

# CELEBRATING FACULTY EXCELLENCE 2016

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ACCLAIMING THE AWARDS, HONORS, AND RECOGNITIONS THAT  
OUR FACULTY RECEIVED DURING THE PAST YEAR  
WELCOMING THE START OF A NEW YEAR



**COLUMBIA ENGINEERING**  
The Fu Foundation School of Engineering and Applied Science





# Introduction

**T**oday we celebrate the many achievements over the past year of our remarkable faculty, as we welcome new faculty who are joining our research and teaching community, and prepare for the start of an exciting and productive year.



We congratulate our colleagues on their outstanding research and scholarship, which have been rightly acknowledged by some of the world's most prestigious institutions and organizations, as well as their excellence in teaching, recognized by Columbia University. Their research continues to break new ground in many fields and will have a huge impact on developing solutions for some of the biggest challenges facing humanity today—from sustainability to human health, from our increasing connectivity to ensuring our security and to empowering creativity. These breakthroughs in engineering and applied science are transforming society.

Columbia Engineering is truly a place where engineering advancements transcend disciplines, inspire leaders, and transform lives. For example, this year we are pleased to recognize Steven Bellovin, who has been named as the first technology scholar to serve on the bipartisan Privacy and Civil Liberties Oversight Board appointed by President Obama. Sunil Agrawal's innovative research into rehabilitative robotics earned two prestigious awards from the American Society of Mechanical Engineers. And our junior faculty continue to astound us. Working in a broad range of disciplines, they have garnered numerous early career awards, including four National Science Foundation CAREER awards, three Sloan Foundation Research Fellowships, an Office of Naval Research Young Investigator Award, and a Presidential Early Career Award for Scientists and Engineers, recognizing their outstanding work.

As important as our faculty's groundbreaking research is the energy and commitment they bring to teaching. By sharing their knowledge and enthusiasm and instilling a love of discovery in our students, they are shaping the next generation of Columbia Engineering scholars and leaders.

Congratulations to all of our distinguished faculty and much success to everyone in the upcoming year.

A handwritten signature in black ink that reads "Mary C. Boyce". The script is fluid and cursive.

Mary C. Boyce  
Dean of Engineering  
Morris A. and Alma Schapiro Professor

# Named Professors

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**PATRICIA J. CULLIGAN**

*Robert A. W. and Christine S. Carleton Professor of Civil Engineering*

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CIVIL ENGINEERING AND ENGINEERING MECHANICS



**IRVING P. HERMAN**

*Edwin Howard Armstrong Professor of Applied Physics*

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APPLIED PHYSICS AND APPLIED MATHEMATICS



**PETER KINGET**

*Bernard J. Lechner Professor of Electrical Engineering*

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ELECTRICAL ENGINEERING

# Named Professors

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**ELISA E. KONOFAGOU**

*Robert and Margaret Hariri Professor of Biomedical Engineering*

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BIOMEDICAL ENGINEERING AND RADIOLOGY



**SANAT KUMAR**

*Bykhovsky Professor of Chemical Engineering*

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CHEMICAL ENGINEERING



**XUNYU ZHOU**

*Liu Family Professor of Industrial Engineering and Operations Research*

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INDUSTRIAL ENGINEERING AND OPERATIONS RESEARCH

# Promotions—Full Professor

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**JOSE BLANCHET**

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INDUSTRIAL ENGINEERING AND OPERATIONS RESEARCH



**KARTIK CHANDRAN**

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EARTH AND ENVIRONMENTAL ENGINEERING



**HENRY HESS**

---

BIOMEDICAL ENGINEERING



**VISHAL MISRA**

---

COMPUTER SCIENCE

# Promotions—Full Professor

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**BARCLAY MORRISON III**

---

BIOMEDICAL ENGINEERING



**SAMUEL SIA**

---

BIOMEDICAL ENGINEERING



**LATHA VENKATARAMAN**

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APPLIED PHYSICS AND APPLIED MATHEMATICS

# Promotions—Associate Professor with Tenure

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**KYLE BISHOP**

---

CHEMICAL ENGINEERING

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**XI CHEN**

---

COMPUTER SCIENCE

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**HARISH KRISHNASWAMY**

---

ELECTRICAL ENGINEERING

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**HAIM WAISMAN**

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CIVIL ENGINEERING AND ENGINEERING MECHANICS

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# Promotions—Associate Professor on Tenure Track

