Congratulations to The Chemical Engineering Class of 2018!

Each year the department takes time to recognize the accomplishments of its students, staff and faculty. We have the distinct honor of cultivating the minds of tomorrow while simultaneously developing the technologies of today.

“There is a good reason they call these ceremonies ‘commencement exercises.’ Graduation is not the end, it’s the beginning.”

Inside this issue...

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• Department Highlights
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• Mark Your Calendar

Annual Welcome Barbecue!

May 2018
A letter from Dr. Alan West, Chair

The Department has had many exciting changes in this past year. We hope that you will enjoy hearing about the progress that has been made. We have hired three new faculty members. An introduction to Dr. Lauren Marbella, from the University of Cambridge, is given below. Stay tuned to additional newsletters for further introductions. We have introduced a new electives course, Computational Fluid Dynamics in Chemical Engineering which is being taught by Dr. Boyce. We hope to increase the number of electives offered so that students can gain even more specialized experience during the pursuit of their degree. Our Department will grow in size as we welcome 13 new PhD students that will be joining us in the Fall 2018 semester. Our labs on the 10th floor, which will house research in catalysis, electrochemistry, and atmospheric science, are scheduled to be completed this summer and our faculty is excited to get back in there. Please feel free to drop us a note or stop on by if you would like to be involved. We always welcome back our Alums!

The Department Welcomes our New Faculty

Dr. Lauren Marbella

The Department of Chemical Engineering is delighted to welcome Assistant Professor Lauren Marbella on July 1, 2018. Dr. Marbella is currently a Marie Skłodowska-Curie Postdoctoral Fellow and the Charles and Katharine Darwin Research Fellow at Darwin College in the group of Prof. Clare Grey, FRS at the University of Cambridge. Her postdoctoral research focuses on using NMR and MRI to map the molecular-level processes that underpin failure events in Li and beyond-Li batteries – from volume expansion in alloyed anodes to dendrite growth in all-solid-state batteries.

Dr. Marbella received her Ph. D. in 2016 under the direction of Prof. Jill Millstone at the University of Pittsburgh. During her Ph. D., Dr. Marbella used a combination of solution and solid-state NMR techniques to provide unprecedented insight into metal nanoparticle formation and function. Her work led to the discovery of new syntheses and new materials with potential applications ranging from heterogeneous catalysis to therapeutics.

At Columbia, Prof. Marbella’s research will focus on designing novel materials and in situ characterization tools for a wide variety of energy-related materials, including electrochemical energy storage and conversion. Her research draws inspiration from both chemistry and biology to create next generation batteries, catalysts, and optics.

Structural transformation of black phosphorus anodes during electrochemical cycling of Na-ion batteries (Dr. Marbella’s postdoctoral research).
Using self-assembly, scientists could create custom materials that are both versatile like biological systems and tough like industrial ones. These materials could be used in better water purifiers, more efficient solar cells, faster catalysts that improve manufacturing, and next-generation electronics. Using self-assembly in manufacturing could also lead to cheaper and more efficient processes. Unfortunately, spontaneous self-assembly relies heavily on the particles’ characteristics. Use different particles, and self-assembly will either form different structures or not occur at all.

But researchers are looking into a different approach that will work no matter what type of particle they use. With this method, scientists attach a material that wants to self-assemble to a different nanomaterial that doesn't. The materials that want to self-assemble act like Velcro strips used to hang pictures. Normally, the pictures and wall wouldn't stick together. But by applying a Velcro strip to each one and pushing on them, they lock in place. With this method, scientists could connect any type of nanoparticles and do so in whatever form they wish. DNA is one of the most promising forms of this nano-Velcro. Scientists at the Center for Functional Nanomaterials (CFN), a DOE Office of Science user facility at Brookhaven National Laboratory, are investigating this method.

"Using DNA, we can instruct particles how to connect to each other," said Oleg Gang, a CFN researcher and Columbia University professor. When scientists attach synthetic DNA to nanoparticles, the DNA strands pair up in the same way they do in every living thing, bringing the nanoparticles along.

