Hanchen Huang

Highlight

- **As the Dean of Engineering at the University of North Texas between January 2019 and July 2022**, I led the college to grow graduate enrollment by about 400% from 500 to 2500, full-time faculty by about 50% from 100 to 150, annual research awards by about 90% from $10M to $19M, and graduate program ranking by 14 places from #145 to #131 (and the undergraduate program ranking by 38 places). Our ascendance propelled the University of North Texas to ascend from the 4th quartile in 2019 to the 3rd quartile in 2022 among R1 universities. The University of North Texas first transformed from R2 to R1 in 2019, and its College of Engineering was founded in 2003.
- **As the Department Chair of Mechanical and Industrial Engineering at Northeastern University between July 2013 and December 2018**, I led the department to grow graduate enrollment by about 240% from 500 to 1700, full-time faculty by about 50% from 60 to 90, annual research awards by about 30% from $10M to $13M (which compensated the loss of similar amount due to the completion of a $5M/year NSF research center led by faculty in the department), and mechanical engineering graduate program ranking by 14 places from #57 to #43 (industrial engineering ranking by 2 places to stay at top 30s). Our ascendance propelled Northeastern University to ascend to the top 40s and its College of Engineering to the top 30s in the country (US News Rankings). During the five years of rapid growth, our department maintained a record of *zero attrition* of tenured/tenure-track faculty to other universities.
- **I have a respectable record of scholarship.** As an individual researcher, I was funded at the level of $500K/year and was included in the list of *Top 2% Career-long Citation Impact in the World.* I was one of the eight investigators at Northeastern University that secured a $20M contract order from US Army Research Office. As chair or dean, I supported faculty in winning multiple team contracts of $9.5M-to-$125M. As an educator, I mentored and sponsored more than 40 post-doc and PhD students. Some of my former PhD students became successful tenured/tenure-track faculty members at R1 universities such as the University of Wisconsin-Madison. This scholarship record led to my election to the Fellow rank of four professional societies: AAAS, ASM, ASME, and SES; and to the Board of Trustees of ASM.
- **I have overseen engineering and engineering technology programs and worked with architecture faulty, in connection with CEAT's unique strength of having three programs in one college.** The College of Engineering at the University of North Texas is home to engineering, computer science, and engineering technology programs. Having led the College, I am familiar with the opportunities and challenges of both engineering and engineering technology programs and their potential synergy. As the program director of mechanical engineering, I also worked with acoustic faculty that held joint appointments in architecture and mechanical engineering at Rensselaer Polytechnic Institute.

Education

- **Hebei Normal University**, China: BS (1984) in Physics; received BS degree at the age 19 with the Outstanding Physics Student Award
- **China Institute of Atomic Energy** (former Chinese Academy of Sciences, Institute of Atomic Energy at Beijing, China): MS (1987) in Theoretical Nuclear Physics
- **University of California at Los Angeles**: PhD (1995) in Nuclear Engineering with concentration in Applied Plasma Physics and Fusion Engineering, and minors in Applied Mathematics and Materials Engineering
- **Lawrence Livermore National Laboratory**: Post-doc (1995-1997) experience in computational mechanics and materials

University Experience

University of Massachusetts Dartmouth July 2022 – Present

Provost and Vice Chancellor for Academic Affairs (July 2022-June 2023, sabbatical June 2023-July 2024)
Professor of Mechanical Engineering (July 2022-present)

University of Massachusetts Dartmouth (UmassD) is one of five campuses of the University of Massachusetts (Umass) System, a system of research universities in the Commonwealth. UmassD has about 7,000 students, 400 full-time faculty members and 400 staff members. As the Provost, I oversee the Charlton College of Business, the College of Arts and Sciences, the College of Engineering, the College of Nursing and Health Sciences, the College of Visual and Performing Arts, the School of Marine Science and Technology, the School of Law, the Libraries, the Honors College, the Division of Graduate Studies, and the Division of Online and Continuing Education.

Select Accomplishments:

- Turned persistent enrollment decline of more than 10 years to enrollment growth. Upon arrival in July 2022, proposed a comprehensive strategy to grow graduate enrollment, lower undergraduate admission rate (from upper 90%), and increase retention rate (from upper 60%).
  - Graduate enrollment growth: (1) launched an initiative of graduate recruiting, (2) created an incentive mechanism of growing graduate enrollment by sharing 70% of the net tuition revenue with colleges, and (3) funded faculty positions to develop degree, certificate, and concentration programs with clear return-on-investment to sustain the enrollment growth. The graduate enrollment of Spring 2023 was about 50% above that of the previous Spring (or 200 above 400 excluding Law and online students). Even though the undergraduate enrollment continued to decline by 100, the total enrollment of the University by Spring 2023 was up by 100. This represented enrollment growth instead of decline *for the very first time* in more than 10 years at Umass Dartmouth.
  - Undergraduate admission: collaborated with the vice chancellor for enrollment and reached out to high schools for recruiting. Working with the Umass System, our campus piloted the Early College program to offer high-school students classes that were taught jointly by schoolteachers and our faculty.

- Undergraduate retention: worked with HelioCampus and Institutional Research to analyze key factors affecting retention – such as academic success, sense of belonging, and financial need. The analyses showed that 85% of the freshmen were retained if they completed at least 18 semester-credit-hours with a GPA of 2.0 or higher. Based on this information, took two parallel approaches. First, invested $200K in the academic year 2023 for Supplemental Instruction, Peer Tutoring, and Inter/Intra-semester Bridge programs to support academic success of students; and collaborated with the Division of Student Affairs on student sense of belonging. In parallel, appointed a Retention Committee and charged it to (1) identify the root causes of retention Issues, (2) develop long-term strategies to address the issues at the root level, and (3) win faculty on board to implement the strategies.

- Put the struggling School of Marine Science and Technology back on track. Due to low enrollment, the School was under the interim leadership by the dean of engineering for multiple years and was steered toward merging. Recognizing the unique strength of the School, met several times with School faculty to develop a sustainable plan of graduate enrollment growth and then allocated faculty lines for the school to (re)grow and appointed a permanent dean.
- Recruited successful middle career faculty. Using the new revenue from enrollment growth, incentivized deans to proactively recruit successful and/or well-funded middle career faculty. As a result, multiple tenure-on-entry hires joined Umass Dartmouth in Fall 2023.
- Developed leadership team. In my first year, completed four dean searches and appointed the Dean of the Umass School of Law, Dean of the School for Marine Science and Technology, (Inaugural) Dean of the Honors College, and Dean of the Libraries. In addition, appointed two associate provosts to lead undergraduate retention and faculty success, and refocused one associate provost's role on graduate enrollment.
- Partnered with industry and communities. Working with the dean of nursing and health sciences and the head of online and continuing education, developed a partnership with SouthCoast Health, the largest employer in the South Coast region of Massachusetts. This partnership provided SouthCoast Health employees preferential tuition rates at UmassD, provided UmassD students more clinical opportunities, and supplied the South Coast area with more graduates of nursing.
- Improved communications. Completed a series of campus listening tours including at least one townhall meeting with each college/school allowing me to understand challenges and opportunities and narrowing gap between faculty, staff and administration. Maintained monthly meetings with student government leaders, the faculty senate, the faculty senate president, the faculty union president, and vice chancellors. Initiated monthly email updates to all academic leaders, including department chairs, program directors, associate and assistant deans, deans, and associate provosts.
- Chancellor's role. Was the Acting Chancellor when the Chancellor was away from the State or away due to personal reasons.

University of North Texas January 2019 – July 2022

Dean of the College of Engineering (January 2019-July 2022)
Lupe Murchison Foundation Chair Professor (January 2019-July 2022)

University of North Texas (UNT) is the flagship of the University of North Texas System and a Hispanic Serving Institution (I). It transformed from Carnegie R2 to R1 in 2019, and ascended by 2022 from the 4th quartile to the 3rd quartile among R1 universities. The College of Engineering, founded in 2003, went

through a phase of rapid growth during my tenure. It is now home to about 6000 students, 150 full-time faculty members (including searches underway), 70 full-time staff members, and 25 adjunct faculty members; as of summer, 2022. The College consists of five academic departments: Department of Biomedical Engineering, Department of Computer Science and Engineering, Department of Electrical Engineering, Department of Materials Science and Engineering, and Department of Mechanical Engineering, as well as two engineering research centers: PACCAR Technology Institute and Center for Information and Cyber Security. The College is also the lead of three inter-college research centers: Center for Agile and Adaptive Additive Manufacturing, Advanced Materials and Manufacturing Processes Institute, and Materials Research Facility. In addition, the College is a co-lead (with the College of Business) of the Center for Integrated Intelligent Mobility Systems.

Select Accomplishments:

- Elevated the College to prominence. Overall undergraduate engineering program ranking moved up 38 places from #200 in 2019 to #162 now (2022), and the overall graduate engineering program ranking moved up 14 places from #145 in 2019 to #131 now (2022), according to the US News rankings.
- Grew faculty in both number and prominence. Full-time faculty grew from 102 in Spring 2019 to 157 by Fall 2022 (including searches underway). Tenured/tenure-track faculty grew from 83 to 117, and active NSF CAREER awardees grew from 1 to 4 (6 when NIH and DoD young investigator awards are included). Two of the NSF CAREER Awardees were new hires from other universities. In addition, the College added two more National Academy of Engineering members on part-time basis.
- Grew annual research awards from $10M to $19M. The College faculty led a team in winning $10M for the Center of Agile and Adaptive Additive Manufacturing in 2019 and $10M renewal in 2021, and collaborated with UNT Health Science in securing the US Congressional approval of $9.5M Plus Up for bio-sensing research. In addition, the College recruited multiple middle career faculty members with transfer grants of more than $1M each.
- Promoted innovation and entrepreneurship, in addition to scientific discovery. With first-hand experience co-founding a start-up company, spearheaded a drive to allocate campus space for start-up companies of faculty and students. Multiple start-ups made UNT their home.
- Grew the MS/PhD enrollment from about 500 to 2,500. This increase from my college represented about 50% of the graduate enrollment growth of the entire University.
- Launched multiple new degree programs. These programs included PhD in Biomedical Engineering, MS in Artificial Intelligence, MS in Data Engineering, MS in Cybersecurity, MS in Engineering Management, BS in Cybersecurity, BS in Construction Management, BS in Computer Science + X, with the first X being geographic information system in collaboration with the College of Liberal Arts and Social Sciences and the second X being electronic music in collaboration with the College of Music, and online BA in Information Technology. In addition, the College added Computer Science and Engineering 101 to the university undergraduate core curriculum.
- Promoted interdisciplinary collaborations. For research, the research grants mentioned earlier involved collaborations with the college of business and college of sciences, as well as the Health Science campus of our University System. My college was a supporting partner of the College of Music in becoming a Yamaha Institution of Excellence. With the Dean of Music, organized faculty collaborations for joint research of additive manufacturing of music instrument materials to substitute rare woods. For education, my college launched the BS in

Computer Science + X program, and implemented the program in collaboration with two other colleges. Supported the New College (at our Frisco site) in offering engineering programs.

