**BIOGRAPHICAL SUMMARY OF QUAN QING**

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**ACADEMIC TRAINING**

2006-2012 Postdoctoral Research Associate Harvard University

2001-2006 Ph.D. in Physical Chemistry Peking University

1997-2001 B.S. in Chemistry Peking University

**PROFESSIONAL EXPERIENCE**

2013-present Assistant Professor Arizona State University

**ACADEMIC AND PROFESSIONAL AWARDS**

Award for Progress of Science and Technology, Third Prize, Beijing, China (2008), Natural Science Award, First Prize, Ministry of Education, China (2007), Outstanding Graduate Research Award, CCME, Peking University (2006), Samsung Fellowship Award, Peking University (2005), Bao Gang Fellowship Award, Peking University (2001), Guanghua Fellowship Award, Peking University (2000), Chuying Fellowship Award, Peking University (1998), Wusi Fellowship Award, Peking University (1997-1999)

**RESEARCH INTERESTS**

* Novel nanomaterials with unique structures and characteristics for electronics and biological applications, including rational synthesis and assembly of 0-D and 1-D metal/semiconductor materials into complex and ordered structures by integrating top-down and bottom-up processes; studies of the basic chemical and physical properties of such materials/structures with the emphasis on building prototype ultra-sensitive biosensing devices that push to the detection limit of biomolecular interactions.
* Interfacing nanoelectronics with complex biological networks for *in vitro* and *in vivo* applications, including development of ultrasmall and multiplexed probes as new tools for fundamental research of extra- and intracellular processes as well as functional cell circuitries, creating hybrid structures of nanoscale electronics and living cell networks/tissues for bidirectional communication and biomimetic information processing.

**GRANTS & FUNDING**

*Pending*

1R21EB020822-01 Freestanding Nanowire Transistor Probes for Intracellular and Implanted Recording; NIH; Role: PI; $381K requested for 2 years including indirect cost. The share for my lab is 100%.

Searle Scholar Award Implantable nanowire transistor bio-probes for communication with neural networks in vivo; Kinship Foundation; Role: PI; $300K requested for 3 years. No indirect cost allowed. The share for my lab is 100%.

**PUBLICATIONS**

**Summary:** 24 peer-reviewed papers and 2 patents.

Total citations: **1748** by Web of Science (2015/01), **2196** by Google Scholar (2015/01)

H-Index by Web of Science (2015/01): **18**.

Search method: AUTHOR: ((Qing Q OR Qing Quan) NOT Qing QQ NOT Qing QM NOT Qing Qing) AND ADDRESS: (HARVARD UNIVERSITY OR ARIZONA STATE UNIVERSITY OR PEKING UNIVERSITY)

H-Index by Google Scholar (2015/01): **17**.

Search Method: <http://scholar.google.com/citations?user=C2k9lQQAAAAJ>

**Peer-reviewed papers (original work)**

**Symbols**: \* Corresponding author, # Equal contribution

**Authors are listed in published order** representing their contribution to the work from high to low (unless explicitly labeled as equal contribution) with the senior authors listed last. Some journals, for example, *Nature* and its sister journals note explicitly the contribution of authors in a special section at the end of the paper.

**Since employment at ASU**

1. Pang, P., Ashcroft, B.A., Song, W., Zhang, P., Biswas, S., *Qing, Q.*, Yang, J., Nemanich, R.J., Bai, J., Smith, J.T., Reuter, K., Balagurusamy, V.S.K., Astier, Y., Stolovitzky, G., Lindsay, S., Fixed-gap tunnel junction for reading DNA nucleotides, *ACS Nano*, 8, 11994 (2014).
2. Xu, L., Jiang, Z., Mai, L. and *Qing, Q.*\*, Multiplexed free-standing nanowire transistor bioprobe for intracellular recording: A general fabrication strategy, *Nano Lett.*, 14, 3602-3607 (2014).
3. *Qing, Q.*#, Jiang, Z.#, Xu, L., Gao, R., Mai, L., and Lieber, C.M., Free-standing kinked nanowire transistor probes for targeted intracellular recording in three dimensions, *Nature Nanotech.* 9, 142-147 (2014).
4. Xu, L. #, Jiang, Z. #, *Qing, Q.*#, Mai, L., Zhang, Q., and Lieber, C.M., Design and synthesis of diverse functional kinked nanowire structures for nanoelectronic bioprobes, *Nano Lett.* 13, 746-751 (2013).

