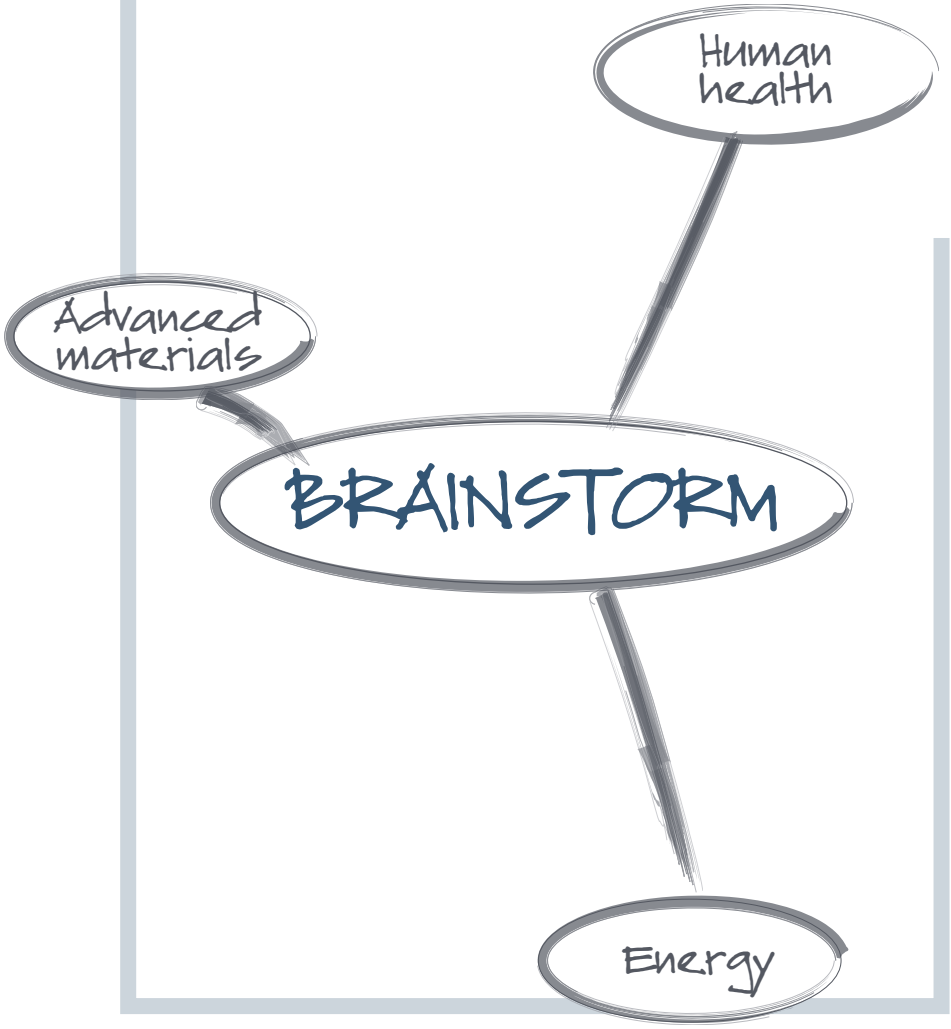
ANNUAL REPORT 2011



CASE SCHOOL OF ENGINEERING
CASE WESTERN RESERVE UNIVERSITY

BEHIND EVERY BREAKTHROUGH IS A FLURRY OF IDEAS.

The journey from question to answer is rarely a straight line. Discovery doesn't come out of strictly regimented silos—rather, breakthroughs spring out of whirlwinds of collaborative thought.

The Case School of Engineering celebrates the hurricane-style thinking that produces innovation. We know that one idea can be a launching pad for a thousand more and that innovation isn't orderly and doesn't wait its turn.

Our engineers have big ideas percolating across the spectrum of the world's toughest challenges in energy, health, advanced materials and other disciplines. The stories on the following pages highlight just a few of the many breakthroughs we've got brewing.

From the Dean

Norman C. Tien, PhD

Dean and Nord Professor
of Engineering
Ohio Eminent Scholar,
Physics

The world faces enormous challenges. Whether it's supplying enough energy for future generations or ensuring they live healthier lives, these problems and their solutions begin the same way. They start small and grow big—like storms on the horizon.

