

# Hanchen Huang

## A. Bio-sketch

Hanchen Huang is the Dean of the College of Engineering and the Lupe Murchison Foundation Chair Professor at the University of North Texas. He has been the Donald W. Smith Professor and the Department Chair of Mechanical and Industrial Engineering at Northeastern University, Connecticut Clean Energy Fund Endowed Professor at University of Connecticut, and Professor of Mechanical and Nuclear Engineering at Rensselaer Polytechnic Institute where he first earned tenure in 2005 and rose to the rank of Professor in 2006. In addition he has been Royal Society of London KTP Visiting Professor, and Hsue Shen Tsien Engineering Science Visiting Professor. Hanchen Huang has received multiple awards for research excellence, as well as for outstanding advising at home universities. In professional societies, he is an elected Member of the Connecticut Academy of Science and Engineering (CASE), elected Fellow of the American Association for the Advancement of Science (AAAS), elected Fellow of the Society of Engineering Science (SES), elected Fellow of the American Society of Mechanical Engineers (ASME), elected Senior Member of the Chinese Mechanical Engineering Society (CMES), and elected Full Member of Sigma Xi the Scientific Research Honor Society. He has delivered more than 130 plenary/keynote/invited lectures and seminars, and mentored more than 40 post-docs and PhD students.

## B. Honors, Awards, and Recognitions

2017 Elected Fellow, American Association for the Advancement of Science

2016 Elected Fellow, Society of Engineering Science

2014 Elected Fellow, American Society of Mechanical Engineers

2011 Elected Member, Connecticut Academy of Science and Engineering

2000 Elected Senior Member, Chinese Mechanical Engineering Society

2018 Elected Full Member, Sigma Xi the Scientific Research Honor Society

2019 Lupe Murchison Foundation Chair Professor in Engineering at University of North Texas

2017 Donald W. Smith Professor of Mechanical Engineering at Northeastern University

2015 Hsue Shen Tsien Engineering Science Visiting Professor at Chinese Academy of Sciences

2010 Royal Society of London KTP Visiting Professor at Hong Kong Polytechnic University

2009 Connecticut Clean Energy Fund Endowed Professor at University of Connecticut

2012 Research Excellence Award, Department of Mechanical Engineering, University of Connecticut

2012 Outstanding Faculty Advisor Award, School of Engineering, University of Connecticut

2007 Research Excellence Award, School of Engineering, Rensselaer Polytechnic Institute

2002 President's Award for Outstanding Performance in Research and Scholarship, Hong Kong Polytechnic University

2001 Bole Award for Professional Leadership, Chinese Mechanical Engineering Society

1992 Scientific Progress Award, China Department of Energy

1991 Associated University Fellowship Award, University of California at Los Angeles

1988 Outstanding Young Investigator Award, Institute of Atomic Energy, Chinese Academy of Sciences

1984 Outstanding Physics Student Award (Triple-Excellence Student Award) Department of Physics, Hebei Normal University

2017 Co-inventor of metallic glue, which is featured as one “The 20 Coolest Inventions of 2016” by the *Interesting Engineering* magazine.

2016 Co-inventor of “metallic glue”, which has been featured in about 200 reports, such as “New invention may end age-old soldering” in *Fox News*, “Nanoscale metallic glue could replace welding and soldering” in *Yahoo! News*, “This Powerful Metal Glue Sets at Room Temperature” in *Smithsonian Magazine*.

2002 *NATURE News and Highlight* “Thin Film Cliffhanger” (*Nature*, June 27, 2002).

## C. Work Experiences

- University of North Texas, College of Engineering
  - Dean of Engineering and Lupe Murchison Foundation Chair Professor (2019-now)
- Northeastern University, Department of Mechanical and Industrial Engineering
  - Chair of University Faculty Senate Financial Affairs Committee (2018-2019)
  - Donald W. Smith Professor (since 2017) and Department Chair (2013 to 2018)
- University of Connecticut, Department of Mechanical Engineering
  - Connecticut Clean Energy Fund Endowed Professor from 2009 to 2013
  - Chair of Executive Committee for the Center of Clean Energy Engineering from 2011 to 2012
- Rensselaer Polytechnic Institute, Department of Mechanical, Aerospace and Nuclear Engineering
  - Chair of University Faculty Senate Honors and Awards Standing Committee, and Member of Advisory Council to the President and that to the Provost from 2008 to 2009
  - Director of Mechanical Engineering Program from 2007 to 2009
  - Professor from 2006 to 2009
  - Associate Professor with tenure from 2005 to 2006
  - Associate Professor on tenure track from 2002 to 2005
- Hong Kong Polytechnic University, Department of Mechanical Engineering
  - Associate Professor from 1999 to 2002
  - Assistant Professor from 1998 to 1999
- Lawrence Livermore National Laboratory, Division of Materials Science and Engineering
  - Term Technical Staff Member from 1997 to 1998
  - Post-doc from 1995 to 1997
- University of California at Los Angeles, Department of Mechanical, Aerospace and Nuclear Engineering
  - Teaching/Research Assistant from 1990 to 1994
- Chinese Academy of Sciences, Institute of Atomic Energy at Beijing
  - Assistant Physicist from 1988 to 1990
  - Practice Physicist from 1987 to 1988

### ***Visiting or Advising Appointments:***

- *Visiting Professor in summer 2010 at Hong Kong Polytechnic University, China*

- *Guest Scientist from 2006 to 2007 at Oak Ridge National Laboratory, Tennessee*
- *Professor Invited in summers 2003 and 2004 at University of Metz, France*
- *Guest Scientist from 2002 to 2007 at Lawrence Livermore National Laboratory, California*
- *Advisory Committee Member 2001 to 2006 at Chinese Academy of Sciences Institute of Physics at Beijing, China*
- *Advisory Professor from 2000 to 2002 at Harbin Institute of Technology, School of Materials Science and Engineering, China*
- *Visiting Post-doc in Fall 1995 at Bell Laboratories Silicon Processing Department, NJ*

## **D. Educational Background**

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

## **E. Research Grants**

### **E.1 Grants at 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.

\$110K from Raytheon: Nian Sun and Hanchen Huang (50%), “Thermal Management”, 07/2016-06/2018.

\$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.

\$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.

### **E.2 Grants at 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.

### **E.3 Grants at 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): Hanchen Huang (100%), US Association for Computational Mechanics (\$5K), and Oak Ridge National Laboratory (\$1K); Collaborators: Jacob Fish, Wing Kam Liu of Northwestern University, and KJ Cho of Stanford University, “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.

#### **E.4 Grants at 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 Kong 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.

