Edwin D. Hirleman Jr.
Chief Corporate and Global Partnerships Officer
Professor of Mechanical Engineering
Purdue University

PROFESSIONAL PROFILE

Proven leader who has excelled in academic administration and in the faculty calling of teaching, research, and service at three institutions. Benefitted from education in public schools and then at Purdue for the baccalaureate through Ph.D., enabled by excellent teachers/mentors and financial aid. Engaged in co-curricular, research, internship, and faith-based opportunities as an undergraduate, followed by international experiences, that collectively have had a dominant impact on life and career. Demonstrated ability to influence all stakeholders of the engaged academy, including students, staff, faculty, alums, public and private organizations, and the community, to assemble teams, work toward shared goals, and achieve results. Committed to innovation in technology development and translation for economic impact as well as in organizational processes, and to the criticality of diversity of thought to success. Led successful initiatives that produced: three new degree programs; inaugural accreditation for four degree programs; two-hundred papers with over 2,500 citations; six patents; ten technologies with commercial impact; a seven-year $142 million capital campaign for one department; three LEED buildings; and multiple academic initiatives. Recognized via national and international awards for education, research, and global engagement impact.

Academic Leadership Positions

2014 – present	Chief Corporate and Global Partnerships Officer, Purdue University
2014 – present	Senior International Officer, Purdue University
2015 – 2016	Senior Intellectual Property Officer, Purdue University
2010 – 2014	Professor and Dean, School of Engineering, University of California, Merced
2013 - 2014	Faculty Director, Blum Center for Developing Economies, UC Merced
2009 - 2014	Member and Chair, Advisory Board, and Director, Engineers for a Sustainable World
2008 - 2011	Guest Professor, Mechanical Engineering Department, Shanghai Jiao Tong University
2010 - 2013	Director, Center for IT Research in the Interest of Society (CITRIS), UC Merced node
2007 - 2010	Founding Director, GlobalHUB.org, NSF Engineering Virtual Organization
2005 - 2008	Founding (Interim) Director, Global Engineering Program, Purdue University
2001 - 2010	William E. and Florence E. Perry Head, Mechanical Engineering, Purdue University
1999 - 2001	Professor and Head, School of Mechanical Engineering, Purdue University
1995 - 1999	Associate Dean for Research, College of Engineering, Arizona State University
1989 - 1992	Vice-chair (Aerospace), Mech. & Aerospace Engineering, Arizona State University

Honors, Citations, and Awards (selected)

- Hon. George E. Brown, Jr. Award for International Scientific Cooperation, from the U.S. Civilian Research & Development Foundation (CRDF), Washington D.C. The 1st engineer to receive the Award, cited *in recognition of outstanding commitment to international education and cooperative research*. Subsequent awardees include Sen. Richard Lugar, Craig Barrett, Dr. Rita Colwell, Dr. Norman Borlaug.
- Charles Russ Richards Memorial Award, awarded once annually by Pi Tau Sigma (honor society) and the American Society of Mech. Engineers (ASME) to *the engineering graduate who has demonstrated outstanding achievement in mechanical engineering 20 years or more following graduation*.
- Wings for Success Award, from the Minority Engineering Program, Purdue University, to the School of Mechanical Engineering for success in *graduating a diverse population of students*.
- Alexander von Humboldt Fellow, from the Alexander von Humboldt Stiftung/Foundation, Bonn.
- Governor's Recognition Award, by the State of Arizona, for Center for Solid State Electronics.
- National Science Foundation Graduate Fellow; Howard Hughes Doctoral Fellow.

- Achievement Award, from the International Network for Engineering Education and Research (iNEER). Cited for *development of programs for education of global engineers through comprehensive international experiences with international design team collaborations.*

LEADERSHIP AND TEAM IMPACT

Purdue University
Chief Corporate and Global Partnerships Officer 2014-present

Founded and serving as the inaugural leader of the Office of Corporate and Global Partnerships. Our overarching commission is to be the gateway for current and future partners to efficiently engage with the staggering array of resources at Purdue. The mission of the Office is to *increase the impact, scale, and sustainability of corporate and global partnerships.* One innovative aim is to intentionally leverage the synergy between the corporate and global domains.