And like storms, they have many moving pieces and parts—interconnected, churning layers that tear through the status quo and burst onto the scene. This annual report celebrates the disruptive swirl of thoughts and ideas that spawns innovation and refreshes our hopes for a better tomorrow.

Inside this hub of activity, you'll find collaborative research institutes, expanded international programs and increased funding opportunities to benefit our faculty, students and community. These accomplishments and more, made possible through support from alumni and friends like you, are highlighted in the pages ahead.

They also remind me of what an honor and a privilege it has been to lead this great institution for the past five years. On Dec. 31, I will be stepping down as dean to return to the faculty. Again I thank you for your continued support of the Case School of Engineering, its faculty, students and aspirations.

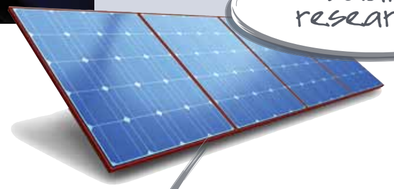
TOMORROW'S ENERGY

Sources

Solar research

This year the school launched the Solar-Durability and Lifetime Extension (S-DLE) Center to help engineers develop longer-lasting solar technology.

Led by director and materials scientist Roger French, the $2.88 million center includes new labs and a sun farm that will allow researchers and industry partners to expose solar products to the equivalent of 25 years' worth of solar radiation, fluctuating temperatures and other environmental factors in a fraction of the time. Evaluating these samples will help researchers study the degradation of solar products and develop technology that lasts longer and costs less than today's systems.



Products

Mirrors

S-DLE Center director Roger French also struck a research partnership with Ohio-based Replex Plastics to develop mirror-augmented photovoltaic systems that could produce more power at lower costs.

Storage

Cut costs

iron ore

Chemical engineering professors Robert Savinell and Jesse Wainright developed a model for cheaper systems to store and distribute the energy generated by alternative, but intermittent, sources of power like wind and solar. Flow batteries store energy in two tanks of chemical solutions and currently use a costly metal called vanadium as the active material for energy storage. A vanadium battery costs about $300 per kilowatt-hour produced for chemicals and tanks, but Savinell estimates using cheaper, more plentiful iron could knock the costs of a chemical storage system down to $45 per kilowatt-hour.

Wind research

We put one of the country's first campus-based wind research centers in motion this year with the construction of a 156-foot-tall wind turbine. Part of the $6 million Ohio Wind Energy Research and Commercialization (WERC) Center, this 100-kilowatt power tower—the first of three research turbines—supplies energy to neighboring campus facilities and gives university researchers and local companies the chance to study wind power technology in action.

WERC Center director and materials engineer David Matthiesen is measuring the interface strength of ice when it sticks to the turbine blades, which could help improve performance in temperate climates.

Optimal performance

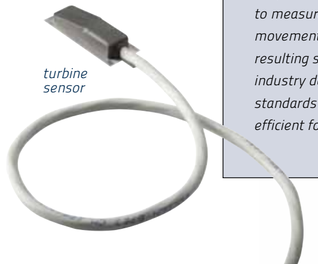
Build a better turbine

Products

Eight private companies are using the turbine as a proving ground for new products, including a paint coating designed to diminish ice buildup on blades.

Strengthen foundation

Civil engineer Arthur Huckelbridge placed sensors deep in the concrete base to measure the turbine's movements and the resulting stresses to help industry develop better standards for building more efficient foundations.



turbine sensor

tomorrow's energy

When imagining tomorrow's energy solutions, identifying alternative sources is only part of the power picture. Once generated, that energy needs to be captured, stored and affordably delivered to consumers. The Case School of Engineering has energy innovation covered from the source to the switch.

The school launched two research centers this year dedicated to developing wind and solar energy technologies to augment the efforts of the Great Lakes Energy Institute. Our faculty members are using mirrors to pump up the output of solar panels and boosting the power of fuel cells one nanotube at a time. They are working on making the most innovative components—from the molecular level on up—and integrating those pieces into tomorrow's energy systems.

Where will it come from?

How will we store it?

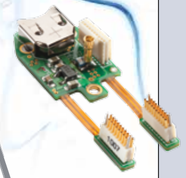
Can we make it affordable?

A HEALTHIER TOMORROW

Healing

New devices

Rebuild



microelectronic circuitry device

Electrical engineering and computer science professor Pedram Mohseni developed a device that uses microelectronic circuitry to bridge the gaps in the brain left by traumatic injury or stroke.

