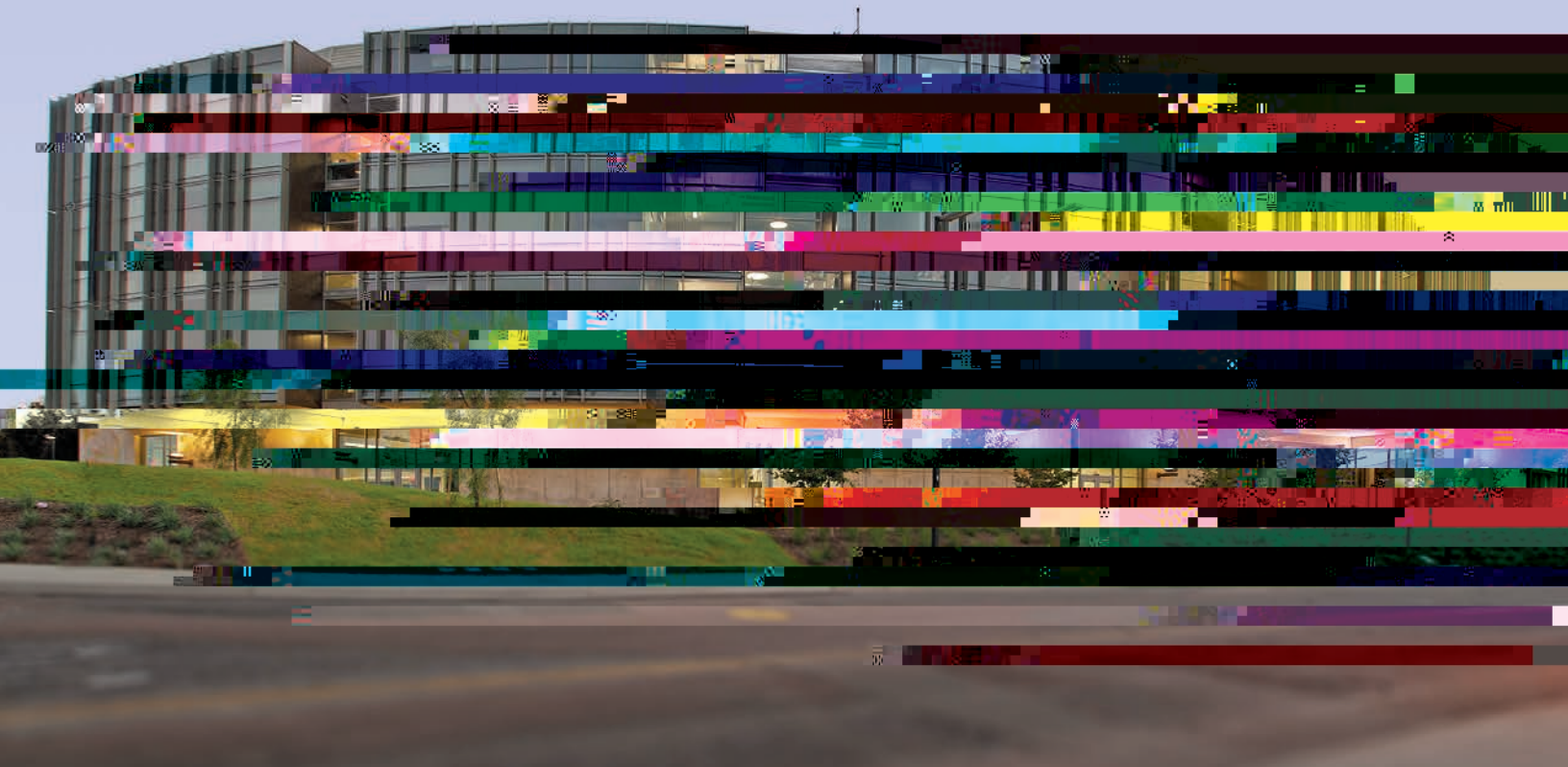
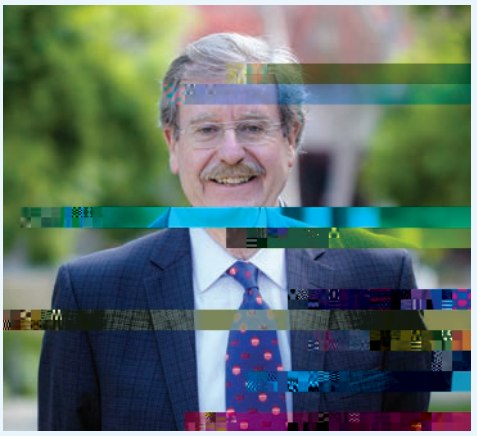
Jacobs



FRIEDER SEIBLE TO RETIRE

AFTER 30 YEARS ON CAMPUS, 10 YEARS AS DEAN

Frieder Seible designed the Scripps Crossing Cable Stayed Pedestrian Bridge at UC San Diego.