Primary Responsibilities
- Leading development of campus-wide strategic partnerships with corporations, global universities, and NGOs, plus serving as primary executive-level contact and growing faculty engagement;
- Overseeing the Technical Assistance Program, plus data analytics & metrics for corporate partnerships;
- Overseeing, as Senior International Officer, student & scholar services, study abroad, recruitment, admission; expanding global opportunities, both academic and professional, for students and faculty;
- Overseeing, as Senior Intellectual Property Officer, academic aspects of intellectual property processes - disclosures, assignments, providing related information to all Purdue campuses and external orgs.

Impact - Strategic Corporate Partnerships
- Set record for annual private-sector sponsor awards ($63.9M) from for-profit entities in 2016-17, up 31% from previous year. Broad participation of corporate sponsors (≈500/yr) and faculty PIs (≈375/yr).
- Managed creation or significant strengthening of strategic partnerships, select examples include:
  - Rolls-Royce: $57M/6yr University Technology Partnership; established new R&T facility as 1st partner in Purdue's Aerospace District Research Park;
  - Eli Lilly, Co.: $52M/5yr research collaboration on injectable biologics and clinical trial efficiency.
  - Dr. Reddy's Labs, Hyderabad, new Doctoral Fellows Program, ≈$2M/5yr;
  - General Electric, $10M/5yr Brilliant Factories Initiative with GE Global Research;
  - Sumitomo Chemical Corp., Tokyo, Innovation Center, ≈$1M awards in first year of engagement;
  - Fiat-Chrysler Automotive, doubled original partnership as per research project awards; and partnering in new World Class Manufacturing Academy;
  - Ford Motor Co. selected Purdue as a strategic Alliance Partner for research, beginning 2017.
- Co-developed and articulated flexible yet balanced Intellectual Property (IP) policies, including agreements encompassing paid-up license fees of varying terms, from ownership to options.
- Supported, via Purdue's innovation ecosystem, the faculty in all-time-high US patents issued (123) and US patent applications (245); plus 135 licenses/options and 345 disclosures in 2016-17.
- Organized Information Assurance team that met with key partners to understand the need. Co-developed and piloting a cost-effective process to deliver information security and render it a Purdue differentiator.
- Received, as the result of a long-term team effort, the DOD Defense Security Service (DSS) Award. Purdue became only the 2nd university to ever receive the Award, and one of only three recipients (from thousands of eligible facilities) of the Award in 2016.
- Set records for funding of the Manufacturing Extension Partnership (MEP), including $13.8M/5yr award from the National Institute for Standards & Technology (NIST), quadrupled program funding.
- The Technical Assistance Program (TAP) set records in 2016-17 for creation or retention of jobs (2,774,) increased or retained sales ($270.6M), cost savings ($72.8M), and investments ($42.4M), for impact measures reported annually by clients. TAP faculty helped 1,121 firms in 83 Indiana counties.

Impact - Global Purdue

- Set record for student experiences abroad (2,409) in 2016-17, up 45% since 2013-14.
- Reached all-time high for the number (9,133) of international students enrolled on campus, 2016-17, which also includes the largest number of international STEM students in any US university.
- Sponsored awards from non-US for-profit corporations total over $18M in last 3 years.
- Launched strategic partnership (Jordan Times) to co-develop Regional Institute for Infectious Disease and Anti-microbial Resistance to support early warning and prevention via education and research.
- Sharpened strategic focus on Purdue's two primary partner nations, Colombia and India. Defined strategies and roadmaps for: Signature Initiatives; bilateral Academic Mobility; Institutional Partnerships; Corporate & NGO Partnerships; Alumni Relations; and Marketing & Media.
- Colombia team (includes 20 or so key faculty and staff):
  - *Signature Initiative* launched for Innovation Ecosystems in Higher Education, to develop institutional capacity by increasing the scope and interconnection of education, research, and corporate partnerships. Acquired Phase 1 project funding ($0.5M) from prime sponsor Sapiencia, the Higher Education Agency of Medellín, with Ruta N as program manager. Offered workshops for 18 of the 45 universities in Antioquia, involving over 400 faculty, staff, and administrators who designed and developed campus innovation projects to deploy in upcoming Phase 2.
- India team (includes 20 or so key faculty and staff):
  - Established and offered the annual C.N.R Rao Purdue-India Lecture Series, targeting growth in research collaboration. 2016 Series was on Pharma Manufacturing, and 2017 on Cybersecurity;
  - *Signature Initiative* launched on Biopharma Manufacturing, linking to Dr. Reddy's Laboratories (DRL) who sponsored the 2016 Rao Lecture. The first related activity is the Doctoral Fellows Program where DRL selects top talent (2/yr) from their Hyderabad campus workforce (≈1,000 scientists) and supports them for a Purdue Ph.D. The first two Fellows arrived in January, 2017.