Program Highlights: New Course

Boyce: Computational Fluid Dynamics in Chemical Engineering

This course introduces the fundamentals of numerical algorithms for modeling dynamics of fluid flow computationally. Includes various approaches to discretize time and space on structured and unstructured grids with a variety of boundary conditions. Involves programming of basic CFD codes in MATLAB or Python to test example problems in fluid mechanics with different discretization schemes. Uses open-source software OpenFOAM to investigate more complex geometries and numerical approaches. Introduction to simulation of multiphase flow.
Faculty Updates

Dr. Daniel Esposito Wins 2018 National Science Foundation Career Award

Five Columbia Engineering professors have won the National Science Foundation’s prestigious Faculty Early Career Development (CAREER) awards this year. Their work carries extraordinary transformative potential: Dan Esposito is developing electocatalytic materials to propel a future of abundant solar fuels. The grants, each totaling $500,000 over five years, are among the most competitive given by the NSF.

“We are so pleased for our professors, whose forefront research promises to bring innovations that will benefit humanity,” says Mary Boyce, Dean of Columbia Engineering. “They join a growing cadre of NSF CAREER award winners on our faculty, whose research is addressing a wide range of challenges from sustainability to connectivity.”

Daniel Esposito, assistant professor of Chemical Engineering, leads a research group that develops solar, catalytic, and electrochemical energy conversion technologies that convert abundant and renewable solar energy into storable “solar fuels” such as hydrogen. For his CAREER award, Esposito and his lab will develop new electocatalytic materials that could significantly improve the efficiency and selectivity of complex electrochemical reactions. Esposito is especially focused in exploring how electrochemical reactions occur at the buried interface between the overlayer and metal catalyst, with hopes of exploiting any unique opportunities to control chemical reaction pathways discovered there.

Student Updates

Chemical Engineer Junior Justin Bui Awarded Prestigious Goldwater Scholarships

For showing “exceptional promise” of becoming the “next generation of research leaders,” Columbia Engineering junior received Goldwater Scholarships, among the most prestigious awards recognizing top undergraduates in engineering, mathematics, and the natural sciences. Chemical engineer Justin Bui ’19 was named Goldwater Scholars, garnering up to $7,500 each for their studies over the next year. Established in honor of Arizona Senator Barry Goldwater, the federally-endowed Goldwater Scholarships are considered the preeminent awards of their kind. Just 211 awardees were selected this year from 1,280 nominees.
With the resurgence of interest in artificial intelligence (AI) and its applications in chemical engineering, Professor Venkat Venkatasubramanian has been receiving many requests to speak and to write about this important topic. In June 2017, Venkat gave an invited lecture on this topic at the 2040 Visions of Process Systems Engineering: A Symposium on the Occasion of George Stephanopoulos’s 70th Birthday and Retirement from MIT. In the photo right, one can see Professor George Stephanopoulos listening to Venkat’s lecture. The lecture video can be accessed here: https://www.youtube.com/watch?v=7YCDWuK7e-Y&index=7&list=PL1Z8XsQQiN4MUNGscZSeoT_kr9J-lonC&t=0s

More recently, Venkat delivered the Park and Veva Reilly Distinguished Lecture at the University of Waterloo, Canada, on April 9, 2018, on the same subject.

Venkat has also been invited to write a perspective paper on this topic for the AIChE Journal, which will appear later this year. Artificial intelligence started off with great promise in the early 1980s, spurred by the successes of the expert system paradigm in certain applications. This prompted a flurry of research activities in process systems engineering (PSE) in the mid-1980s. However, as the ensuing three decades showed, AI didn’t quite live up to its promise in PSE. In this paper, Venkat reviews what went wrong with AI, and discusses how this time it is different – the time for AI in chemical engineering, and in other domains, has arrived, finally. The next 30 years will witness phenomenal progress in AI, with transformational impact on human societies. Venkat offers possible scenarios of the coming phases of AI, and discusses the challenges, opportunities, and emerging trends in diverse areas such as molecular products design, pharmaceutical manufacturing, and systemic risk management.