JUAN C. LASHERAS

NAMED INTERIM DEA

CONTENTS

Frieder Seible: Forever Building

As Dean of the Jacobs School (2003ð

that gives Jacobs School students opportunities to develop into engineering leaders.

Engineering Talent Pipeline

a variety of programs and initiatives for students

IDEA Student Center
IDEA = Inclusion, Diversity, Excellence and Advancement

Team Internship Program (TIP)
! Ấïżôï"đ żí ȺĊ± ŝ"lżbȡ ŋlĊżżŴ ȡ kżïẤżï"Ⱥ± !í˧ŴĜ"Ⱥ±ȡ ǹïżôï"đ

Gordon Engineering Leadership Center

Global Teams in Engineering Service (Global TIES)

Student Organizations / Engineering Teams

Von Liebig Entrepreneurism Center

Moxie Center for Undergraduate Entrepreneurship

Master of Advanced Study programs
Technical executive education for engineering professionals

Frieder Seible's Footprint

Faculty Growth: 87 Hires
The Jacobs School hired 87 faculty members, an average of nearly nine hires per year during Seibleʹs

Faculty Diversity: 26 of 87
Women and other traditionally underrepresented minorities in engineering made up 26 of the new

Partnerships: $26.1M to $66.2M
Research expenditures from industry and private funding more than doubled from $26.1M in 2003 to $66.2M in 2012.

New Buildings at the Jacobs School

2002	109,000 ft²
2005 Atkinson Hall (Calit2)	215,000 ft²
2005	148,000 ft²
2012	183,000 ft²

Departments and Research Centers

Structural Engineering Department
Frieder Seible was a key player in the formation of the þrst

He served as founding chair from 1995 to 2001. Structural

NanoEngineering Department
In 2007, the Jacobs School established the þrst Department

Institute of Engineering in Medicine
Created in 2008, the IEM brings academic and industry research teams together to leverage the latest engineering breakthroughs in order to improve human health.

“ Frieder built a series of very successful programs, including the Team Internship Program, which we have replicated at ViaSat. Compared to individual interns, students who work in teams are easier to manage, more productive and more satisfied with the experience. ”

Steve Hart
Chief Technical Officer and a co-founder of ViaSat Inc.

2012 TIP Team
at UTC Aerospace Systems

Back Row (L–R)
Timothy Hathaway
Justin Chen
Reginald Ballesteros

Front Row (L–R)
Sarah Lohman

Full-scale seismic tests on a þve

Laboratories in 1986 were some of the þrst performed in the facility.

engineers later wrapped the þrst two ÿoors with þber reinforced

forces. The results eventually led to the widespread use of þber

for seismic retroþts as well as for repair strategies for quake-

Response Modiþcation Device (SRMD) Test Facility. Seible led the design team for this unique facility. It tests the full-scale bearings, isolators and dampers used in the seismic retroþts of many long-span bridges, including

Frieder Seible served as founding director of the Powell Labs, which provide a worldwide resource for full-scale testing and analysis of bridges and many other structures. For example, Jacobs School

new East Span of the San Francisco-Oakland Bay Bridge. Seible (pictured left on this new East Span) is called upon to provide seismic design and retroþt expertise in many major bridge and transportation

“ Frieder had the courage, determination and perseverance to develop the necessary testing facilities to advance the scientific basis for designing buildings and bridges to resist earthquakes. ”

Robert E. Englekirk,
Chairman Emeritus, Englekirk Partners
Consulting Structural Engineers, Inc.

Field implementation of steel jacket retrofit technology by Caltrans at the I-10/1-215 interchange in San Bernadino County, Calif. Seible and structural engineering professor emeritus Nigel Priestly led design and testing of the steel jacket retrofits at the Powell Labs at UC San Diego. Retrofitted columns near the epicenter of the 1994 Northridge earthquake withstood the quake, while many nearby, not-yet-retrofitted columns failed.

