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The 150 Women Project - Holding Series

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150 Years of Women in Mechanical Engineering

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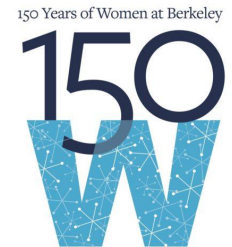
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Emily Higgins, Compiler

This year, along with the entire Berkeley campus, the Department of Mechanical Engineering is celebrating the 150th anniversary of the University of California’s 1870 resolution: “That young ladies be admitted into the University on equal terms in all respects with young men.” The act came just two years after the university’s founding, while many elite East Coast universities waited until the late 20th century to admit their first women students.



Today, our female faculty, students and alumni are at the cutting edge of our work in Mechanical Engineering: holding tenured positions, serving as mentors, leading innovative research, and founding breakthrough startups. Read on to learn more about the ways women have brightened the light in the department over the decades.



Caroline Willard Baldwin (1869–1928) earned a bachelor’s degree from the College of Mechanics at Berkeley in 1892 and was selected to speak at commencement. The College of Mechanics Baldwin went on to graduate study at Cornell University and became the first woman to receive a PhD in science in Physics from an American university. Her paper “A Photographic Study of Arc Spectra” was published in 1896 and is still available online: . Equipped with a doctorate, Baldwin nonetheless taught physics at the California School of Mechanical Arts, a vocational secondary school in San Francisco associated with UC Berkeley. Baldwin’s status as a married woman with two children, similar to that of other Berkeley women graduates in STEM of her era, would have been an obstacle to a position in higher education.



Squishy is an adjective not often associated with machines, but with the leadership of mechanical engineering professor **Alice Agogino**, it can now be considered a sought-after attribute for robust, deployable “tensegrity” robots. Agogino led researchers at Berkeley and Squishy Robotics, a company she co-founded, in the development of shape-shifting robots that could drop 600 feet and remain unscathed. Her innovative work earned her the Presidential Award for Excellence in Science, Mathematics and Engineering Mentoring from the White House Office of Science and Technology Policy and the National Science Foundation.

Fittingly, Agogino’s research group — the BEST Lab (Berkeley Emergent Space Tensegrities/Energy and Sustainable Technologies/Expert Systems Technologies Lab), is an amalgam of research reflecting her wide-ranging expertise and interests. The only thing the lab lacks in its name is Agogino’s reputation as a mentor. Whether it’s helping undergraduates design robots for space, or advising graduate students as they launch careers in development engineering, one thread running through Agogino’s career is the drive to make engineering more diverse and inclusive.

Earlier this year, Agogino won the UC Women in Tech Initiative’s 2020 Athena Award for Academic Leadership, and she was named among the top 10 women in the robotics industry by the publication Analytics Insight. In 2015, the American Society of Mechanical Engineers honored Agogino, the Roscoe and Elizabeth Hughes professor of mechanical engineering, with the group’s Outstanding Design Educator Award. The honor cited her “tireless efforts in furthering engineering design education, including curriculum changes that blend cutting-edge design topics with state-of-the-art educational practices; promoting wide-ranging interaction between industry and students; performing game-changing design research and mentoring the next generation of designers, educators, researchers and engineers.”



Corie L. Cobb received her Ph.D. from UC Berkeley’s Mechanical Engineering Department in 2008 with a dissertation title – “Case-based Reasoning for MEMS (Microelectromechanical Systems) Design Synthesis” – with Prof. Alice M. Agogino as her advisor. Within her doctoral program she majored in design and minored in information systems and materials science. These are rigorous depth areas that require a solid foundation in mathematics.

During the last 1.5 years of her graduate studies, Prof. Cobb led a team of researchers on a longitudinal educational assessment of the new product development class taught by her advisor Prof. Alice Agogino and co-instructor Dr. Sara Beckman. She co-authored a journal paper on longitudinal assessment of the course to better understand the design lessons and new product development methods alumni from the course value in industry. This work was published in 2016 – C.L. Cobb, J. Hey, A.M. Agogino, S.L. Beckman, and S. Kim, “What Alumni Value from New Product Development Education: A Longitudinal Study,” *Advances in Engineering Education*, pp. 1-37, 2016.