- Raised approximately $1M a year for the College even during COVID, and supported fundraising of larger scale for the University. Worked with my assistant dean for development to create multiple endowed scholarships and two endowed professorships, secured a $1M donation for a named Pettinger Center for Design and Innovation, and secured multiple donations of $100K+ for unrestricted research and lab renovations. Working with the President and the Chair of BoT, the assistant dean for advancement and I cultivated a businessman to name the College of Engineering.
- Created two PACCAR Endowed Professorships (with $0.5M endowment each) to recruit and retain senior faculty, and PACCAR Distinguished Faculty Fellowships to recruit and retain rising star middle-career faculty.
- Supported current tenured faculty. Launched the Research Revitalization Initiative to enable tenured faculty who had not been externally funded for at least three years to re-energize their funded research activities.
- Supported junior faculty. Started a program of mentoring assistant professors to develop successful CAREER / YIP proposals.
- Mentored and developed academic leaders. Sponsored and mentored an associate dean of the college to participate in the ELATES Fellow program at Drexel University. Multiple faculty members, with teaching release, participated in the Faculty Leadership Fellow program of the Provost office at UNT. One of the associate deans became the dean of science and engineering at the Texas State University in 2023.
- Supported staff. Started a program to support academic advisors in conference attendances, and created new awards to recognize staff excellence. The college also expanded the career advising team from 0.5 to 3 full-time advisors.
- Strengthened communications with students. In addition to multiple endowed scholarships for students in need and students of outstanding performance, created the Student Advisory Council to enable direct communications with students.
- Promoted diversity, equity, and inclusion. The College launched two initiatives: the Diversity Awareness Committee for faculty and staff, and the Diversity and Excellence in Engineering Network for minoritized students to access support of industry leaders. Appointed two female and one African American (male) faculty members to the College leadership team. The American Society of Engineering Education recognized the College with the Bronze Award for diversity and inclusion in 2021.
- Recruited prominent government and industry leaders, such as a former Secretary of the US Navy and (c-level) Senior VP of Texas Instruments, to the College Board of Councilors.

Northeastern University July 2013 – December 2018

Department Chair of Mechanical & Industrial Engineering (July 2013 – December 2018)
Donald Smith Professor (July 2017 – December 2018)
Professor (July 2013 – December 2018)
Chair of University Faculty Senate ad hoc Committee on Finance (2018)

Northeastern University is a private university with the signature Co-op Program and a Carnegie R1 institution. The Department of Mechanical and Industrial Engineering within the College of Engineering

supports two BS programs, six MS, and three PhD programs. The total enrollment of about 3,200 students in the Department includes 1,700 graduate and 1,500 undergraduate students; according to data in 2018.

Select Accomplishments:

- Elevated the Department to prominence. The Department's graduate mechanical engineering program ranking moved up 14 places, from #57 in 2013/2014 to #43 in 2018/2019 according to the US News rankings.
- Added 24 tenured/tenure-track faculty members, with *zero attrition* to other universities in the first five years. Among the new hires were successful middle-career associate professors at Georgia Tech and Carnegie Mellon University. The tenured/tenure-track faculty grew from about 40 to 60, and full-time faculty grew from about 60 to 90.
- Sponsored weekly coffee hours to promote collegiality and interdisciplinary team collaborations. Weekly coffee hours consisted of the first half for a faculty/staff colleague to present their hobbies the second half for a researcher to present in three slides: (1) their research focus, (2) what they offer in a collaboration, and (3) what they take in a collaboration.
- Grew annual research awards from approximately $10M to $13M (the growth compensated the loss of similar amount due to the completion of a $5M/year NSF center led by our faculty). Was one of eight investigators that secured a $20M contract order from the US Army Research Office, and supported my faculty in securing a $125M contract order from the US Veterans Health Administration.
- Grew the department graduate enrollment from approximately 500 to 1,700, so the Department's total tuition revenue reached about $100M per year; Northeastern University used a decentralized budget model RCM to the college level.
- Launched three MS programs: MS in Data Analytics Engineering, MS in Human Factors in collaboration with the College of Sciences, and MS in Robotics in collaboration with the Department of Electrical and Computer Engineering and the College of Computer Science; and substantially expanded one degree program: MS in Engineering Management in collaboration with the School of Business.
- Mentored and developed academic leaders. Three associate chairs in my leadership team moved on for bigger responsibilities. One of them became the department head of mechanical engineering at the University of Alabama (and then the dean of engineering at the Southern Methodist University in 2023), one became the department chair at the Northeastern after my departure, and the third became a center director at the Northeastern.
- Created an industry consortium of solid mechanics testing to serve medium and small companies and to promote industry-university research collaborations; and initiated a partnership with GE Aviation for joint applied research on the Northeastern campus and for graduate course offering on the GE Aviation campus (this later became part of the university level collaboration).
- Launched an initiative of industry sponsored senior design and increased the number of such projects by about an order of magnitude, to give students an experience of working on real-life engineering problems.
- Launched an initiative for peer mentoring of students. Hosted semi-annual BBQ events where junior and senior undergraduate students met with freshman and sophomore undergraduate students to share their experiences at Northeastern.
- Promoted diversity, equity, and inclusion. Mentored and promoted a female black faculty member first to Group Leader then to Associate Department Chair, and recommended her to

become the Department Chair after my departure. (She is the Department Chair now.) The department also recruited a successful female associate professor from Georgia Tech. While supporting student groups of my department, also supported and mentored interdisciplinary and minoritized student groups. Received the Award of Recognition "for the many contributions, support, and inspiration" jointly by the Society of Women Engineers, the Society of Hispanic Professional Engineers, the Black Engineering Student Society, and the Society of Asian Scientists and Engineers at Northeastern University.

- Led fundraising for the Department and supported fundraising for the College and the University. Led the effort to create multiple endowed scholarships, and supported the Dean and the President in fundraising efforts at the level of more than $100K. Even from within the department, a former department chair donated to endow a scholarship, and the Department Industry Advisory Board generously donated to establish the Hanchen Huang Scholarship after my departure in 2019.
- Co-invented a technology of metallic glue based on scientific discoveries of smallest and well-separated metallic nanorods, and co-founding MesoGlue Inc. (with two former PhD students, Stephen Stagon and Paul Elliott) to commercialize the technology.

University of Connecticut August 2009 – July 2013

Connecticut Clean Energy Fund Endowed Professor (August 2009 – July 2013)
Chair of Executive Committee of C2E2 (August 2011 – July 2012)
Member of Executive Committee of C2E2 (August 2009 – July 2013)

The University of Connecticut is the flagship public university of the State of Connecticut and a Carnegie R1 institution. The State of Connecticut provided the Clean Energy Fund to create a cluster of 13 tenured/tenure-track faculty lines – including three endowed professorships – at the University of Connecticut. These faculty members have tenure home in academic departments of engineering and participate in research at the Center for Clean Energy Engineering (C2E2). Recruited to be one of the three endowed professors and to co-lead the hiring of the cluster of tenured/tenure-track faculty.

Select Accomplishments:

- Co-led the cluster hire of 13 tenured/tenure-track faculty members in the area of Clean Energy.
- Co-led C2E2, as the chair or a member of its Executive Committee, in securing congressional allocations and in promoting team research.
- Chaired the faculty search committee that recruited the first female tenure-line faculty member in the history of the Department of Mechanical Engineering.
- Chaired a review committee for the reappointment of an endowed professor who had a standing lawsuit against the university. Our committee reached a recommendation for the endowed professor to be reappointed and to take corrective measures.
- Completed a theoretical framework of nanorods growth based on the discovery of a new diffusion mechanism, and experimentally discovering smallest and well-separated metallic nanorods under the guidance of the theoretical framework.

Rensselaer Polytechnic Institute August 2002 – July 2009

Chair of University Faculty Senate Standing Committee on Honors and Awards and Member of Advisory Council to the President and that to the Provost (August 2008 – July 2009)
Program Director of Mechanical Engineering (August 2007 – July 2009)

Professor (August 2006 – July 2009),
Tenured Associate Professor (August 2005 – July 2006)
Tenure-track Associate Professor (August 2002 – July 2005)

Rensselaer Polytechnic Institute is a private university and a Carnegie R1 institution, and the first technological research university in the country. The Mechanical Engineering program is part of the Department of Mechanical, Aerospace and Nuclear Engineering in the School of Engineering. The Institute has about 360 faculty members, 120 of whom are in the School of Engineering, and 11 are US National Academy of Engineering/Science members; according to data in 2009.

Select Accomplishments:

- Led the strategic planning of the Mechanical Engineering Program to identify focus areas of hiring, and chaired faculty search committee to implement the plan during 2007 – 2009.
- Improved communications between faculty and the President in my role as the Chair of a University Faculty Senate Standing Committee.
- Served as one of the three faculty experts in working with VP Research (and the President) to establish the $100M Computational Center for Nanotechnology Innovations. This was a three-way joint sponsorship of the New York State legislature (33%), IBM (33%), and Rensselaer Polytechnic Institute (34%).
- Proposed a new concept of surface diffusion, verifying the concept using atomistic simulations, and validating it using experiments. Through conceptualization, atomistic simulations, and experiments, led a group of students and post-docs in discovering a surface diffusion mechanism that was responsible for nanoscale dimensions of metallic nanorods from physical vapor deposition.
- Developed a theoretical framework of nanorods growth, based on the new concept of surface diffusion. Upon the discovery of a surface diffusion mechanism, led a group of students and post-docs in formulating theories of the separation and the diameter of nanorods as a function of processing conditions. This theoretical framework led to the experimental discovery of the smallest and well-separated metallic nanorods, and the subsequent innovation of metallic glue technology and commercialization of the technology through MesoGlue Inc.

Hong Kong Polytechnic University May 1998 – July 2002

Associate Professor (August 1999 – July 2002)
Assistant Professor (May 1998 – July 1999)

The Hong Kong Polytechnic University is a public research university. In 1990s, the University invested heavily to transform from a traditional British-style polytechnic to a prominent research university. In addition to being a full-time academic staff member (aka faculty member in American nomenclature) during 1998-2002, I spent a summer at the same department as a Royal Society of London KTP Visiting Professor in 2010.

Select Accomplishments:

- Won a Group Research project in Hong Kong in 2000. The Hong Kong Research Grants Council sponsors 2-to-3 Group Research projects each year, similar to the way that the US National Science Foundation sponsors Engineering Research Centers. Was the first junior faculty member to serve as the Project Director of such a multi-university Group Research

project in winning the sponsorship. The Project Director had traditionally been a Chair Professor or at least a (full) Professor.

- Proposed a new concept of surface diffusion mechanism, which laid the foundation for further investigation – discovery, innovation, and commercialization at Rensselaer Polytechnic Institute, the University of Connecticut, and Northeastern University. This new concept was referred to as *"…the final piece in our understanding of the rules that govern how atoms move from one layer to another as films or crystals grow*" in a subsequent Nature highlight in 2002.
- Co-founded the International Conference Series of Multiscale Materials Modeling. This conference series has been continuing and growing.

