

The Jacobs School of Engineering  
welcomes **19** new professors.



# 250 by 2017

By 2017, we will have 250 professors here at the Jacobs School of Engineering. That's a 25 percent increase in just five years. We are growing to meet the intense demand for our engineering education programs. We give our students the tools to become tomorrow's technology leaders, and we prepare them to meet the workforce needs of both the private and public sectors.

We are also expanding our research enterprise. Our faculty growth is focused—through cluster hires—in robotics, materials and energy, advanced manufacturing, information sciences, engineering and clinical medicine, and more. We pursue research that is both fundamental and relevant to industry, while addressing the greatest challenges we face in our global society.

Albert P. Pisano

Dean, Jacobs School of Engineering  
University of California, San Diego

# We are proud to announce our 2014-2015 faculty appointments to the UC San Diego Jacobs School of Engineering.



## NUNO BANDEIRA

Associate Professor  
Ph.D. UC San Diego

Bandeira works at the epicenter of a seismic paradigm shift in computational mass spectrometry. Instead of interpreting each spectrum in isolation, he develops algorithms for so-called "spectral networks." His goal is to collect and organize all mass spectrometry data in the world and make it searchable and accessible to a social network of researchers in order to enable discovery of new drugs.

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Computer  
Science &  
Engineering

Concurrently: UC San Diego Skaggs School of Pharmacy



## AARON DREWS

Teaching Professor  
Ph.D. Pennsylvania State University

Drews develops and improves core undergraduate chemical engineering laboratory courses with an emphasis on active classrooms that promote self-directed learning and increase the quantity and usefulness of teacher-student interactions. A 2014 Teaching Fellow for the Chemical Engineering Department at Penn State, Drews is passionate about excellence in engineering education.

[adrews@ucsd.edu](mailto:adrews@ucsd.edu)

NanoEngineering

Previously: Ph.D. Pennsylvania State University



## YI CHEN

Assistant Professor  
Ph.D. Purdue University

Chen builds DNA nanostructures to deliver therapeutic agents and functional biological components. Beyond its genomic properties, DNA is also recognized as a novel material. Chen's group uses DNA strands as building blocks that self-assemble into highly structured materials with specific nanoscale features such as rationally designed DNA 3D crystals and autonomous nanomachines.

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NanoEngineering

Previously: Postdoctoral Fellow, MIT Cancer Center



## DAVID FENNING

Assistant Professor  
Ph.D. Massachusetts Institute of Technology

Fenning designs and develops materials and technology for solar energy conversion and storage. His research centers on modeling, characterizing, and controlling defects in solar cells to raise efficiency and on developing new materials and device architectures for solar-to-fuel conversion for energy storage.

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NanoEngineering

Previously: 1366 Technologies



## JIUN-SHYAN "JS" CHEN

William Prager Endowed Chair Professor  
Ph.D. Northwestern University

Chen is a leader in computational mechanics and specializes in developing mesh-free computer simulation methods using image pixels as data points. His research team applies advanced computational methods to fragment-impact processes in homeland security applications, landslides, natural-disaster prediction, manufacturing processes modeling and biological systems simulation.

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Structural  
Engineering

Previously: Professor in the Civil and Environmental Eng Dept, UCLA



## STEPHANIE FRALEY

Assistant Professor  
Ph.D. Johns Hopkins University

Fraley studies the multiscale physical and molecular contexts that drive complex cellular behaviors. Her research aims to improve our understanding of disease progression in cancer and sepsis. She works to develop new technologies for early detection and personalized interventions. Fraley received a 2013 national Burroughs Wellcome Fund Career Awards at the Scientific Interface.

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Bioengineering

Previously: Postdoctoral Fellow, Johns Hopkins School of Medicine



## PRASHANT MALI

**Assistant Professor**  
Ph.D. Johns Hopkins University

Within synthetic biology and regenerative medicine, Mali's long-term focus is on developing tools for enabling gene- and cell-based human therapeutics. Over the years, he has developed a range of genome and stem cell engineering technologies. In particular, he pioneered the development of the CRISPR/Cas systems for eukaryotic genome engineering.  
[pmali@ucsd.edu](mailto:pmali@ucsd.edu)

Bioengineering

Previously: Postdoctoral Fellow, Harvard Medical School



## JAMES FRIEND

**Professor**  
Ph.D. University of Missouri

To develop new biomedical devices, Friend combines fundamental and applied studies of the interaction of electromechanical fields in novel materials and across various interfaces at the micro and nano scale. His team created several medical technologies, including a new pulmonary drug delivery system and a robot capable of swimming inside human arteries.  
[jfriend@eng.ucsd.edu](mailto:jfriend@eng.ucsd.edu)

Mechanical & Aerospace Engineering

Previously: Professor, RMIT University, Melbourne



## JULIAN MCAULEY

**Assistant Professor**  
Ph.D. Australian National University

McAuley focuses on the linguistic and temporal dimensions of opinions and behavior in social networks and other online communities. He is perhaps best known for having analyzed 42 million Internet product reviews consisting of over five billion words written by 10 million users, including Amazon reviews posted through early 2013, to predict product ratings more accurately.  
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Computer Science & Engineering