Joshua Windmiller (BS ĵ07, MS ĵ09, Ph.D. ĵ12, Electrical Engineering) has developed inexpensive, non-invasive and easily disguisable sensors that can accurately detect the vapors generated by the common chemical constituents found in improvised explosive devices. The sensors can also be used for healthcare, þtness and environmental monitoring. The device integrates temporary transfer tattoos with electrochemical sensors that can be applied directly to the skin or sewn into clothing.

Windmiller, who worked with visual artists on designs for the sensors, discussed the potential of this kind of ubiquitous sensing at the recent NanoMacroMega workshop in the new Structural and Materials Engineering building. The workshop brought together artists, engineers, architects and medical device researchers from UC San Diego and Bauhaus University Weimar ñ home of the Bauhaus movement, which integrated art, technology and craftsmanship and created modern architecture.

The nanoengineered tattoos, combined with high-þdelity electrochemical detection, have resulted in fast, rugged, highly sensitive devices that can detect targeted chemical compounds while tuning out noise. In the healthcare domain,

Structural Engineering. Unique in the Nation.

It is not just the large-scale and full-scale testing facilities that make the Department of Structural Engineering unique. If you look beyond the Jacobs School, you won't find another structural

broader civil engineering departments.

Testing Metal-Frame Buildings

Gauging the Seismic Safety of Retaining Walls

NanoEngineering Department Opens

NanoEngineering gr e
A Ċ

The NanoEngineering Department is focused on understanding nanomaterials and nanoscale interactions. We explore mechanical and physical properties at the nanoscale, and then exploit them to do things that we consider paradigm changing.

Kenneth Vecchio
Professor and Chair, Department of NanoEngineering

PerkinElmer Representatives (L–R) Saleem Abdo and Otto Rose and Kenneth Vecchio at the opening of NanoEngineering's Materials Research Center.

A Better Cardiac Pump for Children with Heart Defects

Jacobs School are working together to create blood ÿow simulations that could lead to improvements in the design of a cardiac pump

hope that the design changes will improve young patients' outcomes.

approved cardiac pump for young children who can't be outþtted with an adult-sized pump. The device is used to extend a patient's life until a transplant becomes available. Accurate simulations of the way blood ÿows inside the pump are important because the device is associated with as much as a 40 percent risk of developing blood clots, which can lead to strokes or embole ä es q v
slatung iondcate Ỳ en en tchildren