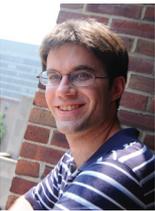
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**PIERRE GENTINE**

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EARTH AND ENVIRONMENTAL ENGINEERING



**JOHN WRIGHT**

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ELECTRICAL ENGINEERING

# Promotions—Senior Lecturer

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**JAE WOO LEE**

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COMPUTER SCIENCE

# Singular Honors

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## SUNIL AGRAWAL

*Professor of Mechanical Engineering*

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MACHINE DESIGN AWARD, AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

for eminent achievement or distinguished service in the field of machine design, which includes application, research, development, or teaching of machine design—specifically, for his seminal contributions to the field of machine design through the innovative design of robotic exoskeletons for gait retraining of stroke patients and of mobility-assist robots for the training of developmentally delayed infants and toddlers

MECHANISMS AND ROBOTICS AWARD, AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

for a cumulative contribution to the field of mechanism design or theory, with continued distinction to be a primary requisite

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## KEREN BERGMAN

*Charles Batchelor Professor of Electrical Engineering*

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ENGINEERING ACHIEVEMENT AWARD, INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE), PHOTONICS SOCIETY (IPS)

for pioneering contributions to optical interconnection networks and photonic-enabled architectures that advance communications and computing systems

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# Singular Honors

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**JOHN (JACK) W. BERKERY**

*Research Scientist of Applied Physics and Applied Mathematics*

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**STEVEN A. SABBAGH**

*Senior Research Scientist and Adjunct Professor of Applied Physics*

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LANDAU-SPITZER AWARD, PRESENTED JOINTLY BY THE AMERICAN PHYSICAL SOCIETY (APS) AND THE EUROPEAN PHYSICAL SOCIETY (EPS)

presented every two years to an individual or group for outstanding theoretical, experimental, or technical contributions in plasma physics, and for advancing the collaboration and unity between the European Union and the United States

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**MARY C. BOYCE**

*Dean, The Fu Foundation School of Engineering and Applied Science; Morris A. and Alma Schapiro Professor, Mechanical Engineering*

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HONORARY PROFESSOR, ZHEJIANG UNIVERSITY

in recognition of research leadership in mechanics of materials

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**SHIH-FU CHANG**

*Richard Dicker Professor of Telecommunications and Professor of Computer Science; Senior Executive Vice Dean, The Fu Foundation School of Engineering and Applied Science*

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HONORARY DOCTORATE, DOCTOR OF SCIENCES, UNIVERSITY OF AMSTERDAM

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# Singular Honors

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## CHIA-KUN CHU

*Fu Foundation Professor Emeritus of Applied Mathematics in the Faculty of Engineering and Applied Science; Special Lecturer in Applied Physics and Applied Mathematics*

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COLUMBIA IMPACT AWARD, ASIAN COLUMBIA ALUMNI ASSOCIATION for pioneering work in the fields of computational fluid dynamics and computational magnetohydrodynamics

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## KAM W. LEONG

*Samuel Y. Sheng Professor of Biomedical Engineering*

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EINSTEIN PROFESSOR, CHINESE ACADEMY OF SCIENCES

PRESIDENT'S FELLOWSHIP FOR DISTINGUISHED SCIENTISTS, CHINESE ACADEMY OF SCIENCES

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## RICHARD M. OSGOOD JR.

*Higgins Professor Emeritus of Electrical Engineering and Professor Emeritus of Applied Physics and Applied Mathematics*

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NATIONAL ACADEMY OF INVENTORS

for demonstrating “a highly prolific spirit of innovation in creating or facilitating outstanding inventions that have made a tangible impact on quality of life, economic development, and welfare of society”

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## FENIOSKY PEÑA-MORA

*Edwin Armstrong Professor of Civil Engineering and Engineering Mechanics*

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DOMINICAN REPUBLIC ACADEMY OF SCIENCES

NATIONAL ACADEMY OF CONSTRUCTION

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# Singular Honors

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## PETER SCHLOSSER

*Maurice Ewing and J. Lamar Worzel Professor of Geophysics and Professor of Earth and Environmental Sciences*

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LEOPOLDINA, GERMAN NATIONAL ACADEMY OF SCIENCES



## HENNING SCHULZRINNE

*Julian Clarence Levi Professor of Mathematical Methods and Computer Science and Professor of Electrical Engineering*

