

RESUME

Zhong Lin (Z.L.) Wang

The Hightower Chair in Materials Science and Engineering
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SCI publication report: <http://www.researcherid.com/rid/E-2176-2011>

Google Scholar citation: <http://scholar.google.com/citations?user=HeHFFW8AAAAAJ&hl=en>

Education:

Ph.D. in Physics, Arizona State University, 1987.

B.S. in Applied Physics, Northwest Telecommunication Engineering Institute (now Xidian University),
Xian, China, 1982.

Employment History:

Georgia Institute of Tech., School of Materials Science and Engineering	
The Hightower Chair in Materials Science and Engineering	2010-present
Engineering Distinguished Professor	2006-2010
Regents' Professor	2004-present
Full Professor,	1999-2004
Associate Professor	1995-1999
Georgia Institute of Tech., School of Electrical and Computer Engineering	
Ajunct Professor	2011-present
Georgia Institute of Tech., School of Chemistry and Biochemistry	
Ajunct Professor	2001-present
Director, Center for Nanoscience and Nanotechnology,	2000 - 2005
Director, Center for Nanostructure Characterization,	1998 – present
National Institute of Standards and Technology	1993 – 1995
Oak Ridge National Laboratory and University of Tennessee	1990 – 1993
Research Associate Professor, Metals and Ceramics Div.	
Oak Ridge National Laboratory	1989 – 1990
Research Fellow, U.S. Dept. of Energy, Metals Y Ceramics Div.	
University of Cambridge - England, Cavendish Laboratory	1988 – 1989
Research Fellow	
State University of New York at Stony Brook, Materials Science & Eng.	1987 – 1988

Visiting Lecturer

Selected Honors, organizations and awards:

- 2014 The 1934 Class Distinguished Professor Award, Georgia Tech (the highest honor for a faculty).
- 2014 The James C. McGroddy Prize in New Materials from American Physical Society.
- Dr. Wang elected as a fellow of American Ceramic Society, 2013.
- Edward Orton Memorial Lecture Award, 2012, American Ceramic Society
- MRS Medal, 2011
- Member of the Editorial board, The Proceeding of Royal Society A, Jan. 1, 2012 – Dec. 30, 2014.
- Editor in Chief and Founding Editor, Nano Energy (published by Elsevier), 2012 – present.
- Elected foreign member of Chinese Academy of Science (中国科学院外籍院士), 2009.
- Purdy award, American Ceramic Society, 2009.
- Elected as a fellow of Microscopy Society of America, 2010.
- Elected as a fellow of Materials Research Society, 2009.
- The Sigma Xi Society best paper award, 2009.
- Fiber nanogenerator elected to be the top 10 most poufounding advances in physics by <<Physics World>> in 2008.
- Nanogenerator elected to be the top 10 most poufounding discoveries in science and technology in world in 2006 by the academicians of China
- Nanogenerator elected to be the top 10 most impacting technologies by <<New Scientist>> for the next 10-30 years.
- Panelist for review the materials program of the Lawrence Berkeley National lab., Aug. 2006.
- Panelist, Georgia life science sumit, Oct. 4, 2006.
- NanoTech Briefs, Top50 award, 2005.
- Sigma Xi 2005 sustain research awards, Georgia Tech.
- Georgia Tech faculty outstanding research author award, 2004.
- Fellow, American Physical Society, 2005 - present.
- Fellow, American Association for Advancement of Science (AAAS), 2007 - present.
- Fellow, World Innovation Foundation (www.thewif.org.uk) 2004 - present.
- Elected member of the European Academy of Science (<http://www.easinus.us/>) in 2002.
- S.T. Li Prize for Distinguished Achievement in Science and Technology, 2001.
- Outstanding Research Author Award, Georgia Tech, 2000.
- Burton Medal, Microscopy Soc. of America, 1999.
- Outstanding Oversea Young Scientists award from NSF China, 1998-2001.
- NSF CAREER award, 1998-2002.
- The Sigma Xi Society best paper award (three times), 1998, 2002 and 2004.
- The discovery of nanobalance was selected as the breakthrough advance in nanotechnology by the America Physical Society in 1999.
- Scientific committee/board of governors for the European Academy of Science, 2003.
- Scientific Advisor, Springer, 2003-present.
- Scientific Advisor, Center for Functional Nanomaterials, Brookhaven National Lab., 2004-2006.
- Member of the Editorial Board, Applied Physics Letters, 2007-present.
- Editorial Advisor, Hefei National Lab., China, 2005-2007.
- Associate editor, the European Physical Journal – Applied Physics, Jan 1 2003 – Dec. 31, 2004.
- Member of the Int. Advisory Board, the European Physical Journal – Applied Physics, Jan 1 2005 – Dec. 31, 2006.
- Member of the Advisory Board for Nano Letters, 2004-present.
- Member of the Editorial Board, Nanotechnology, 2006-present.
- Member of the Editorial Board, J. Materials Science, 2004-present.
- Member of the Editorial Board, Science Bulletin, 2003-2005.
- Member of the Scientific Advisory Board for Kluwer Academic Publishers, 2003-present.
- Member of the Advisory Board for Micron, 1997-present.
- Member of the Advisory Board for J. Physical Chemistry, 2004-present.
- Member of the Editorial Board for J. Nanoscience and Nanotechnology, 2001-2004.