University of California, Merced

Dean, School of Engineering 2010-2014

Provided leadership within the 10th and newest campus (est. 2005) of the University of California system. UCM is the 1st and only US research university established in the 21st century, and it leads UC campuses in the enrollment of first-generation students (62%), underrepresented students (53%), and students from financially-challenged backgrounds (62%). The San Joaquin Valley is one of the most economically-deprived regions of the US, sits amidst a water-energy-food nexus of national significance, and its communities are built on strong families and cultural ties. Defined a distinctive School mission with innovation, sustainability, and community engagement as signature areas.

Primary responsibilities

- Providing effective leadership and management of academic, fiscal, and administrative activities in an academic start-up scenario.
- Orchestrating curriculum and program development for 4 non-accredited undergrad degree programs.
- Identifying competitive niches for graduate and research programs, recruiting faculty who bring focus and growth to those, and necessarily limiting the scope of activities as compared to larger universities.
- Fortifying faculty morale, in midst of CA budget crisis, temporary space, evolving curricula, unseasoned academic policies and procedures, very few and young alums, and many new faculty.
- Changing dramatically the professional experience profile of BS graduates, where less than 10% had paid engineering internships upon graduation in 2010-11.

Impact - Academic Ecosystem

- Led aggressive multidimensional effort to grow the School of Engineering in size, stature, and impact, as well as the entire University through proportional impact (engineering educates a representative cohort of about one-third of the UCM students) and interdisciplinary activities, resulting in:

- Engineering graduate programs debuted, in 2015 after only ten years in existence, ranked No. 140 by *U.S. News & World Report,* rising to No. 127 in 2017 (of >200 doctoral-granting universities);
- UC Merced was ranked No. 5 in 2016 for enabling social mobility by *Washington Monthly* (out of more than 270 national universities);
- UC Merced was ranked No. 8 in 2017 among all national universities in outperforming graduation rate expectations by *U.S. News & World Report*;
- UC Merced ranked No. 47 in 2017 among public institutions in alumni giving rates by *U.S. News & World Report*, despite the youth of its alumni, the vast majority of whom are in their 20s.

- Increased underrepresented students in engineering from 28% to 44% (an increase of 285 students, or 57%) from 2009-10 baseline.
- Grew 1st year UG applications by 57% and UG FTE by 42%; grew graduate students by 58%.
- Developed strategic plan, guiding faculty growth from 28 to proposed 80 by 2020, driven by UC Merced's unique interdisciplinary research foci and graduate programs.
- Hired twelve faculty in 2012-14 (43% growth), including the first two faculty in the Gallo Management Program, the 1st UCM Chancellor's Professor, and an AFOSR Young Investigator. Two (of 35) faculty received NSF CAREER awards in 2013-14.
- Finalized new $88M building for Schools of Engineering and Science, grand opening July 1, 2014.

Impact - Teaching, Research and Engagement

- Served as Faculty Director and Principle Investigator, UC Merced Blum Center for Developing Economies. Mission involves research, scholarship, and outreach addressing developing-world characteristics of the San Joaquin Valley, in order to transform poverty into prosperity. Initial funding $400k from UC, augmented by $100k endowed gift from Richard Blum after 1st Progress Review. Created seed grant program to encourage interdisciplinary engagement.
- Successfully oversaw preparation of ABET self-study and hosted accreditation visit in October, 2013, resulting in inaugural accreditation on first try for all three applicable degree programs (Environmental Engineering, Materials Science & Engineering, and Mechanical Engineering). Programs received maximum possible 6-year accreditation, with next Comprehensive Review scheduled for 2019-20.
- Delivered graduating seniors the opportunity for an industry-inspired, industry-mentored, interdisciplinary capstone project, to partially compensate the ≈90% of students who would not have had a paid industry internship experience upon graduation.