## F. Research Publications

### F.1 Refereed Journal Papers

*\* Indicates corresponding author*

1. L. W. Ma, Hanchen Huang\*, Z. J. Zhang\*, and X. G. Li, “Simultaneous Thermal Stability and Ultrahigh Sensitivity of Nanorods-based Surface-enhanced Raman Scattering Substrates”, **Nano Research** (November 2018) submitted.
2. F. Du and Hanchen Huang\*, “A Theory of Growing Crystalline Nanorods – Mode I”, **Surface Science** 674, 18-24 (2018).
3. F. Du and Hanchen Huang\*, “A Generalized Theory of Thin Film Growth”, **Surface Science** 669, 154-159 (2018).
4. 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).
5. 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).
6. L. W. Ma, Z. J. Zhang, and Hanchen Huang\*, “Design of Ag Nanorods for Sensitivity and Thermal Stability of Surface-enhanced Raman Scattering”, **Nanotechnology** 28, 405602 (2017).
7. F. Du, P. R. Elliott, and Hanchen Huang\*, “Generalized Theory of Smallest Diameter of Nanorods”, **Physical Review Materials** 1, 33401 (2017).
8. H. J. Chu, Hanchen Huang, and J. Wang, “Clustering on Magnesium Surfaces – Formation and Diffusion Energies”, **Scientific Reports** 7, 5167 (2017).
9. Z. Y. Li and Hanchen Huang\*, “Synergy to Discovery and Innovation – Growth of Nanorods”, **Theoretical and Applied Mechanics Letters** 6, 249-252 (2016).
10. F. Du and Hanchen Huang\*, “Closed-form Theory of Nuclei Separation on Highly Anisotropic Surfaces”, **Applied Surface Science** 390, 107-110 (2016).
11. Q. Peng, W. Ji, J. Lian, F. Gao, S. M. Peng, Hanchen Huang, and S. De, “A First-principles Study of the Avalanche Pressure of Alpha Zirconium”, **RSC Advances** 6, 72551-72558 (2016).

12. S. P. Stagon, A. Knapp, P. R. Elliott, and Hanchen Huang\*, “Metallic Glue for Ambient Environments Making Strides”, **Advanced Materials & Processes** *174*, 22-25 (2016).
13. P. R. Elliott, S. P. Stagon, and Hanchen Huang\*, “Control of Separation and Diameter of Ag Nanorods through Self-organized Seeds”, **Scientific Reports** *5*, 16826 (2015).
14. X. Yin, J. Shi, X. B. Niu, Hanchen Huang, and X. D. Wang, “Observation of Wedding Cake Growth Mechanism in One-Dimensional and Two-Dimensional Nanostructure Evolution”, **Nano Letters** *15*, 7766 (2015).
15. P. M. Favi, M. M. Valencia, P. R. Elliott, A. Restrepo, M. Gao, Hanchen Huang, J. J. Pavon and T. J. Webster, “Shape and Surface Chemistry Effects on the Cytotoxicity and Cellular Uptake of Metallic Nanorods and Nanospheres”, **Journal of Biomedical Materials Research Part A** *103*, 3940 (2015).
16. 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).
17. L. Bachenheimer, P. R. Elliott, S. P. Stagon, and Hanchen Huang\*, “Enhanced Thermal Stability of Ag Nanorods through Capping”, **Applied Physics Letters** *105*, 213104 (2014).
18. S. P. Stagon and Hanchen Huang\*, “Controllable Growth of Aluminum Nanorods using Physical Vapor Deposition”, **Nanoscale Research Letters** *9*, 400 (2014).
19. Q. Peng, W. Ji, J. Lian, X. J. Chen, Hanchen Huang, Fei Gao, and Suvranu De, “Pressure Effect on Stabilities of Self-interstitials in HCP Structures”, **Scientific Reports** *4*, 5735 (2014).
20. Xiangcheng Sun, Stephen Stagon, Hanchen Huang, Jun Chen and Yu Lei, “Functionalized Aligned Silver Nanorod Arrays for Glucose Sensing through Surface Enhanced Raman Scattering”, **RSC Advances** *4*, 23382-23388 (2014).
21. Guangming Cheng, Tzu-Hsuan Chang, Qingquan Qin, Hanchen Huang and Yong Zhu, “Mechanical Properties of Silicon Carbide Nanowires: Effect of Size-dependent Defect Density”, **Nano Letters** *14*, 754-758 (2014).
22. S. P. Stagon and Hanchen Huang\*, “Airtight Metallic Sealing at Room Temperature under Small Mechanical Pressure”, **Scientific Reports** *3*, 3066 (2013).
23. X. B. Niu, S. P. Stagon, Hanchen Huang\*, J. K. Baldwin, and A. Misra, “Smallest Metallic Nanorods Using Physical Vapor Deposition”, **Physical Review Letters** *110*, 136102 (2013); this paper has been chosen as “Editors’ Suggestion.
24. Q. Peng, W. Ji, Hanchen Huang, and S. De, “Axial Ratio Dependence of the Stability of Self-Interstitials in HCP Structures”, **Journal of Nuclear Materials** *437*, 293-296 (2013).
25. S. P. Stagon and Hanchen Huang\*, “Synthesis and Applications of Small Metallic Nanorods from Solution and Physical Vapor Deposition”, **Nanotechnology Reviews** *2*, 259-267 (2013).
26. L. G. Zhou and Hanchen Huang\*, “Response Embedded Atom Method of Interatomic Potentials”, **Physical Review B** *87*, 45431 (2013).
27. Badri Narayanan, Ivar E. Reimanis, Hanchen Huang, and Cristian V. Ciobanu, “Radiation Effects and Tolerance Mechanism in  $\alpha$ -Eucriptite”, **Journal of Applied Physics** *113*, 33504 (2013).
28. L. G. Zhou and Hanchen Huang\*, “Controversy over Elastic Constants Based on Interatomic Potentials”, **Journal of Engineering Materials and Technology – ASME Transaction** *135*, 11010 (2013).