While in graduate school, Prof. Cobb’s initial career goal was to work in industry. She wanted to create tangible products that had an immediate impact on the world. Prof. Cobb was highly innovative and excelled in industry with 18 issued US patents and 6 pending US patent applications. She also raised nearly \$8.5M of research funding. In industry, where inventorship is highly valued, Prof. Cobb was greatly productive, and found ways to both patent and publish her research work. She has a career path that is not typical of a professor. Five years ago, she began thinking of ways she could have a broader impact in the clean energy and additive manufacturing fields. Corie Cobb chose to leave a solid job in industry where she was highly valued, so she could advance her research vision at the University of Washington in her new role as a Tenure Track Associate Professor.

During her 3.5+ years at the University of Washington, she received the prestigious DARPA Young Faculty Award and the 3M Non-tenured Faculty award. She has received these two prestigious awards, which is outstanding, and she has raised over \$1M as a PI at the University of Washington. Her teaching scores are phenomenal. She has received scores of 4.6-4.9 for her teaching effectiveness. While some new faculty may require time to develop a strong teaching

record, Prof. Cobb received these high scores when she started at the University of Washington, and she has continued to maintain them.

Prof. Cobb is revolutionizing the clean energy and additive manufacturing landscape by taking on a new fundamental approach to design and manufacturing. She leverages artificial intelligence to develop new material and systems heuristics, creating an automated design process to guide her field towards new discoveries in energy storage architectures and additive manufacturing processes. Her work in industry has already significantly improved the efficiency of solar cells and batteries and these products are in use at real companies – she is now poised to impact and revolutionize clean energy and additive manufacturing through new innovations in materials and mechanical engineering. Prof. Cobb is a Mechanical Engineer by degree, but her research has always been highly interdisciplinary, crossing into Computer Science, Information, Materials Science, and Electrical Engineering. Prof. Cobb has authored or co-authored 15 high quality peer-reviewed papers (six peer-reviewed conference papers, eight peer-reviewed journal papers, one peer-reviewed book chapter and four editorial-reviewed conference or magazine papers).

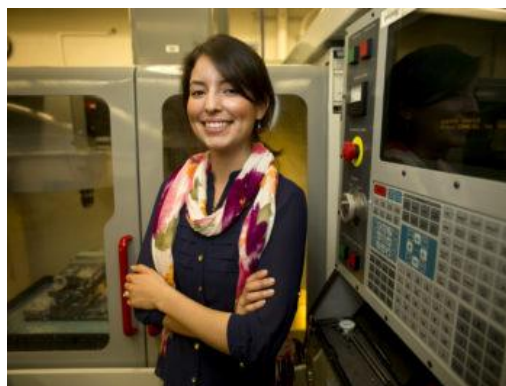
Prof. Cobb has also been very active in community service. At both Stanford University and UC Berkeley, she was active with the black graduate science and engineering student organizations. She was also a student delegate for the Mechanical Engineering Department to the Graduate Assembly for almost two years and was a member of their Diversity Committee. She has shown leadership in activities in the College of Engineering's Center for Underrepresented Engineering Students (CUES) and I remember in 2008 before she graduated from Berkeley, she was hand selected to be one of a small number of advanced Berkeley graduate students on campus who spoke to NSF's program director regarding broadening programs for women and underrepresented minorities. At her prior employer Xerox PARC, she continued to be an active participant in diversity recruiting and hiring, advising managers and human resources on best practices for recruiting and retaining a diverse science and engineering workforce.

Prof. Cobb has an exceptional academic and professional record. She is a highly creative researcher who excels in computation, intelligent systems, and experimental work. She has become an impactful leader in her research field. Prof. Cobb has demonstrated creativity, commitment, innovative thinking, and team-work throughout her time as a researcher. She is an ideal professor with excellence in all of its dimensions in teaching, research, mentoring, outreach and service.