Meet the Artists’ New Helper: a Robot

Visual artists in the new building will get help from an

robot ñ well, a robotic mill ñ that can carve complex

þberglass, hard and soft woods, aluminum, brass

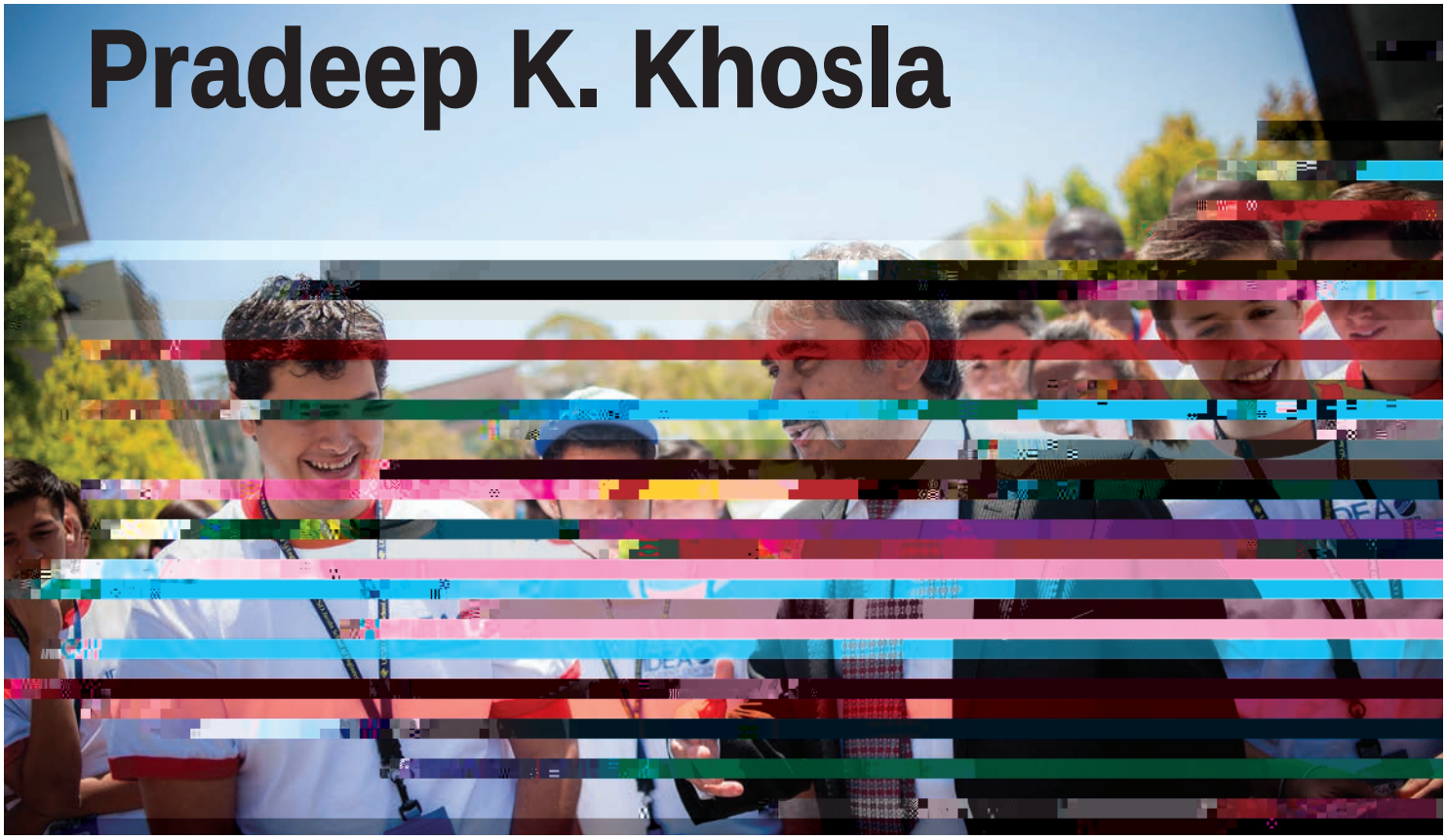
being used for several projects. Rub®n Ortiz-Torres, a Visual Arts professor, is using it to create

that change color as light strikes at different angles.

òI transform tools and other functional objects into means of expression and cultural and political commentaries,ó Ortiz-Torres said. òHowever,

ئی m M

Pradeep K. Khosla



Chancellor Khosla Speaks at Gordon Leadership Center

On Oct. 30, UC San Diego Chancellor Pradeep K. Khosla spoke On Career Choices

an undergraduate student in India to the eighth UC San Diego

SHENGQIANG CAI

Assistant Professor, Mechanical and Aerospace Engineering

Mechanics of soft materials; energy harvesting and storage; micro/nano-fabrication techniques of polymeric structures and soft/stiff hybrid structures; and deformable acoustics and optical metamaterials.

Ph.D. 2011 Harvard University

Most recently: Postdoctoral fellow at the Massachusetts Institute of Technology

OLIVIA A. GRAEVE

Associate Professor, Mechanical and Aerospace Engineering

Solution-based processing of nanopowders; spark plasma sintering of materials; powder particle size distribution control and characterization; behavior of colloidal systems; morphological control of non-oxide ceramic powders; composite manufacturing; special emphasis on electromagnetic materials for sensors and energy applications.

Ph.D. 2001 UC Davis

Most recently: Associate Professor of Materials Science and Engineering at Alfred University

Email: ograeve@ucsd.edu
Website: http://graeve.ucsd.edu/

DREW HALL

Assistant Professor, Electrical and Computer Engineering

Analog and mixed-signal CMOS integrated circuif n(ā̃g and mixriad)}sons.

PRADEEP K. KHOSLA

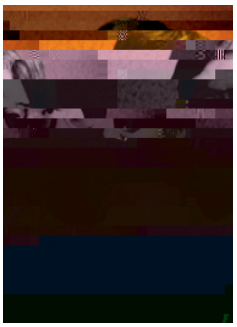
UC San Diego Chancellor

Internet-enabled collaborative design, collaborating autonomous systems, agent-based architectures for distributed design and embedded control, software composition and recon f gurable software for real-time embedded systems, recon f gurable and distributed robotic systems, integrated design-assembly planning systems and distributed information systems.

Ph.D. 1986 Carnegie Mellon University

Most recently: Dean of the College of Engineering and Philip and Marsha Dowd University Professor at Carnegie Mellon University

Email: chancellor@ucsd.edu
Website: http://chancellor.ucsd.edu



JIAN LUO

Professor, NanoEngineering

Utilizing nanoscale interfacial phenomena to design and tailor materials for energy-related applications, including lithium-ion battery materials, high-temperature materials, ionic conductors, photocatalyst and photovoltaic materials, and materials for applications in nuclear power generation systems and clean coal technologies.