Previously: Postdoctoral Scholar, Stanford University



## JESSE JOKERST

**Assistant Professor**  
Ph.D. University of Texas at Austin

Jokerst engineers nanoparticles for molecular imaging and in vitro diagnostics. His focus includes ultrasound imaging, which has broad clinical utility and high spatial and temporal resolution, and photoacoustic imaging for high-contrast imaging. Current projects include tools to image stem cells in cardiac regenerative medicine and increase the specificity of ovarian cancer screening.  
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NanoEngineering

Previously: Postdoctoral Fellow, Stanford School of Medicine



## JOHN MCCARTNEY

**Associate Professor**  
Ph.D. University of Texas at Austin

McCartney solves problems that arise when geotechnical engineering systems such as foundations, retaining walls, and landfills are used as geothermal resources; and he investigates ways of using heat to improve their behavior. He explores the fundamental response of unsaturated soil layers to seismic shaking, temperature changes, wetting and drying, and compression under high stresses.  
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Structural Engineering

Previously: Associate Professor, University of Colorado



## DANIEL M. KANE

**Assistant Professor**  
Ph.D. Harvard University

Topics of Kane's published papers include algorithms for big data, results on writing numbers as sums of primes, and the structure of polynomials in many variables. He has diverse research interests within mathematics and theoretical computer science, particularly in the areas of combinatorics, number theory, derandomization and Boolean functions.  
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Computer Science & Engineering

Previously: Postdoctoral Fellow, Stanford University



## MIA MINNES

**Teaching Professor**  
Ph.D. Cornell University

Minnes' research and teaching expertise is in theory of computation and foundational mathematics. She is a founding faculty member of the Summer Program for Incoming Students and faculty sponsor for the Summer Internship Symposium in the UC San Diego computer science department. She studies the effect of randomness on computational power and models of efficient online computation.  
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Computer Science & Engineering

Previously: Assistant Professor, UC San Diego Mathematics



## GEORGE PORTER

**Assistant Professor**  
Ph.D. UC Berkeley

Porter reduces barriers to developing, deploying and managing applications that process massive amounts of data while ensuring the resulting systems are practical, low cost and energy efficient. He focuses on improving networks for data-intensive clusters and data centers to support a new generation of applications and data sizes that are an order of magnitude greater than state of the art.

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Computer  
Science &  
Engineering

Previously: Assistant Research Scientist, UC San Diego



## PADMINI RANGAMANI

**Assistant Professor**  
Ph.D. Icahn School of Medicine at Mt. Sinai

Rangamani's long-term research goal is to understand how cell shape regulates cellular function by analyzing biological membranes, biochemical signaling and the cytoskeleton. Her work uses a combination of novel mathematical theories and computational approaches to simulate cellular processes. Model predictions are validated in collaboration with experimentalists.

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Mechanical  
& Aerospace  
Engineering

Previously: Postdoctoral Fellow, UC Berkeley



## LEO PORTER

**Teaching Professor**  
Ph.D. UC San Diego

Porter identifies core course concepts essential to student success; develops pedagogies to facilitate student engagement; and creates assessment instruments to evaluate student learning. He works to improve diversity by using pedagogies fostering community among students. His research includes multicore, multithreaded computer architectures and scheduling in high-performance computing.

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Computer  
Science &  
Engineering

Previously: Assistant Professor, Skidmore College



## ANTONIO SANCHEZ

**Professor**  
Ph.D. UC San Diego

Sánchez focuses on multiscale research problems that involve the interplay of fluid mechanics, transport processes, and chemical reactions, in particular those emerging in practical combustion systems. Applications include clean combustion technologies, aerospace propulsion devices, and safety hazards in the built environment.

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Mechanical  
& Aerospace  
Engineering

Previously: Professor, Universidad Carlos III de Madrid



## RAVI RAMAMOORTHI

**Professor**  
Ph.D. Stanford University

Ramamoorthi creates realistic images—or renderings—in computer graphics and studies scene appearance in computer vision. He has received many awards, including a White House Presidential Early Career Award. His results are widely adopted in movies such as Avatar and Monsters U., and in games including Halo. He taught the first open online course in computer graphics.

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Computer  
Science &  
Engineering

Previously: Associate Professor, UC Berkeley



## MICHAEL TOLLEY

**Assistant Professor**  
Ph.D. Cornell University

Tolley focuses on the design and fabrication of bioinspired robotic systems that inherit beneficial properties from natural systems: e.g. resilience and self-organization. He developed origami-inspired print-and-fold methods for rapid robot fabrication and deployment; untethered soft robots that walk or jump; and systems that employ fluid forces for self assembly.

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Mechanical  
& Aerospace  
Engineering

Previously: Postdoctoral Associate, Harvard University

**UC San Diego**  
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