Dr. **Robin Coger** earned both an MS and Ph.D at Berkeley in Mechanical Engineering. Coger is chair of the Council of Engineering Deans of Historically Black Colleges and Universities. Her focus at North Carolina A&T ranges from advancing the global preparedness of students, highlighting the research of graduate students, to enhancing the innovation climate across the university. Prior to joining A&T's faculty in 2011, Dr. Coger served as the founder and director of the Center for Biomedical Engineering and Science and was a professor in the Department of Mechanical Engineering and Engineering Science (MEES) at the University of North Carolina (UNC), Charlotte. Her career at UNC Charlotte spanned over 15 years, where she served as a dedicated educator, researcher, and administrator.

Dr. Coger's research expertise is in solving design and performance problems related to tissue engineered organs, with special emphasis on liver replacement devices and their safe storage for off-the-shelf availability. Dr. Coger is a fellow of both the American Society of Mechanical Engineers and the American Institute for Medical and Biological Engineering.



Dr. **Nancy Diaz-Elsayed** graduated from the Massachusetts Institute of Technology (MIT) with a B.S. in Mechanical Engineering and a minor in Management in 2008. She obtained her MS and

PhD in Mechanical Engineering in 2010 and 2013 from the University of California, Berkeley (UC Berkeley), where she also received certificates in Engineering and Business for Sustainability and the Management of Technology. She is a Research Affiliate of CIRP, the International Academy for Production Engineering, and a member of the Society of Hispanic Professional Engineers. Her current research interests include product design for sustainable production and use, life-cycle assessment, and the design and implementation of sustainable manufacturing operations. Her projects have spanned the aerospace, dairy, industrial machinery, and recycling industries.

Dr. Diaz-Elsayed is a Research Assistant Professor at the University of South Florida (USF) where she is evaluating the sustainability of wastewater treatment solutions for centralized and decentralized applications in the Civil and Environmental Engineering Department. She is also working as a Sustainable Manufacturing Specialist, managing research project partnerships and assisting in the development of new technology offerings for designing and operating sustainable factories.



While at Berkeley—where she served on the faculty for a decade—**Pamela Eibeck** established herself as a national leader in electronics cooling and 3D convective heat transfer, while becoming an early pioneer in multimedia learning. From Berkeley, she took her expertise in engineering and teaching to effectively lead several other institutions of higher education.

As chair of mechanical engineering and vice provost of undergraduate studies at Northern Arizona University, Eibeck led the creation of a centralized student support center, established the Center for Learning in Electronic Environments to support faculty development of online courses and strengthened the mechanical engineering program by supporting interdisciplinary design and a new renewable wind energy program. As dean at Whitacre College of Engineering at Texas Tech University, she expanded enrollments and strengthened research, including building programs in nanophotonics and nanoenergetics. And as president of University of the Pacific—a role from which she retired in 2019—she transformed and headed California’s oldest chartered university, known for its health-related professional programs.

Among her many honors and awards, she is a fellow of the American Society of Mechanical Engineers and recipient of the IBM Young Faculty Development Award and the YWCA Women in Science Excellence Award.



Dr. **Janet Ellzey** received her BS and MS degrees in Mechanical Engineering from The University of Texas at Austin and her PhD from the University of California at Berkeley. She is currently a Professor of Mechanical Engineering and Engineering Foundation Centennial Teaching Fellow at the University of Texas at Austin. Her research has spanned a broad range of topics in the field of combustion, and she currently studies low emissions burners and additive manufacturing of novel combustors. She was awarded the Engineering and Physical Sciences Research Council Research Fellowship from the UK in 2001. In 2011 she was inducted into the Academy of Distinguished Alumni of the Department of Mechanical Engineering at the University of Texas at Austin. In 2018 she was inducted into the inaugural class of Fellows of the Combustion Institute. Dr. Ellzey is an innovative educator and has launched numerous academic initiatives to provide international opportunities for engineering students with specific emphasis on programs focused on the needs of marginalized communities. As the 13th woman to receive a Mechanical Engineering degree from UT Austin, Dr. Ellzey is committed to the advancement of women in her field. She founded Women in Mechanical Engineering at the University of Texas at Austin, as well as Women in Combustion as part of the Combustion Institute, the primary professional organization for researchers in her field.