Ph.D. 2001 Massachusetts Institute of Technology

Most recently: Professor, Materials Science and Engineering, Clemson University

JASON MARS

Assistant Professor, Computer Science and Engineering

Online adaptive systems in both software and hardware, datacenter and warehouse-scale computer architecture, and software / hardware co-design.

Ph.D. 2012 University of Virginia

Most recently: Ph.D. student at the University of Virginia

Email: jmars@ucsd.edu
Website: http://clarity-lab.org/

PATRICK MERCIER

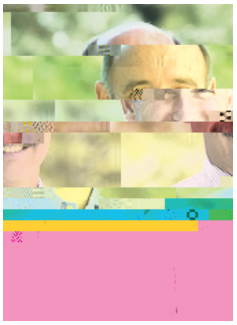
Assistant Professor, Electrical and Computer Engineering

Energy-efficient circuit and system design, with emphasis on miniaturized devices for biomedical electronics that employ novel RF, analog, digital, power management, and energy harvesting architectures.

Ph.D. 2012 Massachusetts Institute of Technology

Most recently: Ph.D. student at the the Massachusettes Institute of Technology

Email: pmercier@ucsd.edu
Website: http://efficiency.ucsd.edu/



MARK MERCOLA

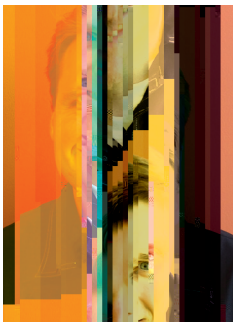
Professor, Bioengineering

Developing novel pharmacological therapies for heart regeneration, protection and maintenance of function after injury. Approaches include high throughput screening, animal and human stem cell models of disease, and systems biology.

Ph.D. 1985 University of California, Los Angeles

Most recently: Professor, Sanford-Burnham Medial Research Institute; Director, Muscle Development and Regeneration Program

Email: mmercola@ucsd.edu



JUSTIN OPATKIEWICZ

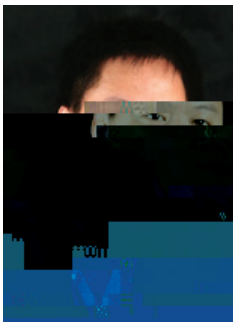
Lecturer, NanoEngineering

Opatkiewicz joined the NanoEngineering Department to teach a variety of the core courses in the Chemical Engineering curriculum. He created and taught courses related to mathematical techniques for chemical engineers while a student at UC Berkeley and Stanford University.

Ph.D. 2012 Stanford University

Most recently: Research staff, Stanford University, Department of Chemical Engineering

Email: jopatkiewicz@ucsd.edu



PETER YINGXIAO WANG

Associate Professor, Bioengineering

Interdisciplinary approaches involving molecular engineering, fluorescence resonance energy transfer (FRET), live cell imaging, and bio-nanotechnology to visualize and elucidate the molecular mechanisms by which live cells perceive the environment and to engineer machinery molecules for the reprogramming of cellular functions.

Ph.D. 2002 UC San Diego

Most recently: Associate Professor, University of Illinois, Urbana-Champaign

Email: yiw015@ucsd.edu

SHENG ZHONG

Associate Professor, Bioengineering

Computational genomics, epigenomics, stem cells and developmental biology, single-cell nano-technology. His lab discovered genetic differences between humans and other mammals in early embryonic development, and contributed to introducing the field of "comparative epigenomics".

Ph.D. 2005 Harvard University

Most recently: Associate Professor and Bliss Faculty Scholar, University of Illinois, Urbana-Champaign, Department of Bioengineering

Email: szhong@ucsd.edu

FACULTY HIRING FOR 2012–2013

The Jacobs School of Engineering is recruiting for 12 open faculty positions in the 2012–13 academic year. The positions fall within three strategic research focus areas: energy, sustainability and environment; engineering in medicine; and information technology and applications. Several of the positions are part of a three-year recruitment plan in the area of advanced energy research. Learn more: http://bit.ly/Y6qMZi=

UCSD Jacobs
University of California, San Diego
Jacobs School of Engineering
9500 Gilman Drive, Dept. 0403
La Jolla, CA 92093-0403