**Before employment at ASU**

1. Tian, B., Liu, J., Dvir, T., Jin, L., Tsui J.H., *Qing, Q.*, Suo, Z., Langer, R., Kohane, D.S., and Lieber, C.M., Macroporous nanowire nanoelectronic scaffolds for synthetic tissues, *Nature Mater.*, 11, 986-994 (2012).
2. Jiang, Z.#, *Qing, Q.*#, Xie, P., Gao, R.X. and Lieber, C.M., Kinked p-n junction nanowire probes for high spatial resolution sensing and intracellular recording, *Nano Lett.*, 12, 1711-1716 (2012).
3. Cohen-Karni, T., Casanova D., Cahoon J., *Qing Q.*, Bell D. and Lieber, C.M., Synthetically-encoded ultrashort-channel nanowire transistors for fast, point-like cellular signal detection, *Nano Lett*., 12, 2639-2644 (2012).
4. Gao, R., Strehle, S., Tian, B., Cohen-Karni, T., Xie, P., Duan, X., *Qing, Q.* and Lieber, C.M., Outside looking in: Nanotube transistor intracellular sensors, *Nano Lett.*, 12, 3329-3333 (2012).
5. Duan, X.J., Gao, R.X., Xie, P., Cohen-Karni, T., Qing, Q., Choe, H.S., Tian, B.Z., Jiang, X.C., and Lieber, C.M., Building nanotube junctions between live cells and nanoscale transistors, *Nature Nanotechnol.,* 7, 174-179 (2012).
6. Xie, P., Xiong, Q.H., Fang, Y., *Qing Q.*, Lieber, C.M., Nanowire-nanopore transistors for localized detection of DNA translocation, *Nature Nanotechnol.*, 7, 119-125 (2012).
7. *Qing, Q.*, Pal, S.K., Tian, B., Duan, X.J., Timko, B.P., Cohen-Karni, T., Murthy, V.N. and Lieber, C.M., Nanowire transistor arrays for mapping neural circuits in acute brain slices, *Proc. Natl. Acad. Sci. USA*, 107, 1882-1887 (2010).
8. Cohen-Karni, T.#, *Qing, Q.*#, Li, Q., Fang, Y. and Lieber, C.M., Graphene and nanowire transistors for cellular interfaces and electrical recording, *Nano Lett.*, 10, 1098-1102 (2010).
9. Tian, B.Z., Cohen-Karni, T., *Qing, Q.*, Duan, X.J., Xie, P. and Lieber, C.M., Three-dimensional, flexible nanoscale field effect transistors as localized bioprobes, *Science*, 329, 830-834 (2010).
10. *Qing, Q.*, Nezich, D.A., Wu, Z.Y., Kong, J. and Liu, Z.F., Local gate effect of mechanically deformed crossed carbon nanotube junction, *Nano Lett.*, 10, 4715-4720 (2010).
11. Chen, F., *Qing, Q.*, Xia, J.L. and Tao, N.J., Graphene field effect transistors: electrochemical gating, interfacial capacitance and biosensing applications, *Chem. Asian J.*, 5, 2144-2153 (2010).
12. Timko, B.P., Cohen-Karni, T., *Qing, Q.*, Tian, B. and Lieber, C.M., Design and implementation of functional nanoelectronic interfaces with biomolecules, cells and tissue using nanowire device arrays, *IEEE Trans. Nanotech.,* 9, 269-280 (2010).
13. Chen, F., *Qing, Q.*, Xia, J.L., Li, J.H. and Tao, N.J., Electrochemical gate-controlled charge transport in graphene in ionic liquid and aqueous solution, *J. Am. Chem. Soc.*, 131, 9908-9909 (2009).
14. Timko, B.P., Cohen-Karni, T., Yu, G.H., *Qing, Q.*, Tian, B.Z. and Lieber, C.M., Electrical recording from hearts with flexible nanowire device arrays, *Nano Lett.*, 9, 914-918 (2009).
15. Chen, F., *Qing, Q.*, Ren, L., Tong, L.M., Wu, Z.Y. and Liu, Z.F., Formation of nanogaps by nanoscale Cu electrodeposition and dissolution, *Electrochimica Acta*, 52, 4210-4214 (2007).
16. *Qing, Q.*, Chen, F., Li, P.G., Tang, W.H., Wu, Z.Y. and Liu, Z.F., Finely tuning metallic nanogap size with electrodeposition by utilizing high-frequency impedance in feedback, *Angew. Chem. Inter. Ed.*, 44, 7771-7775 (2005).
17. Chen, Z., Yang, Y.L., Chen, F., *Qing, Q.*, Wu, Z.Y. and Liu, Z.F., Controllable interconnection of single-walled carbon nanotubes under ac electric field, *J. Phys. Chem. B*, 109, 11420-11423 (2005).
18. Chen, F., *Qing, Q.*, Ren, L., Wu, Z.Y. and Liu, Z.F., Electrochemical approach for fabricating nanogap electrodes with well controllable separation, *Appl. Phys. Lett.*, 86, 123105 (2005).
19. Zhang, J., Zou, H.L., *Qing, Q.*, Yang, Y.L., Li, Q.W., Liu, Z.F., Guo, X.Y. and Du, Z.L., Effect of chemical oxidation on the structure of single-walled carbon nanotubes, *J. Phys. Chem. B*, 107, 3712-3718 (2003).
20. Zou, H.L., Yang, Y.L., Wu, B., *Qing, Q.*, Li, Q.W., Zhang, J. and Liu, Z.F., Purification and characterization of single-walled carbon nanotubes synthesized by chemical vapor deposition, *Acta Physico-chimica Sinica*, 18, 409-413 (2002).