Grace X. Gu is an Assistant Professor of Mechanical Engineering at the University of California, Berkeley. She received her PhD and MS in Mechanical Engineering from the Massachusetts Institute of Technology and her BS in Mechanical Engineering from the University of Michigan, Ann Arbor. Her current research focuses on creating new materials with superior properties for mechanical, biological, and energy applications using multiphysics modeling, artificial intelligence, and high-throughput computing, as well as developing intelligent additive manufacturing technologies to realize complex material designs previously impossible. Gu is very passionate about working with undergraduate and graduate students on exciting 3D-printing and materials science projects to create a better tomorrow.



Dr. **Cynthia Hipwell** received her M.S. and Ph.D. in the Department of Mechanical Engineering at UC Berkeley, and is currently a professor of Mechanical Engineering at Texas A&M University. Hipwell is a member of the National Academy of Engineering, the National Academy of Inventors, and The Academy of Medicine, Engineering, and Science of Texas (TAMEST). When elected to the NAE, Hipwell was cited for “leadership in the development of technologies to enable areal density increases in hard disk drives.” Areal density in a hard drive refers to the quantity of bits of information that can be stored on the surface area of magnetic disks. Her research interests include nanoscale energy transport and tribology of small-scale devices; surface physics in and sensors and actuators for haptic and human/machine interfaces; and innovation business processes, technology and technology platforms to speed the innovation process.



Dr. **Sherry Hsi** received a B.S. degree in Engineering Science, Bioengineering at UC Berkeley in 1986. As an undergraduate student, she initiated a research project to use expert systems to configure communications devices with disabled children. Working with the Stanford's Children's Hospital and Mechanical Engineering Professor Alice Agogino, Sherry won a competitive UC president's undergraduate fellowship and grants from the Texas Instruments and the Department of Education to implement this expert system. As a Master's student in Mechanical Engineering at UC Berkeley she used this project as the foundation for her MS research ("ADIS: Assistive Device Interface Selector for the Disabled"), graduating in 1988. She published several peer-reviewed publications on this research: (1) Hsi, S., M. Barker, A.M. Agogino and B. Yazdani-Kachoee, "Expert Systems Applied to Rehabilitation Engineering: A New Approach to the Evaluation of Control," Proceedings of the RESNA 10th National Conference, June 1987, pp. 148-150. (2) Hsi, S., A.M. Agogino, M. Barker and B. Yazdani-Kachoee, "ADIS: Assistive Device Interface Selector for the Disabled," Proceedings of the ASME International Computers in Engineering Conference, Vol. 1, pp. 109-114, (July 31 – August 3, 1988, San Francisco, California). (3) Expert System ADIS: Assistive Device Interface Selector," Proceedings of the International Conference of the Association for the Advancement of Rehabilitation Technology, (Montreal, June, 1988), pp. 74-75.

After working on AI applications in industry in Japan, Sherry returned to UC Berkeley for a Ph.D. in the interdisciplinary program in Science, Mathematics and Engineering Education. She was a leader in use of multimedia in engineering education with the Synthesis Engineering Education Coalition. In particular, she worked on innovations in multimedia case studies engineering design. Peer-reviewed publications on this subject include: (1) Hsi, S. and A.M. Agogino, "Creating Excitement and Motivation in Engineering Design: Evaluating Student Participatory Experiences in Multimedia Case Studies," Proceedings of the ED-MEDIA '93, World Conference on Educational Multimedia and Hypermedia (June 23-26, 1993; Orlando, Florida), AACE (Association for the Advancement of Computing in Education), pp. 255-261. (2) Hsi, S. and A.M. Agogino, "Use of Multimedia Technology in Teaching Engineering Design,"