Impact - Innovation and Entrepreneurship

- Focused on creating an environment that fosters innovation. Integrated innovation mindset into curriculum by developing and teaching the Professional Seminar as well as an interdisciplinary senior Capstone Project. Created the *Innovation and Design Clinic (IDC)* where regional firms and non-profits provide projects and mentoring for students. Enlisted a patent attorney to mentor students, such that 8 teams from 2013 and 2014 offerings submitted provisional patent applications on their senior capstone projects to the USPTO before the end of the semester.
- Founded and organized *Innovate to Grow* event now in 6th year, where interdisciplinary teams (ENGR, CSE, MGT) do elevator pitches, videos, posters, and presentations. Judges from VC, angel, and industry communities distribute prizes from sponsors SoCal Edison, Wells Fargo, Chevron.
- Developed innovative solution to IP issues for capstone project course whereby students may choose to voluntarily assign IP to partners in advance, with the expectation that their innovation will more likely be commercialized and/or the engagement of the mentors will be more robust.

Purdue University, and University of California, Merced
Philanthropy and Development 1999-present

Embraced the imperative for university leaders at all levels to engage their stakeholders in considering the university and its students, faculty, academic units, and programs, for their philanthropic support. Identified model for success that includes: *Passion*, for the opportunity or

subject; assurance that the outcome of a gift will have substantial *Impact*; and *Relationship* with a university decision-maker who instills trust and can make it happen. Responsible for over $160 million total in philanthropic gifts, with more than $50 million going to nearly tripling the School's endowment.

Primary Responsibilities

- Raising funds for facilities, research, education, and outreach programs that represent the margin of excellence, going beyond baseline activities supported through university general funds.
- Building strong relationships with alums/friends of the university, and communicating opportunities.
- Stewarding gift and endowment funds.

Impact – Significant Gifts (selected, from >$160M total gifts, including 25 individual gifts of $1M or more, lead development relationship role in all listed)

- William *E. and Florence E. Perry Head of Mechanical Engineering*, Purdue University, $10.5M gift made for the purpose of endowing the position of Head of the school of Mechanical Engineering, among the top 10 gifts in history of Purdue at that time.
- *Roger B. Gatewood Wing of Mechanical Engineering*, Purdue University, major gift by Roger B. Gatewood to name the $33M Gatewood Wing, an addition to the Main Campus ME Building.
- *Perception-Based Engineering (PBE) Laboratory, Hybrid Powertrain Lab, Ford Motor Company Instructional Laboratory, GEARE*, Purdue University, $5M from Ford Motor Co.
- *Gerald D. Hines Sustainable Buildings Technology Laboratory*, located in The Ray W. Herrick Laboratories, Mechanical Engineering, Purdue University, $2M, gift by Dr. Gerald D. Hines.
- *Feddersen Lecture Hall*, Gatewood Wing, $2.5M, gift made by Dr. Donald and Catherine Feddersen.
- *Herrick Laboratories,* Mech. Engineering, Purdue University, $3.5M, gift by Roger B. Gatewood
- Thomas J. and Sandra Malott Endowment for International Opportunities, and the Thomas J. and Sandra Malott Endowment for Innovation, Purdue University, $1M, gifts by Tom & Sandy Malott.
- *Cummins Power Lab*, Herrick Laboratories, Mechanical Engineering, $1M, gift from Cummins Inc.
- *Cummins Professor of Mechanical Engineering*, Purdue, $1.5M endowment, Cummins Inc.
- The Dr. and Mrs. Vikram *Lakireddy Innovation and Design Clinic Endowed Fund*, School of Engineering, University of California, Merced, $150k, gift made by Dr. and Mrs. Lakireddy.
- *Recruiting, Retention, and Service Learning*, School of Engineering, UC Merced, $600k, gifts made by PG&E as part of a previous $1M pledge, but installments had been suspended for two years until 2011.
- *Well-Fargo Water-Energy-Food Challenge*, for the *Innovation and Design Clinic*, School of Engineering, UC Merced, $75k, gift made by the Wells Fargo Clean Technology Innovation Program, plus $25k gift from the regional office as an Accelerator Award for *Innovate to Grow 2014.*
- *Innovation and Design Clinic*, UC Merced, $250k, 2014 gifts made by E&J Gallo Wineries, Children's Hospital (CHCC), Hilmar Inc., Duarte Nurseries, Scholle Packaging, plus Wells Fargo *Challenge*.
- *Innovate to Grow*, UC Merced, $105k, 2012 and 2013 gifts made by California Dept. of Water Resources, Chevron, E&J Gallo Winery, Gunderson Dettmer, Hilmar Cheese, Lakireddy Endowed Fund, PG&E, Southern California Edison, Womble Carlyle; *Mobile App Challenge* by AT&T and IBM.