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INTERNET AWARD, INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)



## PONISSERIL SOMASUNDARAN

*LaVon Duddleson Krumb Professor of Mineral Engineering in the Department of Earth and Environmental Engineering*

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HERITAGE AWARD, ASIAN COLUMBIA ALUMNI ASSOCIATION

# Faculty Early Career Awards

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**ALLISON BISHOP**

*Assistant Professor of Computer Science*

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NSF CAREER AWARD

to support “Unifying Provable Security Techniques for Advanced Cryptographer Systems”

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**MICHAEL P. BURKE**

*Assistant Professor of Mechanical Engineering*

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NEW INVESTIGATOR AWARD, AMERICAN CHEMICAL SOCIETY  
PETROLEUM RESEARCH FUND

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**MATEI CIOCARLIE**

*Assistant Professor of Mechanical Engineering*

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NSF CAREER AWARD

to support “From Grasp Quality to Hand Quality: Analysis and Optimization for Effective Robot Hands”

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SLOAN RESEARCH FELLOW, ALFRED P. SLOAN FOUNDATION  
to support his research in the discovery of how artificial mechanisms can interact as skillfully with the world as biological organisms, and how dexterous robots will impact manufacturing, logistics, and health care and contribute to developing cognitively advanced computers and machines

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# Faculty Early Career Awards

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## ANTONIUS (TON) DIEKER

*Associate Professor of Industrial Engineering and Operations Research*

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PRESIDENTIAL EARLY CAREER AWARD FOR SCIENTISTS AND ENGINEERS (PECASE) AWARD

named by President Barack Obama as one of 105 recipients of the highest honor bestowed by the United States government on science and engineering professionals in the early stages of their independent research careers

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## ROXANA GEAMBASU

*Assistant Professor of Computer Science*

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SLOAN RESEARCH FELLOW, ALFRED P. SLOAN FOUNDATION to support her research in designing, building, and evaluating new transparency tools that increase user awareness and society's oversight of web and mobile applications of personal data

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## PIERRE GENTINE

*Associate Professor of Earth and Environmental Engineering*

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NSF CAREER AWARD

to support "Departure from Monin-Obukhov Similarity Theory (MOST) Using High-Resolution Turbulence Model"

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## DANIEL HSU

*Assistant Professor of Computer Science*

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SLOAN RESEARCH FELLOW, ALFRED P. SLOAN FOUNDATION to support his research in algorithms for latent variable models and interactive machine learning

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# Faculty Early Career Awards

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## MARTHA KIM

*Associate Professor of Computer Science*

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### BORG EARLY CAREER AWARD

given to a woman in computer science or engineering who has made early career research contributions and is also committed to encouraging young women to enter the computing field

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## NIMA MESGARANI

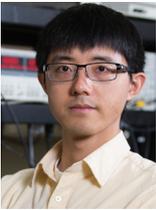
*Assistant Professor of Electrical Engineering*

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### NSF CAREER AWARD

to support “Biologically Inspired Neural Network Models for Robust Speech Processing”

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## NANFANG YU

*Assistant Professor of Applied Physics and Applied Mathematics*

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### YOUNG INVESTIGATOR AWARD, U.S. OFFICE OF NAVAL RESEARCH (ONR)

for exceptionally creative research with far-reaching implications for technological needs of the Navy and the Department of Defense through his project, “Phase-Change Correlated Perovskites as a New Platform for Photonics”

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# Election to Professional Societies

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## SUNIL AGRAWAL

*Professor of Mechanical Engineering*

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FELLOW, AMERICAN INSTITUTE OF MEDICAL AND BIOLOGICAL ENGINEERING (AIMBE)

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## SCOTT BANTA

*Professor of Chemical Engineering*

---

FELLOW, AMERICAN INSTITUTE OF MEDICAL AND BIOLOGICAL ENGINEERING (AIMBE)

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## DAVID BLEI

*Professor of Computer Science and Statistics*

---

FELLOW, ASSOCIATION FOR COMPUTING MACHINERY (ACM)

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## ELIZABETH M. HILLMAN

*Associate Professor of Biomedical Engineering and Radiology*

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FELLOW, OPTICAL SOCIETY OF AMERICA (OSA)

for “pioneering contributions to biomedical optical imaging, spectroscopy, and microscopy, particularly development of novel techniques to elucidate physiological function, and for outstanding services to the biomedical optics community”