Proceedings of the HCI International '93 (5th International Conference on Human-Computer Interaction, Orlando, Florida; Aug. 8-13, 1993), pp. 778-783. (3) Hsi, S. and A.M. Agogino, "Navigational Issues in Multimedia Case Studies of Engineering Design," Proceedings of the HCI International '93 (5th International Conference on Human-Computer Interaction, Orlando, Florida; Aug. 8-13, 1993), pp. 764-769. (4) Hsi, S. and A.M. Agogino, "The Impact and Instructional Benefit of Using Multimedia Case Studies to Teach Engineering Design," Journal of Educational Hypermedia and Multimedia., Vol. 3, No. 3/4, 1994, pp. 351-376. (5) Hsi, S. and A.M. Agogino, "Scaffolding Knowledge Integration through Designing Multimedia Case Studies of Engineering Design," Engineering Education for the 21st Century: Proceedings of Frontiers in Education, FIE'95, ASEE/IEEE, pp. 4d1.1-4d1.4.

A strong advocate in equity, diversity and inclusion, Sherry Hsi also researched gender differences in spatial reasoning strategies in a software application and gender differences in online discussion. Publications include: (1) Hsi, S. and A.M. Agogino, "Scaffolding Knowledge Integration through Designing Multimedia Case Studies of Engineering Design," Engineering Education for the 21st Century: Proceedings of Frontiers in Education, FIE'95, ASEE/IEEE, pp. 4d1.1-4d1.4. (2) Agogino, A.M. and S. Hsi, "Learning Style Based Innovations to Improve Retention of Female Engineering Students in the Synthesis Coalition," Engineering Education for the 21st Century: Proceedings of Frontiers in Education, FIE'95, ASEE/IEEE, pp. 4a2.1-4a2.4. (3) Hsi, S., M. C. Linn and J. E. Bell, "The Role of Spatial Reasoning in Engineering and the Design of Spatial Instruction," Journal of Engineering Education, April 1997, pp. 151-158; (4) Hsi, S. & Hoadley, C. M. (1997). Productive discussion in science: Gender equity through electronic discourse. Journal of Science Education and Technology, 6(1):23-36. Dr. Hsi received her Ph.D. in 1997 with thesis title "Facilitating Knowledge Integration in Science through Electronic Discussion: the Multimedia Forum Kiosk". She was co-advised with Alice Agogino in Mechanical Engineering and Marcia Linn in Education. She co-published a popular book in 2000 with Prof. Marcia Linn – Computers, Teachers, Peers: Science Learning Partners. Lawrence Erlbaum Associates. Mahwah, NJ. 2000 – which showed how technology-enabled curricula that builds on student ideas can help with lifelong learning. After graduation, Dr. Sherry Hsi did her post-doc with the Center for Innovative Learning Technologies, then started Metacourse, Inc., which pioneered collaborative online professional development courses for teachers, faculty instructors, curriculum developers, and industry professionals. She also created communities of online learners among faculty in the U.S and in South America with Metacursos in the early 2000s.

Dr. Sherry Hsi served as Director of Online Media Research and Evaluation (2002-2010) at the Exploratorium in San Francisco, conceptualizing and leading projects in new media research including studying Exploratorium's online visitors, creating Exploratorium's digital learning resources, and researching mobile learning with electronic guidebooks and RFID. Publications include: (1) Hsi, S. (2003). The Electronic Guidebook: A study of user experiences mediated by

nomadic web content in a museum setting. *International Journal of Computer-Assisted Learning*, 19(3): 308-319; (2) Hsi, S. (2008) *Designing for Mobile Digital Engagement*. In *Digital Technologies and the Museum Experience*, Edited by Loïc Tallon and Kevin Walker, pp. 125-146. AltaMira Press, Rowman & Littlefield Publishers.

Dr. Sherry Hsi served as Research Director at the Lawrence Hall of Science at UC Berkeley (2010-2015), where she led a number of innovative education initiatives including 3D visualizations using the AR Sandbox exhibit now in hundreds of museums around the globe; and Paper mechatronics project aims to provide an extensible approach and kit that incorporates both “high” and “low” technological elements, along with learning resources that can meet the needs of novice designers and appeal to the interests and abilities of a wide range of learners. The design marries the inherent approachability and flexibility of everyday materials with graduated pathways into mechanical and computational complexity. She also co-created the informal STEM digital library Howtosmile.org with a network of museum partners; and award-winning mobile health apps for children’s hospitals supported by NIH. While at LHS with Cal alums and BEAM, she created the TechHive studio, a youth makerspace and STEM project-based leadership innovation program to expand opportunities for apprenticeship learning in engineering.

