graduate school I picked up cooking (particularly Indian food) and ice cream/dessert making. This past summer I grew an herb garden that included three kinds of basil, parsley, sage, rosemary and thyme, lemon thyme, oregano, peppermint, fennel, dill, chives, garlic, lavender and ginger. We also had tomatoes, onions, bell peppers (cream, purple and green), tomatillas, zucchini, giant sunflowers, a cantaloupe and one watermelon. Neither of the melons grew very well. We planted a blueberry bush and raspberry vine. Maybe next year they will have fruit on them. Several seeds did not sprout, like cherry pits, peach pits, and avocado pits. The Granny Smith apple seeds sprouted but did not make it in the drought. Now you know what my most recent hobby has been. Stay tuned for the next ones!