- Member of the Editorial Board for Progress in Natural Sciences, 2000-present.
- Member of the Advisory Board for Advanced Functional Materials, 2000-present.
- Member of the Editorial Board for Frontier of Modern Sciences, Chinese High Education Press, 2000-present.
- Member of the Advisory Board for Encyclopedia of Nanotechnology, Academic Press, 2000.
- Scientific Advisory board member for the Nanotechnology Center, Brookhaven National Lab., 2004-2006.
- Editorial Advisory Panel, Nano Today, 2006-present.
- Member of the Editor Board for Sensor Letters, 2003-2005.
- Regents Graduate Academic Scholarship, 1986-1987.
- President of the Sigma Xi Society at Georgia Tech, 2002.
- Vice President of the Sigma Xi Society at Georgia Tech, 2001.
- Member of the America Chemical Society.
- Member of IEEE.
- Member of the ASM Structures Committee 1995-2002.

Selected Publication list

I: Authored Scientific Reference and Text Books:

- [1] "*Elastic and Inelastic Scattering in Electron Diffraction and Imaging*", by **Z.L. Wang**, Plenum Publishing Co. (New York, 1995). [Cited for 147 times]
- [2] "*Reflected Electron Microscopy and Spectroscopy for Surface Analysis*," by **Z.L. Wang**, Cambridge University Press (England, May 1996). [Cited for 56 times]
- [3] "*Functional and Smart Materials - Structural Evolution and Structure Analysis*," by **Z.L. Wang** and Z.C. Kang, Plenum Publishing Co. (New York, 1998). [Cited for 200 times]
- [4] "*Self-assembled Nanostructures*," by J.Z. Zhang, **Z.L. Wang**, J. Liu, S.W. Chen and G.Y. Liu, Kluwer Academic Publisher (New York, 2002). [Cited for 147 times]
- [5] "Nanogenerators for Self-Powered Devices and Systems", by **Z.L. Wang**, published by Georgia Institute of Technology (1st free online book): <http://smartech.gatech.edu/handle/1853/39262>
- [6] 王中林著(秦勇和胡又凡译) 自驱动系统中的纳米发电机, 科学出版社, 中国, 2012。
- [7] 王中林著(张岩和武文倬译) 压电电子学与压电光电子学, 科学出版社, 中国, 2012。
- [8] **Z.L. Wang**, "Piezotronics and Piezo-phototronics", Springer, 2013.

II: Selected Journal publications via peer review (* ^a corresponding author; totally 950+ Journal publications, total citations > 74,000; h-index = 133; average citation of each publication: 84)

