Message from the Department Head

Despite the lingering effects of winter, the spring semester has been an exciting time in the department and proved to be very busy for all of us. This newsletter reflects the dynamic research and educational activities of our faculty, staff, researchers, visitors and students over the past few months. It is a special privilege for me to recognize all of their hard work. During the past academic year, I am pleased to report that several of our faculty members have been recognized through a number of awards.

So far, our academic year has been marked with several key events. October saw a very lively CHEGSA symposium for our PhD students. In addition to showcasing graduate research in the department, we were also pleased to welcome Prof. Professor Athanasios Nenes, a leader in atmospheric chemistry, as our keynote speaker. Moreover, in November our department was strongly represented at the Annual AIChE Meeting in Minneapolis, with over 70 technical and research presentations by our faculty and graduate students. In particular, it was a great pleasure to reconnect with alumni and friends at a banquet celebration for our two emeriti faculty, Profs. Dennis Prieve and Paul Sides.

It is a pleasure to congratulate our faculty for numerous recent awards and recognitions. Among these Prof. Ignacio Grossman has been ranked 41st in the US on the Google H-Index of top scientists. He also received the 2017 Award for Long Term Achievements in Computer Aided Process Engineering at the World Congress of Chemical Engineering in Barcelona. Prof. Bob Tilton was named the Chevron Professor of Chemical Engineering, succeeding Prof. Dennis Prieve, who retired last summer. Prof. Chrysanthos Gounaris has been promoted to Associate Professor and is also a recipient of the CIT Dean's Early Career Fellowship. Congratulations also to Rose Frollini, who retired in December and recently received the Gelfand Award for Educational Outreach. In addition, I am very pleased to welcome the appointments of Dr. Ilhem-Faiza Hakem as an Assistant Teaching Professor, who comes to us from CMU's Department of Materials Science and Engineering, as well as Dr. Alan Russell as Professor of Chemical Engineering, who is
also the Highmark Distinguished Career Professor and Director, Disruptive Health Technology Institute.

We also welcome 43 MS and 33 PhD students who entered last fall, and offer hearty congratulations to our current graduate students. During this academic year two students defended their PhD theses, 14 passed their PhD proposals, and 22 passed their PhD qualifying exams. In addition, our master’s program graduated 41 students in December. Among our undergraduates, it is a pleasure to announce that four Chemical Engineering students have been named in this year's class of Andrew Carnegie Scholars: Palak Bajaj, Emily Carvalho, Jennifer Lott and Cheyenne Shankle, and that Ed Healy was named a finalist for ESWP's George Washington Award. We especially look forward to congratulating our graduating undergraduate, masters and PhD classes in May. Much more information on our planned activities is described in the pages to follow.

I hope you're having a great semester!

Larry
Pictured above are Emeritus Prof. Paul Sides and Dept. Head Larry Biegler, having designated and placed a plaque on the third floor area near the new elevator as the Paul J. Sides Student Alcove. One of Paul's former students, who wishes to remain anonymous, made a monetary gift in honor of Paul's retirement in order to recognize his assistance during the student's time at CMU. The funds were used to furnish this area. Below is a student hard at work in the new alcove.
Congratulations to Bob Tilton for his installation as the Chevron Professor of Chemical Engineering. This honor recognizes Bob's outstanding research and academic accomplishments to date, as well as his continued excellence in his field, and includes financial support for his future research. The Chevron Chair (formerly the Gulf Chair) was presented to Bob by Stacey Olson, President, Chevron Appalachia, LLC, at a ceremony held on February 26, 2018 in the CIT Singleton Room. Many faculty members, staff, students and family were present to celebrate with Bob on this outstanding achievement.

Bob in his new chair, surrounded by his grad students

A retirement party honoring Rose Frollini’s 30 years of service to our department was held on December 12 in Scott Hall. Rose's family, along with many staff and faculty, were there to laud her many accomplishments, both within our department and to the community at large. In addition, Rose was feted at the Holiday Party held for all faculty and staff at the Priory on December 15, 2017.

Rose Frollini, Susana Steppan, and Annette Jacobson: leaders of the Outreach programs.
Katie Whitehead congratulates Chrysanthos Gounaris on his Dean's early Career Fellowship which was awarded in a ceremony on March 27 in the Singleton Room.

**Staff News**

Congratulations to Allyson Danley who was nominated for a CIT Staff Award in the Spirit category. Allyson's nomination recognized her service to our department in significantly improving the CIT experience. The ceremony was held on Wednesday, January 24, 2018 in the Singleton Room.

At the same ceremony Laura Shaheen was recognized for 25 years of service.
Please welcome Project Scientist/Engineer Grigorios Panagakos who will be working with Larry Biegler.

Also welcome Post-Doctoral Fellows Christina Schenk of Trier University, Germany (Biegler), Michael Short from the University of Cape Town, South Africa (Biegler), and Libin Zhang of the University of Utah (Russell). These post-docs will be with us for one to two years.

New research assistants in the department, all recent CMU grads, are: Utsav Awasthi (Grossmann), Sahir Salim Chichkar (Sahinidis), Zixian Cui (Anna), Vibhav Dabadghao (Biegler), Mangalam Lalpuria (Grossmann), Sonal Nayak (Pandis), Irem Sen (Gellman). They will be with us through the spring and summer.

Anne Angyal, who has been working as a temporary employee with Heather DePasquale, has left our department in order to work full-time elsewhere in the University.

