It has been my privilege and pleasure to serve as the Dean and Roy W. Carlson Professor in the College of Engineering at Berkeley during the past ten years. This has been a period of transformation, innovation, and tremendous growth for the College. As I prepare to step down as Dean at the end of this academic year and return full-time to my faculty position, I want to review the wonderful body of work we have achieved together over the past decade.

It has been an exceptional experience for me to carry out this work with so many gifted members of the Berkeley Engineering community, including members of our Engineering Advisory Board, College advisory boards, alumni, partners, department chairs, faculty, staff and student leaders, friends, associate and assistant deans, and indeed all of our more than 240 faculty, about 900 staff, and 5,300 students. I have been fortunate to serve under three Chancellors and their cabinets, who have given their counsel and support to our work in the College, as well as collaborating with wonderful colleagues on the Council of Deans and with other campus leaders.

Our work together this past decade, I believe, has advanced the College’s inspiring mission, Educating Leaders, Creating Knowledge, Serving Society. We have steered and grown the College through times of trying budgets, and I am proud that we have continued to innovate and open new directions for Berkeley Engineering throughout these years.

Beginning on July 1, 2018, I look forward to returning to my research, exploring exciting new directions in robotics, augmented reality/virtual reality (AR/VR) and vision, machine learning, cyber-physical systems, and cyber-security. I will continue as Faculty Director of the Blum Center for Developing Economies, and remain engaged in many of the international partnerships undertaken by the College and campus. I thank you for your invaluable partnership during my tenure, and for your critical role in all we continue to achieve together.
Selected College Accomplishments 2007-2017

Education
The hallmark of Berkeley Engineering is the exceptional education we provide to our students, utilizing the newest and most effective educational methods and enhanced facilities. Many of these innovations, including those listed here, have been made possible by philanthropic support:

- **Jacobs Institute for Design Innovation** and the **Certificate in Design Innovation**: In Fall 2015, we opened a new building, Jacobs Hall, to house the Jacobs Institute. We have now developed the curriculum to offer a new Certificate in Design Innovation with the Haas School of Business, the College of Environmental Design, the Division of Humanities in the College of Letters and Science, and campus programs in the Arts and Design. This fall the Jacobs Institute will serve 3,000+ students from Berkeley Engineering and across the campus.

- **Professional Master’s Degrees**: In 2011 we launched a new professional Master of Engineering (M.Eng.) degree through the Coleman Fung Institute for Engineering Leadership and our engineering departments. Jointly with UCSF, we also began offering a new professional Master of Translational Medicine (MTM) in 2013. More than 480 students entered these programs this fall. Graduates are taking leadership positions in industry and beyond, and are launching a range of exciting new companies.

- **Fostering Entrepreneurship and New Ventures**: Our Pantas and Ting Sutardja Center for Entrepreneurship & Technology (SCET) educates hundreds of undergraduates each year about innovation, technology management, and new ventures. To support startups emanating from the Berkeley campus, SCET has partnered with the Haas School of Business and others to establish SkyDeck, an innovation center and incubator located on the edge of the Berkeley campus that has served dozens of promising startups.

- **Management, Entrepreneurship, & Technology (M.E.T.) Program**: The founding class enrolled this fall 2017 in this new program. Through M.E.T., a select cadre of about 50 students each year earns simultaneous undergraduate degrees in business and engineering in four years. The exceptionally popular and rigorous program was created by the College of Engineering and the Haas School of Business.

- **Broadening Participation**: Increasing our numbers of women and underrepresented minority students continues as a top College priority, and we are now making solid progress in recruiting more women and underrepresented students. As of fall 2017, women make up 26% of our engineering undergraduate student body (compared to 21% nationally); women make up 30% of our graduate students (compared to 25% nationally). In 2013 the College launched our Center for Access to Engineering Excellence (CAEE) to support recruitment, retention, and outreach to
underrepresented engineering groups; thanks to CAEE, as of this fall 2017, 10% of our engineering undergraduates are underrepresented minority students. During the 2017-18 academic year, the College is embarking on a new program of broadening participation in our faculty ranks using a new award from UC’s Office of the President.

- **Educating Undergraduates for Engineering Leadership:** Our transformed Engineering Student Services, serving undergraduates, offers career services, student development support and leadership training, academic guidance and personal counseling, and peer advising. For undergraduates, we have worked to increase the level and quality of faculty advising, research experiences, global study-abroad opportunities, domestic and international service learning experiences, internships, and other programs for enhancing student preparation. With substantial funding from Qualcomm, General Motors, National Instruments, Autodesk, Lockheed Martin, and others, in 2013 we launched a program to grow undergraduate research and design experiences, now offering students the chance to work on more than 400 projects (beehive.berkeley.edu).