On a different subject, Venkat was interviewed by the Nautilus Magazine on the topic of fair income inequality, the theme of his recent book, How Much Inequality Is Fair? Mathematical Principles of a Moral, Optimal, and Stable Capitalist Society, published by Columbia University Press in July 2017. The interview can be accessed here: http://nautil.us/issue/52/the-hive/is-there-an-ideal-amount-of-income-inequality

Venkat was invited to give lectures on this topic as well. He made presentations at the University of Oxford (UK), Imperial College of Science, Technology, and Medicine (UK), Institute for Mathematical Sciences (India), Ohio State University, Prudential Life Insurance, and the Committee on Global Thought, Columbia University.

Dr. Yu Luo, former doctoral student in the Venkatasubramanian lab, joined Professor Babatunde Ogunnaike’s lab at the University of Delaware as a post-doctoral researcher.

Dr. Resmi Suresh joined Venkat’s group as a postdoctoral researcher in July. She earned her PhD at I.I.T.-Madras, India, working with Venkat’s former doctoral student, Professor Raghu Rengaswamy.

Dr. Zhizun “Albert” Zhang, Dr. Ying-Fei Li, and Dr. Miguel Remolona successfully defended their doctoral dissertations, in that order, in this academic year. Miguel is Venkat’s 37th doctoral student.
The Department welcomes 13 new PhD-track students to the graduate program starting Fall 2018. The incoming class of PhD students is a particularly gifted group from some of the top Chemical Engineering programs. In addition to their outstanding academic performance, this year’s class has a diverse range of research experiences on which to build during their graduate studies. **Richard May** (B.S. in Chemical Engineering from CalTech) spent the summer of 2017 at Tesla Motors, where he studied strategies for mitigating the growth of dendrites in Li-ion batteries. **Dimitri Livitz** (B.S. in Chemical Engineering from U Mass Amherst) joins the department from the Broad Institute of MIT and Harvard, where he developed statistical algorithms and visualization tools for studying cancer genomics. **Salomon Vainstein** (B.S. in Chemical Engineering from Johns Hopkins) was selected as an Amgen Scholar and spent the summer of 2017 at Columbia medical school studying the immune response to pathogenic bacteria. **Azin Padash** (M.S. in Chemical Engineering from University of Tehran) completed her M.S. thesis on computation fluid dynamics of multiphase flows and is enthusiastic to work with Prof. Boyce on related topics here at Columbia. **Dong An** (B.S. in Chemistry from Xiamen University) has been working with a New York-based startup company, Algikit, to develop biodegradable and non-toxic biopolymers for use in sustainable textiles. We look forward to welcoming the new PhD students this fall!

Undergraduate Institutions of new PhD-track students:

- California Institute of Technology
- Columbia University
- John Hopkins University
- King Fahd University
- Princeton University
- University of California, Berkeley
- University of California, Los Angeles
- University of California, Santa Barbara
- University of Massachusetts, Amherst
- University of Pennsylvania
- University of Tehran
- University of Texas, Austin
- Xiamen University

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**The Department Welcomes our New Staff**