A holiday event was held on December 13, 2017 for staff members at the Pittsburgh Glass Center, where they watched a demonstration of glass blowing and then practiced this procedure by making an ornament. This was followed by lunch at the Ace Hotel. Pictured below are staff members Janet Latini, Julie Tilton, Rose Frollini, Shirley Pavlishak, Anne Angyal and Allyson Danley with their handmade ornaments.
We'd like to welcome new Assistant Teaching Professor Dr. Ilhem-Faiza Hakem, who comes to us from CMU’s Department of Materials Science and Engineering. Her office is in DH 3207A (the CPS Lab).

--Kris Dahl. Kris has been invited to speak at the EMBO Workshop on Nuclear Mechano-Genomics at the University of Singapore in April, 2018. In addition, she is to give the keynote address at the 8th World Congress of Biomechanics to be held in Dunlin, Ireland in July, 2018.

--Mike Domach. NMR technology developed by Anthony Meehan and then Chris Castro, under the mentorship of Mike Domach, is being adopted by a lab at the National Institutes of Health (Laboratory of Cardiac Energetics, National Heart Lung and Blood Institute). Mike has participated in transferring this to the NIH. Also, Mike will give the keynote address at the Biological Engineering (IBE) Annual Conference to be held in Norfolk, VA on April 6-7. In July of this year, Mike will participate in the National Academies committee on Continuous Manufacturing for Modernization of Pharmaceutical Production, sponsored by the FDA and BARDA in Washington, D.C.

--Neil Donahue. Neil was quoted in an article in Nature magazine about his affirmation that using energy to create clean electricity, or not emitting pollution in the first place, might be just as beneficial as using China's new giant air cleaners in reducing pollution. Neil was also cited in a CBS Pittsburgh report on his belief that the severity of local winter weather may change in the long term.

--Chrysanthos Gounaris. Chrysanthos is the recipient of the CIT Dean's Early Career Fellowship which is awarded to untenured faculty members and comes with discretionary funds for a three-year period. He has been promoted to Associate Professor.

--Ignacio Grossmann. In the Guide2Research, Ignacio has been ranked 41st in the US and 55th worldwide on the Google H-Index of top scientists. Also, the Ranking Web of Universities has included Ignacio on the list of all time Highly Cited Researchers, ranking at #1655, with 39,724 citations.

--Bob Tilton. Bob has been named as the Chevron Chair in Chemical Engineering (see previous article). Bob's Formulation Engineering class has been recognized as an innovative hands-on workshop.
--Katie Whitehead. Katie was invited to attend the Academy of Achievement’s 52nd International Achievement Summit in London, England in October, 2017. This summit honors individuals who "shape society and enrich culture." Also, Katie has been quoted in Science Magazine about her research in mRNA delivery as a long-term treatment for patients.

Outreach

Rose Doerfler, Caroline Morin, Natalie Isenberg, Owais Sarwar at the Science Center.

On February 22-24, 2018  ChemE's presentation at "Engineer Your Future Week" at the Carnegie Science Center involved applications of plastics, as well as information about chemical engineering careers. Young visitors made shrinky-dinks and learned that they shrink because of how the plastic is processed. Volunteers for this event are pictured above.
Congratulations to Rose Frollini, who recently retired after 30 years in our department, and won the Mark Gelfand Award for Educational Outreach for her groundbreaking outreach work. This will be presented to her at the Celebration of Education Ceremony and Reception in the Rangos Ballroom on April 30, 2018. The Award recognizes Rose's unique position in our department as the Associate Director of the CPS Program, the manager of the CPS lab and the pioneering, hands-on activities that she initiated in STEM outreach. Rose developed activities that have been used at the Women Engineers High School Day, the Carnegie Science Click Program and by the Pennsylvania Department of Education at a professional development program for K-12 science teachers held on CMU's campus for many years.

She has also participated in outreach programs including those at the Carnegie Science Center, the Pennsylvania Governor’s Institute for Physical Science Teachers, the Gelfand Summer Science Sampler and the ERA Summer Engineering Experience. Long an advocate for STEM education, Rose provided training to graduate students on the proper ways to present each demonstration and concept.
Conferences

The latest successful Annual Meeting of the Center for Advanced Process Decision-making (CAPD) took place on March 12-23, 2018. It was followed by the meeting of the Energy Systems Initiative group on Enterprise-Wide Optimization (EWO) on March 14. The group had a total of 45 participants from the process industry. Copies of the slides of the meeting are available at capd.cheme.cmu.edu/newsletters.html.

The Spring Enterprise-Wide Optimization Project Meeting was held on March 14, 2018 and attended by representatives of 20 international corporations. Egon.cheme.cmu.edu/ewocp.

Jose Pinto (Praxair) and Pedro Castro (Univ. of Portugal) at the CAPD Meeting.

Welcome Visiting Scholars

Lin Ma and Jiayuan Kang from Zhejiang University in China have returned to work with Larry Biegler’s group. In addition, Eka Suwartadi I Dewa Putu of Norwegian University of Science and Technology in Norway is working with the Biegler group.