Scientists believe that as the brain develops, it naturally establishes communication pathways between neurons that repeatedly fire together. Mohseni and research partner Randoph J. Nudo of Kansas University Medical Center believe that these pathways can be restored in the aftermath of an injury. But timing is critical—the brain is more malleable during the month following an injury.

Mohseni's device uses a microchip to connect populations of neurons in different parts of the brain. He and Nudo believe that re-establishing communications between these distant neurons could spark long-reaching axons to form and connect.

Restore

nerve cuff

A nerve cuff developed by biomedical engineering professor Dustin Tyler could help restore mobility in paralyzed patients and sensation to persons with limb loss. In paralyzed patients, Tyler's device engages the femoral nerve, which is divided into dozens of separate nerve bundles called fascicles that control different muscles in the leg.

Since fascicles are bundled together, it's tough to stimulate individual bunches to enable coordinated muscle movements. But Tyler's nerve cuff electrode gently reshapes the femoral nerve to access individual fascicles. Controlling the intensity of the electrical stimulation makes more complex movements like standing and taking steps possible.

Thriving

Tools

Electrical engineering and computer science professor Wyatt Newman developed a prototype for a speech-driven motorized wheelchair that could eventually recognize voice commands, open and close doors, and even call elevators. He and his team are testing the technology's ability to evaluate its surroundings and interpret commands.

Prevention

Building knowledge

Identifying weak spots

Exploring tendon structure from the atoms up helped biomedical engineering professor Steven Eppell identify the weak link in our connective tissue. Applying the same principles civil engineers use to stress-test structural steel, Eppell built a micro-device to test the threads of collagen that make up the bulk of our tendons and found they aren't the most vulnerable to injury—it's likely the molecular glue that binds the collagen threads together that puts our joints at risk.

New techniques

Detecting problems early

Using a pulse of laser light, a team of researchers led by biomedical engineer Andrew Rollins and his research partner Michael Jenkins paced contractions in an avian embryonic heart, with no apparent damage to the tissue. This non-invasive device could help researchers learn more about the relationship between heart development and heart problems later in life.

Rollins' lab is now conducting experiments to see whether the laser could be used as a pacemaker to keep a heart beating during surgery.

a healthier tomorrow

From the earliest prosthetic limbs and diagnostic tools, we've turned to technology to fix what ails us. The human body is an incredible machine, and engineers are dedicated to making it even more amazing—marrying medicine and mechanics to help people live longer, healthier lives.

Pooling bright ideas from nearly every engineering discipline—from electronics and computers to structural and chemical science—our faculty members are exploring the body's systems and building revolutionary tools for a healthier tomorrow. This year, they found the atomic Achilles' heel that puts our tendons at risk for injury, used robotics to help an aging population stay independent and safe, and developed microelectronic circuits to fill the gaps left by nature's healing process.

How can we stop disease before it starts?

What tools will help us thrive?

How much can technology heal?

TOMORROW'S MATERIALS

Nanomaterials

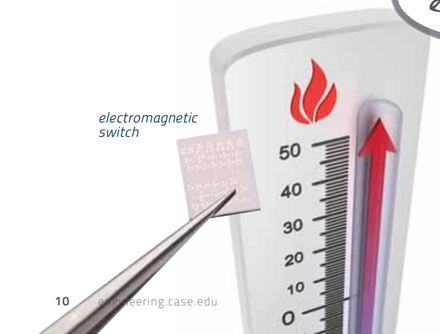
Reduce cost

Professor of macromolecular science and engineering Ica Manas-Zloczower found that using carbon-nanotube reinforced polymer composites on wind turbine blades could help the industry build bigger blades without breaking the budget.

fuel cell

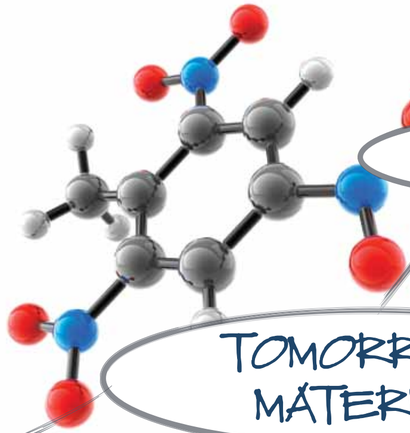
Macromolecular science and engineering professor Liming Dai swapped pricey platinum catalysts in fuel cells for polymer-coated carbon nanomaterials, including nanotubes and graphene, to create significant cost savings.