Additional Work Experience

DoE Lawrence Livermore National Laboratory, California
Term Staff Member (March 1997 – May 1998)
Post-doc Staff Member (January 1995 – March 1997)
Guest Scientist (Aug 2002 – July 2007)

DoE Oak Ridge National Laboratory, Tennessee
Guest Scientist (August 2006 – July 2007)

University of Metz, France
Professor Invited (summer 2003 and summer 2004, hosted by Professor Mohammed Cherkaoui)

AT&T Bell Labs, New Jersey
Visiting post-doc (fall 1995, hosted by Dr. George Gilmer)

Chinese Academy of Sciences, China
Institute of Atomic Energy, Beijing
Assistant Physicist (August 1988 – July 1989)
Practice Physicist (August 1987 – July 1988)
Institute of Physics, Beijing
Advisory Committee Member (August 2001 – July 2006)
Institute of Mechanics, Beijing
Hsue Shen Tsien Engineering Science Visiting Professor (winter 2015, hosted by Dr. Zhengyang Li)

Harbin Institute of Technology, China
Advisory Professor (August 2000 – July 2002)

American Society for Materials International
Board of Trustees (October 2023 – October 2026)

Honors and Awards

- 2023, Elected Board of Trustees, American Society for Materials International (ASM)
- 2018, Elected Fellow, American Society for Materials International (ASM)
- 2017, Elected Fellow, American Association for the Advancement of Science (AAAS)
- 2016, Elected Fellow, Society of Engineering Science (SES)
- 2014, Elected Fellow, American Society of Mechanical Engineers International (ASME)
- 2011, Elected Member, Connecticut Academy of Science and Engineering (CASE)
- 2000, Elected Senior Member, Chinese Mechanical Engineering Society (CMES)
- 2018, Elected Full Member, Sigma Xi the Scientific Research Honor Society
- 2019, Lupe Murchison Foundation Endowed Chair Professor at the University of North Texas
- 2017, Donald W. Smith Professor of Mechanical Engineering at Northeastern University
- 2015, Hsue Shen Tsien Engineering Science Visiting Professor at the Chinese Academy of Sciences
- 2010, Royal Society of London KTP Visiting Professor at the Hong Kong Polytechnic University
- 2009, Connecticut Clean Energy Fund Endowed Professor at the University of Connecticut
- 2020, *Top 2% Career-long Citation Impact in the World*; and ensuring years
- 2016, One of *The 20 Coolest Inventions in 2016* by the Interesting Engineering magazine, in recognition of a technology jointly invented with two former PhD students Stephen Stagon and Paul Elliott (US Patent # 10,646,964 B2)
  More than 170 reports highlighted this invention in January and February 2016 by Smithsonian Magazine, Fortune, Fox News, Business Standard, University Herald, Yahoo News, KRMG News 102.3 AM 740, etc.; in the United States and 25 other countries.
- 2019, Namesake of the *Hanchen Huang Scholarship*, created by the Industry Advisory Board of the Department of Mechanical and Industrial Engineering at Northeastern University
- 2019, Award of Recognition "for the many contributions, support, and inspiration" presented jointly by the Society of Women Engineers, the Society of Hispanic Professional Engineers, the Black Engineering Student Society, and the Society of Asian Scientists and Engineers at Northeastern University
- 2012, Outstanding Faculty Advisor Award, School of Engineering, the University of Connecticut (through nomination by graduate students)
- 2012, Research Excellence Award, Department of Mechanical Engineering, the University of Connecticut
- 2007, Research Excellence Award, School of Engineering, Rensselaer Polytechnic Institute
- 2002, President's Award for Outstanding Performance in Research and Scholarship, the Hong Kong Polytechnic University
- 2001, Bole Award for Professional Leadership, Chinese Mechanical Engineering Society
- 1992, Scientific Progress Award, China Department of Energy
- 1991, Oak Ridge Associated University Fellowship, University of California at Los Angeles
- 1988, Outstanding Young Investigator Award, Institute of Atomic Energy, the Chinese Academy of Sciences
- 1984, Outstanding Physics Student Award (one award for each graduating class), the Hebei Normal University

Research Grants

Northeastern University

- $510K for three years (Years 12-14) from Department of Energy Office of Basic Energy Science Core Program: Hanchen Huang (100%), "A Theory of Growing Crystalline Nanorods", 7/2016-06/2019.
- $60K from Raytheon: Nian Sun and Hanchen Huang (50%), "Thermal Management", 07/2016-06/2018.
- $50K from Raytheon: Nian Sun and Hanchen Huang (50%), "Novel Thermal Management Technologies", 12/2016-06/2017.
- $50K from NSF I-Corps: Hanchen Huang (Northeastern), "Metallic Glue in Ambient", 01/2016-06/2016; with Paul Elliott (current PhD student) as the Entrepreneur Lead and Stephen Stagon (former PhD student) as the Industry Advisor.
- $381K from NSF: Yu Lei, Xiuling Lu, Jing Zhao (UCONN); and Hanchen Huang (Northeastern), "Collaborative Research: Injectable, Biocompatible, Programmed-Bioresorbable Nanosensor Array for Continuous Glucose Monitoring", 07/2015-06/2018; with Northeastern share being $97K.
- $20,000K Contract Order from Army Research Lab: Hanchen Huang (12.5%), "Engineered Materials and Materials Design of Engineered Materials (EMMDEM)", 03/2015 – 02/2018; The PI of this contract order is David Luzzi, with seven other faculty members including Huang.
- $185K for one year (Year 11) from Department of Energy Office of Basic Energy Science Core Program: Hanchen Huang (100%), "A Theory of Growing Crystalline Nanorods", 7/2015-06/2016.
- $209K from NASA: Hanchen Huang (100%), "Space Research Technology Fellowship", 08/2013 – 12/2016; administrative PI for a graduate fellowship.
- $500K from Brigham and Women's Hospital: Hanchen Huang (100%), "Collaboration Between Northeastern and Vascular Profiling Group at BWH", 09/2013-08/2018; administrative PI for a collaborative grant.

University of Connecticut

- $341K+$94K matching for four years from Nuclear Regulatory Commission: Thomas Filburn of University Hartford (50%) and Hanchen Huang (50%), "Collaborative Nuclear Fellowship Program Applied Research in Radiation Damage and Mitigation", 07/2012-06/2016.
- $591K for three years (Years 8-10) from Department of Energy Office of Basic Energy Science Core Program: Hanchen Huang (100%), "Characteristic Length Scales of Growing Nanorods", 04/2011-03/2014.
- $510K for three years (Years 5-7) from Department of Energy Office of Basic Energy Science Core Program: Hanchen Huang (100%), Amit Misra of Los Alamos National Laboratory and CINT (Collaborator), "Nanodesign: From New Kinetics to Nanorods", 04/2008-03/2011; one year at RPI, and two years at UCONN.
- $1,000K for three years from Defense Threat Reduction Agency: Suvranu De of Rensselaer Polytechnic Institute (53%) and Hanchen Huang (47%), "A Self-Consistent Multiscale Method for Modeling the Effects of Neutron Irradiation on the Mechanical Properties of BCC and FCC Metals", 04/2009-03/2012.

- $497K for three years from National Science Foundation: Jie Lian of Rensselaer Polytechnic Institute (57%) and Hanchen Huang (43%), "Collaborative Research: Atomistic Mechanisms of Stabilizing Oxide Nanoparticles in Oxide-dispersion Strengthened Structural Materials", 08/2009-07/2012.
- $280K for three years from National Science Foundation: Hanchen Huang (100%), "A New Characteristic Length Scale on Surfaces", 08/2009-07/2012.
- $50K for half a year from National Science Foundation: Hanchen Huang (100%), Stephen Stagon (Entrepreneur Lead) and John Daniels (Industry Mentor), "From Nanofabrication to Commercial Production of Solar Cells", 10/2012-02/2013.
- $83K for one year from UTC Hamilton Sundstrand: Eric Jordan (50%) and Hanchen Huang (50%), "Composite Technologies", 01/2010-12/2010.
- $23.5K for half a year from Army Research Office: Hanchen Huang (100%), "Workshop on Atomistic Interfaces 2009 – Ionic Solids", 07/2009-4/2010.
- $840K for four years from Department of Energy Office of Basic Energy Science: Dieter Wolf of Idaho National Lab, Ram Devanathan of Pacific Northwest National Lab, Simon Phillpot of University of Florida, Blas Uberuaga of Los Alamos National Lab; Hanchen Huang is the Task Leader on interface damage (one of the five tasks); *$64K subcontracted to UConn in 2009;* "Computational Materials Science Network on Nuclear Materials", 2006-2010.

Rensselaer Polytechnic Institute

- $375K for three and a half years (Years 1-4) from Department of Energy Office of Basic Energy Science Core Program: Hanchen Huang (100%), George Gilmer of Lawrence Livermore National Laboratory (Collaborator) and Oleg Pankratov of University of Erlangen (Collaborator), "Control of New Kinetic Barriers and Design of Nanorods", 09/2004-02/2008.
- $250K for three years from National Science Foundation: Hanchen Huang (100%), "Multiple-lattice Kinetic Monte Carlo Method", 07/2006 – 06/2009.
- $225K for three years from National Science Foundation: Satya Atluri of UC Irvin (55%) and Hanchen Huang (45%), "Mechanics of Nanoscale Interfaces", 09/2006 – 08/2009.
- $330K for three years from National Science Foundation: Daniel Gall (50%) and Hanchen Huang (50%), "Multi-component Nanopillar Coatings", 08/2004 – 07/2008.
- $180K for two years from National Science Foundation: Daniel Gall (50%) and Hanchen Huang (50%), "Interlinked Nanorods Coating", 07/2007 – 06/2009.
- $110K for one year from National Science Foundation: George Dvorak (50%) and Hanchen Huang (50%), "SGER: Toughening Mechanisms of SiC/SiC Composites through SiC Nanowires", 09/2007 – 08/2008.
- $150K for three years from Lawrence Livermore National Laboratory: Hanchen Huang (100%), "Atomistic Simulations of Twinning in BCC Crystals", 08/2005 – 07/2008.
- $180K for three years from Lawrence Livermore National Laboratory: Hanchen Huang (100%), "Nanostructure Evolution of Aging U-Nb", 12/2005 – 11/2008.
- $200K for two years from National Science Foundation: Hanchen Huang (50%) and George Dvorak (50%), "Mechanics of Sandwich Nanostructures", 05/2004 – 04/2006.
- $20K for one year from Lawrence Livermore National Laboratory: Hanchen Huang (100%), "Computer Simulations of Interface Dislocation and Deformation in Lamellar TiAl", 06/2003 – 05/2004.

- $50K for one year from Lawrence Livermore National Laboratory: Hanchen Huang (100%), "Nanoscale Simulation and Design of PETN Crystals", 03/2005 – 02/2006.
- $150K for three years from Interconnect Focus Center (A GaTech based consortium of industry, government, and universities): Hanchen Huang (100%), "Modeling", 12/2002 – 09/2005.
- $128K for five years from Hong Kong Polytechnic University: Hanchen Huang (100%), "Computer Aided Materials Engineering", 12/2002 – 08/2007.
- $50K for one and a half years from Rensselaer Polytechnic Institute SEED: Daniel Gall (50%) and Hanchen Huang (50%), "Vertical Device Structures by Glancing Angle Deposition", 01/2003 – 06/2004.
- $17K for one year from National Science Foundation ($10K) and Army Research Office ($7K): Hanchen Huang (100%), "Symposium on Mechanics of Composites in the Era of Energy and Nanotechnology", 03/2007 – 12/2007.
- $36K for one year from National Science Foundation ($20K), Army Research Office ($10K), US Association for Computational Mechanics ($5K), and Oak Ridge National Laboratory ($1K): Hanchen Huang (100%), Jacob Fish (Collaborators), Wing Kam Liu of Northwestern University (Collaborators), and KJ Cho of Stanford University (Collaborators), "USACM Workshop on Computational Nanomechanics of Materials", 01/2004 – 12/2004.
- $9K for one year from National Science Foundation: Hanchen Huang (100%), Eliot Fang of Sandia National Labs (Collaborator), Satya Atluri of UC Irvine (Collaborator), and Xanthippi Markenscoff of UCSD (Collaborator), "ICCES – Mechanics of Nanostructures", 09/2005 – 12/2006.

Hong Kong Polytechnic University

- $6.2M for four years from Hong Kong Research Grants Council: Hanchen Huang (100%); C. H. Woo (Co-investigator), Ian Wilson of Chinese University of Hong Kong (Co-investigator), T. X. Yu and Q. P. Sun of Hong Kong University of Science and Technology (Co-investigators), and Alfonso Ngan of Hong Jong University (Co-investigator), "Computer Aided Materials Engineering", 2000 – 2004; all dollar figures in Section E.4 are in HK$.
- $400K for two years from Hong Kong Research Grants Council: Hanchen Huang (100%) and C. H. Woo (Co-investigator), "Atomistic Simulation of Dislocation Dynamics During Thin Film Growth", 2001 – 2003.
- $515K for three years from Hong Kong Research Grants Council: Hanchen Huang (100%), Timothy Cale of Rensselaer Polytechnic Institute and Oleg Pankratov of University Erlangen (Co-investigators) "A Multiscale Model of Texture Competition During Thin Film Growth – Hybrid of ADEPT and EVOLVE", 2000 – 2003.
- $702K for three years from Hong Kong Research Grants Council: Hanchen Huang (100%), C. H. Woo and C. W. Ong (Co-investigators), and Oleg Pankratov of University Erlangen (Co-investigator) "Atomistic Simulation of Texture Competition During Thin Film Growth – Multiple Lattices and Stress Effects", 1999 – 2002.
- $40K for two years from Hong Kong Research Grants Council and German DAAD Joint Support: Hanchen Huang (100%), and Oleg Pankratov of University Erlangen (German PI with separate fund), "Atomistic Simulation of Thin Film Growth", 1999 – 2001.