# Election to Professional Societies

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**JULIA HIRSCHBERG**

*Percy K. and Vida L. W. Hudson Professor of Computer Science*

FELLOW, ASSOCIATION FOR COMPUTING MACHINERY (ACM)

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**VISHAL MISRA**

*Professor of Computer Science*

FELLOW, INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

for contributions to “network traffic modeling, congestion control, and Internet economics”

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**SAMUEL SIA**

*Professor of Biomedical Engineering*

FELLOW, AMERICAN INSTITUTE OF MEDICAL AND BIOLOGICAL ENGINEERING (AIMBE)

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**ALAN C. WEST**

*Samuel Ruben-Peter G. Viele Professor of Electrochemistry*

FELLOW, ELECTROCHEMICAL SOCIETY (ECS)

for advanced individual technological contributions in the field of electrochemical and solid-state science and technology, and for active membership and involvement in the affairs of the Electrochemical Society

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# Recognitions and Achievements

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## SCOTT BANTA

*Professor of Chemical Engineering*

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VAN LANEN DISTINGUISHED SERVICE AWARD, BIOMEDICAL TECHNOLOGY DIVISION OF THE AMERICAN CHEMICAL SOCIETY

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## ADAM ELMACHTOUB

*Assistant Professor of Industrial Engineering and Operations Research*

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NAMED TO *FORBES* "30 UNDER 30 IN SCIENCE"

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## HARISH KRISHNASWAMY

*Associate Professor of Electrical Engineering*

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GLOBAL INITIATIVE OF ACADEMIC NETWORKS (GIAN) LECTURESHIP, GOVERNMENT OF INDIA, MINISTRY OF HUMAN RESOURCE DEVELOPMENT

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## JEFFREY KYSAR

*Professor of Mechanical Engineering*

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WILLIAM E. HITSSELBERGER MEMORIAL LECTURE, 50TH ANNUAL SPRING MEETING, AMERICAN NEUROTOLOGY SOCIETY gave lecture entitled, "Butterfly Roof to Round Window: How Engineers Can Build One and Perforate the Other"

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# Recognitions and Achievements

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## V. FAYE MCNEILL

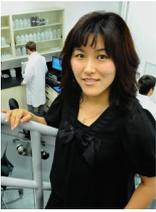
*Associate Professor of Chemical Engineering*

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KENNETH T. WHITBY AWARD, AMERICAN ASSOCIATION FOR AEROSOL RESEARCH (AAAR)

recognized for her influential research, “changing the way we think about atmospheric organic chemistry, its effect on aerosol properties, and its impact on clouds and climate”

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## AH-HYUNG (ALISSA) PARK

*Lenfest Earth Institute Associate Professor of Climate Change in the Department of Earth and Environmental Engineering*

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U.S.-CHINA ECOPARTNERSHIPS PROGRAM, U.S. DEPARTMENT OF STATE

a partnership between Columbia University and Baotou Steel Group to capture iron and steel slag waste and recycle it for use in other industrial processes, preventing dangerous emissions

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## STEVE W. SUN

*Assistant Professor of Civil Engineering and Engineering Mechanics*

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FELLOWSHIP OF DRESDEN, TECHNISCHE UNIVERSITÄT DRESDEN

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# Recognitions and Achievements

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## VENKAT VENKATASUBRAMANIAN

*Samuel Ruben-Peter G. Viele Professor of Chemical Engineering*

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22ND ANNUAL PROFESSOR ROGER SARGENT LECTURE, IMPERIAL COLLEGE, LONDON

delivered a lecture in honor of Professor Roger W. H. Sargent, the “Father” of Process Systems Engineering, entitled, “Process Systems Engineering at a Crossroads: Challenges and Opportunities in the Era of Watson”

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## GORDANA VUNJAK-NOVAKOVIC

*Mikati Foundation Professor of Biomedical Engineering and Professor of Medical Sciences (in Medicine)*

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ROBERT A. PRITZKER DISTINGUISHED LECTURE AWARD, BIOMEDICAL ENGINEERING SOCIETY

for outstanding achievement and leadership in the practice of Biomedical Engineering