Increase efficiency



electromagnetic switch

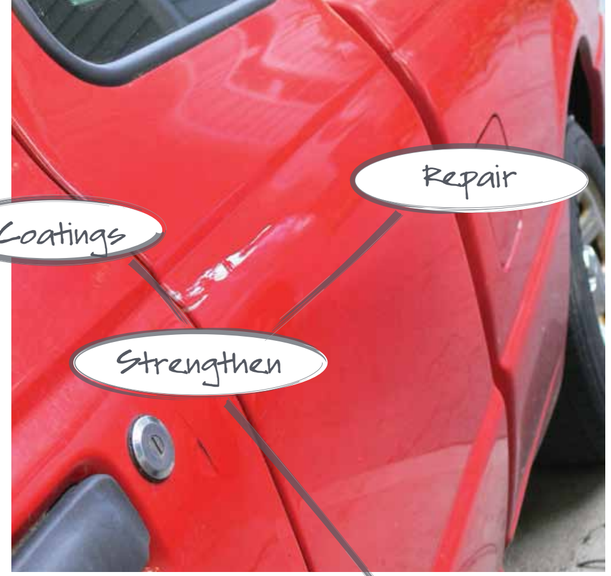
Swarup Bhunia and Mehran Mehregany, both professors in the electrical engineering and computer science department, developed a computing platform using electromagnetic switches made of silicon carbide that can stand up to serious heat. With the ability to operate in temperatures over 500 degrees Celsius—the equivalent of the inside of a jet engine—these components could reduce the need for costly cooling systems for future computers.



Polymers

Coatings

Repair



An international team of engineers led by macromolecular science and engineering professor Stuart J. Rowan, director of the Institute for Advanced Materials, developed a brand-new polymer that heals itself in seconds when exposed to UV light.

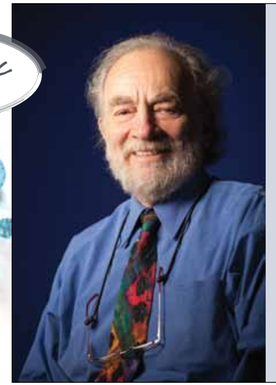
The self-repairing material could be used in a range of products from automotive paints to varnishes for furniture and floors in the not-too-distant future. The polymer's unique molecular makeup allows it to disassemble temporarily under UV light and reform once the light is removed. Using light to get the molecules moving instead of heat allows engineers to focus the fix on the damaged area and leave the rest of the material untouched.

Strengthen

Crystals

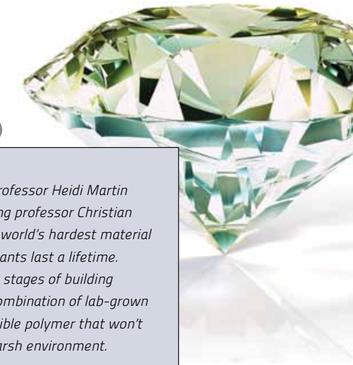
Master properties

Subatomic imaging



A first in the field, world-renowned ceramics expert and NAE member Arthur Heuer used an ultra-high-resolution electron microscope to capture subatomic images of defects in synthetic sapphire during high-temperature experiments. His team studied how subtle shifts in atomic structure control the properties of this technologically important material. The information and imaging technique can be applied to all crystalline solids, from microchips to thermal protection systems that shield jet engines.

Enhance



Chemical engineering professor Heidi Martin and electrical engineering professor Christian Zorman discovered the world's hardest material could help medical implants last a lifetime. The team is in the early stages of building electrodes that use a combination of lab-grown diamond film and a flexible polymer that won't corrode in the body's harsh environment.

Zorman and Martin are designing sensors and stimulators for the human brain—devices that could measure chemical or electrical changes or stimulate nerves.

tomorrow's materials

We're asking a lot of the materials that will make up tomorrow's technology. We need them to thrive in the most challenging environments—from inside the human body to the farthest reaches of outer space. We need them to be stronger, cheaper, multifaceted wonder-stuff. Thankfully, our faculty members are developing better building blocks across the board, from teaching old materials new tricks to inventing never-before-seen molecular structures.