**ChemE Operations Manager: Aurna Malakar**

Aurna Malakar joined Chemical Engineering Department on June 12th, 2017 as the new Operations Manager. She graduated with a Bachelor of Arts in Public Administration and Masters in Public Administration with concentration in Program Performance Management from Rutgers University. Aurna was previously employed at Columbia University Medical Center as Administrative Coordinator and prior to that as a Program Coordinator at Institute for Entrepreneurial Leadership. She currently overseas purchasing, daily operational functions of office, assist the Director of Finance and Administration with hiring, ABET and student affairs. We are very excited to welcome Aurna to our team!
Since May of 2016, Robert G. Bozic LTC USA(Ret) (CU PhD 2008) has sponsored a Columbia Chemical Engineering Fuel Cell Car Demonstration and Competition, a special chemical engineering themed Science Technology Engineering and Meth (STEM) Outreach with the strong support of the Chemical Engineering Graduate Organization (CheGO). In May 2016, the first Columbia Chemical Engineering Fuel Cell Car Demonstration and Competition was planned, developed, and executed in order to inspire and educate local high school students about chemical engineering with a hands-on experience modelled after the American Institute of Chemical Engineers (AIChE) ChemE Car Competition using the X7 Fuel Cell Car from Thames and Kosmos. This competition was part of an outreach event organized by ChEGO under the leadership of Christianna Lininger, Ph.D. Candidate and Anna Dorfi, Ph.D. Candidate, and sponsored Robert.

More recently, the CU Fuel Cell Car Competition became an exciting part of the CEN E2100 course in the Fall 2016 and Fall 2017 semesters in which CU Graduate Students teach the undergrads about the fuel cell car and there is a chemical engineering competition to see what team can fill the car with just enough fuel to get as close to the finish line without any part of the car on or over the line. Ten of the Thames and Kosmos X7 fuel cell cars affectionately named after the Columbia themes (Roar-ee, Pride, Lion, Lioness, Cub, and Ivy.) and electrochemical engineering themes (ChemE, Electro, Voltaic, and Galvanic) were used in graduate student led competition. Over 30 students and visitors were introduced to this unique chemical engineering competition concept and encouraged to participate. The first event would not have been possible without the support of the following Columbia Chemical Engineering Graduate Students: Ece Erturk, Emily Hsu, Gianna Credaroli, Thi Vo, Christianna Lininger, and Anna Dorfi. The event on 22 Sep 2016 was run by the following grad students: Andrew Jimenez, Xuanting Wang, Yong Dou, Thi Vo, Yuta Inaba, and Walaa Abdallah. The 26 Sep 2017 competition was run by the following grad students: Alex Cook, Yupeng He, Shuting Xiang, Dennis Bizios, Vera Smirnova, and Egor Antipov. Tremendous, administrative and logistical support was provided by Kathy Marte and Aurna Malakar. Logistical and photographic support was provided by Ariel Sanchez.
Department Events

Industry Panel

The Department hosted an Industry Panel with the Young Chemist Committee which concentrated on the “Transition from Academic Studies to a Career in Industry”. For many college students, the thought of graduation is fear-inducing. After years of carefully scheduled classes and activities, having to step out into the unknown without a safety net can be scary. We hope for a stream of industry professionals willing to return to campus to share their stories, career trajectories, and graduate school experiences, giving helpful advice to students along the way. This was an excellent chance for the students to hear from professionals in industry from companies such as Pepsi Co, AMC Engineering, BASF, Con Edison, and more. We want to thank all of our panelists for participating.

If interested in participating in this year or next year’s Industry Panel please contact Irina Katz (ik2380@columbia.edu).

Chemical Engineering Department awarded with the 2017 Chimie Industrielle Research Scholarship

The Société de Chimie Industrielle awarded the Chemical Engineering Department with the 2017 Société de Chimie Industrielle Research Scholarship.

This took place at the 2017 biennial International Palladium Medal Dinner on Thursday, June 1, 2017 in the Grand Ballroom of the Roosevelt Hotel in New York.

This Scholarship sponsors three outstanding students who are pursuing research within Columbia University. This summer we have a talented group of students who have received a summer fellowship from the Societe De Chemie Industrielle. Benjamin Ed Sator will be conducting research in the Esposito Research Group. Deboleena Dhara will be conducting research with the Kumar Group. Paulina Babiak will be conducting research with the Obermeyer Group.
Department Events

Company Recruiting Events: Merck

"Real" jobs and internships remain key interests with students, and local firms are of special interest. Merck is one of the largest pharmaceutical companies in the world. Irina Katz arranged a pre-recruiting visit from the company; it and its product attracted substantial student interest. More such visits are planned for next year. Alumni participation is welcome. Contact Irina (ik2380@columbia.edu).