**Patents**

**Before employment at ASU**

1. Lieber C.M., Tian B.Z., Xie P., Kempa T.J., *Qing Q.*, Cohen-Karni T., Duan X.J., “Single crystalline kinked nanowires superstructures” PCT/US10/50199
2. Chen, F., *Qing, Q.*, Wu, Z.Y., Liu, Z.F., “An electrochemical feedback system for producing nanogap electrodes,” ZL 2004 1 0091452.1

**SELECTED CONFERENCE/SEMINAR/WORKSHOP PRESENTATIONS**

**Since employment at ASU (presentations outside ASU are labeled with “\*”)**

1. \* 2014/10/23, Qing, Q., Multiplexed Free-standing Nanowire Transistor Bioprobes for Intracellular Studies, 2014 BMES Annual Meeting, talk
2. \* 2014/05/13, Qing, Q., Bridging Nanoelectronics and Biology, 3rd Annual NeuroEngineering Workshop, McGill University, **invited talk**
3. 2014/01/13, Qing, Q., Nanoelectronic probes for neural interface, Dublin City University/ASU Workshop, talk
4. 2013/08/12, Qing, Q., Gateable solid-state nanopore embedded in tunneling junction for DNA sequencing, Workshop of Center for Bioelectronics and Biosensors, Biodesign Institute, ASU, **invited talk**
5. \* 2013/04/30, Qing, Q., Bridging Nanoelectronics and Biology, Workshop at Los Alamos National Lab, **invited talk**
6. 2013/04/20, Qing, Q., Nanoelectronics for Biosensing, BioPhest, ASU, talk
7. 2013/01/30, Qing, Q., Bridging Nanoelectronics and Biology, Center for Biological Physics Seminar, ASU, **invited talk**