29. Y. F. Zhang, L. G. Zhou, and Hanchen Huang\*, “Size Dependence of Twin Formation Energy of Metallic Nanowires”, **International Journal of Smart and Nano Materials** *4*, 112-118 (2013).
30. Y. F. Zhang and Hanchen Huang\*, “Design of Twin Structures in SiC Nanowires”, **Journal of Computational and Theoretical Nanoscience** *9*, 1975-1979 (2012).
31. Hanchen Huang, “A Framework of Growing Crystalline Nanorods”, **JOM** *64*, 1253-1257 (2012).
32. Q. Peng, W. Ji, Hanchen Huang, and S. De, “Stability of Self-interstitial Atoms in HCP-Zr”, **Journal of Nuclear Materials** *429*, 233-236 (2012).
33. X. B. Niu and Hanchen Huang\*, “Diffusion Boundary Condition at Surface Steps”, **Journal of Crystal Growth rapid communication** *353*, 174-176 (2012).
34. F. Lin, L. G. Zhou, and Hanchen Huang\*, “Melting Mechanisms of Coated Nanoparticles”, **Advanced Science Letters** *11*, 9-13 (2012).
35. L. G. Zhou and Hanchen Huang\*, “Critical Separation of Nuclei During Physical Vapor Deposition”, **Applied Physics Letters** *100*, 141605 (2012).
36. S. P. Stagon, Hanchen Huang\*, J. K. Baldwin, and Amit Misra, “Anomaly of Film Porosity Dependence on Deposition Rate”, **Applied Physics Letters** *100*, 61601 (2012).
37. Y. F. Zhang, Hanchen Huang\*, Paul C. Millett, Michael Tonks, Dieter Wolf, and Simon R. Phillpot, “Atomistic Study of Grain Boundary Sink Strength Under Prolonged Electron Irradiation”, **Journal of Nuclear Materials** *422*, 69-76 (2012).
38. J. F. Jin and Hanchen Huang\*, “Interaction of Edge Dislocation with Stacking Fault Tetrahedron in Cu”, **Journal of Engineering Materials and Technology** *134*, 11007-1-6 (2012).
39. S. H. Lee and Hanchen Huang\*, “From Covalent Bonding to Coalescence of Metallic Nanorods”, **Nanoscale Research Letters** *6*, 559-564 (2011).
40. Hanchen Huang, “Twin Boundaries in Nanowires – Controllable Introduction”, **JOM** *63*, 58-61 (2011).
41. R. X. Zhang and Hanchen Huang\*, “Another Kinetic Mechanism of Stabilizing Multiple-layer Surface Steps”, **Applied Physics Letters** *98*, 221903 (2011).
42. Y. F. Zhang and Hanchen Huang\*, "Controllable Introduction of Twin Boundaries into Nanowires", **Journal of Applied Physics** *108*, 103507 (2010).
43. Y. Yang, Hanchen Huang\*, and S. J. Zinkle, "Anomaly in Dependence of Radiation-induced Vacancy Accumulation on Grain Size", **Journal of Nuclear Materials** *405*, 261-265 (2010).
44. Y. Yang, Hanchen Huang\*, S. K. Xiang, and Eric Chason, "Another Mechanism of Stress Control in Thin Films: Use of Surfactants", **Applied Physics Letters** *96*, 211903 (2010).
45. S. K. Xiang and Hanchen Huang\*, "Binding of In and Pb Surfactants on Cu{111} Surfaces", **Surface Science** *604*, 868-871 (2010).
46. Y. F. Zhang and Hanchen Huang\*, "Twin Cu Nanowires Using Energetic Beams", **Applied Physics Letters** *95*, 111914 (2009).
47. C. G. Johansen, Hanchen Huang\*, and T. M. Lu, “Diffusion and Formation Energies of Adatoms and Vacancies on Magnesium Surfaces”, **Computational Materials Science** *47*, 121-127 (2009).
48. D. Aidhy, P. C. Millett, S. R. Phillpot, D. Wolf, and Hanchen Huang, “Kinetically-driven Point-defect Clustering in Irradiated MgO by Molecular-dynamics Simulation”, **Scripta Materialia** *60*, 691-694 (2009).



49. Hanchen Huang\* and Helena van Swygenhoven, “Atomistic Simulations of Mechanics of Nanostructures”, **MRS Bulletin** 34, 160-163 (2009).
50. Harold S. Park, Wei Cai, Horacio D. Espinosa, and Hanchen Huang, “Mechanics of Crystalline Nanowires”, **MRS Bulletin** 34, 178-183 (2009).
51. H. W. Shim, J. D. Koppers, and Hanchen Huang\*, “Strong Friction of Silicon Carbide Nanowire Films”, **Nanotechnology** 20, 25704-1-4 (2009); highlighted in news report <http://nanotechweb.org/cws/article/lab/37263>.
52. Y. F. Zhang and Hanchen Huang\*, “Do Twin Boundaries Always Strengthen Metallic Nanowires”, **Nanoscale Research Letters** 4, 34-38 (2009); “**Hand-Picked Key Papers**” at the Springer publisher’s website (<http://www.springer.com/physics?SGWID=0-10100-2-638009-0>).
53. Y. F. Zhang, Hanchen Huang\*, and S. N. Atluri, “Strength Asymmetry of Twinned Copper Nanowires under Tension and Compression”, **Computer Modeling in Engineering and Science** 35, 215-226 (2008).
54. L. G. Zhou and Hanchen Huang\*, “A Characteristic Length Scale of Nanorods Diameter during Growth”, **Physical Review Letters** 101, 266102-1-4 (2008); featured in DoE Office of Science weekly report with the title “Surface Science Breakthrough: Reason for Nanorod Growth Discovered”.
55. H. W. Shim, Y. F. Zhang, and Hanchen Huang\*, “Twin Formation During SiC Nanowire Synthesis”, **Journal of Applied Physics** 104, 63511-1-5 (2008).
56. Y. F. Zhang, H. W. Shim, and Hanchen Huang\*, “Size Dependence of Twin Formation Energy in Cubic SiC at the Nanoscale”, **Applied Physics Letters** 92, 261908-1-3 (2008).
57. F. Sansoz, Hanchen Huang, and D. H. Warner, “An Atomistic Perspective on Twinning Phenomena in Nano-enhanced FCC Metals”, an invited paper, **JOM** 60, 79-84 (2008).
58. H. W. Shim, J. G. Koppers, and Hanchen Huang\*, “High-temperature Stability of Silicon Carbide Nanowires”, **Journal of Nanoscience and Nanotechnology** 8, 3999-4002 (2008).
59. Y. F. Zhang and Hanchen Huang\*, “Stability of Single-wall Silicon Carbide Nanotubes”, **Computational Materials Science** 43, 664-669 (2008).
60. S. K. Xiang and Hanchen Huang\*, “Ab initio Determination of Three-dimensional Ehrlich-Schwoebel Barriers on Cu{111}”, **Applied Physics Letters** 92, 101923-1-3 (2008).
61. Hanchen Huang, “Predictive Modelling of Nanorods Synthesis”, **Journal of Physics: Conference Series** 107, 12006-1-4 (2008).
62. S. K. Xiang, Hanchen Huang\*, and L. M. Hsiung, “Quantum Mechanical Calculations of Uranium Phases and Niobium Defects in  $\gamma$ -uranium”, **Journal of Nuclear Materials** 375, 113-119 (2008).
63. C. G. Johansen, Hanchen Huang\*, and T. M. Lu, “Effects of Three-dimensional Ehrlich-Schwoebel Barrier on Texture Selection during Cu Nanorod Growth”, **Applied Physics Letters** 91, 121914-1-3 (2007).
64. H. W. Shim and Hanchen Huang\*, “Nanowebs and Nanocables of Silicon Carbide”, **Nanotechnology** 18, 335607-1-5 (2007).
65. B. H. Aguilar, J. C. Flores, A. M. Coronado, and Hanchen Huang, “Atom Diffusion of Small Cu Clusters across Facet-facet Barriers over Cu{111} Surfaces”, **Modelling and Simulation in Materials Science and Engineering** 15, 419-426 (2007).
66. J. Wang, T. Golfinopoulos, R. N. Gee, and Hanchen Huang\*, “Diffusion on (110) Surface of Molecular Crystal PETN”, **Applied Physics Letters** 90, 101906-1-3 (2007).