- $400K for two years from Hong Kong Research Grants Council: Stas Golubov (100%), Hanchen Huang and C. H. Woo (Co-investigators), “Reaction Kinetics of Mobile Defect Clusters in Metals: A Combination of Atomistic Simulations and Theory”, 2001 – 2003.
- $3M-$5M for the duration of four years from Hong Kong Polytechnic University Internal Competitive Grants: Hanchen Huang, with C. H. Woo, S. Q. Shi, K. J. Lau, or Stas Golubov (Co-investigators), “Multiple projects with focus on Multiscale Materials Modeling”, 1998 – 2002.

Research Papers and Patents

Summary of Discovery, Innovation, and Commercialization

My scholarship activities cover a range of topics, including nanorods growth, solid mechanics, radiation damage, and multiscale computation. The most notable contribution is in the topic area of metallic nanorods growth. In this topic area, my contributions span the entire spectrum of new conceptualization, formulation of analytical theories based on the new concept, experimental discovery of smallest and well-separated metallic nanorods under the guidance of the analytical theories, invention of metallic glue technology based on the experimental discovery, and commercialization of the technology through a startup company MesoGlue Inc.; as described below.

- **Definition of Scientific Challenge:** Around the turn of 20th and 21st centuries, "nano" became a fashionable term. Many nanostructures were synthesized, without the understanding of what was the reason of nanoscale dimensions of these nanostructures. For clear scientific understanding with minimum ambiguity, I chose to focus on the simplest materials system and the cleanest process – metallic nanorods growth using physical vapor deposition (PVD) in ultra-high vacuum. For such metallic nanorods, the kinetic factor that keeps the dimension of nanorods at the nanoscale is surface diffusion. For simple metals like Cu and Ag, the theoretical value of surface diffusion distance is on the order of 10-100 micro meters, but the experimental value of nanorods diameter is on the order of 10-100 nano meters. The three orders of magnitude discrepancy between theory and experiment cannot be explained by inaccuracy of the theory. The scientific challenge is: **what is the origin of this discrepancy**?
- **Concept Proposal and Mechanism Discovery:** In 2002, proposed a new concept of diffusion of surface adatoms over multiple-layer steps and named it three-dimensional Ehrlich-Schwoebel (3D ES) barrier, in reference to the classical contributions of Ehrlich's group and Schwoebel's in discovering the extra diffusion barrier over monolayer surface steps in 1960s. Through atomistic calculations, my students and I verified that the 3D ES barrier would slow down surface diffusion by about 1,000,000 times at typical processing conditions. Consequently, the diffusion distance would be reduced by 1,000 times, so the new theoretical value of diffusion distance would become 10-100 nano meters in agreement with the experimental value of nanorods diameter.
  This new concept of 3D ES barrier has been referred to as "…the final piece in our understanding of the rules that govern how atoms move from one layer to another as films or crystals grow" in a subsequent Nature highlight by peers in 2002.
- **Analytical Theories:** Based on the new concept of 3D ES barrier, my students and I formulated an analytical theory of nanorod diameter. Two characteristics of this theory are that: (1) it is based on the new concept of 3D ES barrier, and (2) it is analytical – that is, it expresses nanorod diameter as an explicit function of deposition parameters. Further, we have developed an analytical theory of nanorods separation. The second theory is not conceptually new, but its analytical form had never been available before (only numerical solutions were available).
  The combination of these two theories reveals a critical length scale, below which nanorods cannot be achieved because they will be replaced by thin films. One year before these two theories were developed, my students and I – like many other research groups – attempted experimentally to push for nanorods of smaller diameter but ended up with continuous thin films. Not knowing that we had pushed below the critical length scale, my team published the

experimental results with "Anomaly" in the title of the paper. Once the new theories were developed, it was clear that the "Anomaly" was in fact normal!

- **Experimental Discovery of the Smallest and Well-separated Metallic Nanorods:** The two analytical theories make it possible to explain the "anomaly" mentioned above. Further, the two analytical theories guide the design of experiments to reach the smallest diameter without crossing the critical length scale into the thin film growth mode. Guided by the theories, my students and I designed PVD experiments and realized the smallest and yet well-separated metallic nanorods.
  The word "smallest" is in the title of our publication in 2013, although claiming "smallest" is generally considered a taboo in nano research. This title is accepted by the reviewers and the editor, presumably because the theories predict the smallest diameter, and the experiments confirm so.
- **Invention of Metallic Glue Technology:** Taking the experimental discovery of the smallest and well-separated metallic nanorods one step further, my students and I invented the metallic glue technology and received a US patent. Conceptually, we deposited metallic nanorods on each of two solid surfaces, and then pushed the two surfaces together. The mechanical flexibility of small nanorods and the large separation between them make interpenetration feasible under small pressure. The fast surface diffusion of small nanorods make room-temperature sintering fast enough to complete in minutes. As a result, and two solids glue together at room temperature under fingertip pressure; without the need of melting at high temperature as in conventional welding or high pressure as in normal bonding.
  In the first two months of 2016, more than 170 news reports featured this metallic glue technology in Fox News, Smithsonian Magazine, Popular Mechanics, etc. Further, it was featured as one of "The 20 Coolest Inventions in 2016" by Interesting Engineering magazine.
- **Commercialization of the Technology**: Going from invention to entrepreneurship, my former PhD students and I co-founded MesoGlue Inc. To commercialize the technology of metallic glue, MesoGlue has been granted allowance of three more patents on similar technologies with lower cost in 2023 (publication # 222, 223, and 224).

In addition, I contributed to multiple other disciplines. In nanomechanics, my students and I discovered the mechanisms of elastic softening and stiffening due to surface bond loss, surface bond saturation, surface reconstruction, and under-surface non-linear elasticity; as well as plastic strengthening mechanism of nanowires through twin formation. In another area, my team has developed the Atomistic Simulator for Thin Film Deposition in Three Dimensions (ADEPT), which so far remains the only computer simulation method for polycrystalline thin films or nanorods growth in three dimensions and in laboratory time scale.

Refereed Journal Papers

** Indicates corresponding author*

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2. Nosirudeen Abayomi Yussuf and Hanchen Huang*, "Branching of Titanium Nanorods", **Nanomaterials** *11*, 1070 (2021).

3. L. W. Ma, J. K. Wang, Hanchen Huang*, Z. J. Zhang*, X. G. Li, and Yi Fan, "Simultaneous Thermal Stability and Ultrahigh Sensitivity of Heterojunction SERS Substrates", **Nanomaterials** 9, 830 (2019).
4. F. Du and Hanchen Huang*, "A Theory of Growing Crystalline Nanorods – Mode I", **Surface Science** 674, 18-24 (2018).
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6. Shuai Shao, Amit Misra, Hanchen Huang, and Jian Wang, "Micro-scale Modeling of Interface-dominated Mechanical Behavior", **Journal of Materials Science** *53*, 5546-5561 (2018).
7. L. Bachenheimer, R. Scherzer, P. R. Elliott, S. P. Stagon*, L. Gasparov, and Hanchen Huang*, "Degradation Mechanism of Ag Nanorods for Surface Enhanced Raman Spectroscopy", **Scientific Reports** *7*, 16282 (2017).
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11. Z. Y. Li and Hanchen Huang*, "Synergy to Discovery and Innovation – Growth of Nanorods", **Theoretical and Applied Mechanics Letters** *6*, 249-252 (2016).
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17. P. R. Elliott, S. P. Stagon, Hanchen Huang*, D. Furrer, S. Burlatsky, and T. Filburn, "Combined Hydrophobicity and Mechanical Durability Through Surface Nanoengineering", **Scientific Reports** *5*, 9260 (2015).
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213. B. Wang, C. H. Woo, Q. P. Sun, T. X. Yu, "Critical Thickness for Dislocation Generation in Epitaxial Piezoelectric Thin Films", **Philosophical Magazine** *83*, 3753-3764 (2003).
214. D. Walgraef, "Reaction-Diffusion Approach to Nanostructure Formation During Thin-Film Deposition", **Philosophical Magazine** *83*, 3829-3846 (2003).
215. M. O. Bloomfield, D. F. Richards, and T. S. Cale, "A Computational Framework for Modelling Grain-structure Evolution in Three Dimensions", **Philosophical Magazine** *83*, 3549–3568 (2003).
216. D. Y. Zhong, S. Liu, G. Y. Zhang, and E. G. Wang, "Large-scale Well Aligned Carbon Nitride Nanotube Films: Low Temperature Growth and Electron Field Emission", **Journal of Applied Physics** *89*, 5939-5943 (2001).

Panel Reports for State and Federal Governments

217. Advances in Nuclear Power Technology, October 2011, a Report by the Connecticut Academy of Science and Engineering, for the Connecticut Energy Advisory Board; Hanchen Huang's role: a member of the Academy's Study Committee (https://ctcase.org/wp-content/uploads/2021/08/nuclear_power_2011.pdf).
218. Report of the Basic Energy Sciences Workshop on Basic Research Needs for Advanced Nuclear Energy Systems, July 31 – August 3 of 2006, Office of Science of U. S. Department of Energy; Hanchen Huang's role: Panelist of the Workshop (https://www.osti.gov/servlets/purl/899045).

219. Computational Nanomechanics of Materials, November 2004, Workshop Report to U. S. Army Research Office; Hanchen Huang's role: Author of the Report (https://apps.dtic.mil/sti/citations/ADA430085).

Technology Patents

220. David Furrer, Sergei Burlatsky, Paul Elliott, Stephen P. Stagon, and Hanchen Huang, "Article with Controllable Wettability", **US Patent # 10,053,190 B2**; United Technologies Corporation (now Raytheon Technologies Corporation) is the owner of this IP.
221. Stephen P. Stagon, Paul Elliott, and Hanchen Huang, "Low-temperature Bonding with Spaced Nanorods and Eutectic Alloys", **US Patent # 10,646,964 B2**; Northeastern University is the owner of this IP.
222. Stephen P. Stagon, Chuanwei Zhuo, Paul Elliott, and Hanchen Huang, "Amalgamation Preform", **US Patent # 11,826,258**; MesoGlue Inc. is the owner of this IP.
223. Stephen P. Stagon, Chuanwei Zhuo, Paul Elliott, and Hanchen Huang, "Method of Making Amalgamation Preform", **US Patent Application # 17/365,757** with allowance issued on July 13, 2023; MesoGlue Inc. is the owner of this IP.
224. Stephen P. Stagon, Chuanwei Zhuo, Paul Elliott, and Hanchen Huang, "Method of Using Amalgamation Preform", **US Patent Application # 17/365,811** with allowance issued on July 18, 2023; MesoGlue Inc. is the owner of this IP.