Dr. Sherry Hsi served as Senior Research Scientist (2016-2018) and then Executive Vice President (2018-2020) at the Concord Consortium. There she served in both a leadership capacity and in managing technology learning research. Her team created novel Dataflow software and IoT-enabled sensors kits for data production to enhance learning in science laboratories and computational craft materials for learning engineering.

Dr. Sherry Hsi is currently a Principal Scientist at BSCS Science Learning, a national center that develops, studies, and disseminates powerful approaches to education through research-driven innovation. She is the Principal Investigator on two National Science Foundation projects that are exploring mobile strategies for raising awareness and public understanding of modern radio; and teach computing concepts using craft-based materials and culturally-responsive approaches to design.

“Our hope for future learners is that they grow to be more creative, scientifically literate, and independent in making sound decisions. This requires recognizing the many assets that youth bring, acknowledging different ways of working, and valuing learners’ curiosity.” – Sherry Hsi

“You can teach a lot of engineering with just a piece of paper and some cardboard.” -Sherry Hsi



After earning her bachelor's degree at the University of Minnesota and master's and PhD from the University of California, Berkeley, **Melany Hunt** joined Caltech in 1988 as an assistant professor. She was named associate professor in 1995, professor in 2001, and Kenan Professor in 2012. She became Hayman Professor in 2013. She served as executive officer of mechanical engineering from 2002–07, and as vice provost from 2007–14.

Among her contributions to Caltech, Hunt founded in 2012 the Center for Teaching, Learning and Outreach (CTLO), which supports teaching and learning on campus as well as PreK-12 and public educational outreach. Although Hunt first conceived of the CTLO in 2007, the financial pressures that followed the Great Recession delayed its creation. Hunt worked with then-President Jean-Lou Chameau and then-Provost Ed Stolper to leverage support from the Kiyo and Eiko Tomiyasu Presidential Fund and make it a reality.

Despite her service in Caltech's administration, Hunt has never taken a year off from teaching. Currently, she teaches a thermodynamics lecture course to sophomores. "Students think, 'oh, no. That sounds dry,'" she says. "But then you tell them that they'll be able to figure out the thrust from the engine of a 777 aircraft, or understand how a power plant works. It helps students to get into the material when you take the time to explain the applications for what they're learning."

Hunt says her teaching style was inspired, in part, by her thesis advisor from Berkeley, who always advised students not to get "lost in the math," she says. "It's not enough to just arrive at an answer. You need to stop and consider whether that answer makes sense."

Recently, Hunt launched the [Giving Voice](#) project, which creates recorded vignettes that illustrate the challenges that disproportionately affect women in science and engineering labs and classrooms, and pairs them with online supporting materials aimed at effecting change.

“I read a report from the EEOC [U.S. Equal Employment Opportunity Commission] highlighting the harassment women can face in the workplace, and I wanted to get our community thinking about how to improve the working environment for women in STEM,” she says.

Excerpt from article by Robert Perkins, <https://www.caltech.edu/about/news/melany-hunt-awarded-caltechs-top-teaching-award>



Dr. **Sara McMains** is a professor in the Department of Mechanical Engineering, University of California, Berkeley. Her research interests include Geometric DFM (Design for Manufacturing) feedback, geometric solid modeling, CAD/CAM, GPU algorithms, computer aided process planning, layered manufacturing, computer graphics, visualization, virtual prototyping, and virtual reality. Her current research focuses on new techniques for accessibility analysis and collision detection, with applications in haptic design environments, design for manufacturing for injection molding, design for cleanability, layered manufacturing, and machining.

McMains received her A.B. from Harvard University in Computer Science, and her M.S. and Ph.D. from UC Berkeley in Computer Science with a minor in Mechanical Engineering. She is the recipient of Best Paper Awards from Usenix (1995) and ASME DETC (2000), a Best Poster and a Best Paper Award from the ACM Solid and Physical Modeling Symposium (2007, 2008 — 2nd place), and the NSF CAREER Award (2005).