Anibal Santiago Galan Prado from Universidad de Valladolid in Spain and Prof. Eduardo Camponogara of the Universidade Federal de Santa Catarina in Brazil are working with Ignacio Grossmann’s group.
Two of our undergraduate students, Jonathan Calvello and Caroline Morin, are among those who won a grant to compete in the 2018 RASC-AL Mars Ice Challenge hosted by ASA. The team is comprised of 5 CIT students from various backgrounds. The Carnegie Mellon University Tartan Ice Miners intend to apply mining techniques to successfully extract Martian ice with minimal overburden interference and loss of water to sublimation using the "Tartan Ice Drilling System." More information about the project is available on the webpage: https://tartanicedrillingsystem.github.io/

Major declaration night was held on Monday, March 26th in Rangos Auditorium. Freshmen declared their majors during the event with friends, faculty, and department staff on hand to celebrate with them. Pictured below are Jim Schneider and Bob Tilton with two of our new undergrads.
Senior Edward Healy, pictured below with Susana Steppan, was recently chosen as a finalist of the 2018 George Washington Prize given by the Engineering Society of Western PA. This award is for a senior who has demonstrated qualities of academic excellence, service and leadership within the College of Engineering. Edward will receive a Dean's Fellowship to attend graduate school here at CMU.
Congratulations to the following students who were on the CIT Dean’s List for Fall 2017:

SENIORS
Alaina Anand
Palak Bajaj
Jonathan Calvello
Francisco Delgado
Ian Donovan
Eloy Fernandez
Yuanyuan Fu
Edward Healy
Sunah Hong
Simone Hugh Sam
Taigyu Joo
Tanvi Joshi
Neha Kapate
Tiffney Kathir
Shrishti Kedia
Jae Yeon Kim
Ji Yoon Lee
Yun Jung Lee
Jiaying Li
Sooyeon Lim
Jennifer Lott
Benjamin Mersman
Julia Napolitano
Alicia Ng
Jae Gang Oh
Aakash Parekh
Megan Pudlo
Rohan Reddy
Scott Rohrer
Cheyenne Shankle
Shridhar Singh
Cameron Smith
Tianyi Song
Oluwatomisin Soyebo
Kevin Steinhouse
Emily Tencza
Alexandra Vendetta
Jamei Wang
Chase Webb

JUNIORS
Alisandra Welch
Sarah Winget
Roxana Wolfson
Annabella Wong
Michelle Wu
Mengxi Yang
Yilin Yang

SOPHOMORES
Eniola Adeogba
Michelle Bai
Peter Alan Barty
Sanjna Bhartiya
Sung-Jun Byun
Kevin Cai
Teddy Cai
Qilin Cao
Katherine Forrester
Yue Han
Sunjeev Kale
Nin Rebecca Kang
Paul Kim
Christopher Lee
G. Ping Lee
Jacqueline Lewis
Siying Li
Christopher Littrell
Beechen Liu
Anne Noonan
Alexander Noring
Chukwudumebi Ogbogu
Richard Ruales
Grant Seastream
Chaitanya Singh
Sophie Sitter
Frederik Steufmehl
Chung Ho Suh
Jamie Vizelman

Talor Tilton
Yu Zhou
Ph.D. student Michael Davidson was recently awarded a PPG Industries graduate fellowship from the PPG Foundation. Michael is pictured below with Mike Makowski of PPG.

Dow Chemical has renewed its University Partnership Initiative with CMU to support graduate students studying chemical engineering. Nine graduate students have been supported through the initiative since 2011 and currently, Braulio Brunaud and Sreekanth Rajagopalan are working in supply chain optimization under Dow's UPI.
Congratulations and good luck to our students who graduated in Fall 2017:

**PhD**

**Juan Morinelly - PhD**  
Advisor: B. Erik Ydstie. Title: “Adaptive Model Predictive Control with Generalized Orthonormal Basis Functions”

*Irem Sen - PhD*  
Advisor: A. Gellman. Title: “Alloy Catalysis across Composition Space”

**Justin Weinberg - PhD**  
Advisor: T. Przybycien. Title: “Competitive IgG Adsorption on Protein A Chromatography Resins and Improving Resin Performance with PEGylated Ligands”

**MS**

**Abdulelah Alshehri - MS**  
Advisor: C. Gounaris. Title: “The Process Scheduling Optimizer Website (CMUPSO)”

**Utsav Awasthi - MS**  
Advisor: I. Grossmann. Title: “Optimization of Production and Gas Lift for Oil Wells”

**Chintan Bhomia - MS**  
Advisor: B. Erik Ydstie. Title: “Generalized Theory for Logic Model Synthesis”

**Yufei Chen - MS**  
Advisor: J. Schneider, L. Walker. Title: “Hydration of Carboxymethylcellulose Studied Using Raman Spectroscopy”

**Sahir Salim Chichkar - MS**  
Advisor: N. Sahinidis. Title: “Development of High-Fidelity Quantitative Structure Property Relationships for Organic Photovoltaics”

**Zixian Cui - MS**  
Advisor: S. Anna. Title: “Thin Film Development during Particle Adsorption to Confined Bubbles”

**Vibhav Dabadghao - MS**  
Yurong Diao - MS
Advisor: N. Sahinidis. Title: “Discretization for the Standard Pooling Problem”

Nan Ding - MS

Mihir Gada - MS
Advisor: L. Walker. Title: “Modeling of Shrinking Water Droplet in Microfluidic Device”

Yuting Huang - MS
Advisor: N. Sahinidis. Title: “A Systematic Review and Comparison of Existing HPLC Software”