Invited Presentations

Conference Talks

1. Keynote Speaker, "Society-relevant University Education", the 21st Annual International Forum on Higher Education, December 10-12, 2021; Guangzhou, China.
2. Invited Panel Moderator, Panel on Integration of Additive Manufacturing and Artificial Intelligence, American Society of Materials Annual Meeting IMAT, October 26-28, 2020; Virtual.
3. Invited Speaker, USA Chinese Institute of Engineers and AAEOY International Technology and Leadership Conference, August 17, 2019; "Academic Leadership, Management, and Administration".
4. Invited Speaker, 26th American Association for Crystal Growth and Epitaxy West, June 10-13, 2018, Lake Tahoe, California; "Characteristic Length Scales of Nanorod Growth".
5. Invited Speaker, Prager Medalist Symposium, 54th Annual Meeting of Society of Engineering Science, July 25-28, 2017 in Boston, Massachusetts; "Aging of Metallic Glue – Or Improving".
6. Plenary Speaker, 8th International Conference on Physical and Numerical Simulation of Materials Processing, October 14-17, 2016 in Seattle, Washington; "Metallic Glue in Ambient".
7. Invited Speaker, Society of Engineering 53rd Annual Technical Meeting, College Park, MD, October 2-5, 2016; "Metallic Glue in Ambient".
8. Invited Speaker, Massachusetts High Performance Computing Day Workshop, Dartmouth, MA, May 26, 2016; "Computation Enabled Discovery of Smallest Metallic Nanorods & Innovation of Metallic Glue".
9. Invited Speaker at Plenary Session, NSF-AFOSR-ARO-DTRA Workshop on Reproducible Advanced Technologies for Next-Generation Nano/Quantum Device, Washington DC, April 27-28, 2016; "Nanomanufacturing: From Fabrication to Mass Production".
10. Invited Panelist, ASME 2016 Educational Leadership Summit Open Mic Reception, Tampa, Florida, March 16-19, 2016; "How Do You Build Trust with Your Faculty as a New External Department Head".
11. Keynote Speaker, ASME 2015 International Mechanical Engineering Congress & Exposition, Houston, Texas, November 13-19, 2015; "Metallic Glue in Ambient Environment".
12. Invited Speaker, DOE-BES Synthesis and Processing Science Principal Investigators' Meeting, Gaithersburg, MD, November 2-4, 2015; "From Atomistic Simulations to Closed-form Theories of Nanorod Growth, and Beyond".
13. Invited Speaker, 249th ACS Annual Meeting and Exhibition, in Denver, CO, March 22-26, 2015; "Combined Hydrophobicity and Mechanical Durability through Surface Nanoengineering"
14. Invited Speaker, Annual TMS Meeting & Exhibition in Orlando, FL, March 15-19, 2015; "Response Embedded Atom Method Potential".
15. Keynote Speaker, ASME 2014 International Mechanical Engineering Congress & Exposition, Montreal, Canada, November 14-20, 2014; "Response Embedded Atom Method Potential".

16. Invited Panelist, ASME 2014 International Mechanical Engineering Congress & Exposition Workshop on Tips for Faculty Job Search, Promotion, & Tenure, Montreal, Canada, November 14-20, 2014.
17. Invited/featured Speaker, Synthesis and Processing Science Principal Investigators' Meeting, November 18-22, 2013; “Science-directed Pursue of the Smallest Metallic Nanorods using Physical Vapor Deposition”.
18. Invited Speaker, The Atomistic Simulations for Industrial Needs Workshop, Washington DC, August 12-13, 2013; “Respond Embedded Atom Method for Interatomic Potentials”.
19. Keynote Speaker, Society of Engineering Conference 2013, Brown University, July 29-31, 2013; “Making Nanomechanics Simulations Physical: Responsive Embedded Atom Method Potentials”.
20. Keynote Speaker, The 8th Pacific Rim International Conference on Advanced Materials and Processing, Waikoloa, Hawaii, August 4-9, 2013; “PVD Growth of Metallic Nanorods - Science Instead of Art”.
21. Invited Speaker, Engineering Science and Technology Conference, Boston, MA, July 13, 2013 (this is the summer camp of high-school juniors and seniors organized by Lead America); “Energy Sustainability Through Nanotechnologies”.
22. Keynote Speaker, Plasticity 2013, Nassau, Bahamas, January 3-8, 2013; “Response Embedded Atom Method of Interatomic Potentials”.
23. Keynote Speaker, International Conference on Advance Materials Design and Mechanics, Xiamen, China, June 5-7, 2012; “A Model Framework of Nano Crystal Growth”.
24. Invited Speaker, The 23rd Conference on Crystal Growth and Epitaxy (AACGE-west-23), Fallen Leaf Lake (Tahoe), California, June 3-6, 2012; “A Model Framework of Nano Crystal Growth”.
25. Invited Speaker, Materials Genome Initiative Workshop (kicked off at the White House), Washington, DC, May 14-15, 2012; “Growth of Nanowires”.
26. Invited Speaker, Integrated Computational Materials Engineering Workshop, Storrs, CT, May 10-11, 2012; “Atomistic Simulations of Surface Processing”.
27. Invited Speaker/Participant, Workshop on Mechanics of Materials, Oberwolfach, Germany, March 18-24, 2012; “Mechanics of Twinned Nanowires”.
28. Keynote Speaker, The 2011 Annual Conference of the Society of Experimental Mechanics, Uncasville, Connecticut, June 13-16, 2011; “Deformation of Nanowires: How They Deform and How We Want Them to Deform”.
29. Invited Speaker, The 3rd International Conference on Heterogeneous Material Mechanics, Shanghai, China, May 22-26, 2011; “Twin Boundaries in Nanowires: Knowledge-based Fabrication & Mechanics”.
30. Keynote Speaker, Symposium on Multiphysics Simulations and Experiments for Solids, ASME International Mechanical Engineering Congress and Exposition, Vancouver, Canada, November 12-18, 2010; "Twin Boundaries in Nanowires - Design for Mechanics".
31. Invited Speaker, Symposium on Mechanical Behavior of Low Dimensional Materials. Materials Science and Technology Conference, Houston, Texas, October 17-21, 2010; "Twin Boundaries in Nanowires: Knowledge-based Fabrication & Mechanics".
32. Invited Speaker, International Conference on Mechanical Property of Materials (ICMPM), Hangzhou, China, May 24-28, 2010; "Twin Boundaries in Nanowires: Knowledge-based Fabrication & Mechanics",

33. Invited Speaker, ARO-sponsored Workshop on Atomistic Interfaces 2009 - Ionic Solids, UConn Campus, August 24 - 26, 2009; "Surface Characteristic Length Scale During Growth".
34. Invited Speaker, Symposium on Ion Beam and Materials, Materials Research Society Meeting; also XVIII International Materials Research Congresses, Cancun, Mexico, August 16 – 20, 2009; "Atomistic Simulations of Radiation Damage in Nanograins".
35. Invited Speaker, Symposium in Honor of Zdenek Bazant, The 2009 Joint ASCE-ASME-SES Conference on Mechanics and Materials, Blacksburg, June 24-27, 2009; "Dislocation Dynamics Across Twin Boundaries".
36. Invited Speaker, Surface Kinetics International Workshop, Salt Lake City, Utah, March 20 – 22, 2009; "A Characteristic Surface Length Scale During Growth".
37. Leader of group discussions on Defect Evolution near Interfaces, at the DoE BES Computational Materials Science Network Meeting, Gainesville, Florida, March 11 – 12, 2009.
38. Invited speaker, Benet Labs Materials Forum: Nano-scale Materials and Modeling, Albany, New York, February 19, 2009; "Atomistic Simulations of Surface Processing".
39. Invited speaker, Plasticity 2009, Virgin Islands, January 3-9, 2009; "Do Twins Always Strengthen Nanowires".
40. Invited speaker, Workshop on Radiation Stability of Complex Microstructures, Santa Fe, New Mexico; September 2-4, 2008; "Defect Evolution in Nanograins".
41. Panel Chair, on Interface Effects to Defect Evolution, at the DoE BES Computational Materials Science Network Meeting, Santa Fe, New Mexico; September 4-5, 2008.
42. Invited speaker, Symposium on Defects in Materials – in honor of Nasr Ghoniem, 4th Multiscale Materials Modeling Conference, Tallahassee, Florida; October 27-31, 2008; "A New Characteristic Length Scale on Surfaces".
43. Invited speaker, 2nd International Conference on Heterogeneous Material Mechanics, Huangshan, China, June 3-8, 2008; title TBA.
44. Invited panelist, on Bridging Atomistic and Continuum Scales, 2nd International Conference on Heterogeneous Material Mechanics, Huangshan, China, June 3-8, 2008.
45. Invited speaker, DoE BES Computational Materials Science Network Meeting, March 18-20, 2008, "Radiation Damage of SiC".
46. Invited speaker, NSF Symposium on Multiscale Dislocation Dynamics, January 19-20, 2008; "Twinned Nanorods: Synthesis and Dislocation Anomaly".
47. Invited speaker, Banff International Research Station (BIRS) Workshop: Physics-Based Mathematical Models of Low-Dimensional Semiconductor Nanostructures, Canada, November 18-23, 2007; "Predictive Modeling of Nanorods Synthesis".
48. Moderator, Group Discussion on Growth, Banff International Research Station (BIRS) Workshop: Physics-Based Mathematical Models of Low-Dimensional Semiconductor Nanostructures, Canada, November 18-23, 2007.
49. Keynote speaker, ICCES 2007, Miami, Florida, January 3-8, 2007; "Fabrication and Mechanics of Nanorods".
50. Invited speaker, Multiscale Science and Engineering Workshop, Troy, NY, October 31, 2006; "Atomistic Simulations over Multiple Time Scales During Nanostructure Fabrications".

51. Invited speaker, Sandia NECIS Workshop on Multidisciplinary Approaches to Science of Nanoscale Interfaces, September 6-8, 2006, Santa Fe, NM; "Synergy of Atomistic Simulations and Experiments vs Multiscale Modeling".
52. Invited panelist on Materials under Extreme Conditions, DoE BES workshop on Basic Research Needs for Advanced Nuclear Energy Systems, Bethesda, Maryland, July 31 – August 2, 2006.
53. Invited speaker, Russia-US NSF Workshop on Nanomechanics of Materials, St. Petersburg, Russia, August 2-4, 2006, "Fabrication and Mechanics of Nanowires".
54. Invited speaker, 2006 American Nanoscience Technology Conference, Las Vegas, May 20-22, 2006, "Fabrication and Mechanics of Nanowires".
55. Keynote speaker, ICCES, Chennai, India, December 1-6, 2005, "Fabrication and Mechanics of Nanowires".
56. Invited speaker, DoE BES Computational Materials Science Network Workshop, Argonne National Laboratory, IL, September 29-30, 2005, "Mechanics of Nanowires".
57. Keynote speaker, Symposium on Mathematical and Computational Foundations of Multiscale Modeling, US National Congress on Computational Mechanics, Austin, Texas, July 24-27, 2005, "Atomistic Simulator of Polycrystalline Thin Film Deposition in Three Dimensions".
58. Invited speaker, China International Conference on Nanoscience and Nanotechnology, Beijing, June 9-11, 2005, "Atomistic Model and Modeling of Nanostructures".
59. Invited speaker, US NSF–China NSF Workshop on Multiscale Model-based Mechanics and Materials Engineering, Dalian, China, September 3-5, 2004, "Mechanics of Sandwich Nanostructures".
60. Invited speaker, 4th European Congress on Computational Methods in Applied Sciences and Engineering, Jyvaskyla, Finland, July 24 – 28, 2004, "Surface Nanoelasticity".
61. Invited speaker, World Congress on Computational Mechanics VI, Beijing, China, September 5 – 10, 2004, "Dynamics of Nanoplates".
62. Keynote speaker, International Conference on Computational and Experimental Engineering and Science, Madeira, Portugal, July 2004, "ADEPT: Polycrystalline Thin Films Modeling".
63. Invited speaker, 3rd International Conference on Computational Modeling and Simulation of Materials, Sicily, Italy, June 2004, "Kinetics Driven Nanopatterning on Surfaces".
64. Keynote speaker, International Conference on Computational and Experimental Engineering and Science, Corfu, Greece, July 2003, "Kinetics Limited Surface Patterning at the Nanoscale".
65. Invited speaker, Symposium on Mechanics and Physics of Microstructures and Nanostructures – Size Effects, EUROMECH, Thessaloniki, Greece, August 2003, "Mechanics Driven Texture Competition".
66. Invited speaker, Focus Symposium on Materials of Mechanics at Nano and Micro Scales, the First International Conference on Multiscale Materials Modeling, London, UK, June 2002, "Deposition of Multilayer Thin Films of Single Components".
67. Invited speaker, Global Chinese Scientist Meeting on Nano Science and Nano Technology, July 2001, Beijing, "Multiscale Modeling of Nanoscale Thin Films".
68. Invited speaker, the First International Energy Agency Working Group Meeting, April 2001, San Francisco, "Computer Aided Design of Fusion Reactor Materials".