**Before employment at ASU**

1. 2012/09/17, Qing, Q., Bridging Nanoelectronics and Biology, Workshop on Materials Science and Materials Chemistry for Energy, Peking University, China, **invited talk**
2. 2011/11/28-12/02, Qing, Q., Nelson, E., Jiang, Z., Gao, R., Lieber, C.M., Nanowire transistor three-dimensional probes for intracellular and tissue recording, 2011 MRS Fall Meeting & Exhibit, talk
3. 2010/05/25, Quan, Q., Lieber, C.M., Developing nano-bio interfaces from the bottom-up, Bioelectronics and Biosensors Seminar, Biodesign Institute, ASU, **invited talk**
4. 2009/11/30-12/4, Qing, Q., Pal, S.K., Tian, B., Duan, X., Timko, B.P., Cohen-Karni, T., Murthy, V.N., Lieber, C.M., Nanowire transistor arrays for high spatiotemporal resolution recording in acute brain slides, 2009 MRS Fall Meeting & Exhibit, talk
5. 2009/10/07-10, Qing, Q., Tian, B., Duan, X., Timko, B.P., Cohen-Karni, T., Pal, S.K., Murthy, V.N., Lieber, C.M., Nanoelectronic-biology interfaces: Ultrasensitive detection and study of functional cell networks, BMES 2009 Annual Fall Meeting, **invited talk**
6. 2009/09/24-25, Qing, Q., Pal, S.K., Tian, B., Duan, X., Timko, B.P., Cohen-Karni, T., Murthy, V.N., Lieber, C.M., Nanowire transistor arrays for functional neural network recording, Fifth Annual NIH Director’s Pioneer Award Symposium, Poster
7. 2009/06/14-16, Qing, Q., Tian, B., Timko, B.P., Cohen-Karni, T., Duan, X., Yu, G., Lieber, C.M., Nanoelectronic interfaces with functional bionetworks, Janelia Workshop: Technical Challenges in Extracellular Electrophysiology, **invited talk**
8. 2009/06/07-12, Qing, Q., Pal, S.K., Tian, B., Duan, X., Timko, B.P., Cohen-Karni, T., Murthy, V.N., Lieber, C.M., Nanowire transistor arrays for studying functional neural network, Gordon Research Conference on Neural Circuits & Plasticity, Poster

**TEACHING**

* Causes taught in Arizona State University

2015 Spring General Physics (PHY 111)

2014 Fall General Physics (PHY 111)

2014 Spring General Physics (PHY 111)

2013 Spring General Physics (PHY 111)

* Training on teaching and mentoring

2014/11 2014 International Learning Assistant Workshop

2013/06 New Faculty Workshop organized by the American Association of Physics Teachers

**MENTORING**

**Arizona State University**

*Graduate Students*

Y. Wang (since Spring 2014), J. Sadar (since Fall 2013), X.Jiao (since Fall 2013), Q. Shang (rotation student Fall 2014), R. Jani (Professional Science Master’s in Nanoscience program, Fall 2013)

*Undergraduate Students*

Ryan Schmoll (research student Spring 2015), Christy Contreras (research student Spring 2015), K. Ngo (research student since Fall 2013), M. Sharma (Barrett Honors College honors contract, Fall 2014), A. Echeverri (research student Fall 2013 to Fall 2014), A. Slyder (research student, Fall 2013)

**PROFESSIONAL SERVICES AND MEMBERSHIPS**

**Manuscript and Grant Review**

Reviewer for Nano Lett. (since 2006), Ultramicroscopy (since 2013), J. Biomed. Nanotechnol. (since 2014), Trans. IEEE Nanotechnol. (since 2015)

Reviewer for full proposals to Great Lakes Protection Fund (2013)

**Professional Memberships**

Member, Material Research Society (2007-present)

Member, American Chemical Society (2009-present)

Member, Biological and Medical Engineering Society (2009-present)

**Department Service (since joining ASU)**

Member of the Graduate Examination Committee (Fall 2013-present)

Member of the Dissertation Committee of Yanan Zhao (Spring 2014)

Member of the Supervisory Committee of Weisi Song (since Fall 2014)

Member of the Oral Comprehensive Exam Committee of A. Blake (Fall 2013), J. Gallagher (Fall 2013), M. Kolopanis (Fall 2013), J. Martinez (Fall 2013), S.S. Seyedi (Fall 2013), X. Su (Fall 2013), R. Gonzalez (Spring 2014), J. Homes (Spring 2014), N. Garrett (Spring 2014), R. Chen (Spring 2014), A. Adams (Fall 2014), V.F. Hagh (Fall 2014), N. Mathis (Fall 2014), G. Randall (Fall 2014), P.Y. Wang (Fall 2014), A. Ward (Fall 2014, Spring 2015), J. Zhang (Fall 2014), S. Sadjadi (Fall 2014), R. Strausbaugh (Spring 2015), Y. Cai (Spring 2015)

**CURRENT COLLABORATIONS**

Dr. Stuart Lindsay, Biodesign Institute, Arizona State University

Dr. Nongjian Tao, Biodesign Institute, Arizona State University