Impact – Development Infrastructure and Stewardship Activities

- Created the Purdue Mechanical Engineering Awards Convocation that links the next generation of alums (scholarship and fellowship recipients) with past alums and donors. Speakers include students plus private and corporate donor representatives. Faculty and staff awards are also presented. The event was offered for 17th time in 2017.
- Instituted an Investiture Ceremony model for endowed Professorships in Mechanical Engineering, involving: donors and their family and friends; the Professorship recipient and their family and friends; plus faculty and staff. The ceremony has been held about twenty times, most recently in 2017.
- Created the Innovate to Grow Showcase at UC Merced that connects event and project sponsors with students from design teams and their families. It also draws a broader audience from the community (several hundred total attend). The 8th Innovate to Grow event was held May 11, 2018.

Purdue University

Head, School of Mechanical Engineering **1999-2010**

Led transformation of one of the original Schools of Purdue University. Formulated the Land Grant mission for the 21st century, embedding interdisciplinary emphasis, technological advancement, global engagement, and global professional competency in teaching, research and service missions.

Primary responsibilities

- Create a compelling modern offering, while staying true to foundational concepts, to grow the student body in quantity and quality, as well as attract more research sponsorship.
- Oversee curriculum and program development for approximately 1,900 UG students including 1st year.
- Develop with leadership team strategic plan to guide faculty hiring, facilities upgrade and expansion, communications, performance evaluation, and budgetary decisions.
- Oversee nearly 150 faculty and staff and three facilities.
- Manage an all-funds annual operating budget of approx. $60M.

Impact - Academic Ecosystem

- Focused on creating an environment that fosters innovation. Raised an endowed gift to support the Thomas J. and Sandra H. Malott Innovation Award presented first in 2009 to the most innovative senior design project and continuing to this day.
- Increased economic development and tech transfer activity, ≈10X increase by 2007-08 in disclosures (46), patent applications (13), patents issued (5), and currently-active licenses/options (27); 70% of inventions involved students, 70% of the ME faculty were involved.
- Enhanced fund raising, recruited staff of 3 for development in ME, raised >$160M, $142M comprising the ME share of $1.7B Campaign for Purdue during 2000-07; personal involvement plus responsibility for 25 gifts >$1M, increased School endowment from $30M to over $80M.
- Quadrupled the value of scholarships/fellowships distributed to ME students to ≈$1.75M per year for the 2008-09 academic year, raised $12M in student support in the Campaign for Purdue;
- Raised $28M to triple the number of endowed ME professorships from 6 to 18.
- Raised $17.5M private funds for the $34.5M Roger B. Gatewood Wing of ME, the first LEED-certified building on Purdue campus, opened in summer 2011.
- Combined $11.75M private funds with $11.75M NIST grant for $23.5M Herrick Labs expansion, Purdue's 3rd LEED building, which includes Gerald D. Hines Sustainable Buildings Technology Lab.
- Expanded School to 64 tenure-track faculty, 70 staff (3 for development and alumni relations), over 1,400 undergraduates (includes 1st year students), and over 500 graduate students.
- Recruited 24 new faculty in final 6 years, including 6 women, 3 underrepresented minorities, 5 NSF CAREER awardees, and 2 PECASE awardees.
- Created 5-year BS/MBA, 5-year BS/MS, and Direct-to-Ph.D. degree tracks.
- Tripled School fiscal activity to over $60M/yr; $21M tuition/fees, $26M sponsored research, and $17M gifts while the general fund appropriation to the School increased from $8M to $11M/yr.
- Created and implemented Engineer-in-Residence program; industry posted full-time engineers in ME.
- Increased student participation in credit-bearing international experiences, from 1 in 1999-00 to all-time high of 85 in 2009-10, with the latter representing about 30% of BSME graduating class.
- Doubled Ph.D. graduation rate from historic <20/yr through 1990's to >40/yr (42 in 2008).
- Doubled archival journal publications to approx. 250/yr, citations increased at a greater rate.
- Tripled research expenditures to $26M/yr consistent with strategic plan, through interdisciplinary research center/signature initiatives, with major ME participation in 2 NSF Eng. Research Centers and leadership of major DOE Center grant (4th largest in Purdue history).
- Started a chapter of the student organization Engineers for a Sustainable World (ESW), and served as faculty advisor. Hosted the annual meeting of ESW at Purdue in 2010.
- Launched inaugural Green Week at Purdue in 2009 with Thomas Friedman Lecture, ESW student involvement, speakers, and campus & community projects. This event is now in its 9th year.