Faculty Updates

Boyce Research Group – 2017-2018 Updates

It's been a great start for the Boyce Research Group! Tom Kovar, the first PhD student, started in September and Azin Padash, the second PhD student, will be starting in May. Tom is coming straight from an undergraduate program at Lafayette College and Azin is joining after studies at the University of Tehran and Penn State. Both students are excited and motivated to learn more about multiphase flows and use experimental and computational methods to generate impactful research. May will also mark a beginning for two MS students joining the group to learn more about research via conducting computer simulations and processing magnetic resonance imaging (MRI) data on fluidized beds.

After accepting a position at Columbia in 2016, I spent 2017 in a second postdoctoral research position at ETH Zurich in order to broaden my experimental research horizons. This year abroad worked out to be an extremely valuable experience. Highlights include a publication in Science Advances on a new method for large-scale, rapid MRI of granular flows using medical scanners as well as an invited publication on the effects of liquid bridging on fluidized beds in AIChE Journal as part of the inaugural special issue entitled the “AIChE Futures Series”. The year also exposed me to MRI of chemical reactions and optical imaging of anomalous flow phenomena in multiphase flows. On a lighter note, the year also provided me an incredible opportunity to take in the natural beauty of Switzerland.

I started at Columbia in January motivated to start a transformational laboratory in multiphase, reactive flows and serve the students as a captivating lecturer and insightful advisor. So far, it has been a great experience to develop a new graduate elective course in computational fluid dynamics, helping students learn the theory and practice via a projects-based course. It has also been exhilarating to guide my students in starting new research projects in various areas of multiphase flows and start to setup a lab with multiple MRI and optical imaging capabilities. Although things are just starting, I am confident and excited to be reporting on more advances from the group in a year's time.
As part of a change in Chemical Engineering Process Safety Education and in response to the Safety in Chemical Engineering (SAChE) recommendations, Columbia University Chemical Engineering Robert G. Bozic LTC USA(Ret) (CU PhD 2008) and Donald C. Glaser and Matthew B. Garvey of Simulation Solutions Inc. (http://simulation-solutions.com/index.html) continue to collaborate on creative ways to bring chemical engineering process safety to the next generation of Columbia Chemical Engineers in the CHEN E4500 Design Course and the CHEN E4501 Chemical Engineering Process Safety elective. With multiple years of integrating simulation of chemical engineering processes, the CHEN E4501 Chemical Engineering Process Safety Course uses case studies, computer aided design, and simulation as course content covering instructional objectives. Course content is also controlling and mitigating chemical plant upsets as well as on the education and training of operators using simulation.

In the Spring 2018 semester, Columbia Chemical Engineering and Simulation Solutions conducted multiple Chemical Engineering Operations Center exercises by means of combining computer simulation with a role player (contract hot work, 1st responders, plant supervisors, transporters, and media) exercise and classroom instruction in 826 Mudd, the Omar A. Davidson Multi-Media Room and in 627 Mudd, in order to educate 44 students on chemical engineering process safety by providing a unique chemical engineering process safety experience. Columbia Chemical Engineering students used a simulation of a distillation column that included a real-time control screen representation of the distillation column, alarms, and a virtual reality display. The operations center exercise combined with simulation greatly increased student awareness and understanding of chemical engineering process safety. The students thoroughly enjoyed the exercise and met the challenges of the day with great Columbia Chemical Engineering enthusiasm. The education team has been nominated for the AIChE 2018 Himmelbau award for integration of computers into chemical engineering education.
Faculty Updates

Esposito Research Group – 2017-2018 Updates

The 2017-2018 school year has been eventful one for the Esposito Research Group, which studies (photo)electrocatalytic materials and devices for converting sunlight and electricity into chemical fuels. Papers describing the group’s investigations of membraneless electrolyzers, a solar fuels rig, electrochemical production of acids and bases, bubble-induced losses in photoelectrochemical cells, and membrane-coated electrocatalysts have been published during the past year. One paper by Ph.D. student Jack Davis, M.S. researchers Ji Qi and Xinran Fan, and undergraduate Justin Bui was highlighted in a Columbia SEAS press release, Newsweek, and a number of other news outlets.