67. H. W. Shim and Hanchen Huang\*, “Three-stage Transition during SiC Nanowires Growth”, **Applied Physics Letters** *90*, 83106-1-3 (2007).
68. H. L. Wei, Hanchen Huang, C. H. Woo, and X. X. Zhang, “From Uniform Cu Thin Films to  $\langle 110 \rangle$  and  $\langle 111 \rangle$  Columns”, **Vacuum** *81*, 583-589 (2007).
69. J. C. Flores, B. H. Aguilar, A. M. Coronado, Hanchen Huang, "Double Rotation Mechanism in Small Cu Clusters Concerted Diffusion over Cu{111} Surfaces", **Surface Science** *601*, 931-935 (2007).
70. L. X. Zhang and Hanchen Huang\*, “Structural Transformation of ZnO Nanostructures”, **Applied Physics Letters** *90*, 23115-1-3 (2007).
71. H. L. Wei, L. Zhang, Z. L. Liu, Hanchen Huang\*, and X. X. Zhang, “Spontaneous Growth of Indium Nanostructures”, **Journal of Crystal Growth** *297*, 300-305 (2006).
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## F.6 Edited Books and Journal Issues

196. *Defects in Materials* as a special issue of **Philosophical Magazine** (2010) in honor of Professor Nasr Ghoniem at the occasion of his 60<sup>th</sup> birthday; co-edited by Shahram Sharافت, Ladislav Kubin, Anter El-azab, Steven Zinkle, and Hanchen Huang.
197. *Atomistic Simulations of Mechanics of Nanostructures* as the March 2009 issue of **MRS Bulletin** (2009); co-edited (by Hanchen Huang) with Helena van Swygenhoven of PSI.

198. **Nano- and Microscale Materials – Mechanical Properties and Behavior under Extreme Environments** (MRS 2009); co-edited (Hanchen Huang) with Amit Misra of Los Alamos National Lab, Thomas J. Balk of University Kentucky, Maria Jose Caturla of Universitat d'Alacant, and Chris Eberl of University of Karlsruhe.
199. *Advances in Computational Study of Nanostructures* as a special issue of **Computer Methods in Applied Mechanics and Engineering** (2008); co-edited (by Hanchen Huang) with Harold Park of Vanderbilt University, Eliot Fang of Sandia National Labs, and Jacob Fish of RPI.
200. **Nanocomposites in the Era of Energy and Nanotechnology** (2007), Workshop Report to National Science Foundation and Army Research Office; by Hanchen Huang.
201. **Mechanics of Nanoscale Materials and Devices** (MRS, 2006); co-edited (by Hanchen Huang) with Amit Misra of Los Alamos National Lab, John Sullivan of Sandia National Labs, and Syed Asif of Hystron.
202. **Computational Nanomechanics of Materials: Cross Fertilization of Physics, Chemistry, Materials Science, Mechanics, and Computation** (2004), Workshop Report to National Science Foundation and Army Research Office, and available through [www.stormingmedia.us](http://www.stormingmedia.us) (\$21.95); by Hanchen Huang.
203. **Kinetics-driven Nanopatterning on Surfaces** (MRS, 2004); co-edited (by Hanchen Huang) with Eric Chason of Brown University, George Gilmer of Lawrence Livermore National Lab, and Enge Wang of Chinese Academy of Sciences.
204. *Nano/micro Mechanics of Materials* as a special issue of **Philosophical Magazine** Volumes 31-34 (2003); co-edited (by Hanchen Huang) with Nasr Ghoniem of UCLA and Esteban Busso of Imperial College of UK.
205. *Multiscale Materials Modeling* as a special issue of **Computational Materials Science** Volume 23 (2002); co-edited (by Hanchen Huang) with Z. Xiao Guo of Queen Mary College of UK, Shuichi Iwata of Tokyo University of Japan, Oleg Pankratov of University Erlangen of Germany, and Sidney Yip of MIT.
206. *Multiscale Materials Modeling* as a special issue of **Journal of Computer-aided Materials Design** Volume 6 (1999); co-edited (by Hanchen Huang) with Nasr Ghoniem of UCLA, Howard Heinisch of Pacific Northwest National Lab, Ladislav Kubin of CNRS of France, Sidney Yip of MIT, and Jinnan Yu of Chinese Academy of Sciences.

### **F.7 Refereed Journal Papers Acknowledging H. Huang for Contributions**

207. K. Zhang, X. B. Pitner, R. Yang, W. D. Nix, J. D. Plummer, and J. A. Fan, “Single-crystal Metal Growth on Amorphous Insulating Substrates”, *Proceedings of National Academy of Sciences* (2018) doi: 10.1073/pnas.1717882115; as a reviewer with name published.
208. Q. L. Dai, J. J. Chen, L. Y. Lu, J. K. Tang, and W. Y. Wang, “Pulsed Laser Deposition of CdSe Quantum Dots on Zn<sub>2</sub>SnO<sub>4</sub> Nanowires and Their Photovoltaic Applications”, **Nano Letters** 12, 4187-4193 (2012).
209. L. Zhou, N. Zhou, and G. Song, “Collective Motion of Atoms in Grain Boundary Migration of a BCC Metal”, **Philosophical Magazine** 86, 5885-5895 (2006).
210. X.-Y. Liu, J. E. Reynolds, C. Wells, J. Welch, and T. S. Cale, “First-principles modeling of electronic transport in  $\pi$ -stacked molecular junctions”, **Journal of Applied Physics** 98, 33712-33715 (2005).
211. F. Tang, C. Gaire, D.-X. Ye, T. Karabacak, T.-M. Lu, and G.-C. Wang, “AFM, SEM and in-situ RHEED study of Cu texture evolution on amorphous carbon by oblique angle vapor deposition”, **Physical Review B** 72, 35430-35437 (2005).

212. J. T. Drotar, T.-M. Lu, and G.-C. Wang, “Real-time Observation of Initial Stages of Copper Film Growth on Silicon Oxide Using Reflection High-energy Electron Diffraction”, **Journal of Applied Physics** 96, 7071-7079 (2004).
213. X. Y. Liu, F. Ercolessi, and J. B. Adams, “Aluminium Interatomic Potential from Density Functional Theory Calculations with Improved Stacking Fault Energy”, **Modelling and Simulation in Materials Science and Engineering** 12, 665-670 (2004).
214. 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).
215. D. Walgraef, “Reaction-Diffusion Approach to Nanostructure Formation During Thin-Film Deposition”, **Philosophical Magazine** 83, 3829-3846 (2003).
216. 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).
217. 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).

## G. Plenary, Keynote, and Invited Talks

### G.1 Lectures at Conferences

1. Invited Speaker, 26<sup>th</sup> American Association for Crystal Growth and Epitaxy West, June 10-13, 2018, Lake Tahoe, California; “Characteristic Length Scales of Nanorod Growth”.
2. Invited Speaker, Prager Medalist Symposium, 54<sup>th</sup> Annual Meeting of Society of Engineering Science, July 25-28, 2017 in Boston, Massachusetts; “Aging of Metallic Glue – Or Improving”.
3. Plenary Speaker, 8<sup>th</sup> International Conference on Physical and Numerical Simulation of Materials Processing, October 14-17, 2016 in Seattle, Washington; “Metallic Glue in Ambient”.
4. Invited Speaker, Society of Engineering 53<sup>rd</sup> Annual Technical Meeting, College Park, MD, October 2-5, 2016; “Metallic Glue in Ambient”.
5. Invited Speaker, Massachusetts High Performance Computing Day Workshop, Dartmouth, MA, May 26, 2016; “Computation Enabled Discovery of Smallest Metallic Nanorods & Innovation of Metallic Glue”.
6. 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”.
7. 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”.
8. Keynote Speaker, ASME 2015 International Mechanical Engineering Congress & Exposition, Houston, Texas, November 13-19, 2015; “Metallic Glue in Ambient Environment”.
9. 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”.