Shashwat Koranne - MS
Advisor: N. Sahinidis. Title: “Optimization of Multilayer Perceptron”

Mangalam Lalpuria - MS
Advisor: I. Grossmann. Title: “Optimal Scheduling of Copper Concentrate Operations Using Priority Slots”

Daniel Lee - MS
Advisor: A. Gellman. Title: “High-Throughput Study of Surface Segregation in Pd_xAu_yCu_1-x-y Alloys”

Yao Li - MS
Advisor: N. Sahinidis. Title: “Tuning MIP Solvers Using Derivative-free Optimization Algorithms”

Gaopo Liu - MS
Advisor: N. Sahinidis. Title: “Tuning Nonlinear Programming Solvers Using Derivative-free Optimization Algorithms”

Raksha Mahalinkam - MS
Advisor: A. Khair. Title: “Inertial Locomotion of a Slender Squirmer”

Sarah Michalik - MS
Advisor: B. Erik Ydstie. Title: “Solar Manufacturing Cost Savings through Horizontal Ribbon Growth of Silicon Wafers”

Anantha Venkataraman Nagarajan - MS
Sonal Nayak - MS
Advisor: S. Pandis. Title: “Response of Particulate Matter Concentration to Coupled Emission Changes of Sulfur Dioxide, Ammonia and Nitrogen Oxides in the United States”

Hardik Panchal - MS
Advisor: N. Sahinidis. Title: “Optimization of Multilayer Perceptron”

Aditya Pasari - MS
Advisor: C. Gounaris. Title: “Solving Exact Inventory and Vehicle Routing Problem”

Wen Ren - MS
Advisor: B. Erik Ydstie. Title: “Stability and Control of Crystallization in Aspirin Production”

Jay Shah - MS
Advisor: C. Gounaris. Title: “Online Optimization for Process Scheduling”

Kekai Shi – MS
Advisor: B. Erik Ydstie. Title: “Modeling and Stabilization of Crystal Shape and Distribution”

Navneet Singh - MS
Advisor: N. Sahinidis. Title: “Implementation of Cycle Inequalities for Bilinear Optimization Problems”

Vaidish Sumaria - MS
Advisor: V. Viswanathan. Title: “Maximal Predictability Approach for Identifying the Right Descriptors for Electrocatalytic Reactions”

Garry Taifan - MS
Advisor: C. Gounaris. Title: “Decomposition Method for Driver Consistent Vehicle Routing Problem”

Yan Wu - MS
Advisor: J. Schneider, L. Walker. Title: “Characterization of Carboxymethylcellulose Solutions by Rheological Methods”

Hanqi Xu - MS
Advisor: D. Prieve, J. Schneider. Title: “Identification of Charge Carriers in Doped Nonpolar Liquids by Electrochemical Impedance Spectroscopy”

Yizu Zhang - MS
Mengjie Zhao - MS  

Zhichun Zhao - MS  
Advisor: I. Grossmann. Title: “Long-Term Planning of Electric Power Infrastructure with TIMES Model”

MS-CPS

Emily Charleson - MS  
Advisor: N. Washburn. Title: “Surfactant Properties of Charged and Uncharged Lignin Grafted Polymers”

Anubhav Khanna - MS  
Advisor: R. Tilton, T. Przybycien, S. Garoff. Title: “Effect of Hexanol Cosurfactant on Sodium Dodecyl Sulfate Driven Marangoni Transport at the Oil/Water Interface”

Aditya Patel - MS  

Amy Stetten - MS

MS - Chemical Engineering and CPS

Yitian Chen - MS  
Advisor: J. Schneider. Title: “Characterization of Molecular Weight and Solubility of Carboxymethyl Cellulose using Size Exclusion Chromatography”

Nikhil Nambiar - MS  

Master of Chemical Engineering

Mariah Richardson

Ziming Wang
Congratulations to the following students who recently presented their research proposals:

Michael Davidson  
Advisor: Lynn Walker  
Controlling spontaneous emulsification at microscale interfaces with block copolymer surfactants

Qi Chen  
Advisor: Ignacio Grossmann  
Computational Tools for Process Synthesis

Keyi Xu  
Advisor: James Schneider  
Identity of Charge Carriers in Surfactant Doped Nonpolar Liquids

Naser Mahfouz  
Advisor: Neil Donahue  
An Inverse Model of the General Dynamic Equation of Atmospheric Aerosols

Marissa Engle  
Advisor: Nikolaos Sahinidis  
Methodology for Developing Helmholtz Energy Equations of State

Lingxiao Yan  
Advisor: James Schneider  
Predicting Mobility of Kilobase DNA during rapid Micelle-ELFSE Separation in Transient CiEj Micelle Network

Wonyup Song  
Advisors: Myung Jhon, Lorenz Biegler  
Modeling and Optimization of Pressurized Water Reactor

Akang Wang  
Advisor: Chrysanthos Gounaris  
Optimization of Vehicle Routing under Uncertainty
Yixin Ye
Advisor: Ignacio Grossmann
Mixed-integer Nonlinear Programming Models for Optimal Design of Reliable Chemical Plants

Benjamin Sauk
Advisor: Nikolaos Sahinidis
Parallelizing Large Scale Optimization Algorithms with GPUs

Rajarshi Sengupta
Advisors: Aditya Khair, Lynn Walker
Coupling Electric Fields and Surfactants to Quantify the Mechanics of Fluid-fluid Interfaces