In other news, our group has started three new projects this year: (1.) a NSF-funded project to develop new scanning electrochemical microscopy (SECM) methodologies in collaboration with John Wright in Electrical Engineering, (2.) a collaborative project with Shell focused on membraneless electrolyzers, and (3.) an NSF CAREER award project that will develop electrocatalysts based on oxide-encapsulated metal nanoparticles and thin films for electrolyzer and fuel cell applications (See Figure below).

Group members have also won various awards over the past year, including undergraduate student Justin Bui (Goldwater Scholarship, AIChE poster award), undergraduate student Amar Bhardwaj (Udall Scholarship and Deresiewicz Fellowship), and MS student Ed Sartor (Societe Scholarship). Congrats guys!

Several group members have graduated this year, including MS graduates Jake Robinson (Princeton Consultants), Han Chen (Ph.D. program at UMass), and Qianhui Qin (industry). Graduating seniors Sophia Kurdziel (Ph.D. program at U. Delaware.) and Shin Cousens (industry) will be graduating this Spring. We are also sad to report that our beloved MakerBot 3D printer, used by almost all students working with our lab, has been officially retired. Last but not least, Natalie Labrador, the first member of our research group who has lead the group’s efforts in developing oxide-encapsulated electrocatalysts, is scheduled to defend her Ph.D. thesis at the end of the Spring. Best of luck to all!! Natalie, the MakerBot, and the other recent graduates will be greatly missed, but the group is fortunate to have several new undergrad, MS and Ph.D. students join this year who have been doing a great job in keeping all of the momentum going.

(Left) Esposito group after holiday lunch at Dinosaur BBQ. (Right) Model thin film electrocatalysts coated with an ultrathin oxide layer whose properties can be tuned to control reaction pathways at the buried interface between the metallic catalyst and the oxide. This materials platform will be the basis for research conducted through a new NSF-funded award.
The Department was pleased to host, Mark Verbrugge (GM) as our Eleventh Annual Gaden Memorial Lecturer. He spoke on "Research Highlights Associated with Advanced Traction Batteries and Electrified Vehicles". This lecture took place on Tuesday, October 10, 2017.

Mark Verbrugge started his career in 1986 with the GM Research Labs after receiving his doctorate in chemical engineering from the University of California, Berkeley. In 1996, Mark was awarded a Sloan Fellowship to the Massachusetts Institute of Technology, where he received an MBA. Mark returned to GM in 1997 as chief engineer for energy management systems in GM's Advanced Technology Vehicles. In 2002, Mark rejoined the GM Research Labs as director of the Materials and Processes Lab, which maintains global research programs ranging from chemistry, physics, and materials science to the development of structural subsystems and energy storage devices. The Lab was later expanded in scope and is now the Chemical and Materials Systems Laboratory. Mark has published and patented in areas associated with electroanalytical methods, polymer electrolytes, advanced batteries and supercapacitors, fuel cells, high-temperature air-to-fuel-ratio sensors, surface coatings, compound semiconductors, and manufacturing processes related to automotive applications of structural materials.

Mark is a board member of the United States Automotive Materials Partnership LLC and the United States Advanced Battery Consortium LLC, and an adjunct professor for the Department of Physics, University of Windsor, Ontario, Canada.