Impact - Global Education Initiatives

- Highlighted the lack of global engagement as a high-risk weakness for the program and for students entering the workforce after graduating from ME, given that only one student of the 1,000 or so 2nd-4th year students in ME studied abroad for credit in 1999-2000.
- Conducted a survey of the 350+ BSME graduates in the class of 2000 and synthesized the results as three dominant barriers to participation: *delayed graduation; additional cost*; and lack of *community*.
- Conceived the concept of the GEARE program (Global Engineering Alliance for Research and Education), assembled a team to design a reciprocal program that mitigated all three perceived barriers:
  - *Graduation time* – articulated junior year spring semester abroad with engineering courses in prerequisite order, resulting in no delay, via guaranteed offerings at strategic partner universities;
  - *Cost* – raised gift/grant funds to make participation in the GEARE program cost neutral to students, regardless of whether they stayed to study/intern in Indiana or went abroad as part of the program;
  - *Community* – built global cohort networks by uniting Purdue students, who had language and culture preparation for each international location, with equal numbers of students from global partner universities. These global communities then engaged for two or more years that included a two-semester global design team project, with one semester at Purdue and e.g. one at U. Karlsruhe;
  - The GEARE program is in its 12th year with over 500 students having participated.
- Created a strategic approach to university partners for student exchange and research, selecting one per billion people (world population was about 6B in 2000), initially U. Karlsruhe, Shanghai Jiao Tong, IIT Bombay, Monterrey Tech, then National Univ. of Rwanda and Jordan Univ. of Science & Technology.
- Built a network of GEARE sponsor companies (Cummins, Dow, Ford, GM, John Deere, Shell, Siemens, United Technologies) for U.S. and international-site internships. Raised about $2M from various sources to make program participation cost-neutral for undergraduates and for faculty on sabbaticals.

Purdue University

Founding (Interim) Director, Global Engineering Program 2005-07

Commissioned by the dean to translate and scale up the prior success in creating a department-level global program into an initiative at the College of Engineering level. By 2005 nearly $2M had been raised to support the ME global program, including the signature GEARE program, and participation went from one student to a nationally-competitive level (30%). This became an integral component of the Engineer 2020 Initiative at the College level.

Primary Responsibilities

- Developing faculty and admin champions within the 10 other Schools in the College of Engineering.
- Identifying unique constraints and barriers arising with the various Schools, and modify strategies and programs as needed for success.
- Translating the model of working with a very small number of strategic partner to the other Schools, and engaging them in existing strategic partnerships as appropriate, such as with Shanghai Jiao Tong U.

Impact – Global Purdue

- Developed and taught interdisciplinary global capstone projects and global service learning experiences for Purdue students in Puerto Rico, Mexico, Germany, China, India, Rwanda, Kenya and Jordan.
- Defined and established Program and Office to achieve preeminence in educating for global professional competence and in global collaborations for research, education, and engagement.
- Raised external funds to triple the $100k/yr College investment.
- Supported development of pre-1st-year study-abroad courses, e.g. *Creativity & Engineering* (Singapore), *Energy in Global Context* (Germany), and *Introduction to Intercultural Teamwork* (Germany, China).
- Expanded GEARE program to include Schools of AAE, CE, ECE, and IE.
- Facilitated doubling in 2 years of participation in credit-bearing global experiences.
- Established College-wide Minor in *Global Engineering Studies*.

- Founded, as Director and PI, GlobalHUB.org, awarded an NSF Engineering Virtual Organization (EVO) grant to establish the first cybercommunity of scholars, practitioners, and students to advance global engineering education. Since its launch in 2009 GlobalHUB.org has had 458,967 visitors from 164 nations with over 39 million hits. Resources include Engineering Cultures ® On-line 2.0.

Arizona State University

Associate Dean for Research, College of Engineering 1995-1999

Charged with facilitating a dramatic increase in research activity during a critical phase of ASU's transformation from a teaching school to a research university. Supporting faculty in developing increased extramural funding for programs and grad students, especially larger scale interdisciplinary initiatives. Also managed College space and facilities to ensure resource alignment.

Primary Responsibilities

- Supporting faculty in research and scholarship growth, via investments, incentives, accessible information, workshops, and teaming.
- Partnering across departments and colleges to develop agile processes for fostering a pipeline of signature research initiatives, seeding these groups, engaging industry, and supporting team efforts.
- Conceiving, advocating, and creating shared-use core facilities.
- Planning for expansion into new buildings and a new campus (Polytechnic).
- Managing existing space and facilities assets of the College, using data-driven decisions, to co-optimize the learning and discovery missions, creating dual-use space where appropriate.