Danish Iqbal
Advisor: Robert Tilton
Development of Multi-Responsive Magnetic Brush Grafted Nanoparticle Fibrils for Soft Material Actuators

Dana McGuffin
Advisors: Peter Adams, B. Erik Ydstie
Atmospheric Inverse Modeling with Distributed Passivity-Based Input Observers

Charles Sharkey
Advisor: Shelley Anna
Characterization of Interfacial Stabilization and Mechanics for Particle-ligand Stabilized Capsules
Congratulations to our second-year Ph.D. Students who passed their qualifier exams:

Bhavya Balu  
David Bernal Neira  
Kyle Cochran  
Andrew Fox  
Nicholas Golio  
Bowen Huo  
Natalie Isenberg  
Brad Johnson  
Spiro Jorga  
Saif Kazi  
Daniel Lee

Bhagyashree Lele  
Can Li  
Yanxin Li  
Junchi Ma  
Scott Pedu  
Michael Radetic  
Stephanie Stephanie  
Yijia Sun  
Kevin Tran  
Olga Vinogradova  
Yunhan Wen

Good luck to our first-year graduate students who have joined the following professors in their research efforts:

**PhD Students**

<table>
<thead>
<tr>
<th>Name</th>
<th>Faculty Advisor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Martin Burton</td>
<td>Shelley Anna</td>
</tr>
<tr>
<td>Carlos Fernandez Caban</td>
<td>Andrew Gellman</td>
</tr>
<tr>
<td>Zicheng Cai</td>
<td>Erik Ydstie</td>
</tr>
<tr>
<td>Namit Chaudhary</td>
<td>Kathryn Whitehead</td>
</tr>
<tr>
<td>Brian Dinkelacker</td>
<td>Spyros Pandis</td>
</tr>
<tr>
<td>Rose Doerfler</td>
<td>Kathryn Whitehead</td>
</tr>
<tr>
<td>Can Ekici</td>
<td>Lorenz Biegler</td>
</tr>
<tr>
<td>Sandra Fomete</td>
<td>Coty Jen</td>
</tr>
<tr>
<td>Luke Habib</td>
<td>Neil Donahue</td>
</tr>
<tr>
<td>Peter Hayes</td>
<td>James Schneider</td>
</tr>
<tr>
<td>Tsung-Lin Hsieh</td>
<td>Robert Tilton</td>
</tr>
<tr>
<td>Kimberly Hui</td>
<td>James Schneider</td>
</tr>
<tr>
<td>Mackenzie Humes</td>
<td>Neil Donahue</td>
</tr>
<tr>
<td>Jason Kabarowski</td>
<td>Aditya Khair</td>
</tr>
<tr>
<td>Jihoo Kim</td>
<td>Dennis Prieve</td>
</tr>
<tr>
<td>Virginia Lane</td>
<td>Todd Przybycien</td>
</tr>
<tr>
<td>Mingjie Liu</td>
<td>John Kitchin</td>
</tr>
<tr>
<td>Brandon Lopez</td>
<td>Neil Donahue</td>
</tr>
<tr>
<td>Kaizen Ma</td>
<td>Nikolaos Sahinidis</td>
</tr>
<tr>
<td>Eyan Noronha</td>
<td>Erik Ydstie</td>
</tr>
<tr>
<td>Aini Palizhati</td>
<td>Zachary Ulissi</td>
</tr>
<tr>
<td>Jingyi Pan</td>
<td>Robert Tilton, Todd Przybycien</td>
</tr>
<tr>
<td>Robert Parker</td>
<td>Lorenz Biegler</td>
</tr>
<tr>
<td>Shivam Sahu</td>
<td>Aditya Khair</td>
</tr>
</tbody>
</table>
Owais Sarwar, Nikolaos Sahinidis
Connor Valentine, Lynn Walker
Hua Wang, Chrysanthos Gounaris
Deyu Yang, Lynn Walker
Yilin Yang, John Kitchin
Jungwoong Yoon, Zachary Ulissi
Noriyuki Yoshio, Lorenz Biegler
Ni Zhan, John Kitchin