Grace O'Connell's engineering education began with breaking things. “Whenever anything broke in our house, before we threw it out, my dad would say, ‘Let’s take it apart just to look inside.’ Because it was already broken, we could break it even more. That was a lot of fun.” She’s parlayed that childlike curiosity into a distinguished career in biomechanics and tissue engineering, applying mechanical engineering principles and regenerative medicine strategies to repair damaged tissues in the body. In particular, she’s studying soft tissue degeneration. She looks at the mechanical function of native tissue to try to mimic this function in the biological analog tissues that her lab creates. Among the many people who will benefit from her research are the approximately 80% of adults who experience back pain.

O’Connell is also an associate professor of mechanical engineering and the Don M. Cunningham Endowed Professor of Mechanical Engineering. Her broader research interests include the biomechanics of cartilage and intervertebral disc; tissue engineering; continuum modeling of soft tissues; and intervertebral disc function, degeneration and regeneration.



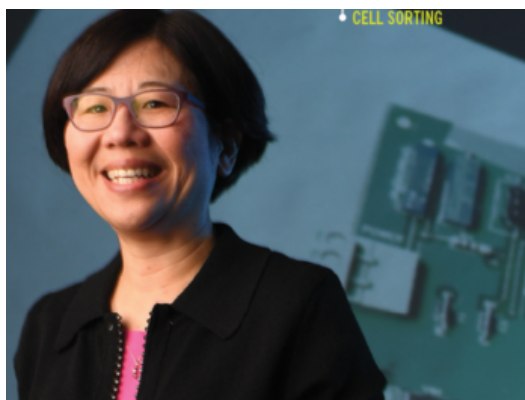
Lisa Pruitt received her Ph.D. from Brown University and joined the faculty of Mechanical Engineering at UC Berkeley in 1993. She has authored more than 300 publications in her research field of biomaterials, medical devices and failure analysis. She has received numerous awards. Her research has been recognized with a Congressional citation; a National Science Foundation CAREER award; an Office of Naval Research Young Investigator Award; and her election into the American Institute of Medical and Biological Engineering. Professor Pruitt has also been honored for commitment to excellence in mentoring, teaching and outreach. She has received the American Association of Advancement of Sciences Mentoring Award; the Presidential Award for Excellence in Science, Mathematics and Engineering Mentoring; the UC Berkeley Distinguished Teaching Award as well as the A. Richard Newton Educator Award. Professor Pruitt has taught undergraduate and graduate courses in Behavior of Engineering Materials, Failure Analysis, Polymer Engineering, Medical Device Design, Personal Leadership and Equine-guided leadership. Pruitt has authored three books including *Mechanics of Biomaterials: Fundamentals for Implant Design*; *Horse of Fire: The story of an extraordinary and Knowing Horse as told by JJ Luck*; as well as *Savanna and the Magic Boots*.



Debbie G. Senesky is an Assistant Professor at Stanford University in the Aeronautics and Astronautics Department. In addition, she is the Principal Investigator of the EXtreme Environment Microsystems Laboratory (XLab). Her research interests include the development of nanomaterials for extreme harsh environments, high-temperature electronics, and robust instrumentation for Venus exploration. In the past, she has held positions at GE Sensing (formerly known as NovaSensor), GE Global Research Center, and Hewlett Packard. She received the B.S. degree (2001) in mechanical engineering from the University of Southern California. She received the M.S. degree (2004) and Ph.D. degree (2007) in mechanical engineering from the University of California, Berkeley. Prof. Senesky recently chaired the 2018 Women in Aerospace Symposium (WIA2018) at Stanford University. She has served on the technical program committee of the IEEE International Electron Devices Meeting (IEEE IEDM), International Conference on Solid-State Sensors, Actuators, and Microsystems (Transducers), and International Symposium on Sensor Science (I3S).. In addition, she currently serves on the board of directors of the non-profit organization Scientific Adventures for Girls. In recognition of her research, she received the Emerging Leader Abie Award from AnitaB.org in 2018, Early Faculty Career Award from the National Aeronautics and Space Administration (NASA) in 2012, Gabilan Faculty Fellowship Award in 2012, and Sloan Ph.D. Fellowship from the Alfred P. Sloan Foundation in 2004.