- [1] W. Z. Wu, Z. L. Wang*, *et al.* "Piezoelectricity of single-atomic-layer MoS₂ for energy conversion and piezotronics", *Nature*, 2014, DOI: 10.1038/nature13792.
- [2] G. Zhu, J. Chen, T. Zhang, Q. Jing, Z. L. Wang, "Radial-arrayed rotary electrification for high performance triboelectric generator", *Nature Communications*, 2014, 5, online.
- [3] Z.L. Wang, "Triboelectric Nanogenerators as New Energy Technology for Self-Powered Systems and as Active Mechanical and Chemical Sensors", *ACS Nano* 7 (2013) 9533-9557.
- [4] S. Niu, Y. Liu, S. Wang, L. Lin, Y.S. Zhou, Y. Hu, and Z.L. Wang, "Theory of Sliding-Mode Triboelectric Nanogenerators", *Advanced Materials*, 2013, 25, 43, 6184-6193.
- [5] Jun Chen, Guang Zhu, Weiqing Yang, Qingshen Jing, Peng Bai, Ya Yang, Te-Chien Hou, and Zhong Lin Wang, "Harmonic-Resonator-Based Triboelectric Nanogenerator as a Sustainable Power Source and a Self-Powered Active Vibration Sensor", *Advanced Materials*, 2013, 25, 24, 6094-6099.
- [6] Fengru Fan, Zhong-Qun Tian and Z.L. Wang*, "Flexible triboelectric generator", *Nano Energy*, 1 (2012) 328-334. Cited for 93 times. 1st paper on triboelectric nanogenerators.
- [7] Sheng Xu[#], Yong Qin[#], Chen Xu[#], Yaguang Wei, Rusen Yang, Zhong Lin Wang*, "Self-powered Nanowire Devices", *Nature Nanotechnology*, 5 (2010) 366-373. Cited for 483 times.
- [8] J.F. Li, Y.F. Huang, Y. Ding, Z.L. Yang, X.S. Zhou, F.R. Fan, W. Zhang, Z.Y. Zhou, D.Y. Wu, B. Ren, Z.L. Wang*, Z.Q. Tian*, "Shell-Isolated Nanoparticle-Enhanced Raman Spectroscopy", *Nature*, 464 (2010) 392-395 (news and view highlights, *Nature*, 464 (2010) 357). Cited for 640 times.

- [9] Z.L. Wang, "ZnO Nanowire and Nanobelt Platform for Nanotechnology" (Review), *Materials Science and Engineering Report*, 64 (issue 3-4) (2009) 33-71. Cited for 501 times.
- [10] R. Yang, Y. Qin, L. Dai and Z.L. Wang*, "Flexible charge-pump for power generation using laterally packaged piezoelectric-wires", *Nature Nanotechnology*, 4 (2009) 34-39. Cited for 293 times.
- [11] Z.L. Wang, "Towards self-powered nanosystems: from nanogenerators to nanopiezotronics" (feature article), *Advanced Functional Materials*, 18 (2008) 3553-3567. Cited for 277 times.
- [12] L. Qu, L. Dai*, M. Stone, Z. Xia, Z.L. Wang* "Carbon nanotube arrays with super-strong shear binding-on and easy normal lifting-off", *Science*, 322 (2008) 238-242. Cited for 375 times.
- [13] Fang Qian, Yat Li, Silvija Gradečak, Hong-Gyu Park, Yajie Dong, Yong Ding, Zhong Lin Wang* and Charles M. Lieber* "Multi-quantum well nanowire heterostructures for multi-colour lasers", *Nature Materials*, 7 (2008) 701-706. Cited for 282 times.
- [14] Yong Qin, Xudong Wang and Zhong Lin Wang*, "Microfiber-Nanowire Hybrid Structure for Energy Scavenging", *Nature*, 451 (2008) 809-813. Cited for 708 times.
- [15] N. Tian, Z.Y. Zhou, S.G. Sun*, Y. Ding, and Z.L. Wang* "Tetrahexahedral Pt Nanocrystals with High Index Faces and High Electro-Oxidation Activity", *Science*, 316 (2007) 732-735. Cited for 1399 times.
- [16] Xudong Wang, Jinhui Song, Jin Liu and Zhong Lin Wang* "Direct Current Nanogenerator Driven by Ultrasonic Wave", *Science*, 316 (2007) 102-105. Cited for 1139 times.