69. Invited speaker at the Focus Symposium on Multiscale Materials Modeling, the 2000 International Conference on Computational Engineering Science (ICES2K), Los Angeles, August 2000, "Multiscale Modeling of Texture Competition during Thin Film Deposition".
70. Invited speaker at the IMA workshop at the University of Minnesota: Reactive Flow and Transport Phenomena, Minnesota, June 2000, "Atomistic Simulation of Thin Film Growth".
71. Keynote speaker, the 3rd International Conference on Physical and Numerical Simulation of Materials and Hot Working, Beijing, October 1999, "Multiscale Materials Modeling".
72. Invited series lecturer at the Hiroshima University, October 1999, "Multiscale Materials Modeling of Thin Film Growth".
73. Invited speaker and Session Chair at the 2nd International Symposium on Applied Plasma Science, Osaka, September 1999, "Atomistic Simulation of Texture Competition during Thin Film Growth".
74. Invited speaker at the Metals, Minerals, and Materials Society Meeting, TX, February 1998, "ADEPT: An Atomistic Simulator for Deposition Processes in Three Dimensions".
75. Invited speaker at the 1st International Symposium on Applied Plasma Science, Los Angeles, CA, September 1997, "ADEPT: An Atomistic Simulator for Deposition Processes in Three Dimensions".
76. Invited speaker at the American Association of Crystal Growth (West) Meeting, Lake Tahoe, CA, June 1997; "ADEPT: An Atomistic Simulator for Deposition Processes in Three Dimensions".

Named Lectures

77. **Leaders in Engineering Lecture** speaker, Department of Mechanical, Aerospace and Nuclear Engineering, Rensselaer Polytechnic Institute, September 12, 2018; "Metallic Glue: Science, Technology and Commercialization".
78. **Hseu Shen Tsien Engineering Science Lecture** (钱学森工程科学讲座), Institute of Mechanics, Chinese Academy of Science, December 21, 2015; "Fabrication and Mechanics of Nanorods".
79. **Distinguished Seminar** speaker, Department of Mechanical and Aerospace Engineering, the University of Central Florida, January 23, 2015; "Metallic Glue in Ambient through Nanodesign".
80. **Leaders in Engineering Lecture** speaker, Department of Mechanical, Aerospace and Nuclear Engineering, Rensselaer Polytechnic Institute, April 9, 2014; "Touching the Bottom: the Smallest Metallic Nanorods using PVD".
81. **Distinguished Lecture Series** speaker, School of Engineering, the University of Connecticut, August 5, 2008, "Science Based Nanorods Synthesis".

Seminars

82. Seminar speaker, Department of Mechanical Engineering, the University of North Texas, March 3, 2022; "Synthesis and Mechanics of Nanorods".
83. Seminar speaker, UNT International Students Research Organization – Thanksgiving Special Diversity and Creativity Event, November 21, 2019; "Metallic Glue: Science, Technology, and Commercialization".
84. Seminar speaker, Department of Materials Science and Engineering, the University of North Texas, September 6, 2019; "Nanorods: rom Synthesis Science to Metallic Glue Technology".

85. Seminar speaker, Department of Mechanical Engineering, the University of Texas at San Antonio, November 16, 2018; "Metallic Glue: Science, Technology and Commercialization".
86. Seminar speaker, Rowland Institute at Harvard University, March 9, 2018; "Nanorods: from Synthesis Science to Metallic Glue Technology".
87. Seminar speaker, Department of Aerospace Engineering and Engineering Mechanics, the University of Texas at Austin, February 15, 2018; "Nanorods: from Synthesis Science to Metallic Glue Technology".
88. Seminar speaker, Center for Interdisciplinary Research on Complex Systems, Northeastern University, Boston, September 26, 2017; "Growth of Nanorods – from Basic Science to Metallic Glue Technology".
89. Seminar speaker, Nebraska Center for Materials and Nanoscience in co-sponsorship with Department of Mechanical and Materials Engineering, the University of Nebraska, Lincoln, March 15, 2016; "Metallic Glue in Ambient".
90. Seminar speaker, Department of Mechanical Engineering, Worcester Polytechnic Institute, February 3, 2015; "Metallic Glue in Ambient".
91. Seminar speaker, Department of Mechanical Engineering, Northwestern University, June 1, 2015; "Metallic Glue in Ambient".
92. Seminar speaker, Department of Mechanical and Industrial Engineering, the University of Miami, October 17, 2014; "Metallic Glue in Ambient through Nanodesign".
93. Seminar speaker, Institute of Nanotechnologies, George Washington University, February 4, 2014; "Touching the Bottom: the Smallest Metallic Nanorods using PVD".
94. Seminar speaker, the United Technologies Research Center, August 15, 2013; "From Nanoscience to Nanotechnology: Nanorod Syntheses and Applications".
95. Seminar speaker, Department of Mechanical and Industrial Engineering, Northeastern University, April 12, 2013; "Nanomanufacturing through Science-based Nanofabrication".
96. Invited lecturer, School of Materials Science and Engineering, the Harbin Institute of Technology, June 11 and 22, 2012; "Molecular Dynamics Simulations for Interface Processing" and "Atomistic Simulations of Interface Processing", respectively.
97. Seminar speaker, United Technologies Research Center, August 16, 2013; "From Nanoscience to Nanotechnology – Nanorod Syntheses & Applications".
98. Seminar speaker, Department of Mechanical and Aerospace Engineering, the University of Central Florida, November 9, 2012; "Computation Enabled Discovery in Nanorod Fabrication".
99. Seminar speaker, Department of Physics, Tsinghua University, June 14, 2012; "A Framework of Nano Crystal Growth".
100. Seminar speaker, School of Engineering, Beijing University, June 8, 2012; "A Framework of Nano Crystal Growth".
101. Seminar Speaker, School of Dynamic Systems, the University of Cincinnati, Ohio, April 13, 2012; "A Framework of Nano Crystal Growth".
102. Seminar Speaker, Princeton Plasma Physics Laboratory, New Jersey, March 13, 2012; "Plasma Facing Materials – Nanowires Development".
103. Seminar Speaker, Department of Astronomy and Physics, the University of Wyoming, October 21, 2011; "Physics Based Growth of Nanorods".
104. Seminar Speaker, Department of Mechanical Engineering, Boston University, September 30, 2011; "Fabrication and Mechanics of Nanowires".

105. Seminar Speaker, Department of Modern Mechanics, the University of Science and Technology of China, May 25, 2011; “Modeling & Atomistic Simulations of Nanowires: Fabrication and Mechanics”.
106. Seminar Speaker, Department of Mechanical Engineering, the Mississippi State University, August 16, 2010, "Atomistic Simulations and Modeling of Nanowires - Fabrication and Mechanics".
107. Seminar Speaker, School of Physics and Engineering, Sun Yat-Sen University, June 24, 2010, "Atomistic Simulations and Modeling of Nanowires - Fabrication and Mechanics".
108. Seminar Speaker, jointly at the Department of Mechanical Engineering and Department of Electronic and Information Engineering, the Hong Kong Polytechnic University, June 21, 2010, "Atomistic Simulations and Modeling of Nanowires - Fabrication and Mechanics".
109. Seminar Speaker, Institute of Metal Research, Chinese Academy of Sciences, Shenyang, Sun Yat-Sen University, June 10, 2010, "Old Fashioned Surface Science in Nanosynthesis".
110. Seminar Speaker, School of Mechanical Science and Engineering, the Huazhong University of Science and Technology, June 8, 2010, "Synthesis and Mechanics of Nanostructures".
111. Seminar Speaker, Materials Science and Engineering Program, the University of Connecticut, January 27, 2010, "Old Fashioned Surface Science in Nanosynthesis".
112. Seminar Speaker, Department of Materials Science and Engineering, the University of Wisconsin at Madison, September 24, 2009, “Kinetics-dictated Nanoscale Materials Processing”.
113. Seminar Speaker, Los Alamos National Laboratory, July 22, 2009, “Kinetics-dictated Nanoscale Materials Processing”.
114. Seminar Speaker, Department of Chemistry, the University College London, March 30, 2009; “Atomistic Simulations of Surface Processing”.
115. Seminar Speaker, Army Research Laboratory, November 12, 2008, “Surface Processing – Synthesis of 1D Nanostructures”.
116. Seminar Speaker, Department of Mechanical Engineering, the New Jersey Institute of Technology, October 8, 2008, “Nanorods Processing: Synthesis and Mechanics”.
117. Seminar Speaker, Department of Nuclear Engineering and Radiological Sciences, the University of Michigan at Ann Arbor, September 19, 2008, “Fabrication and Radiation Damage of Nanostructured Materials”.
118. Seminar speaker, Department of Mechanical Engineering, the University of Connecticut, February 19, 2008, “Nanorods Processing: Synthesis and Mechanics”.
119. Seminar speaker, Department of Mechanical and Aerospace Engineering, Clarkson University, September 14, 2007, “Fabrication and Mechanics of 1D Nanostructures”.
120. Seminar speaker, School of Materials Science and Engineering, the Harbin Institute of Technology, July 30, 2007, “Fabrication and Mechanics of 1D Nanostructures”.
121. Seminar speaker, College of Nanoscience and Nanoengineering, SUNY Albany, March 9, 2007, “Design of Nanowire Structures”.
122. Seminar speaker, Materials Science and Engineering Division, Oak Ridge National Laboratory, February 21, 2007, “Atomistic Simulator and Simulations of Structure Evolution”.
123. Seminar speaker, Department of Civil and Environmental Engineering, Vanderbilt University, February 20, 2007, “Atomistic Simulator and Simulations of Structure Evolution”.