10. Invited Speaker, 249<sup>th</sup> ACS Annual Meeting and Exhibition, in Denver, CO, March 22-26, 2015; “Combined Hydrophobicity and Mechanical Durability through Surface Nanoengineering”
11. Invited Speaker, Annual TMS Meeting & Exhibition in Orlando, FL, March 15-19, 2015; “Response Embedded Atom Method Potential”.
12. Keynote Speaker, ASME 2014 International Mechanical Engineering Congress & Exposition, Montreal, Canada, November 14-20, 2014; “Response Embedded Atom Method Potential”.
13. Invited Panelist, ASME 2014 International Mechanical Engineering Congress & Exposition Workshop on Tips for Faculty Job Search, Promotion, & Tenure, Montreal, Canada, November 14-20, 2014.
14. 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”.
15. Invited Speaker, The Atomistic Simulations for Industrial Needs Workshop, Washington DC, August 12-13, 2013; “Respond Embedded Atom Method for Interatomic Potentials”.
16. Keynote Speaker, Society of Engineering Conference 2013, Brown University, July 29-31, 2013; “Making Nanomechanics Simulations Physical: Responsive Embedded Atom Method Potentials”.
17. 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”.
18. 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”.
19. Keynote Speaker, Plasticity 2013, Nassau, Bahamas, January 3-8, 2013; “Response Embedded Atom Method of Interatomic Potentials”.
20. Keynote Speaker, International Conference on Advance Materials Design and Mechanics, Xiamen, China, June 5-7, 2012; “A Model Framework of Nano Crystal Growth”.
21. 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”.
22. Invited Speaker, Materials Genome Initiative Workshop (kicked off at the White House), Washington, DC, May 14-15, 2012; “Growth of Nanowires”.
23. Invited Speaker, Integrated Computational Materials Engineering Workshop, Storrs, CT, May 10-11, 2012; “Atomistic Simulations of Surface Processing”.
24. Invited Speaker/Participant, Workshop on Mechanics of Materials, Oberwolfach, Germany, March 18-24, 2012; “Mechanics of Twinned Nanowires”.
25. 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”.
26. Invited Speaker, The 3rd International Conference on Heterogeneous Material Mechanics, Shanghai, China, May 22-26, 2011; “Twin Boundaries in Nanowires: Knowledge-based Fabrication & Mechanics”.

27. 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".
28. 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".
29. Invited Speaker, International Conference on Mechanical Property of Materials (ICMPM), Hangzhou, China, May 24-28, 2010; "Twin Boundaries in Nanowires: Knowledge-based Fabrication & Mechanics",
30. Invited Speaker, ARO-sponsored Workshop on Atomistic Interfaces 2009 - Ionic Solids, UConn Campus, August 24 - 26, 2009; "Surface Characteristic Length Scale During Growth".
31. 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".
32. 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".
33. Invited Speaker, Surface Kinetics International Workshop, Salt Lake City, Utah, March 20 – 22, 2009; "A Characteristic Surface Length Scale During Growth".
34. Leader of group discussions on Defect Evolution near Interfaces, at the DoE BES Computational Materials Science Network Meeting, Gainesville, Florida, March 11 – 12, 2009.
35. Invited speaker, Benet Labs Materials Forum: Nano-scale Materials and Modeling, Albany, New York, February 19, 2009; "Atomistic Simulations of Surface Processing".
36. Invited speaker, Plasticity 2009, Virgin Islands, January 3-9, 2009; "Do Twins Always Strengthen Nanowires".
37. Invited speaker, Workshop on Radiation Stability of Complex Microstructures, Santa Fe, New Mexico; September 2-4, 2008; "Defect Evolution in Nanograins".
38. 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.
39. Invited speaker, Symposium on Defects in Materials – in honor of Nasr Ghoniem, 4<sup>th</sup> Multiscale Materials Modeling Conference, Tallahassee, Florida; October 27-31, 2008; "A New Characteristic Length Scale on Surfaces".
40. Invited speaker, 2<sup>nd</sup> International Conference on Heterogeneous Material Mechanics, Huangshan, China, June 3-8, 2008; title TBA.
41. Invited panelist, on Bridging Atomistic and Continuum Scales, 2<sup>nd</sup> International Conference on Heterogeneous Material Mechanics, Huangshan, China, June 3-8, 2008.
42. Invited speaker, DoE BES Computational Materials Science Network Meeting, March 18-20, 2008, "Radiation Damage of SiC".
43. Invited speaker, NSF Symposium on Multiscale Dislocation Dynamics, January 19-20, 2008; "Twinned Nanorods: Synthesis and Dislocation Anomaly".
44. 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".

45. 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.
46. Keynote speaker, ICCES 2007, Miami, Florida, January 3-8, 2007; “Fabrication and Mechanics of Nanorods”.
47. Invited speaker, Multiscale Science and Engineering Workshop, Troy, NY, October 31, 2006; “Atomistic Simulations over Multiple Time Scales During Nanostructure Fabrications”.
48. 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”.
49. 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.
50. Invited speaker, Russia-US NSF Workshop on Nanomechanics of Materials, St. Petersburg, Russia, August 2-4, 2006, “Fabrication and Mechanics of Nanowires”.
51. Invited speaker, 2006 American Nanoscience Technology Conference, Las Vegas, May 20-22, 2006, “Fabrication and Mechanics of Nanowires”.
52. Keynote speaker, ICCES, Chennai, India, December 1-6, 2005, “Fabrication and Mechanics of Nanowires”.
53. Invited speaker, DoE BES Computational Materials Science Network Workshop, Argonne National Laboratory, IL, September 29-30, 2005, “Mechanics of Nanowires”.
54. 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”.
55. Invited speaker, China International Conference on Nanoscience and Nanotechnology, Beijing, June 9-11, 2005, “Atomistic Model and Modeling of Nanostructures”.
56. 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”.
57. Invited speaker, 4<sup>th</sup> European Congress on Computational Methods in Applied Sciences and Engineering, Jyvaskyla, Finland, July 24 – 28, 2004, “Surface Nanoelasticity”.
58. Invited speaker, World Congress on Computational Mechanics VI, Beijing, China, September 5 – 10, 2004, “Dynamics of Nanoplates”.
59. Keynote speaker, International Conference on Computational and Experimental Engineering and Science, Madeira, Portugal, July 2004, “ADEPT: Polycrystalline Thin Films Modeling”.
60. Invited speaker, 3<sup>rd</sup> International Conference on Computational Modeling and Simulation of Materials, Sicily, Italy, June 2004, “Kinetics Driven Nanopatterning on Surfaces”.
61. Keynote speaker, International Conference on Computational and Experimental Engineering and Science, Corfu, Greece, July 2003, “Kinetics Limited Surface Patterning at the Nanoscale”.
62. Invited speaker, Symposium on Mechanics and Physics of Microstructures and Nanostructures – Size Effects, EUROMECH, Thessaloniki, Greece, August 2003, “Mechanics Driven Texture Competition”.