- **Engineering Leadership Through Executive Education:** Growing our continuing education offerings, we created the Engineering Leadership Professional Program (ELPP) in Silicon Valley, aimed at engineers working in industry who are looking for the education they need to take the next step in their careers.

### Research, Institutes, and Centers
College of Engineering research is robust and productive, with a steady growth in volume. The total research expenditures in the College (that is, funding brought in and expended to drive research programs) for the past year is more than $170 million; to reach this level the figure has grown by 5-12 % each year during the past decade.

A key feature of our approach has been to launch many new multidisciplinary institutes and centers integrating research with new pedagogy, with a strategic focus and corporate, philanthropic, and government support. Each of these has a physical home with new or renovated space, a business plan with substantial extramural and philanthropic financial support, and committed faculty involvement. Some that were launched or grown significantly during the past decade are these:

1. **CITRIS and the Banatao Institute** extends the reach of the Center for Information Technology Research in the Interest of Society into areas of global relevance. CITRIS and the institute span four UC campuses: Berkeley, Davis, Merced, and Santa Cruz. ([citris-uc.org/the-banatao-institute](http://citris-uc.org/the-banatao-institute))
2. In the **Richard C. Blum Center for Developing Economies** nine of the 10 UC campuses plus Lawrence Berkeley National Laboratory (LBNL) come together to solve the world’s most pressing development challenges. ([blumcenter.berkeley.edu](http://blumcenter.berkeley.edu))

3. The **Berkeley Water Center**, a partnership with the College of Natural Resources and LBNL, is a leading nexus for water-related research. ([bwc.berkeley.edu](http://bwc.berkeley.edu))

4. The **Synthetic Biology Institute**, a joint venture with the College of Chemistry, is engineering biological systems to address global problems in health, materials, energy, environment, and security. ([synbio.berkeley.edu](http://synbio.berkeley.edu))

5. The **Qualcomm Swarm Lab** develops swarms of sensors and actuators to enable wireless ubiquity. ([swarrlab.eecs.berkeley.edu](http://swarrlab.eecs.berkeley.edu))

6. The **Center for Neural Engineering and Prostheses**, a joint undertaking with Neurosurgery and Neuroscience at UCSF, is federated with the Swarm Lab. ([www.cnep-uc.org](http://www.cnep-uc.org))

7. The **Center for Research in Energy Systems Transformation** (CREST) works on energy policy, economics, and business models to transform our society from high-carbon/low-efficiency to low-carbon/high-efficiency. ([crest.berkeley.edu](http://crest.berkeley.edu))

8. The **Sutardja Center for Entrepreneurship and Technology** (SCET) offers an undergraduate certificate program in entrepreneurship and technology and hosts colliders that connect graduate students and undergraduates to leaders in the management of innovation. ([scet.berkeley.edu](http://scet.berkeley.edu))

9. The **Simons Institute for the Theory of Computing** is an international hub for global exchange and fundamental new activities in the study of theoretical computer science. ([simons.berkeley.edu](http://simons.berkeley.edu))

10. The **Siebel Energy Institute** is a research consortium of nine universities, led by Berkeley, working on data analytics and machine learning for the smart energy grid. Participating schools are Berkeley, Carnegie Mellon, MIT, Princeton, University of Illinois at Urbana Champaign, University of Tokyo, Politecnico di Torino, Ecole Polytechnique, and Tsinghua University. ([www.sieblenergyinstitute.org](http://www.sieblenergyinstitute.org))

11. The **Jacobs Institute for Design Innovation**, a hub for all things design, offers a certificate in Design Innovation and fosters cutting-edge methods in design thinking. ([jacobsinstitute.berkeley.edu](http://jacobsinstitute.berkeley.edu))
The College has also been the hub of several large extramurally funded efforts. These include two major National Science Foundation centers – the Team for Research in Ubiquitous Secure Technology (TRUST) and the Center for Energy Efficient Electronics Science (E3S), as well as the hubs in the National Network for Manufacturing Innovation in energy systems manufacturing and robotics. In addition, we have several large and active industry partnerships for research in the College, including efforts with Intel, Qualcomm, Siemens, Microsoft, Google, United Technologies, IBM, GE, and Lockheed Martin.

**Philanthropy**

The leadership and generosity of our Engineering Advisory Board and our board members across the College – together with the active engagement and substantial financial support of our loyal College community of alumni, partners, advisors, and friends – have been crucial to Berkeley Engineering’s achievements, impact and growth. Over the past decade, our leading benefactors have made it possible for the College to create cornerstone endowments for 27 faculty chairs, launch more than 15 institutes and major centers, provide dozens of new student fellowships and scholarships, grow the total College endowment to more than $300 million, and add three new state-of-the-art buildings and more than 20 modern classrooms, design studios, and laboratories.