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## NGAI YIN YIP

*Assistant Professor of Earth and Environmental Engineering*

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OUTSTANDING DOCTORAL DISSERTATION AWARD, CH2M/ ASSOCIATION OF ENVIRONMENTAL ENGINEERING AND SCIENCE PROFESSORS (AEESP)

for his dissertation, “Sustainable Production of Water and Energy with Osmotically Driven Membrane Processes and Ion-Exchange Membrane Processes”

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# Scholarly Leadership

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## STEVEN BELLOVIN

*Percy K. and Vida L. W. Hudson Professor of Computer Science*

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APPOINTED FIRST TECHNOLOGY SCHOLAR FOR THE PRIVACY AND CIVIL LIBERTIES OVERSIGHT BOARD (PCLOB)

The PCLOB is an independent agency within the executive branch of the United States government. The bipartisan, five-member Board is appointed by the President and confirmed by the Senate. The PCLOB's mission is to ensure that the federal government's efforts to prevent terrorism are balanced with the need to protect privacy and civil liberties.



## KEREN BERGMAN

*Charles Batchelor Professor of Electrical Engineering*

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ADVANCED SCIENTIFIC COMPUTING ADVISORY COMMITTEE (ASCAC), U.S. DEPARTMENT OF ENERGY



## ROXANA GEAMBASU

*Assistant Professor of Computer Science*

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MEMBER, DARPA'S INFORMATION SCIENCE AND TECHNOLOGY (ISAT) STUDY GROUP

a select group of cross-discipline experts that provides advice to DARPA on long-range research directions in information sciences and technology

# Scholarly Leadership

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## MICHAL LIPSON

*Eugene Higgins Professor of Electrical Engineering (Joint appointment with Applied Physics and Applied Mathematics)*

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MEMBER, BOARD OF DIRECTORS, OPTICAL SOCIETY OF AMERICA (OSA)



## MICHAEL MAUEL

*Professor of Applied Physics*

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EDITOR-IN-CHIEF, *PHYSICS OF PLASMAS*, AMERICAN INSTITUTE OF PHYSICS



## GORDANA VUNJAK-NOVAKOVIC

*Mikati Foundation Professor of Biomedical Engineering and Professor of Medical Sciences (in Medicine)*

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BOARD OF DIRECTORS, AMERICAN INSTITUTE FOR MEDICAL AND BIOLOGICAL ENGINEERING (AIMBE)

COUNCIL MEMBER, TISSUE ENGINEERING AND REGENERATIVE MEDICINE SOCIETY (TERMIS)

# Teaching Awards

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## ADAM CANNON

*Senior Lecturer in Discipline in the Department of Computer Science*

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PRESIDENTIAL AWARD FOR EXCELLENCE IN TEACHING, COLUMBIA UNIVERSITY

GREAT TEACHER AWARD, SOCIETY OF COLUMBIA GRADUATES

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## ROBERT FARRAUTO

*Professor of Professional Practice in the Department of Earth and Environmental Engineering*

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DISTINGUISHED FACULTY TEACHING AWARD, COLUMBIA ENGINEERING ALUMNI ASSOCIATION

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## JEFFREY KOBERSTEIN

*Percy K. and Vida L. W. Hudson Professor of Chemical Engineering*

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EDWARD AND CAROLE KIM AWARD FOR FACULTY INVOLVEMENT honors a faculty member who is not only an excellent teacher, but who also shows a special, personal commitment to students

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## JAE WOO LEE

*Senior Lecturer in Discipline in the Department of Computer Science*

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DISTINGUISHED FACULTY TEACHING AWARD, COLUMBIA ENGINEERING ALUMNI ASSOCIATION

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## MISSION STATEMENT

The mission of The Fu Foundation School of Engineering and Applied Science is to expand knowledge and advance technology through research, while educating students to become leaders informed by an engineering foundation. Enriched with the intellectual resources of a global university in the City of New York, we push disciplinary frontiers, confront complex issues, and engineer innovative solutions to address the grand challenges of our time. We create a collaborative environment that embraces interdisciplinary thought, integrated entrepreneurship, cultural awareness, and social responsibility, and advances the translation of ideas into practical innovations.







**COLUMBIA | ENGINEERING**  
The Fu Foundation School of Engineering and Applied Science

Office of the Dean, Room 510, Mail Code 4714  
500 West 120th Street, New York, NY 10027

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