MS Students

<table>
<thead>
<tr>
<th>Name</th>
<th>Faculty Advisor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abhijeet Anil Alshi</td>
<td>Nikolaos Sahinidis</td>
</tr>
<tr>
<td>Aakash Bhatia</td>
<td>Nikolaos Sahinidis</td>
</tr>
<tr>
<td>Pengfei Cheng</td>
<td>Ignacio Grossmann</td>
</tr>
<tr>
<td>Aditya Chindhade</td>
<td>Nikolaos Sahinidis</td>
</tr>
<tr>
<td>Kedar Dabhadkar</td>
<td>Nikolaos Sahinidis</td>
</tr>
<tr>
<td>Anuja Deshpande</td>
<td>Ignacio Grossmann</td>
</tr>
<tr>
<td>Yiqun Fu</td>
<td>Lynn Walker, James Schneider</td>
</tr>
<tr>
<td>Reshma Gajula</td>
<td>Nikolaos Sahinidis</td>
</tr>
<tr>
<td>Shail Godiwala</td>
<td>Erik Ydstie</td>
</tr>
<tr>
<td>Naien He</td>
<td>Lorenz Biegler</td>
</tr>
<tr>
<td>Yanyan Hu</td>
<td>Lorenz Biegler</td>
</tr>
<tr>
<td>Kshitij Ingale</td>
<td>Nikolaos Sahinidis</td>
</tr>
<tr>
<td>Geethanzali Kamalanathan</td>
<td>Erik Ydstie</td>
</tr>
<tr>
<td>Nithish Kaushik</td>
<td>Andrew Gellman, Nisha Shukla</td>
</tr>
<tr>
<td>Rishabh Kumar</td>
<td>Nikolaos Sahinidis</td>
</tr>
<tr>
<td>Xiandong Li</td>
<td>Chrysanthos Gounaris</td>
</tr>
<tr>
<td>Fanyi Meng</td>
<td>Erik Ydstie</td>
</tr>
<tr>
<td>Chinedu Okorafor</td>
<td>Kathryn Whitehead</td>
</tr>
<tr>
<td>Darshan Pandya</td>
<td>Nikolaos Sahinidis</td>
</tr>
<tr>
<td>Nikhil Rajeev</td>
<td>Ignacio Grossmann</td>
</tr>
<tr>
<td>Tushar Rathi</td>
<td>Chrysanthos Gounaris</td>
</tr>
<tr>
<td>Jiachun Shi</td>
<td>Lynn Walker, Aditya Khair</td>
</tr>
<tr>
<td>Ningguan Sun</td>
<td>Robert Tilton, Todd Przybycien, Stephen Garoff</td>
</tr>
<tr>
<td>Rohit Tawde</td>
<td>Nikolaos Sahinidis</td>
</tr>
<tr>
<td>Sudarshan Vijay</td>
<td>Noonan, Tomasz Kowalewski</td>
</tr>
<tr>
<td>Aman Wagadre</td>
<td>Nikolaos Sahinidis</td>
</tr>
<tr>
<td>Sijie Xian</td>
<td>Kathryn Whitehead</td>
</tr>
<tr>
<td>Haokun Yang</td>
<td>Ignacio Grossmann</td>
</tr>
<tr>
<td>Zong Qian Yu</td>
<td>Zachary Ulissi</td>
</tr>
<tr>
<td>Xin Zhang</td>
<td>Robert Tilton, Todd Przybycien, Stephen Garoff</td>
</tr>
<tr>
<td>Hanqin Zhao</td>
<td>Lynn Walker, James Schneider</td>
</tr>
<tr>
<td>Lilin Zhao</td>
<td>Lynn Walker</td>
</tr>
<tr>
<td>Wen Zhong</td>
<td>Zachary Ulissi</td>
</tr>
</tbody>
</table>
ChEGSA and ChEMSA

Congratulations to the new ChEMSA Officers:

PRESIDENT: Sahir Chichkar  
VICE-PRESIDENT: Anantha Venkatraman  
SOCIAL CHAIRS: Mangalam Lalpuria and Garry Taifan  
ACADEMIA CHAIR: Vaidish Sumaria  
FINANCE CHAIR: Hardik Panchal  
TECHNICAL CHAIR: Shashwat Koranne  
COMMUNICATION CHAIR: Anubhav Khanna

Congratulations to the new ChEGSA Officers:

PRESIDENT: Nicholas Golio  
VICE-PRESIDENT: Andrew Fox  
SYMPOSIUM CHAIRS: Kathy Fein, Ben Sauk, Charles Sharkey  
SOCIAL CHAIRS: Jason Kabarowski, Marty Burton, Brandon Lopez, Pari Palizhati, Brian Dinkelacker, Robby Parker  
WEBMASTER: Marissa Engle  
GSA REPRESENTATIVES: Qin Gu, Luke Habib, Bowen Huo  
FUNDRAISING CHAIR: Brad Johnson  
OUTREACH COORDINATOR: Natalie Isenberg
<table>
<thead>
<tr>
<th>Name</th>
<th>Institution/Group</th>
<th>Title</th>
<th>Date of Seminar</th>
</tr>
</thead>
<tbody>
<tr>
<td>*Ben Freireich</td>
<td>Particulate Solid Research, Inc.</td>
<td>What Is a Particle?</td>
<td>January 19, 2018</td>
</tr>
<tr>
<td>Joelle Frechette</td>
<td>Johns Hopkins University</td>
<td>Adsorption, Contact and Adhesion at Elastic and Capillary Interfaces</td>
<td>January 23, 2018</td>
</tr>
<tr>
<td>Philippe Sautet</td>
<td>UCLA</td>
<td>Modelling catalytic activity on transition metal catalysts: From generalized coordination to dynamic behavior</td>
<td>January 30, 2018</td>
</tr>
<tr>
<td>Fernando V. Lima</td>
<td>West Virginia University</td>
<td>Process Systems Framework for Intensification and Modularization of Natural Gas Utilization Processes</td>
<td>February 6, 2018</td>
</tr>
<tr>
<td>*John Riley</td>
<td>National Institute of Standards and Technology, Center for Neutron Research</td>
<td>Branching and alignment in reverse worm-like micelles studied with simultaneous dielectric spectroscopy and RheoSANS</td>
<td>February 9, 2018</td>
</tr>
<tr>
<td>Wendy Thomas</td>
<td>University of Washington</td>
<td>Transportation and Adhesion of Microparticles; Lessons from bacteria</td>
<td>February 13, 2018</td>
</tr>
<tr>
<td>*Anthony Kotula</td>
<td>National Institute of Standards and Technology, Polymers Processing Group</td>
<td>Polycaprolactone Crystallization in Additive Manufacturing and Rheology</td>
<td>February 16, 2018</td>
</tr>
<tr>
<td>Lola Eniola-Adefeso</td>
<td>University of Michigan</td>
<td>Understanding Cellular-Particle Interactions in Blood: Implications in for Disease Pathology and Treatment</td>
<td>February 27, 2018</td>
</tr>
<tr>
<td>*Melikhan Tanyeri</td>
<td>Duquesne University</td>
<td>Hydrodynamic Trap: A new microfluidic tool for studying soft matter</td>
<td>March 9, 2018</td>
</tr>
<tr>
<td>Anne Robinson</td>
<td>Tulane University</td>
<td>G-protein coupled receptors: Overcoming challenges to expression, characterization, and screening assays for drug discovery</td>
<td>April 24, 2018</td>
</tr>
<tr>
<td>Christine Bryant</td>
<td>Covestro</td>
<td>Toor Lecture</td>
<td>May 1, 2018</td>
</tr>
</tbody>
</table>
Carnegie Mellon's commencement will take place at 11am on Sunday, May 20th in Gesling Stadium (rain or shine). The procession of candidates across campus will begin at 10:15am. Guests are asked to be seated in the stadium by 10am. The ceremony will begin at 11am and last about 90 minutes.