- [17] Charles M. Lieber and Zhong Lin Wang, "Functional Nanowires", *MRS Bulletin*, 32 (2007) 99-104. Cited for 706 times.
- [18] X. Wang, J. Zhou, J. S.J. Liu, N. Xu and Z.L. Wang*, "Piezoelectric-Field Effect Transistor and Nano-Force-Sensor Based on a Single ZnO Nanowire", *Nano Letters*, 6 (2006) 2768-2772. Cited for 422 times.
- [19] Jun Zhou, Ningsheng Xu and Zhong Lin Wang*, "Dissolving behavior and stability of ZnO wires in biofluids – a study on biodegradability and biocompatibility of ZnO nanostructures", *Adv. Mater*, 18 (2006) 2432-2435. Cited for 260 times.
- [20] Jingyun Huang, Xudong Wang, Zhong Lin Wang*, "Controlled replication of butterfly wings for achieving tunable photonic properties", *Nano Letters*, 6 (2006) 2325 - 2331. Cited for 256 times.
- [21] Zhong Lin Wang* and Jinhui Song, "Piezoelectric Nanogenerators Based on Zinc Oxide Nanowire Arrays", *Science*, 312 (2006) 242-246. Cited for 2680 times.
- [22] Chang Shi Lao, Jin Liu, Puxian Gao, Liyuan Zhang, Dragomir Davidovic, Rao Tummala, and Zhong L. Wang*, "ZnO nanobelt/nanowire Schottky diodes formed by dielectrophoresis alignment across Au electrodes", *Nano Letters*, 6 (2006) 263 – 266. Cited for 287 times.
- [23] J. Zhou, Y. Ding, S.Z. Deng, L. Gong, N.S. Xu* and Z.L. Wang*, "Three-dimensional tungsten oxide nanowire networks", *Advanced Materials*, 17 (2005) 2107-2110. Cited for 256 times.
- [24] P.X. Gao, Y. Ding, W. Mai, W.L. Hughes, C. Lao and Z.L. Wang*, "Conversion of Zinc Oxide Nanobelt into Superlattice-Structured Nanohelices", *Science*, 309 (2005) 1700-1704. Cited for 691 times.
- [25] F. Li*, Y. Ding, P. Gao, X. Xin and Z.L. Wang*, "Single-Crystal Hexagonal Nanodisks and Nanoings of ZnO: Low Temperature and Large-Scale Synthesis and Growth Mechanism", *Angew. Chem. Int. Ed.*, 116 (2004) 5350 –5354 (featured as hot paper by the journal). Cited for 407 times.
- [26] X. Wang, C. J. Summers and Z.L. Wang*, "Large-Scale Hexagonal-Patterned Growth of Aligned ZnO Nanorods for Nano-Optoelectronics and Nanosensor Arrays", *Nano Letters*, 3 (2004) 423-426. Cited for 1163 times.
- [27] X.Y. Kong, Y. Ding, R.S. Yang, Z.L. Wang*, "Single-crystal nanorings formed by epitaxial self-coiling of polar-nanobelts ", *Science*, 303 (2004) 1348-1351. Cited for 1241 times.
- [28] Z.L. Wang, "Zinc Oxide Nanostructures: Growth, Properties and Applications", *Journal of Physics: Condensed Matter*, 16 (2004) R829 - R858. Cited for 1936 times.
- [29] Z.L. Wang, "Zinc oxide nanostructures", *Materials Today*, 7 (June 2004) 26-33. Cited for 851 times.
- [30] Zhong Lin Wang*, Xiang Yang Kong, Yong Ding, Puxian Gao, Williams Hughes, Rusen Yang, and Yue Zhang "Semiconducting and Piezoelectric Oxide Nanostructures Induced by Polar Surfaces", *Adv. Functional Mater.*, 14 (2004) 944-956. Cited for 445 times.
- [31] X.Y. Kong and Z.L. Wang*, "Polar-surface dominated ZnO nanobelts and the electrostatic energy induced nanohelices/nanosprings", *Appl. Phys. Letts.*, 84 (2004) 975-977 + Cover. Cited for 266 times.
- [32] P.X. Gao, Y. Ding and Z.L. Wang* "Crystallographic-Orientation Aligned ZnO Nanorods Grown by Tin Catalyts", *Nano Letters*, 3 (2003) 1315-1320. Cited for 386 times.