63. 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”.
64. Invited speaker, Global Chinese Scientist Meeting on Nano Science and Nano Technology, July 2001, Beijing, “Multiscale Modeling of Nanoscale Thin Films”.
65. Invited speaker, the First International Energy Agency Working Group Meeting, April 2001, San Francisco, “Computer Aided Design of Fusion Reactor Materials”.
66. 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”.
67. 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”.
68. Keynote speaker, the 3<sup>rd</sup> International Conference on Physical and Numerical Simulation of Materials and Hot Working, Beijing, October 1999, “Multiscale Materials Modeling”.
69. Invited series lecturer at the Hiroshima University, October 1999, “Multiscale Materials Modeling of Thin Film Growth”.
70. Invited speaker and Session Chair at the 2<sup>nd</sup> International Symposium on Applied Plasma Science, Osaka, September 1999, “Atomistic Simulation of Texture Competition during Thin Film Growth”.
71. Invited speaker at the Metals, Minerals, and Materials Society Meeting, TX, February 1998, “ADEPT: An Atomistic Simulator for Deposition Processes in Three Dimensions”.
72. Invited speaker at the 1<sup>st</sup> International Symposium on Applied Plasma Science, Los Angeles, CA, September 1997, “ADEPT: An Atomistic Simulator for Deposition Processes in Three Dimensions”.
73. 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”.

## G.2 Distinguished Lectures

74. **Leaders in Engineering Lecture** speaker, Department of Mechanical, Aerospace and Nuclear Engineering, Rensselaer Polytechnic Institute, September 12, 2018; “Metallic Glue: Science, Technology and Commercialization”.
75. **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”.
76. **Distinguished Seminar** speaker, Department of Mechanical and Aerospace Engineering, University of Central Florida, January 23, 2015; “Metallic Glue in Ambient through Nanodesign”.
77. **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”.
78. **Distinguished Lecture Series** speaker, School of Engineering, University of Connecticut, August 5, 2008, “Science Based Nanorods Synthesis”.

### G.3 Regular Seminars

79. Seminar speaker, Department of Mechanical Engineering, University of Texas at San Antonio, November 16, 2018; “Metallic Glue: Science, Technology and Commercialization”
80. Seminar speaker, Rowland Institute at Harvard University, March 9, 2018; “Nanorods: from Synthesis Science to Metallic Glue Technology”.
81. Seminar speaker, Department of Aerospace Engineering and Engineering Mechanics, University of Texas at Austin, February 15, 2018; “Nanorods: from Synthesis Science to Metallic Glue Technology”.
82. 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”.
83. Seminar speaker, Nebraska Center for Materials and Nanoscience in co-sponsorship with Department of Mechanical and Materials Engineering, University of Nebraska, Lincoln, March 15, 2016; “Metallic Glue in Ambient”.
84. Seminar speaker, Department of Mechanical Engineering, Worcester Polytechnic Institute, February 3, 2015; “Metallic Glue in Ambient”.
85. Seminar speaker, Department of Mechanical Engineering, Northwestern University, June 1, 2015; “Metallic Glue in Ambient”.
86. Seminar speaker, Department of Mechanical and Industrial Engineering, University of Miami, October 17, 2014; “Metallic Glue in Ambient through Nanodesign”.
87. Seminar speaker, Institute of Nanotechnologies, George Washington University, February 4, 2014; “Touching the Bottom: the Smallest Metallic Nanorods using PVD”.
88. Seminar speaker, United Technologies Research Center, August 15, 2013; “From Nanoscience to Nanotechnology: Nanorod Syntheses and Applications”.
89. Seminar speaker, Department of Mechanical and Industrial Engineering, Northeastern University, April 12, 2013; “Nanomanufacturing through Science-based Nanofabrication”.
90. Invited lecturer, School of Materials Science and Engineering, Harbin Institute of Technology, June 11 and 22, 2012; “Molecular Dynamics Simulations for Interface Processing” and “Atomistic Simulations of Interface Processing”, respectively.
91. Seminar speaker, United Technologies Research Center, August 16, 2013; “From Nanoscience to Nanotechnology – Nanorod Syntheses & Applications”.
92. Seminar speaker, Department of Mechanical and Aerospace Engineering, University of Central Florida, November 9, 2012; “Computation Enabled Discovery in Nanorod Fabrication”.
93. Seminar speaker, Department of Physics, Tsinghua University, June 14, 2012; “A Framework of Nano Crystal Growth”.
94. Seminar speaker, School of Engineering, Beijing University, June 8, 2012; “A Framework of Nano Crystal Growth”.
95. Seminar Speaker, School of Dynamic Systems, University of Cincinnati, Ohio, April 13, 2012; “A Framework of Nano Crystal Growth”.
96. Seminar Speaker, Princeton Plasma Physics Laboratory, New Jersey, March 13, 2012; “Plasma Facing Materials – Nanowires Development”.
97. Seminar Speaker, Department of Astronomy and Physics, University of Wyoming, October 21, 2011; “Physics Based Growth of Nanorods”.



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

117. Seminar speaker, Department of Civil and Environmental Engineering, Vanderbilt University, February 20, 2007, "Atomistic Simulator and Simulations of Structure Evolution".
118. Seminar speaker, Department of Mechanical & Industrial Engineering, University of Illinois at Urbana Champaign, April 27, 2006, "Fabrication and Mechanics of Nanostructures".
119. Seminar speaker, Department of Civil and Environmental Engineering, University of California at Irvine, March 4, 2005, "Model and Modeling of Nanostructures".
120. Seminar speaker, Department of Civil and Environmental Engineering, University of California at Los Angeles, February 22, 2005, "Model and Modeling of Nanostructures".
121. Seminar speaker, Center for Integrated Nanotechnologies, Sandia National Laboratories, January 19, 2005, "Model and Modeling of Nanostructures".
122. Seminar speaker, Department of Materials, Queen Mary College of University London, July 29, 2004, "Nanomechanics of Sandwich Structures".
123. Seminar speaker, Division of Engineering, Brown University, September 29, 2003, "Thin Film Processing: Kinetics and Mechanics".
124. Seminar speaker, Department of Mechanical Engineering, Northwestern University, September 24, 2003, "Thin Film Processing: Kinetics and Mechanics".
125. Seminar speaker, Structural Mechanics Seminar Series, Georgia Institute of Technology, November 15, 2002, "Computer Aided Design of Thin Film Mechanics".
126. Seminar speaker, Lawrence Livermore National Laboratory, October 11, 2002, "Computer Aided Design of Surface Patterning at the Nanoscale".
127. Seminar speaker, Jiaotong University, Xi'an, China, June 2002, "Computer Aided Materials Engineering".
128. Seminar speaker, School of Materials Science and Engineering, Harbin Institute of Technology, China, March 2001, "Molecular Dynamics Simulations of Interfaces".
129. Seminar speaker, Department of Applied Physics and Materials, City University of Hong Kong, Hong Kong, December 2000, "Computer Aided Materials Engineering".
130. Seminar speaker, Department of Materials, Queen Mary College, University of London, United Kingdom, March 2000, "Atomistic Simulations of Thin Film Deposition".
131. Seminar speaker, Department of Physics, University of Erlangen, Germany, March 2000, "Atomistic Simulations of Thin Film Deposition".
132. Seminar speaker, Department of Mechanical Engineering, Hong Kong University of Science and Technology, October 1999, "Computer Aided Materials Engineering".
133. Seminar speaker, Institute of Atomic Energy, Chinese Academy of Science, China, July 1998, "Atomistic Simulation of Thin Film Deposition".
134. Seminar speaker, Department of Chemical and Materials Engineering, Arizona State University, summer 1997, "Atomistic Simulation of Thin Film Deposition".
135. Seminar speaker, Department of Materials Science and Engineering, Stanford University, February 1997, "Atomistic Simulation of Thin Film Deposition".
136. Seminar speaker, Department of Mechanical, Aerospace and Nuclear Engineering, UCLA, July 1996, "Atomistic Simulation of Thin Film Deposition".