This year, our engineers made advances from watching how atoms move in crystals to manipulating molecules to change a material's key properties. They came up with new applications for precious metals, cost-effective coatings for fuel cell catalysts and even a material that redefines a do-it-yourself-fix.

What will tomorrow's technology be made of?

Can coatings create stronger, more resilient products?

Can materials cut costs?

Ideas need room to grow—and not just a hypothetical home in the architecture of the mind. Ideas need actual, physical space in which to be tested, tweaked and brought to life.

For more than 150 years, we've proven ourselves not just as thinkers, but as doers, inventors and founders—bright engineering minds with a keen entrepreneurial bent. And with the help of generous alumni and other supporters, we are building the infrastructure to keep that spirit of innovation thriving.

INNOVATION

Supporting state-of-the-art

An entrepreneurial duo from Northeast Ohio has made a $5 million gift to support innovation at the Case School of Engineering. Innovators in their own right, Joseph B. "J.B." Richey II (CIT '62) and A. Malachi Mixon III—leaders of Elyria, Ohio-based medical products manufacturer Invacare Corporation—have endowed a Richey-Mixon Building, a space that will be dedicated to enhancing the university's culture of creativity and entrepreneurship.

Part lab, part studio, the building will provide not only a place for engineers to team up, but a space for all the university's big-idea-generators to work together—from artists and designers to scientists and business leaders.

Applying expertise

First-year computer science student Joshua Schwarz pledged to created 52 new Facebook apps this year—that's a new app every week.

Nurturing bright ideas

This year, a team of Case Western Reserve University students launched a company to bring electronic shelf labeling technology to U.S. stores and warehouses.

Electronic tags that can be digitally updated are common on store shelves across Europe and Asia, but haven't caught on in the U.S. just yet. Mark Lorkowski, a fourth-year electrical engineering and computer science major, explored the technology as part of a design competition sponsored by Saint-Gobain and then founded LorkTech to take the product further.

The system uses a flexible electrophoretic material for its tags, which are updated using a radio frequency signal. A tiny solar cell in the tag uses the store's ambient light to provide the only electricity the tags need—a small jolt to change the display.

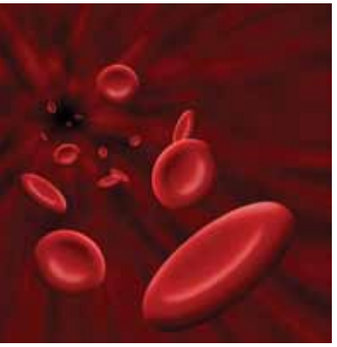
LorkTech is in talks with potential partners and investors—as well as future retail customers—and plans to establish a headquarters in Northeast Ohio later this year.

Going Pro: Students Michael Giammo and Samir Salka work for LorkTech—a collaborative startup company that grew out of a Case School of Engineering design project.

Gaining attention

Our engineering students mowed down the competition again at the Eighth Annual Institute on Navigation Robotic Lawn Mower Competition—winning first prize for the third year in a row, as well as a special Best Cut Award. The student team was led by professor Roger Quinn from the Department of Mechanical and Aerospace Engineering.

FACULTY HONORS AND HIGHLIGHTS



Alexis Abramson of mechanical and aerospace engineering has been selected to work with the U.S. Department of Energy's Energy Efficiency and Renewable Energy Building Technologies Program.

Eric Baer of macromolecular science and engineering was named a fellow of the American Chemical Society.

Swarup Bhunia of electrical engineering and computer science earned an NSF CAREER Award.

Dominique Durand of biomedical engineering received a $6.3 million DARPA grant.

Erin Lavik of biomedical engineering was featured in *Popular Mechanics* for her work with synthetic platelets.

Melissa L. Knothe Tate of biomedical engineering and mechanical and aerospace engineering received the Chairman's Distinguished Life Sciences Award from the Christopher Columbus Foundation-U.S. Chamber of Commerce.

Emeritus Professor **Wen Ko** of electrical engineering and computer science received the Founders' Award at the 16th International Conference on Solid State Sensors, Actuators and Microsystems.

LaShanda Korley of macromolecular science and engineering earned the 2011 DuPont Young Professor, IUPAC Young Observer and the 3M Nontenured Faculty awards.