The Chemical Engineering Department ceremony will take place at noon on Saturday, May 19th in the Weigand Gym, Cohon University Center. After the ceremony, a special reception will be held at the Tartans Pavilion, Resnik House for graduates and their guests. Tickets are not issued or required.

The Doctor’s hooding ceremony will take place at 4:30pm on Saturday, May 19th at the Carnegie Music Hall, Carnegie Museum, 4400 Forbes Avenue. Doctor's candidates, participating faculty and other ceremony participants will robe in the Carnegie Music Hall Foyer, Carnegie Museum at 3:30pm. The ceremony will last approximately 90 minutes. Doors will open at 3:30pm and seating is first come, first served. A reception will immediately follow in the Carnegie Music Hall Foyer.

Be sure to follow the schedule of events and latest news at the commencement web site: http://www.cmu.edu/commencement/.

If you have any questions about the university commencement ceremony, please find contact information at this site: http://www.cmu.edu/commencement/contact-us/index.html.
Take our Daughters and Sons to Work 2018 is scheduled for Thursday, April 26. If you'd like to register for this, please use the link below:

http://www.cmu.edu/take-our-kids-to-work/registration/index.html

The AIChE Annual Meeting will be held this year in Pittsburgh at the David L. Lawrence Convention Center on October 28 - November 2, 2018. Our department will be hosting several events, the details of which will be available at a later date.

The next Enterprise Wide Optimization meeting will be held in September, 2018 here in our department. Please see Ignacio Grossmann for more details.

The 40th Annual ChEGSA Symposium will be held on Thursday and Friday, October 25 and 26, 2018. In the meantime, keep an eye on the ChEGSA Symposium website (chegsa.cheme.cmu.edu/symposium/) for information. More details regarding the schedule, abstract deadlines and judging requests will be available as we get closer to the event.

Spring Carnival will take place on April 19-21, 2018. The Department will host an Alumni, Faculty, Student Mixer on Friday, April 20 at 3:00pm, to be followed by the ChEGSA Wine & Cheese Happy Hour at 4:30pm. For details of the many University events scheduled please see https://www.springcarnival.org/.
**Alumni News**

Alex Dowling (PhD, ChemE '15) is now an Assistant Professor of Chemical Engineering at the University of Notre Dame.

Muge Erdirk-Dogan (PhD, ChemE, '07), an Amazon executive of North America Retail, was interviewed by CBS on sales by Amazon on Cyber Monday:
https://app.criticalmention.com/app/#/clip/share/31024312?token=16955b76-44d2-4490-9d45-4e33d1845fb7

Lynn Yanyo (BS, ChemE, '82) Alum and ChemE Advisory Board Member, President of DeNovo Ground and owner of Slateplate, was featured on "Good Morning America" on March 1, 2018.

Norm Wagner (BS, ChemE '84), Professor of Chemical and Biomolecular Engineering at the University of Delaware, has won the Sustained Research Prize from the Neutron Scattering Society of America.
I joined the department in August 2017 and have thoroughly enjoyed my time in Pittsburgh and at CMU for the past 7 months! I grew up in many places since my dad was a civilian working for the US government. I was born in Vicenza, Italy, about 30 minutes outside of Venice, in the foothills of the Dolomite mountains. Coincidentally, my dad’s family emigrated from Italy to the US in the early 1900’s, and because of my heritage I was able to apply for dual citizenship with Italy when I was a kid. I don’t speak much Italian, but love to visit, and the EU passport certainly makes travel easier! We moved near the NATO headquarters outside of Mons, Belgium where I attended a Canadian school for joint language (English/French) education. Growing up overseas was an amazing opportunity to travel and see sites all over Europe; I vividly remember first/second grade class trips to Cologne, Germany, a class ski trip to the Swiss Alps, camping trips in Italy, and a bus tour of Turkey. When I was nine, my family moved back to the US to the Maryland suburbs outside of Washington DC and Baltimore, where my family still lives today. My house in high school was about 3 blocks from the National Institutes of Health, which inspired me to go into science and allowed me to start doing research as a high school student.