124. Seminar speaker, Department of Mechanical & Industrial Engineering, the University of Illinois at Urbana Champaign, April 27, 2006, “Fabrication and Mechanics of Nanostructures”.
125. Seminar speaker, Department of Civil and Environmental Engineering, the University of California at Irvine, March 4, 2005, “Model and Modeling of Nanostructures”.
126. Seminar speaker, Department of Civil and Environmental Engineering, the University of California at Los Angeles, February 22, 2005, “Model and Modeling of Nanostructures”.
127. Seminar speaker, Center for Integrated Nanotechnologies, Sandia National Laboratories, January 19, 2005, “Model and Modeling of Nanostructures”.
128. Seminar speaker, Department of Materials, Queen Mary College of the University London, July 29, 2004, “Nanomechanics of Sandwich Structures”.
129. Seminar speaker, Division of Engineering, Brown University, September 29, 2003, “Thin Film Processing: Kinetics and Mechanics”.
130. Seminar speaker, Department of Mechanical Engineering, Northwestern University, September 24, 2003, “Thin Film Processing: Kinetics and Mechanics”.
131. Seminar speaker, Structural Mechanics Seminar Series, the Georgia Institute of Technology, November 15, 2002, “Computer Aided Design of Thin Film Mechanics”.
132. Seminar speaker, Lawrence Livermore National Laboratory, October 11, 2002, “Computer Aided Design of Surface Patterning at the Nanoscale”.
133. Seminar speaker, Jiaotong University, Xi’an, China, June 2002, “Computer Aided Materials Engineering”.
134. Seminar speaker, School of Materials Science and Engineering, the Harbin Institute of Technology, China, March 2001, “Molecular Dynamics Simulations of Interfaces”.
135. Seminar speaker, Department of Applied Physics and Materials, the City University of Hong Kong, Hong Kong, December 2000, “Computer Aided Materials Engineering”.
136. Seminar speaker, Department of Materials, Queen Mary College, the University of London, United Kingdom, March 2000, “Atomistic Simulations of Thin Film Deposition”.
137. Seminar speaker, Department of Physics, the University of Erlangen, Germany, March 2000, “Atomistic Simulations of Thin Film Deposition”.
138. Seminar speaker, Department of Mechanical Engineering, the Hong Kong University of Science and Technology, October 1999, “Computer Aided Materials Engineering”.
139. Seminar speaker, Institute of Atomic Energy, Chinese Academy of Science, China, July 1998, “Atomistic Simulation of Thin Film Deposition”.
140. Seminar speaker, Department of Chemical and Materials Engineering, the Arizona State University, summer 1997, “Atomistic Simulation of Thin Film Deposition”.
141. Seminar speaker, Department of Materials Science and Engineering, Stanford University, February 1997, “Atomistic Simulation of Thin Film Deposition”.
142. Seminar speaker, Department of Mechanical, Aerospace and Nuclear Engineering, UCLA, July 1996, “Atomistic Simulation of Thin Film Deposition”

Mentoring of Post-docs and Graduate Students

Post-docs and Research Associates/Fellows/Professors

1. Abayomi Yussuf, post-doc (2022)
2. Yuehua Liu, visiting scholar (2019)
3. Yanxia Gu, visiting scholar (2018-2019)
4. Feng Du, research assistant professor (2018-2019) and post-doc (2015-2018).
5. Cheng Jin, visiting scholar (2016-2017)
6. Lingwei Ma, visiting scholar (2016-2017)
7. Xiuli Han, visiting scholar (2014-2015)
8. Xiaobin Niu, post-doc (2011-2012) and research assistant professor (2013-2014)
9. Stephen Stagon, research assistant professor (2013-2014)
10. Dangxian Wu, post-doc (2013)
11. Longguang Zhou, post-doc (2003-2004), research associate (2004-2008), research scientist (2008-2009), research assistant professor (2009-2012)
12. Jianfeng Jin, post-doc
13. Soohwan Lee, post-doc
14. Haijian Chu, post-doc
15. Xiaojuan Ye, visiting scholar
16. Yongfeng Zhang, post-doc
17. Shikai Xiang, post-doc
18. Lixin Zhang, post-doc
19. Alberto Coronado, post-doc
20. Daniel Danailov, post-doc
21. Stas Golubov, senior research fellow
22. Wenjun Zhu, research associate
23. Yuexia Wang, research associate
24. Lang Zhou, research associate
25. Yifang Ouyang, research associate
26. Helin Wei, research associate
27. Zheng Zhong, research associate
28. Haiyi Liang, research associate
29. Kenjiro Sugio, research associate
30. B. Sundarvel, post-doc
31. Jiwu Shu, research assistant
32. Shaojun Liu, post-doc
33. Biao Wang, research fellow

PhD Students

34. Ryan Scherzer at Northeastern University (PhD to be completed, while on leave in 2023)
35. Abayomi Yussuf (PhD 2022) “Growth and Applications of Titanium Nanorods with Branches Using Physical Vapor Deposition”
36. Lou Bachenheimer (PhD 2017) “Diffusion on Silver Nanorod Surfaces: Mechanisms of Fast Diffusion at Low Temperature”
37. Paul Elliott (PhD 2017) “From the Science of Nanorod Growth to Metallic Glue Technology”

38. Stephen Stagon (PhD 2013), “Physical Vapor Deposition of Nanorods from Science to Technology”
39. Yi Yang (PhD 2010), “Interactions between Energetic Beams and Polycrystalline Solids”.
40. Yongfeng Zhang (PhD 2009), “Mechanical Deformation and Radiation Damage of Face-centered-cubic Metallic Nanowires”
41. Hyun Woo Shim (PhD 2008), “Design and Fabrication of SiC Nanowires”
42. Jian Wang (PhD 2006), “Fabrication and Mechanics of Nanorods/Nanograins”
43. R. Murugavel (PhD 2004), “Temperature Dependence of Dislocation Dynamics During Nanoindentation in Metals”
44. Xiangli Liu (PhD 2004), “Nano-plasticity in BCC and HCP Metals”
45. Averil W. C. Liu (PhD 2003), “Dislocation Dynamics During Thin Film Deposition”
46. L. H. Han (PhD 2002), “Superplasticity of Particulates Reinforced Aluminum Matrix Composites and Molecular Dynamics Simulation on Grain Boundary Sliding”

MS Students (thesis based)

47. Deron Cecil Dixon (MS 2019), “HCP Nanorods Growth”
48. Matthew Stagon (MS 2013), “Nanomechanics Simulations based on Response Embedded Atom Method”
49. Jaron Kuppers (MS 2009), “Nanotechnology for Energy”
50. Ruoxin Zhang (MS 2008), “Engineering Surface Steps Through Shadowing”
51. Christopher Johansen (MS 2007), “Molecular Dynamics Simulations of Nanorods Texture”
52. sponsored by Department of Education fellowship.
53. Richard Baran (MS 2006), “A Molecular Dynamics Study of Deformation in Carbon Nanotubes and BCC Single Crystals”.
54. Charles F. S. Chow (MS 2000), “Study of Erosion Mechanism in Piping System”.

Society Leadership and Service Roles

Leadership

1. Co-Founder of Multiscale Materials Modeling Conference series. This research conference has become an annual event since its founding in 2002.
2. Co-Founder of Northeast Mechanical Engineering Department Chairs Summit. The inaugural Summit took place at Northeastern University in 2014 with two focus topics – minimization of mechanical engineering core curriculum, and maximization of faculty and student diversity. Subsequently, the Summit took place at Rensselaer Polytechnic Institute in 2015, University of Pennsylvania in 2016, and Boston University in 2017. It will continue at Columbia University in 2018 and Rutgers University in 2019.
3. Board of Trustees, the American Society for Materials International (2023-2026).
4. Chair (2021-2023), Vice Chair (2019-2021), and Member (2011-2019), Emerging Technologies Awareness Committee, American Society for Materials International.
5. Advisory Board Member (2021-2023), NiHao Food Bank Initiative in partnership with North Texas Food Bank.
6. Immediate Past President (2023-2024), President (2022-2023), President-elect (2020-2022), Council of Chinese American Deans and Presidents; and Board of Directors (2020-2024).
7. Chair, Nomination Committee of the Board of Directors, Society of Engineering Science (2015).
8. Chair of Task Force on Satisfaction of Department Chairs/Heads (2016 and 2017), and Member of Mechanical Engineering Department Heads Executive Committee, American Society of Mechanical Engineers (2014-2018).
9. Co-Chair, Mechanical Engineering Department Heads Forum on "Fostering Interdisciplinary Research and Challenges Associated with It", American Society of Mechanical Engineers IMECE (2018).
10. Co-Chair, 54th Annual Meeting of the Society of Engineering Science at Boston, MA; jointly with the American Society of Mechanical Engineers Applied Mechanics Division Anneal Meeting (2017).
11. Co-Chair, ME/MET Department Heads Professional Development Workshop on “Delegating, Managing Up, and Balancing Scholarship and Administration”, as part of ICMEC Annual Conference at Tampa, FL (2017).
12. Vice Chair, International Scientific Committee, 8th International Conference on Physical and Numerical Simulation of Materials Processing at Seattle, Washington (2016).
13. Co-Chair, 2nd Northeast Mechanical Engineering Department Chairs Summit at Rensselaer Polytechnic Institute (2015).
14. Co-Chair, 1st Northeast Mechanical Engineering Department Chairs Summit at Northeastern University (2014).
15. Co-Chair, Integrated Computational Materials Engineering Workshop at University of Connecticut (2012).
16. Track Co-organizer, NanoEngineering for Energy, ASME International Mechanical Engineering Congress and Exposition at Denver, Colorado (2011).
17. Topic Lead Organizer, Mechanics of Nanostructured Materials, ASME International Mechanical Engineering Congress and Exposition at Denver, Colorado (2011).
18. Track Co-organizer, Nanoengineering for Energy, ASME International Mechanical Engineering Congress and Exposition at Vancouver, Canada (2010).

19. Chair, ARO-sponsored workshop on Atomistic Interfaces 2009 - Ionic Solids at University of Connecticut (2009).
20. Co-Chair, Symposium on Defects in Materials – in honor of Nasr Ghoniem, 4th Multiscale Materials Modeling Conference at Tallahassee, FL (2008).
21. Co-Chair, Symposium on Mechanics of Nanostructured Materials Under Extreme Conditions, MRS Fall Meeting at Boston, MA (2008).
22. General Chair, NSF/ARO Sponsored Symposium on Mechanics of Composites in the Era of Energy and Nanotechnology at Rensselaer Polytechnic Institute (2007).
23. Co-chair, Symposium on Modeling and Simulation of Nano Materials and Mechanics, US National Congress of Computational Mechanics at San Francisco, CA (2007).
24. Co-chair, Symposium on Recent Advances in Computational Study of Nanostructures, the Seventh World Congress on Computational Mechanics at Los Angeles, CA (2006).
25. Co-chair, Symposium on Nano-Micro Mechanics of Materials, the Seventh World Congress on Computational Mechanics at Los Angeles, CA (2006).
26. Co-chair, Symposium on Mechanics of Nanoscale Materials and Devices, MRS Spring Meeting at San Francisco, CA (2006).
27. Co-chair, Symposium on Mechanics of Nanostructures, International Conference on Computational and Experimental Engineering Sciences at Chenai, India (2005).
28. Co-chair, Thin Film Processing Symposium, the International Conference on Multiscale Materials Modeling at Los Angeles, CA (2004).
29. Co-chair, Interface Processing Symposium, International Conference on Computational and Experimental Engineering Sciences at Madeira, Portugal (2004).
30. Co-chair, NSF/ARO-sponsored USACM Workshop on Computational Nanomechanics of Materials at Chicago, IL (2004).
31. Co-chair, Nanomechanics of Interfaces Symposium, World Congress on Computational Mechanics VI at Beijing, China (2004).
32. Co-chair of Panel Discussions, US NSF–China NSF Workshop on Multiscale Model-based Mechanics and Materials Engineering at Dalian, China (2004).
33. Co-chair, Kinetics-Driven Nanopatterning on Surfaces Symposium, MRS Fall Meeting at Boston, MA (2004).
34. Chair/Co-Chair, Nanotechnology Committee, US Association for Computational Mechanics (2003-2009).
35. Co-chair, Focus Symposium on Nano/Micro Mechanics of Materials, the 1st International Conference on Multiscale Materials Modeling at London, UK (2002).
36. Co-chair, Theory and Modeling of Electronic Materials Symposium, International Union of Materials Research Societies-ICEM at Xi'an, China (2002).
37. Co-chair, Multiscale Materials Modeling Symposium, the 6th Conference of International Union of Materials Research Societies at Hong Kong, China (2000).
38. Co-chair, Multiscale Materials Modeling Symposium, the 5th Conference of International Union of Materials Research Societies at Beijing, China (1999).

Editorship

39. Associate Editor, ASME Journal of Materials Engineering and Technology (2009-2014).
40. Guest Editor, Philosophical Magazine on Defects in Materials, in honor of Professor Nasr Ghoniem at his 60th birthday (2010).