Joao Maia of macromolecular science and engineering won the Polymer Processing Society's Morand Lambla Award and the British Society of Rheology's Annual Award.

Christos A. Papachristou of electrical engineering and computer science received a $2.3 million DARPA research grant.

P. Hunter Peckham of biomedical engineering received a $7.4 million National Institute of Neurological Disorders and Strokes grant.

Roger Quinn of mechanical and aerospace engineering won a $1.1 million NSF grant.

Michael Rabinovich of electrical engineering and computer science was named editor-in-chief of *IEEE Internet Computing* magazine.

Professor Emeritus **Eli Reshotko** of mechanical and aerospace engineering was named to the NASA Aeronautics Research and Technology Roundtable.

ADMINISTRATION AND FACULTY

The Case School of Engineering has been renowned for excellence in teaching and research for 130 years. Upholding this tradition are more than 100 dedicated faculty members who pride themselves on their unique student-teacher research collaborations, which are often formed as early as the freshman year. To follow is a list of the administrators and tenured and tenure-track faculty who foster these relationships.

Administration

Case Western Reserve University

Barbara R. Snyder
President

William "Bud" Baeslack III
Provost and Executive Vice President
Professor of Materials Science and Engineering

Case School of Engineering

Norman C. Tien
Dean and Nord Professor of Engineering
Ohio Eminent Scholar, Physics

Laura Bulgarelli
Associate Dean, Finance and Administration

Patrick E. Crago
Associate Dean, Professor of Biomedical Engineering

Daniel Ducoff
Associate Dean of Development and External Affairs

Ica Manas-Zloczower
Associate Dean of Faculty Development
Professor of Macromolecular Science and Engineering

Clare M. Rimnac
Associate Dean
Wilbert J. Austin Professor of Engineering

Lisa Camp
Assistant Dean for Special Initiatives

Deborah J. Fatica
Assistant Dean of Engineering Student Programs

Innovators Wanted

This year, Case Western Reserve University launched its Engineering Strategic Hiring Initiative, seeking out exceptional researchers to augment the world-class faculty at the Case School of Engineering. Through this recruitment effort, the university aims to build on its existing strengths and create powerful new collaborations focused in three key areas—human health, energy and advanced materials—as well as increase faculty diversity. Alumnus Tom Seitz (CIT '70) made the first major gift under the initiative, establishing the Thomas W. and Nancy P. Seitz Professorship in Advanced Materials and Energy.

Faculty

Biomedical Engineering

Jeffrey L. Duerk
Chair and Allen H. and Constance T. Ford Professor in Biomedical Engineering

Eben Alsberg
Associate Professor

James Basilion
Associate Professor*

Jeffrey R. Capadona
Assistant Professor

Patrick E. Crago
Associate Dean and Professor

Dominique Durand
Elmer Lincoln Lindseth Professor of Biomedical Engineering

Steven J. Eppell
Associate Professor

Miklos Gratzl
Associate Professor

Kenneth J. Gustafson
Associate Professor

Efstathios "Stathis" Karathanasis
Assistant Professor*

Robert F. Kirsch
Professor

Melissa Knothe Tate
Professor

Erin B. Lavik
Elmer Lincoln Lindseth Associate Professor of Biomedical Engineering

Zheng-Rong Lu
M. Frank and Margaret Domiter Rudy Professor

Roger E. Marchant
Professor

P. Hunter Peckham
Distinguished University Professor and Donnell Institute Professor of Engineering

Andrew M. Rollins
Associate Professor

Gerald M. Saidel
Professor

Nicole Seiberlich
Assistant Professor

Anirban Sen Gupta
Assistant Professor

Nicole Steinmetz
Assistant Professor*

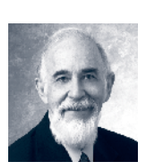
Dustin J. Tyler
Associate Professor

Horst von Recum
Associate Professor

Chemical Engineering

David L. Wilson
Robert J. Herbold Professor

Xin Yu
Associate Professor



Uziel Landau
Chair and Professor

Harihara Baskaran
Associate Professor

Donald L. Feke
Vice Provost and Professor

* Case Western Reserve University School of Medicine campus

Chemical Engineering, continued

Daniel J. Lacks
C. Benson Branch Professor of Chemical Engineering

Chung-Chiun "C.C." Liu
Wallace R. Persons Professor of Sensor Technology and Control