My introduction to chemical engineering was quite accidental. I enjoyed chemistry in high school so went to the University of Delaware, which was fairly close to DC and had a stronger chemistry program than the state schools nearby. I don’t remember anyone ever telling me what chemical engineering was when I was in high school, and I started with no intentions of being an engineer. My first week in the dorms a number of students were bragging about how they were in the chemical engineering program, which was known as one of the hardest at Delaware. All of the first-semester courses were the same anyway, and I was intrigued by more
math/physics in later years, so I figured I would try it for a year and switched majors at the end of my first week on campus. 12 years later I’m still in chemical engineering! I enjoy many areas of science, so while at Delaware I also majored in physics and did minors in math, computer science, materials science and chemistry. After Delaware, I spent a summer at Imperial College in London and started a Master’s degree at Cambridge (part III of the math tripos), the same program that Aditya Khair did his, where, in addition to learning math and fluids, I tried rowing crew and got to travel all over the UK and Europe. Stephen Hawking’s recent passing reminds me of that time, because he had an office in the same building complex. I didn’t see him often, but he would occasionally pass through the building atrium where we usually studied, and generally the experience gave me some perspective about mathematics and science outside of chemical engineering.

I came back to the US for my PhD at MIT and post-doc at Stanford. I was co-advised at MIT by Michael Strano (experimental carbon nanotubes devices) and Richard Braatz (systems engineering) and was lucky to work on many projects modeling nanotube devices, such as DNA-wrapped single-nanotube optical sensors, with a mix of system, stochastic methods, molecular dynamics, and thermodynamics. Attending the systems group meetings during my PhD gave me an appreciation for how those methods can be very practical in approaching complex problems with many parameters, and I’m excited to continue these interactions with the CAPD program here at CMU! After my PhD I moved to Stanford/SLAC for a two-year post-doc working with Jens Nørskov, who leads one of the largest catalysis programs in the world. It quickly became apparent that my PhD work with systems and modeling (which was atypical for the Nørskov group since I had never done quantum mechanical modeling) would be most helpful addressing the large materials discovery and mechanism reduction problems in catalysis. I showed that applying systems and machine learning techniques could make these problems tractable, and this is now an exciting and rapidly growing area in the field.

My work at CMU generally uses molecular simulations, high throughput computing, and systems or machine learning methods to quickly build accurate structure/property relationships to identify trends, discover materials with interesting properties, and guide experimental work. I love that my work requires us to use methods from chemical engineering, physics, computer science, and materials science every day. I joined CMU because of the strong systems influence ensuring graduate students who are excited to do theoretical work, experimental collaborators in the department (both catalysis and complex fluids) who are doing experiments I am interested in, and a broader interest in predictive data-driven methods across CMU. I now have three PhD students (Kevin Tran, Pari Palizhati, Junwoong Yoon), two MS students (Wen Zhong and Zong Qian Yu) and an undergraduate (Kaylee Tan). We’re at the beginning stages and still building up methods and data, but we’re looking at applications in surfactant design, electrochemical catalyst discovery, and automated mechanism reduction, among others. I hope that we soon have some published results to talk about!

My time in Pittsburgh has been very enjoyable. I really appreciate the sense of community here and live next to Frick Park (down the street from ChemE colleague Neil Donahue) and a few blocks from a close friend from grad school who’s in the chemistry department. My wife is an
air quality environmental consultant (who works with many chemical engineers!) and has enjoyed interactions with the large air quality community at CMU. We have a (not-so-)small puppy Kepler (named after the astronomer Johannes Kepler), a lab/Australian shepherd mix who has attended a few department happy hours!

My wife and I really enjoy traveling and biking. We met on the cycling team at MIT. Collegiate bike racing was a big part of my grad school life, giving me reason to exercise and spend time exploring the area outside of Boston, and providing an outlet for frustrations when data generation was slow in lab. I tell all of my students to find something (hobby, student groups, etc.) to keep some balance during the many years of PhD studies. We made a large number of friends across the northeast (some of whom are in Pittsburgh now), did about a hundred bike races during our time there and won two national collegiate championships. Although we don’t race or ride as much as we used to, we have enjoyed biking in the Pittsburgh area and generally try to do one or two bike-related vacations each year (previous trips have been Switzerland/Germany, Italy, and this year to New Zealand and Spain). We also did the Pittsburgh Dirty Dozen bike race this year with fellow CMU faculty Stef Sydlik, Neil Donahue, and Shawn Litster.

I would love to meet more alumni of the chemical engineering department, so feel free to email or stop by and chat. I’m looking forward to many more years at CMU!

**Social Media**

**Follow** us on TWITTER: [http://www.twitter.com/cmucheme](http://www.twitter.com/cmucheme) (@CMU_ChemE)

**Like** us on FACEBOOK: [http://www.facebook.com/cmucheme](http://www.facebook.com/cmucheme)

**Subscribe** to us on YOUTUBE for current updates: [www.youtube.com/used/CMUEngineering](http://www.youtube.com/used/CMUEngineering)

**Watch** the following:

Bob Tilton: Chemical engineering course: formulation engineering
[https://www.youtube.com/watch?v=puur38WsLz0](https://www.youtube.com/watch?v=puur38WsLz0)

**Others of interest from CIT:**

Machine learning research in the College of Engineering
[https://www.youtube.com/watch?v=tnicGW9KA40](https://www.youtube.com/watch?v=tnicGW9KA40)