41. Guest Editor, MRS Bulletin on "Atomistic Simulations of Mechanics of Nanostructures"; co-edited with Professor Helena van Swygenhoven of PSI (2009).
42. Guest Editor, Computer Methods in Applied Mechanics and Engineering on "Recent Advances in Computational Study of Nanostructures"; co-edited with Professor Harold Park of Vanderbilt University, Dr. Eliot Fang of Sandia National Labs, and Professor Jacob Fish of RPI (2008).
43. Board of Editors, Computer Modeling in Engineering and Sciences (2003-2007).
44. Guest Editor, Philosophical Magazine (Elsevier) on "Nano/Micro Mechanics of Materials"; co-edited with Professor Nasr Ghoniem of UCLA and Dr. Esteban Busso of Imperial College of University London (2003).
45. Guest Editor, Computational Materials Science (Elsevier, NL) on "Multiscale Materials Modeling"; co-edited with Professor Xiao Guo of Queen Mary College of University London, Professor Shuichi Iwata of Tokyo University, Professor/Dr. Oleg Pankratov of University Erlangen, and Professor Sidney Yip of MIT (2002).
46. Guest Editor, Journal of Computer Aided Materials Design (Kluwer, NL) on "Multiscale Materials Modeling"; co-edited with Professor Nasr Ghoniem of UCLA, Dr. Howard Heinisch of Pacific Northwest National Lab, Dr. Ladislas Kubin of CNRS, Professor Sidney Yip of MIT, and Professor Jinnan Yu of Chinese Academy of Sciences (1999).
47. International Scientific Committee of Experts, Journal De Physique IV Volume 11 Pr5, edited by S. Forest of CNRS, E. van der Giessen of University Groningen, and Ladislas Kubin of CNRS (2001).
48. Editorial Board Member, SCIENTIA SINICA Technologica (2017-).
49. Editorial Board Member (2017-), Journal of Nanomedicine (2017-).
50. Editorial Board Member (2013-2017), Scientific Reports (2013-2017).
51. Editorial Board Member, Advances in Applied Plasma Science (2001-2009).

Program Evaluation

52. External evaluator/chair of graduate programs at University of Nevada at Reno (Mechanical Engineering 2018).
53. External evaluator of graduate programs at University of Maryland at Baltimore County (Mechanical Engineering, 2018).
54. External evaluator of graduate programs at University of Miami (Mechanical Engineering, 2017).
55. External Academic Advisor at City University of Hong Kong (Mechanical and Biomedical Engineering, 2017-2019).
56. Chair of Review Committee, Laboratory Directed Research and Development funded center at Los Alamos National Laboratory (2013).
57. Panel Member of Research Needs for Advanced Nuclear Energy Systems for the US Department of Energy (2016): https://science.energy.gov/~/media/bes/pdf/reports/files/Basic_Research_Needs_for_Advanced_Nuclear_Energy_Systems_rpt.pdf.
58. Panel Member of Advances in Nuclear Power Technology for the State of Connecticut (2011) through the Connecticut Academy of Science and Engineering: http://www.ctcase.org/reports/nuclear/nuclear_power_2011.pdf.
59. Reviewer of the Camille Dreyfus Teacher-Scholar Awards for $75K Unrestricted Research Grant (2017).

60. Evaluator of the Tan Kah Kee Science Award, Chinese Academy of Sciences (2009).
61. Chair of the Award Committee of Young Investigator Award in experimental science of the International Conferences of Computational and Experimental Sciences (2007-2009).
62. Committee for the Best Paper Awards, the 6th International Symposium on Applied Plasma Science at Nikki, Japan (2007).
63. Adjudicating Panel, the 34th Joint (High) School Science Exhibition at Hong Kong, China (2007); Committee of Graduate Student Awards Selection, MRS Spring Meeting at San Francisco, CA (2006).
64. Evaluator of proposals for Office of Basic Energy Science and Office of Nuclear Energy, Department of Energy; National Science Foundation; American Chemical Society Petroleum Research Fund; Idaho National Laboratory National User Facility; Los Alamos National Laboratory's LDRD Proposal; University of California Discovery Grants; Louisiana State Board of Regents; Women's International Science Collaboration (WISC) Program, American Association for the Advancement of Science; Government of Ontario's Ministry of Research and Innovation, Canada; Natural Sciences and Engineering Research Council of Canada; Engineering and Physical Sciences Research Council, United Kingdom; Hong Kong Research Grants Council; New Zealand Royal Society Marsden Funds; National Fund for Scientific and Technological Development (FONDECYT), Chile; International Copper Association (New York) and University of Chile (Chile).
65. Evaluator of Senior/Chair Professor appointment, and tenure and promotion at Ohio State University at Columbus (Mechanical Engineering); University of California at Irvine (Civil Engineering); Boston University (Mechanical Engineering); George Washington University (Physics) - appointment of Gus Weiss Professor; Colorado School of Mines (Engineering Division); Nanyang Technological University, Singapore (Electrical & Electronic Engineering); Purdue University – appointment of Department Head of Nuclear Engineering; Rutgers University (Mechanical Engineering); University of Tennessee at Knoxville (Materials Science and Engineering) - appointment of Governor's Chair; University of Pittsburgh (Mechanical Engineering); University of Texas at El Paso (Mechanical Engineering); University of North Texas (Materials Engineering); University of Texas at Dallas (Mechanical Engineering); American University in Beirut (Mechanical Engineering); University Vermont (Mechanical Engineering); Vanderbilt University (Civil Engineering); University of Iowa (Civil Engineering); University of Central Florida (Mechanical and Materials Engineering); North Carolina State University (Nuclear Engineering); Pacific Northwest National Laboratory (Materials Science); Peking University (Mechanics and Engineering Science); and Arizona State University (Mechanical Engineering).
66. Evaluator of PhD Thesis at Nanyang Technological University, Singapore; University College, University London, UK; Harbin Institute of Technology, China; and George Institute of Technology.

Membership

67. Member of Honorary Membership Selection Committee, American Society for Materials (2020-2021).
68. Member of the Academic Partnership Council of Society of Hispanic Professional Engineers (2020-2022).

69. Member of Nominating Committee for the election of Board of Trustees and President-elect, American Society for Materials (2019).
70. Task Lead on Employers' Perspective of Work Force (2019-2010) and Member (2019-2023), Public Policy Committee of Engineering Dean's Council, American Society of Engineering Education.
71. Member of NanoEngineering for Energy & Sustainability Steering Committee, American Society of Mechanical Engineers (2011-2016).
72. Member of Nuclear Power Study Committee, Connecticut Academy of Sciences and Engineering (CASE), Connecticut (2010-2011).
73. Member of Meetings Quality Subcommittee, Materials Research Society (2010-2013).
74. Member of Expert Committee of Materials Division, Chinese Mechanical Engineering Society (2001-2009).
75. Member of Membership Committee, Materials Research Society (2009-2013).
76. Panelist, DOE BES Workshop on Basic Research Needs for Advanced Nuclear Energy Systems at Washington, DC (2006).
77. Chinese Representative, International Energy Agency Working Group on Fusion Reactor Materials Modeling (2001-2002).

University Leadership and Service Roles

University Level

1. Vice President, Board of UMass Dartmouth Foundation (2022-2023)
2. Chair of Search Committee for the College of Science Dean, UNT (2022).
3. Member of Executive Council of Center and Institute Directors, UNT (2020-2023).
4. Advisory Board Member of the Jim McNatt Institute for Logistics Research, UNT (2020-).
5. Advisory Board Member of the Center for Agile and Adaptive Additive Manufacturing, UNT (2019-2022).
6. Member of University Space Planning and Management Committee, UNT (2020-2021).
7. Member of University Research Space Adjudication Subcommittee, UNT (2019-2022).
8. Member of Search Committee for the Registrar, UNT (2019).
9. Chair of University Faculty Senate *ad hoc* Financial Affairs Committee, NU (2018-2019).
10. Member of University Faculty Senate Administrator Evaluation Sub-committee for Dean Ken Henderson in the College of Science, NU (2018-2019).
11. University Faculty Senate Appointed Member of Search Committee for the Department Chair of Electrical and Computer Engineering, NU (2016-2017).
12. Chair of Inter-College Faculty Search Committee in Nanotechnology and Materials, NU (2013-2014).
13. Member of Evaluation Committee, Internal Screening for NSF Nanotechnology Undergraduate Education Program, UCONN (2010).
14. Chair, University Faculty Senate Honors and Awards Committee, RPI (2008-2009)
15. Advisory Council Member to the President and that to the Provost, RPI (2008-2009).
16. Member of University Review Board, RPI (2004-2006): In this capacity, I (together with four other members) have reviewed cases of student appeals against decisions made at department/school or judicial board level.

College or School Level

17. Member of DEI (Diversity, Equity, and Inclusion) at the College of Engineering, NU (2018)
18. Chair, CDM Smith Chair Professor Screening Committee, College of Engineering, NU (2014).
19. Member of Academic Strategic Planning Committee, School of Engineering, UCONN (2013).
20. Chair, School of Engineering Chair Professorship Review Committee - the Leonard Chair Professorship in Computer Science and Engineering, UCONN (2011).
21. Chair of Executive Committee, Center for Clean Energy Engineering, UCONN (2011-2012).
22. Co-Chair, Working Group on Multiscale Computational Science and Engineering, School of Engineering, UCONN (2010-2013).
23. Member of Evaluation Committee, Youtube Video Contest, School of Engineering, UCONN (2010).
24. Chair, School of Engineering Chair Professorship Review Committee - the UTC Chair Professorship in Thermal-fluids Engineering, UCONN (2009).
25. Member, School of Engineering Excellence Award Selection Committee, RPI (2008).
26. Member, Nanotechnology Committee at School of Engineering, RPI (2007).
27. Coordinator, School of Engineering Course: Introduction to Engineering Analysis, RPI (Spring 2006).

28. Jockey Club Award Selection Committee, HKPU (1999-2001); In this capacity, I participated in the selection of award recipients from a pool of undergraduate students.
29. Member of External Board of Examination, HKPU (1998-2002): In this capacity, I served as a member of multiple MS/PhD thesis committees in other engineering departments.

Department Level

30. Chair of Faculty Search Committee for three new hires in Advanced Manufacturing, Department of Mechanical Engineering, UCONN (2012-2013).
31. Chair of Computing Committee, Department of Mechanical Engineering, UCONN (2010-2013).
32. Chair, Promotion, Tenure and Renewal Committee (2011-2012), and member of the Committee (2010-2013), Department of Mechanical Engineering, UCONN.
33. Judge of Senior Design Demonstration, Department of Mechanical Engineering, UCONN (2010).
34. Representative of Mechanical Engineering Department at the Connecticut Invention Convention, UCONN (2010).
35. Adjunct/participating member of Faculty Search Committee, Department of Mechanical Engineering, UCONN (2009-2010).
36. International Exchange Subcommittee for Academic Curricula, RPI (2007): In this capacity, I was responsible for reciprocal recognition of mechanical engineering and nuclear engineering courses from overseas institutions.
37. Program Director of Mechanical Engineering, RPI (2007-2009): In this capacity, I was responsible for developing plans of the program, including growth directions and corresponding faculty hiring.
38. Faculty Search Committee in nuclear engineering, RPI (2006-2008).
39. Chair, Faculty Search Committee for multiple hires in mechanical and aerospace engineering, Department of Mechanical, Aerospace and Nuclear Engineering, RPI (2007-2008).
40. Chair of Department Colloquium Series, RPI (2004-2007); In this capacity, I initiated the "Van Mow Lecture of Applied Mechanics", in honor of Van Mow, an PRI graduate and a member of three national academies. With the help of Institute Advancement Office and the department head, this lecture became endowed by summer 2006.
41. Chair of Departmental Computer Committee, HKPU (1998-2001).
42. Member of Departmental Research Committee, HKPU (1998-2002).
43. Coordinator of Departmental Seminar Affairs, HKPU (1998-2001).