In addition, our remarkably generous Dean’s Society and Annual Fund donors have provided pivotal startup funding, essential to our successfully hiring the best young Engineering faculty. These dedicated benefactors’ vital annual giving has helped the College recruit 82 new faculty in the past decade.

The level of support from the College’s outstanding donor community has risen significantly in the past 10 years. In the eight-year Campaign for Berkeley, which ended in December 2013, the College raised more than $425 million in private support. Since 2014, the College has raised more than $250 million. During the past decade, the average annual level of total private giving to the College has more than doubled – 2016-17 was a record-breaking year, with the College’s private giving total of close to $93 million. Through their thoughtful philanthropy, the College’s generous benefactors have a profound impact across all of Berkeley Engineering – transforming the student experience in Engineering through research and internship experiences, enhanced advising, leadership opportunities, and new labs and infrastructure. Private gifts are essential to maintaining the College’s excellence.
Space and Infrastructure
I am proud of the major changes we have achieved in the last decade to create new space in the College, thanks to pivotal leadership funding from private benefactors. We have constructed three impressive and now very busy new buildings: Sutardja Dai Hall (home of CITRIS and the Banatao Institute), Blum Hall (housing the Blum Center, Fung Institute, and the M.E.T. program), and Jacobs Hall (headquarters for the Jacobs Institute for Design Innovation).

In addition, we have overseen and completed major renovations in existing buildings: the Bechtel Engineering Center; Calvin Lab to house the Simons Institute for the Theory of Computing; areas of Shires Hall at the Graduate Theological Union for the Fung Institute for Engineering Leadership; space in California Memorial Stadium for the Sutardja Center for Entrepreneurship & Technology; and downtown Berkeley space at 2150 Shattuck Avenue for SkyDeck, CITRIS and the Banatao Institute, and the Tsinghua-Berkeley Shenzhen Institute (TBSI). Recently, we also opened the new V&A Café in Etcheverry Hall, made improvements to several floors there, and upgraded several teaching labs and student study spaces in each of the buildings in the College: Cory Hall, Etcheverry Hall, Davis Hall, O’Brien Hall, Soda Hall, Hearst Memorial Mining Building, Stanley Hall, Mc Laughlin Hall, Hesse Hall, among others.

We are now in the planning phases for a physical hub for Inventing the Future, a new building to be located on the current site of Tolman Hall, developed in partnership with the College of Chemistry and the College of Natural Resources.

International Partnerships
Our global engagements are built on strong foundations of shared educational and research goals, with clear objectives and expectations. Our goals in developing these programs have never been financial (although each program has been a net-positive revenue generator for the College.) One approach that we have pioneered involves the establishment of overseas not-for-profit entities owned by Berkeley, which is a template for further international programs. Over the past decade, examples of our global partnerships include:

- King Abdullah University of Science and Technology (KAUST): A partnership created in 2008 with the new Jeddah, Saudi Arabia, university to help design its mechanical engineering curriculum and research programs.

- Office of the Prime Minister of Singapore, National Research Foundation (NRF): The creation in 2012 of a not-for-profit (wholly owned by Berkeley), the Berkeley Educational Alliance for Research in Singapore (BEARS), which has received large grants for research in building efficiency and advanced materials for harvesting energy from the Sun. The partnership has been extended for 2017-22.
- Tsinghua-Berkeley Shenzhen Institute (TBSI): Enabling Tsinghua University to co-establish with Berkeley a new graduate school in Shenzhen, China, and offer graduate students from both institutions collaboration opportunities with Berkeley and Tsinghua faculty. TBSI is a not-for-profit with offices in both Shenzhen and downtown Berkeley.

- Shanghai Berkeley Zhangjiang Berkeley Engineering Innovation Center (Z-BEI) in Pudong, China: A partnership with Zhangjiang Innovation Park in Shanghai and Shanghai Tech, a new university operated by the Chinese Academy of Sciences, to receive research support in electronics and information technologies and in translational medicine research.

- Philippine-California Advanced Research Institutes (PCARI): A consortium of universities in the Philippines, Berkeley, and other UC campuses to advance research in Information and Communication Technology (ICT) and Translational Innovations in Health Care. Announced by Dado Banatao and President Benigno Aquino III in 2012, the program commenced in January 2015 with four sets of more than 30 large research projects. The Philippine government has announced plans to launch a new collaboration in the area of Inclusive Innovation.

**Looking Ahead**

As I complete my final academic year as Dean, I look forward to continuing to work with the College community, our board members, partners and friends on these and other innovations and new directions for the College. My years as Dean have given me great optimism and excitement about the ever-growing potential of Berkeley Engineering. We are poised to play a leadership role in inventing the future – I plan to further our efforts alongside my faculty colleagues, staff, students, our dedicated partners, and my fellow alumni as we achieve new successes, guided by our College of Engineering mission: *Educating Leaders, Creating Knowledge, Serving Society.*