J. Adin Mann Jr.
Professor

Heidi B. Martin
Associate Professor

Syed Qutubuddin
Professor

R. Mohan Sankaran
Associate Professor

Robert Savinell
George S. Dively Professor of Engineering

Civil Engineering

Xiangwu "David" Zeng
Chair and Frank H. Neff Professor

Dario A. Gasparini
Professor

Arthur A. Huckelbridge Jr.
Professor

Aaron A. Jennings
Professor

Michael Pollino
Assistant Professor

Adel S. Saada
Professor

Xiong "Bill" Yu
Associate Professor

Electrical Engineering and Computer Science

Michael S. Branicky
Chair and Professor

Swarup Bhunia
Associate Professor

Marcus R. Buchner
Associate Professor

M. Cenk Cavusoglu
Associate Professor

Vira Chankong
Associate Professor

Philip X.L. Feng
Assistant Professor

Mario Garcia-Sanz
Milton and Tamar Maltz Professor in Energy Innovation

Steven L. Gaverick
Professor

Mehmet Koyuturk
Theodore L. and Dana J. Schroeder Assistant Professor in Computer Science and Engineering

Michael Lewicki
Associate Professor

Jing Li
Associate Professor

Vincenzo Liberatore
Associate Professor

Wei Lin
Professor

Kenneth A. Loparo
Nord Professor of Engineering

Electrical Engineering and Computer Science, continued

Behnam Malakooti
Professor

Mehran Mehregany
Goodrich Professor for Engineering Innovation

Francis L. Merat
Associate Professor

Pedram Mohseni
Associate Professor

Wyatt S. Newman
Professor

Gultekin Ozsoyoglu
Professor

Z. Meral Ozsoyoglu
Andrew R. Jennings Professor of Computing Sciences

Christos A. Papachristou
Professor

H. Andy Podgurski
Professor

Michael Rabinovich
Professor

Soumya Ray
Assistant Professor

Daniel G. Saab
Associate Professor

Narasingarao Sreenath
Professor

Norman C. Tien
Dean and Nord Professor of Engineering
Ohio Eminent Scholar, Physics

Guo-Qiang "G.Q" Zhang
Professor

Xiang Zhang
Assistant Professor

Xinmiao Zhang
Timothy E. and Allison L. Schroeder Associate Professor in Computing Science and Engineering

Hongping Zhao
Assistant Professor

Christian A. Zorman
Associate Professor

Macromolecular Science and Engineering

David Schiraldi
Chair and Professor

Eric Baer
Distinguished University Professor and Herbert Henry Dow Professor of Science and Engineering

John Blackwell
Leonard Case Jr. Professor of Engineering

Liming Dai
Kent Hale Smith Professor

Hatsuo "Ken" Ishida
Professor

Alexander M. Jamieson
Professor

LaShanda T.J. Korley
Nord Distinguished Assistant Professor

João Maia
Associate Professor

Ica Manas-Zloczower
Associate Dean of Faculty Development and Professor

Stuart J. Rowan
Kent Hale Smith Professor

Macromolecular Science and Engineering, continued

Gary E. Wnek
Joseph F. Toot Jr. Professor

Lei Zhu
Associate Professor

Materials Science and Engineering

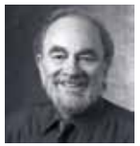
James D. McGuffin-Cawley
Chair and Arthur S. Holden Jr. Professor in Engineering

William "Bud" Baeslack III
Provost and Executive Vice President
Professor

Mark R. Deguire
Associate Professor

Frank Ernst
Leonard Case Jr. Professor of Engineering

Roger French
F. Alex Nason Professor



Arthur H. Heuer
Distinguished University Professor and Kyocera Professor in Ceramics