## H. Society Services

### H.1 As Founder or Co-Founder

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, Boston University in 2017, and Columbia University in 2018. It will continue at Rutgers University in 2019.

### H.2 As Evaluator

3. Reviewer of the Camille Dreyfus Teacher-Scholar Awards for \$75K Unrestricted Research Grant (2017); Evaluator of the Tan Kah Kee Science Award, Chinese Academy of Sciences (2009); Chair of the Award Committee of Young Investigator Award in experimental science of the International Conferences of Computational and Experimental Sciences (2007-2009); Committee for the Best Paper Awards, the 6<sup>th</sup> International Symposium on Applied Plasma Science at Nikki, Japan (2007); Adjudicating Panel, the 34<sup>th</sup> Joint (High) School Science Exhibition at Hong Kong, China (2007); Committee of Graduate Student Awards Selection, MRS Spring Meeting at San Francisco, CA (2006).
4. External evaluator/chair of graduate programs at University of Nevada at Reno (Mechanical Engineering 2018); External evaluator of graduate programs at University of Maryland at Baltimore County (Mechanical Engineering, 2018); External evaluator of graduate programs at University of Miami (Mechanical Engineering, 2017); External Academic Advisor at City University of Hong Kong (Mechanical and Biomedical Engineering, 2017-2019); Chair of Review Committee, Laboratory Directed Research and Development funded center at Los Alamos National Laboratory (2013).
5. Evaluator of R&D needs for federal and state agencies (2016): Research Needs for Advanced Nuclear Energy Systems for the US Department of Energy: [https://science.energy.gov/~media/bes/pdf/reports/files/Basic\\_Research\\_Needs\\_for\\_Advanced\\_Nuclear\\_Energy\\_Systems\\_rpt.pdf](https://science.energy.gov/~media/bes/pdf/reports/files/Basic_Research_Needs_for_Advanced_Nuclear_Energy_Systems_rpt.pdf); and 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](http://www.ctcase.org/reports/nuclear/nuclear_power_2011.pdf).
6. 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).
7. 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).

8. Evaluator of PhD Thesis at Nanyang Technological University, Singapore; University College, University London, UK; Harbin Institute of Technology, China; and George Institute of Technology.

### **H.3 As Chair or Member of Technical Committees**

9. Chair, Nomination Committee of the Board of Directors, Society of Engineering Science (2015).
10. 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).
11. Member of NanoEngineering for Energy & Sustainability Steering Committee, American Society of Mechanical Engineers (2011-2016).
12. Member of Emerging Technologies Awareness Committee, American Society of Materials (2011-2019).
13. Member of Nuclear Power Study Committee, Connecticut Academy of Sciences and Engineering (CASE), Connecticut (2010-2011).
14. Member of Meetings Quality Subcommittee, Materials Research Society (2010-2013).
15. Member of Expert Committee of Materials Division, Chinese Mechanical Engineering Society (2001-2009).
16. Member of Membership Committee, Materials Research Society (2009-2013).
17. Panelist, DOE BES Workshop on Basic Research Needs for Advanced Nuclear Energy Systems at Washington, DC (2006).
18. Co-chair of Panel Discussions, US NSF–China NSF Workshop on Multiscale Model-based Mechanics and Materials Engineering at Dalian, China (2004).
19. Chair/Co-Chair, Nanotechnology Committee, US Association for Computational Mechanics (2003-2009).
20. Chinese Representative, International Energy Agency Working Group on Fusion Reactor Materials Modeling (2001-2002).

### **H.4 As Editor or Member of Editorial Boards**

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

23. Guest Editor, MRS Bulletin on “Atomistic Simulations of Mechanics of Nanostructures”; co-edited with Professor Helena van Swygenhoven of PSI (2009).
24. 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).
25. Board of Editors, Computer Modeling in Engineering and Sciences (2003-2007).
26. 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).
27. 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).
28. 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. Ladislav Kubin of CNRS, Professor Sidney Yip of MIT, and Professor Jinnan Yu of Chinese Academy of Sciences (1999).
29. 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 Ladislav Kubin of CNRS (2001).
30. Editorial Board Member, SCIENTIA SINICA Technologica (2017-).
31. Editorial Board Member (2017-), Journal of Nanomedicine (2017-).
32. Editorial Board Member (2013-2017), Scientific Reports (2013-2017).
33. Editorial Board, Advances in Applied Plasma Science (2001-2009).

### **H.5 As Chair or Co-Chair of Conferences/Workshops**

34. Co-Chair, Mechanical Engineering Department Heads Forum on "Fostering Interdisciplinary Research and Challenges Associated with It", American Society of Mechanical Engineers IMECE (2018).
35. Co-Chair, 54<sup>th</sup> Annual Meeting of the Society of Engineering Science at Boston, MA; jointly with the American Society of Mechanical Engineers Applied Mechanics Division Annual Meeting (2017).
36. 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).
37. Vice Chair, International Scientific Committee, 8<sup>th</sup> International Conference on Physical and Numerical Simulation of Materials Processing at Seattle, Washington (2016).
38. Co-Chair, 2<sup>nd</sup> Northeast Mechanical Engineering Department Chairs Summit at Rensselaer Polytechnic Institute (2015).
39. Co-Chair, 1<sup>st</sup> Northeast Mechanical Engineering Department Chairs Summit at Northeastern University (2014).
40. Co-Chair, Integrated Computational Materials Engineering Workshop at University of Connecticut (2012).
41. Track Co-organizer, NanoEngineering for Energy, ASME International Mechanical Engineering Congress and Exposition at Denver, Colorado (2011).