- [33] Z.L. Wang, "Functional Oxides Nanobelts – Materials, properties and potential applications in Nanosystems and Biotechnology", *Annual Reviews of Physical Chemistry*, 55 (2003) 159-196. Cited for 370 times.
- [34] Z.R. Dai, Z.W. Pan and Z.L. Wang*, "Novel Nanostructures of Functional Oxides Synthesized by Thermal Evaporation" (feature article), *Adv. Functional Materials*, 13 (2003) 9-24. Cited for 881 times.
- [35] Z.L. Wang*, X.Y. Kong and J.M. Zuo, "Induced growth of asymmetric nanocantilever arrays on polar surfaces", *Phys. Rev. Letts.*, 91 (2003) 185502 + Cover. Cited for 657 times.
- [36] P.X. Gao and Z.L. Wang*, "Mesoporous Polyhedral Cages and Shells formed by Textured Self-assembly of ZnO Nanocrystals", *J. Am. Chem. Soc.*, 125 (2003) 11299-11305. Cited for 327 times.
- [37] X.Y. Kong and Z.L. Wang*, "Spontaneous polarization and helical nanosprings of piezoelectric nanobelts", *Nano Letters*, 3 (2003) 1625-1631 + Cover [One of the most cited paper in materials science in 2004 (ISI)]. Cited for 933 times.
- [38] Christopher Ma, Daniel Moore, Jing Li and Zhong L. Wang*, "Nanobelts, Nanocombs and Nanowindmills of Wurtzite ZnS", *Adv. Mater.*, 15 (2003) 228-231. Cited for 378 times.
- [39] Z.L. Wang, "Nanobelts, Nanowires and Nanodiskettes of Semiconducting Oxides – from materials to nanodevices", *Adv. Mater.*, 15 (2003) 432-436. Cited for 461 times.
- [40] M. Arnold, P. Avouris, Z.W. Pan and Z.L. Wang, "Field-Effect Transistors Based on Single Semiconducting Oxides Nanobelts", *J. Phys. Chem. B*, 107 (2003) 659-663. Cited for 936 times.
- [41] X. Wang, J. Li, P. Gao, C.J. Summers and Z.L. Wang*, "Rectangular porous ZnO-ZnS nanocables and ZnS nanotubes", *Adv. Mater.*, 14 (2002) 1732-1735. Cited for 270 times.
- [42] Puxian Gao and Z.L. Wang*, "Self-assembled Nanowire-Nanoribbon Junction Arrays of ZnO", *J. Phys. Chem. B*, 106 (2002) 12653-12658 + Cover. Cited for 342 times.
- [43] Hao Zeng, Jing Li, J.-P. Liu, Zhong L. Wang, Shouheng Sun, "Exchange-coupled nanocomposites magnets by nanoparticle self-assembly", *Nature*, 420 (2002) 395-398. Cited for 987 times.
- [44] E. Comini, G. Faglia, G. Sberveglieri, Z. Pan, Z.L. Wang, "Stable and highly sensitive gas sensors based on semiconducting oxide nanobelts", *Applied Physics Letters*, 81 (2002) 1869-1871. Cited for 1157 times.
- [45] Z.W. Pan, Z.R. Dai, C. Ma and Z.L. Wang*, "Molten Gallium as A Catalyst for the Large-Scale Growth of Highly Aligned Silica Nanowires", *J. Am. Chem. Soc.*, 124 (8): (2002) 1817-1822. Cited for 370 times.
- [46] Z.R. Dai, J. L. Gole, and J. D. Stout, Z. L. Wang*, "Tin Oxide Nanowires, Nanoribbons, and Nanotubes", *J. Phys. Chem. B*, 106 (2001) 1274-1279 [The paper was selected as the Editors' Choice by Science Vol 295 (2002) 767]. Cited for 503 times.
- [47] Z.R. Dai, Z.W. Pan and Z.L. Wang*, "Gallium Oxide Nanoribbons and Nanosheets", *J. Phys. Chem. B*, 106 (2002) 902-904. Cited for 257 times.
- [48] Z.W. Pan, Z.R. Dai and Z.L. Wang*, "Nanobelts of semiconducting oxides", *Science*, 291 (2001) 1947-1949 [The most cited paper in materials from 1998-2008]. Cited for 5477 times.
- [49] Y. Li, J. Liu, Y.Q. Wang and Z.L. Wang, "Preparation of monodispersed Fe-Mo nanoparticles as the catalyst for CVD synthesis of carbon nanotubes", *Chem. Mater.* 13 (2001) 1008-1014. Cited for 335 times.
- [50] Z. L. Wang, "Characterizing the Structure and Properties of Individual Wire-like Nanoentities", *Adv. Mater.*, 12 (2000) 1295-1298. Cited for 336 times.
- [51] Mei Gao, Shaoming Huang, Liming Dai, Gordon Wallace, Ruiping Gao, Zhong L. Wang, "Aligned Coaxial Nanowires of Carbon Nanotubes Sheathed with Conducting Polymers", *Angewandte Chemie*, 39 (2000) 3664-3667. Cited for 279 times.
- [52] D. Li, L. Dai, S. Huang, Albert W.H. Mau and Z.L. Wang*, "Structure and Growth of Aligned Carbon Nanotube Films by Pyrolysis," *Chemical Physics Letters*, 316 (2000) 349-355. Cited for 286 times.
- [53] P. Poncharal, Z.L. Wang, D. Ugarte and W.A. De Heer, "Electrostatic Deflections and Electromechanical Resonances of Carbon Nanotubes," *Science*, 283 (1999), p. 1513-1516. Cited for 1783 times.
- [54] S. Frank, P. Poncharal, Z.L. Wang, and W.A. De Heer, "Carbon Nanotube Quantum Resistors," *Science*, 280 (1998), p. 1744-1746. Cited for 2016 times.
- [55] Z.L. Wang, "Structural Analysis of Self-Assembling Nanocrystal Superlattices," *Adv. Mater.*, 10 (1998), p. 13-30. Cited for 450 times.