Impact

- Set consecutive records for research expenditures, doubling in four years, changing the trajectory.
- Created four shared research facilities, two involving other Colleges (Science, Management).
- Created and applied evaluation process for university-supported research centers, that resulted in sunsetting three of eight centers and redirecting funds to more strategic purposes.
- Stood up the Manufacturing Institute, a joint effort between Colleges of Management and Engineering.
- Facilitated team and proposal development (2 awards) for ERC, DARPA, SRC, and FAA $$M Centers.

TEACHING AND MENTORING

Classroom Instruction, Course Development

Demonstrated commitment to student learning, via both curricular and co-curricular experiences. Instructor for the courses below (number of semesters shown). Played lead role in envisioning and developing courses that extend(ed) the domain of student personal growth far beyond that of then-current practices in academic offerings (highlighted in bold). At ASU: ECE 100, Intro to Engineering (1); ECE 106, Intro to Computer-aided Engineering (3); ECE 340, Thermodynamics (6); ECE 382, Transport Phenomena (4); MAE 305, Measurements & Microcomputers (6); **MAE 405, Microprocessor-aided Processes in ME** (6); MAE 456, Combustion (2); MAE 443, Engineering Design (3); MAE 468, Aerospace Systems Design (1); **MAE 504, Laser Diagnostics** (8). At Purdue: portions of **ME 290 Global Professional Seminar** (20); lectures in ENG 100 (20); capstone design ME 463 (3). At UC Merced: **ENGR 191 Professional Seminar** (8); **Capstone Projects** (5).

Undergraduate Research Projects Advised

Personally supervised more than 80 undergraduate research projects resulting in ten local and regional awards for outstanding ASME student papers, plus additional publications and inventions. Developed funding sources to support these experiences, including twice as principal investigator receiving NSF grants as well as raising gift funds for same. These efforts have directly and indirectly helped 100's of students.

Graduate Students Advised / co-Advised

Advised and supported over 40 graduate students and post-doctoral scholars. A unique aspect of his portfolio has been the large fraction of the research project funding that comes from the private-sector, both domestic and global. This model, as compared to say a typical NSF grant, requires much more direct involvement by the students in making the case for the value proposition of their work to the sponsor paying with funds that could easily be directed elsewhere. This creates a very rich educational experience and is partially responsible for their career success in academia and industry.

RESEARCH, SCHOLARSHIP, AND TECHNOLOGY TRANSFER

Publications

Published over 200 articles in archival journals and conference proceedings, with co-authors. Google Scholar h-index is 30 and citation count is 2,558. These publications span the areas of combustion and flow diagnostics, semiconductor manufacturing, food safety and biosensors, and pedagogical research.

Invited Lectures and Seminars

Presented more than 90 invited lectures and seminars at university, government, and industry in 14 countries. Topics of these lectures include: laser diagnostics; design education; innovation and entrepreneurship; fund raising and development; academic administration; economic development; international standards; and global engineering education as below

Innovation and Technology Transfer (selected)

Six patents and ten innovations/inventions with licenses and/or commercialized products, including:

- E. D. Hirleman, "Calibration Device and Technique for Laser Diffraction Particle Sizing," U.S. Patent Application 06/417487. Resulting product is basis of ASTM and ISO Standards and Test Methods and is manufactured by Laser Electro-optics LLC, West Lafayette, IN. Approximately 1000 in use worldwide in automotive, propulsion, consumer product, food processing, cement, inhalers, and pharma.
- E. D. Hirleman, "Programmable Detector Configuration for Fraunhofer Diffraction Particle Sizing Instruments," Arizona State University Patent Disclosure, December 22, 1986. U.S. Patent No. 5,007,737, 1991. Assigned to the U.S.A. as represented by the Secretary of the Air Force.
- E. D. Hirleman, "Successive Order Model for Multiple Scattering in Fraunhofer Diffraction Particle Sizing," Arizona State University Patent Disclosure, December 22, 1986. Incorporated into particle sizing instrument produced by Insitec, Inc. San Ramon, CA.
- E. D. Hirleman and D. J. Holve, "Ensemble Diffraction Particle Sizing System with Axial Spatial Resolution," Arizona State University Invention Disclosure, February 14, 1989. U.S. Patent No. 5,101,113, 1992. Licensed to Insitec, Inc. San Ramon, CA, with royalty stream to ASU.
- B. Nebeker and E. D. Hirleman, "DDSURF/FFSURF: Scattering-Light Inspection System Model and Software," Arizona State University Invention Disclosure 98-101, Aug, 1997. Licensed to Hitachi Corp, royalty stream to ASU.
- L. Suresh, R. Diaz, and E.D. Hirleman, "Total Internal Reflection Scatterometer for Defect Detection on Transparent Substrates" ASU Invention Disc. 99-045, licensed to Intel Corp, royalty stream to ASU.
- E. D. Hirleman, S. Guo, A. K. Bhunia, and E. W. Bae, "System and Method for Rapid Detection and Characterization of Bacterial Colonies Using Forward Light Scattering," Purdue University Invention Disclosure #64142, 2004. U.S. Patent No. 7,465,560, 2008. Licensed to Indiana Technology Group, Purdue Research Park, West Lafayette, IN, royalty stream to Purdue.
- J. P. Robinson, B. Rajwa, B. Bayraktar, A. K. Bhunia, E. D. Hirleman, and E. Bae, "System and Method of Organism Identification," Purdue University Invention Disclosure # 64405, 2005. U.S. Patent No. 8,787,633, 2014. Licensed to Indiana Technology Group, Purdue Research Park, West Lafayette, IN, royalty stream to Purdue.

- E. D. Hirleman, B. Nebeker and H. P. Zhang, "DDEFILM/FFEFILM, Computational Electromagnetics Code for Modeling Light Scattering by a Feature Embedded in a Planar Thin Film on an Infinite Half-plane," Purdue University Invention Disclosure December 26, 2006. Licensed to Hitachi Corp, royalty stream to ASU and Purdue.
- B. Nebeker and E. D. Hirleman, "DDSUB/FFSUB, Computational Electromagnetic Code for Modeling Light Scattering by a Feature Embedded Below the Surface of an Infinite Half-plane," Purdue University Invention Disclosure December 26, 2006. Licensed to Hitachi Corp, royalty stream to ASU and Purdue.
- C.S. Chen, W.C. Chin, and E.D. Hirleman, "Application of Light Scattering Patterns to Determine Differentiation Status of Stem Cells and Stem Cell Colonies," University of California Case No. 2011-762-1, U.S. Provisional Patent Application No. 61/610,397, 2011, Patent Application filed March, 2013.

ENGAGEMENT AND SERVICE

Journal Editorships

- Topical Editor, *Applied Optics*, 1991-1993, 1994-1996.
- Editor, *Applied Optics* Special Issue on Optical Particle Sizing, September, 1991.
- Advisory Editorial Board, *Particle Characterization*, 1988-1994.

Reviewer

Reviewer of hundreds of Technical Papers and Proposals for eighteen journals, six government agencies and non-profits. Served on Major Program Reviews for: North Carolina State University; Georgia Institute of Technology; Virginia Tech; and Shanghai Jiao Tong University.

Leadership - Professional and Honorary Societies and Organizations (selected)

- Engineers for a Sustainable World (Director and Chair, Advisory Board)
- ASME Department Heads (Global Strategy Task Force, Executive Committee)
- Defect Metrology Working Group, International Technology Roadmap for Semiconductors (co-Chair)
- Chair or co-Chair for six international conferences, served on organizing committee on dozens

Leadership - University Activities (selected, in addition to membership on dozens)

- Project 2020 Academic Space Planning, UC Merced (Chair)
- Globalization Working Group, Purdue Strategic Planning Steering Committee (Chair);
- Finance Team, College of Engineering, Purdue University (Inaugural Chair);
- Nanotechnology Signature Area, Schools of Engineering, Purdue University, (Inaugural Chair)
- College of Engineering Committee on Teaching Evaluations and Awards, ASU (Inaugural Chair)

Leadership - Other Service

- Purdue United Way Campaign (Engineering Chair)
- Purdue Racquetball Club (Faculty Advisor)
- The Aslan Society, Arizona State University (President)
- Kairos Ministries Inc. (Founding President)

SPONSORED PROGRAM FUNDING

Served as principle- or co-principle investigator on over seventy sponsored awards from 32 corporations and foundations plus 11 government agencies. The total funding for these is over $22M, with approximately one-third for education and engagement and two-thirds for research.