Peter D. Lagerlof
Associate Professor

John J. Lewandowski
Leonard Case Jr. Professor of Engineering

David H. Matthiesen
Associate Professor

Gary M. Michal
Professor

Pirouz Pirouz
Professor

Gerhard E. Welsch
Professor

Mechanical and Aerospace Engineering

J. Iwan D. Alexander
Chair and Cady Staley Professor

Alexis Abramson
Associate Professor

Maurice L. Adams
Professor

Ozan Akkus
Associate Professor

J. R. Kadambi
Professor

Yasuhiro Kamotani
Professor

Melissa Knothe Tate
Professor

Kiju Lee
Assistant Professor

Joseph M. Mansour
Professor

Joseph M. Prahl
Professor

Vikas Prakash
Professor

Roger D. Quinn
Arthur P. Armington Professor of Engineering

Clare M. Rimnac
Associate Dean and Wilbert J. Austin Professor of Engineering

James S. T'ien
Leonard Case Jr. Professor of Engineering

PROGRAMS AND COMMITTEES

Departments

Biomedical Engineering
Chemical Engineering
Civil Engineering
Electrical Engineering and Computer Science
Macromolecular Science and Engineering
Materials Science and Engineering
Mechanical and Aerospace Engineering

Research Centers and Institutes

Case Center for Surface Engineering
Center for Biomaterials
Center for Layered Polymeric Systems
Center for Mechanical Characterization of Materials
Center for Modeling Integrated Metabolic Systems
Cleveland Functional Electrical Stimulation Center
Electronics Design Center
Great Lakes Energy Institute
Institute for Advanced Materials
Neural Engineering Center
Ohio Wind Energy Research and Commercialization Center
Solar-Durability and Lifetime Extension Center
Swagelok Center for Surface Analysis of Materials
Technology and Health Institute
The Institute for Management and Engineering
think[box]

Visiting Committee

Robert T. Bond Jr., (CIT '66), *chair*

Chi-Foon Chan (GRS '74, '77)
Walter J. Culver (GRS '62, '64)
John F. X. Daly (CWR '89, GRS '91)
Myra A. Dria (CIT '76)
Robert A. Gingell Jr. (CIT '77)
Karl Van Horn
Jennie S. Hwang (GRS '76)
William M. James (CIT '64)
Joseph P. Keithley
Martin P. Kress
Kenneth A. Loparo (GRS '77)
Kenneth R. Lutchen (GRS '80, '83)
Gerald McNichols (CIT '65)
Somsak Naviroj (GRS '83)
Charles H. Phipps (CIT '49)
Claiborne R. Rankin
Richard T. Schwarz (MGT '78)
Thomas W. Seitz (CIT '70)
Russell J. Warren (CIT '60)
Gerald Wasserman (CIT '76)
Andrew Wasynczuk (CIT '79, GRS '79)

2010-11 Campaign Leadership Committee

Lawrence M. Sears (CIT '69), *chair*

Kenneth A. Barker (CIT '70)
Robert T. Bond (CIT '66)
Edward M. Esber Jr. (CIT '74)
Ramon Gomez (CIT '81)
William M. James (CIT '64)
Richard G. LeFauve Jr. (CIT '85)
Simon Ostrach
Charles H. Phipps (CIT '49)
William E. Pritts II (CIT '61)
Barry A. Romich (CIT '67)
Robert L. Smialek (CIT '65; GRS '67, '70)
John J. Tanis (CIT '49)
Gerald Wasserman (CIT '76)
Roger H. Cerne (CIT '63), *ex-officio*
Frank N. Linsalata (CIT '63), *ex-officio*
Kenneth A. Loparo (GRS '77), *ex-officio*

AT A GLANCE

Enrollment: fall 2011

1,030
declared undergraduate engineering students

598
graduate and professional-degree students

1,628
total*

* In addition, 400 undergraduate students expressed interest in engineering majors but are not expected to declare majors until the end of their sophomore years.

Full-time faculty: fall 2011

112

Revenue budget: FY 2011

$84.1 million

Research and training revenue: FY 2011

$41.1 million

Fundraising: FY 2011

$18.8 million
Case School of Engineering

$1.9 million
Case Alumni Association

$20.7 million
total

U.S. News & World Report rankings

Top 50
for undergraduate and graduate engineering programs

11th
for graduate biomedical engineering programs

13th
for undergraduate biomedical engineering programs

Every effort has been made to ensure the accuracy of this report. If you have any questions or concerns, please contact Helen Jones-Toms, director of marketing and communications, Case School of Engineering, Case Western Reserve University, 10900 Euclid Avenue, Cleveland, Ohio 44106-7220; 216.368.8694; hlj2@case.edu.

For more news about the Case School of Engineering, go to engineering.case.edu.

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