Originally from Flagstaff, Arizona, **Suzanne Singer** is a member of the Diné (Navajo) tribe. She earned her BS in Mechanical Engineering from the University of Arizona and her Masters and PhD from UC Berkeley in Mechanical Engineering. Since graduating, she has had an incredibly successful and impressive career. She worked at Lawrence Livermore National Laboratory as a postdoctoral researcher and then as an Energy Systems and Thermal Analyst. In 2016, she founded Native Renewables, which aims to bring solar energy to Native American communities. She received the 2019 U.S. C3E Entrepreneur award.



Lydia L. Sohn received her A.B. (Chemistry and Physics, magna cum laude 1988), A. M. (Physics, 1990), and Ph.D. (Physics, 1992) from Harvard University. She was an NSF/NATO postdoctoral fellow at Delft University of Technology (1992-1993) and a postdoctoral fellow at AT&T Bell Laboratories (1993-1995). Sohn was on the Physics faculty at Princeton University (1993-2003) prior to joining the Mechanical Engineering Dept. at UC Berkeley in 2003. In addition to being a Professor of Mechanical Engineering, Sohn is a Core Member of the UCSF-UC Berkeley Joint-Graduate Group in Bioengineering. Sohn has received numerous awards, including the NSF CAREER, Army Research Office Young Investigator Award, and the DuPont Young Faculty Award. In 2010, Sohn received the prestigious W. M. Keck Foundation Medical Research award to develop a label-free method for screening and sorting rare cells.

Sohn was named a Bakar Fellow at UC Berkeley in 2013 for her innovative work in isolating and screening single CTCs from metastatic breast-cancer patients. In 2014, Sohn's developed label-free method—Node-Pore Sensing (NPS)—was named one of five “Revolutionary Platform Technologies for Advancing Life Sciences Research” in a competition sponsored by 6 major foundations, including the W. M. Keck Foundation, Gordon & Betty Moore Foundation, Kavli Foundation, Burroughs-Wellcome Fund, John Templeton Foundation, and Research Corporation, and Sohn was honored at the White House Office of Science and Technology Policy for this award. More recently, at the prestigious 2014 Oakridge Conference, Emerging Clinical & Laboratory Diagnostics: The Portable Lab, the American Association of Clinical Chemistry bestowed NPS with an Outstanding Poster Award for its high clinical value potential. Sohn currently serves on the Executive Committee of the UCSF-UCB Graduate Program in Bioengineering and is the Chair of UC Berkeley's Institutional Biosafety Committee and a member of its Research Compliance Advisory Committee.



Somayeh Sojoudi is an Assistant Professor in the Departments of Electrical Engineering & Computer Sciences and Mechanical Engineering at the University of California, Berkeley. She received her PhD degree in Control & Dynamical Systems from California Institute of Technology in 2013. She has been working on several interdisciplinary problems in optimization theory, control theory, machine learning, and power systems. Somayeh Sojoudi is an Associate Editor for the journals of the IEEE Transactions on Smart Grid, IEEE Access, and Systems & Control Letters. She is also a member of the conference editorial board of the IEEE Control Systems Society. She has received the 2015 INFORMS Optimization Society Prize for Young Researchers and the 2016 INFORMS Energy Best Publication Award. Her work on graphical models has received the INFORMS 2018 Data Mining Best Paper Award. She has also received four best conference paper awards from the Control Systems Society.



Hannah Stuart is an assistant professor in the Mechanical Engineering department at the University of California, Berkeley. She received her BS in Mechanical Engineering from the George Washington University in 2011. She then completed her MS and PhD in Mechanical Engineering at Stanford University in 2013 and 2017 respectively. Her research interests include: Dexterous manipulation; Bioinspired design; Soft and multi-material mechanisms; Skin contact conditions; Tactile sensing and haptics.