42. Topic Lead Organizer, Mechanics of Nanostructured Materials, ASME International Mechanical Engineering Congress and Exposition at Denver, Colorado (2011).
43. Track Co-organizer, Nanoengineering for Energy, ASME International Mechanical Engineering Congress and Exposition at Vancouver, Canada (2010).
44. Chair, ARO-sponsored workshop on Atomistic Interfaces 2009 - Ionic Solids at University of Connecticut (2009).
45. Co-Chair, Symposium on Defects in Materials – in honor of Nasr Ghoniem, 4<sup>th</sup> Multiscale Materials Modeling Conference at Tallahassee, FL (2008).
46. Co-Chair, Symposium on Mechanics of Nanostructured Materials Under Extreme Conditions, MRS Fall Meeting at Boston, MA (2008).
47. General Chair, NSF/ARO Sponsored Symposium on Mechanics of Composites in the Era of Energy and Nanotechnology at Rensselaer Polytechnic Institute (2007).
48. Co-chair, Symposium on Modeling and Simulation of Nano Materials and Mechanics, US National Congress of Computational Mechanics at San Francisco, CA (2007).
49. Co-chair, Symposium on Recent Advances in Computational Study of Nanostructures, the Seventh World Congress on Computational Mechanics at Los Angeles, CA (2006).
50. Co-chair, Symposium on Nano-Micro Mechanics of Materials, the Seventh World Congress on Computational Mechanics at Los Angeles, CA (2006).
51. Co-chair, Symposium on Mechanics of Nanostructures, International Conference on Computational and Experimental Engineering Sciences at Chennai, India (2005).
52. Co-chair, Thin Film Processing Symposium, the International Conference on Multiscale Materials Modeling at Los Angeles, CA (2004).
53. Co-chair, Interface Processing Symposium, International Conference on Computational and Experimental Engineering Sciences at Madeira, Portugal (2004).
54. Co-chair, NSF/ARO-sponsored USACM Workshop on Computational Nanomechanics of Materials at Chicago, IL (2004).
55. Co-chair, Nanomechanics of Interfaces Symposium, World Congress on Computational Mechanics VI at Beijing, China (2004).
56. Co-chair, Focus Symposium on Nano/Micro Mechanics of Materials, the 1<sup>st</sup> International Conference on Multiscale Materials Modeling at London, UK (2002).
57. Co-chair, Symposium on Mechanics of Nanoscale Materials and Devices, MRS Spring Meeting at San Francisco, CA (2006).
58. Co-chair, Kinetics-Driven Nanopatterning on Surfaces Symposium, MRS Fall Meeting at Boston, MA (2004).
59. Co-chair, Theory and Modeling of Electronic Materials Symposium, International Union of Materials Research Societies-ICEM at Xi'an, China (2002).
60. Co-chair, Multiscale Materials Modeling Symposium, the 6<sup>th</sup> Conference of International Union of Materials Research Societies at Hong Kong, China (2000).
61. Co-chair, Multiscale Materials Modeling Symposium, the 5<sup>th</sup> Conference of International Union of Materials Research Societies at Beijing, China (1999).

## **I. University Services**

### **I.1 At University Level**

1. Chair of University Faculty Senate Financial Affairs Committee, NU (2018-2019).
2. Member of University Faculty Senate Administrator Evaluation Sub-committee for the Dean of Science, NU (2018-2019).

3. University Faculty Senate Appointed Member of Search Committee for the Department Chair of Electrical and Computer Engineering, NU (2016-2017).
4. Chair of Inter-College Faculty Search Committee in Nanotechnology and Materials, NU (2013-2014).
5. Member of Evaluation Committee, Internal Screening for NSF Nanotechnology Undergraduate Education Program, UCONN (2010).
6. Chair, University Faculty Senate Honors and Awards Committee, RPI (2008-2009)
7. Advisory Council Member to the President and that to the Provost, RPI (2008-2009).
8. 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.

### **I.2 At College or School Level**

9. Member of DEI (Diversity, Equity, and Inclusion) at the College of Engineering, NU (2018)
10. Chair, CDM Smith Chair Professor Screening Committee, College of Engineering, NU (2014).
11. Member of Academic Strategic Planning Committee, School of Engineering, UCONN (2013).
12. Chair, School of Engineering Chair Professorship Review Committee - the Leonard Chair Professorship in Computer Science and Engineering, UCONN (2011).
13. Chair of Executive Committee, Center for Clean Energy Engineering, UCONN (2011-2012).
14. Co-Chair, Working Group on Multiscale Computational Science and Engineering, School of Engineering, UCONN (2010-2013).
15. Member of Evaluation Committee (2010), Youtube Video Contest, School of Engineering, UCONN.
16. Chair, School of Engineering Chair Professorship Review Committee - the UTC Chair Professorship in Thermal-fluids Engineering, UCONN (2009).
17. Member, School of Engineering Excellence Award Selection Committee, RPI (2008).
18. Member, Nanotechnology Committee at School of Engineering, RPI (2007).
19. Coordinator, School of Engineering Course: Introduction to Engineering Analysis, RPI (Spring 2006).
20. 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.
21. Member of External Board of Examination, HKPU (1998-2002): In this capacity, I have served as a member of multiple MS/PhD thesis committees in other engineering departments.

### **I.3 At Department Level**

22. Chair of Faculty Search Committee for three new hires in Advanced Manufacturing, Department of Mechanical Engineering, UCONN (2012-2013).
23. Chair of Computing Committee, Department of Mechanical Engineering, UCONN (2010-2013).
24. Chair, Promotion, Tenure and Renewal Committee (2011-2012), and member of the Committee, Department of Mechanical Engineering, UCONN (2010-2013).
25. Judge of Senior Design Demonstration, Department of Mechanical Engineering, UCONN (2010).

26. Representative of Mechanical Engineering Department at the Connecticut Invention Convention, UCONN (2010).
27. Adjunct/participating member of Faculty Search Committee, Department of Mechanical Engineering, UCONN (2009-2010).
28. International Exchange Subcommittee for Academic Curricula, RPI (2007): In this capacity, I am responsible for reciprocal recognition of mechanical engineering and nuclear engineering courses from overseas institutions.
29. Program Director of Mechanical Engineering, RPI (2007-2009): In this capacity, I am responsible for developing plans of the program, including growth directions and corresponding faculty hiring.
30. Faculty Search Committee in nuclear engineering, RPI (2006-2008): for two hires in Nuclear Engineering Program.
31. Chair, Faculty Search Committee for multiple hires in mechanical and aerospace engineering, Department of Mechanical, Aerospace and Nuclear Engineering, RPI (2007-2008).
32. Chair of Department Colloquium Series, RPI (2004-2007): In this capacity, I have initiated the “Van Mow Lecture of Applied Mechanics”, in honor of Van Mow, who is an PRI graduate and a member of three national academies. With the help of Institute Advancement Office and the department chair/head, the endowment has been established by summer 2006.
33. Chair of Departmental Computer Committee, HKPU (1998-2001).
34. Member of Departmental Research Committee, HKPU (1998-2002).
35. Coordinator of Departmental Seminar Affairs, HKPU (1998-2001).