Mark’s research efforts resulted in his receiving the Norman Hackerman Young Author Award and the Energy Technology Award from the Electrochemical Society as well as GM internal awards, including the John M. Campbell Award for research accomplishments, the Charles L. McCuen Award (twice) for inventions substantially influencing GM products, and the Boss Kettering Award (twice), the highest technical award given by GM. Mark received the Lifetime Achievement Award from the United States Council for Automotive Research, is a fellow of the Electrochemical Society, and is a member of the National Academy of Engineering.

Department Highlights:
Obermeyer Lab Renovations

The Obermeyer Group moved in to newly renovated lab space on the 8th floor of the Northwest Corner Building. This lab space is shared with Tal Danino (Biomedical Engineering) and features fume hoods for polymer synthesis, spaces for bacterial and mammalian culture, and an optical imaging suite.
Congratulations to the Chemical Engineering Class of 2018!

Every year, the Chemical Engineering Department is delighted to recognize three talented undergraduate students for their achievements and accomplishments during their time at Columbia.

The Robert Edward Reiss Award in Chemical Engineering is awarded annually to the student in the department who shows the greatest promise of success in applying the discipline of chemical engineering to the improvement of biological products and medical devices. This year’s prize is awarded to Rajat Chandra who will be pursuing a career at Roivant Sciences.

The Carl C. Gryte Prize is awarded annually for service to the Department of Chemical Engineering. This year’s recipient is Aditya Balaji, who will be pursuing a career at Strategy&.

The Charles F. Bonilla Medal is an award for outstanding academic merit. It is presented annually to that student in the graduating class in the Department of Chemical Engineering who best exemplifies the qualities of Professor Charles F. Bonilla. The 2018 Bonilla Medal is awarded to two students this year. Kelsey Reed who will be pursuing a PhD at MIT and Matthew Cooper who will be pursuing a career at Ruane, Cunniff & Goldfarb.

Go confidently in the direction of your dreams. Live the life you have imagined.

- Henry David Thoreau

WHERE ARE THEY GOING?

Binoy Jhaveri
Athlon Solutions

Andrew Meehan
Celgene

Justin Delafontaine
Sanofi Genzyme
Foyin Bolage
Goldman Sachs

Emmanuel Akpan
Edwards
Life Sciences
Dustin Smith
Google

Nicholas Ouassil
UC Berkeley
PhD Candidate
Nikhil Rampal
ORNL
PhD Candidate

Stephanie Norwood
Quantum Opus
Xiaoluan Hua
Mount Sinai Hopsital

Congratulations Graduates!!
A Special Thanks to the Seminar Speakers for the 2017-2018 Academic Year

### Fall 2017
- 9/12 - Dr. Bill Green
- 9/19 - Dr. Rebecca Schulman
- 9/26 - Dr. Kam Leong
- 10/10 - Dr. Mark Verbrugge
- 10/17 - Dr. Prashant Kamat
- 10/24 - Dr. Tim Whitehead
- 11/14 - Dr. Mark Barteau
- 11/28 - Dr. Cheryl Erhman

### Spring 2018
- 1/23 – Dr. Sijin Li
- 1/26 – Dr. Aditya Kunjapur
- 1/30 – Dr. Edward Kim
- 2/2 – Dr. Alexander Urban
- 2/6 – Dr. Jinhuyk Lee
- 2/9 – Dr. Antoni Forner-Cuenca
- 2/13 – Dr. Lauren Marbella
- 2/16 – Dr. Megan Butala
- 2/20 – Dr. John Blazeck
- 3/20 – Dr. Gerri Botte
- 4/10 – Dr. Darrell Velegol
- 4/17 – Dr. Mayuresh Kothare

Chemical Engineering’s Annual Welcome BBQ
Mark Your Calendar!

On **Wednesday, August 29, 2018**, we will be hosting a Bar-B-Que lunch between 12:00 and 2:00pm at Avery Plaza. Join us in welcoming our new students, meeting current students, while enjoying some great barbeque!!!!! If you are interested in attending please reach out to Rezarta Binaj ([rb3230@columbia.edu](mailto:rb3230@columbia.edu)).