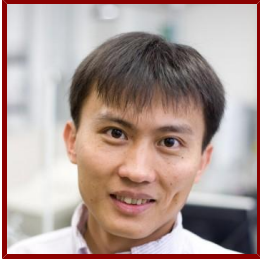


Stanford



Yi Cui

Professor of Materials Science and Engineering, of Photon Science, Senior Fellow at the Precourt Institute for Energy and Prof, by courtesy, of Chemistry

CONTACT INFORMATION

- **Administrator**

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Bio

BIO

Cui studies nanoscale phenomena and their applications broadly defined. Research Interests: Nanocrystal and nanowire synthesis and self-assembly, electron transfer and transport in nanomaterials and at the nanointerface, nanoscale electronic and photonic devices, batteries, solar cells, microbial fuel cells, water filters and chemical and biological sensors.

ACADEMIC APPOINTMENTS

- Professor, Materials Science and Engineering
- Professor, Photon Science Directorate
- Senior Fellow, Precourt Institute for Energy
- Professor (By courtesy), Chemistry
- Member, Bio-X
- Affiliate, Precourt Institute for Energy
- Member, Stanford Neurosciences Institute

HONORS AND AWARDS

- David Filo and Jerry Yang Faculty Scholar, Stanford University (2010-2014)
- Sloan Research Fellowship, Alfred P. Sloan Foundation (2010)
- Investigator Award, KAUST (2008)
- Young Investigator Award, ONR (2008)
- Innovators Award, MDV (2008)
- Terman Fellowship, Stanford University (2008)
- Top 100 Young Innovator Award, Technology Review (2004)
- Miller Research Fellowship, Miller Institute (2003)
- Distinguished Graduate Student Award in Nanotechnology, Foresight Institute (2002)

- Graduate Student Gold Medal Award, Materials Research Society (2001)

PROFESSIONAL EDUCATION

- PhD, Harvard University (2002)

LINKS

- http://www.stanford.edu/group/cui_group/: http://www.stanford.edu/group/cui_group/

Teaching

COURSES

2017-18

- Nanoscale Science, Engineering, and Technology: MATSCI 316 (Spr, Sum)
- Principles, Materials and Devices of Batteries: MATSCI 303 (Aut)

2016-17

- Materials Chemistry: MATSCI 192, MATSCI 202 (Spr)

2015-16

- Materials Chemistry: MATSCI 192, MATSCI 202 (Aut)
- Nanoscale Science, Engineering, and Technology: MATSCI 316 (Spr)

2014-15

- Materials Chemistry: MATSCI 192, MATSCI 202 (Aut)
- Nanoscale Science, Engineering, and Technology: MATSCI 316 (Spr)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Antonio Bacig, William Keown, Allister McGuire, Matthijs Van den Berg

Postdoctoral Faculty Sponsor

Jonathan Bachman, Lili Cai, Guangxu Chen, Hao Chen, Jun Chen, Wenxiao Huang, Yanxi Li, Kaixiang Lin, Bofei Liu, Chong Liu, Kai Liu, Kai Liu, Zhiyi Lu, Feifei Shi, Jing Tang, Jiayu Wan, Hongzia Wang, Jiangyan Wang, Kecheng Wang, Tong Wu, Jin Xie, Ankun Yang, Xiaoyun Yu, Xueli Zheng, Guangmin Zhou, Yangying Zhu

Doctoral Dissertation Advisor (AC)

William Huang, Jun Li, Rafael Vila

Master's Program Advisor

Anthony Onyeador

Postdoctoral Research Mentor

Jonathan Bachman, Hao Chen, Wenxiao Huang, Yanxi Li, Kai Liu

Publications

PUBLICATIONS

- **Two-dimensional chalcogenide nanoplates as tunable metamaterials via chemical intercalation** *Nano Letters*
Cha, J., J., Koski, K., J., Huang, K., C. Y., Wang, K., X., Luo, W., Kong, D., Cui, Y.

- **Sulfur-Modulated Tin Sites Enable Highly Selective Electrochemical Reduction of CO₂ to Formate** *Joule*
Zheng, X., De luna, P., de Arquer, F., Zhang, B., Becknell, N., Cui, Y., Du, X., Yang, P., Sargent, E.
2017
- **Facile synthesis of Li₂S-polypyrrole composite structures for high-performance Li₂S cathodes** *Energy and Environmental Science*
Seh, Z., W., Wang, H., Hsu, P., C., Zhang, Q., Li, W., Zheng, G., Cui, Y.
2014
- **Full open-framework batteries for stationary energy storage** *Nature Communications*
Pasta, M., Wessells, C., D., Liu, N., Nelson, J., McDowell, M., T., Huggins, R., A., Cui, Y.
2014; 3007 (5)
- **Elastic moduli of polycrystalline Li₁₅Si₄ produced in lithium ion batteries** *JOURNAL OF POWER SOURCES*
Zeng, Z., Liu, N., Zeng, Q., Ding, Y., Qu, S., Cui, Y., Mao, W. L.
2013; 242: 732-735
- **First-row transition metal dichalcogenide catalysts for hydrogen evolution reaction** *Energy and Environmental Science*
Kong, D., Cha, J., J., Wang, H., Lee, H., R., Cui, Y.
2013; 3553 (6)
- **Strengthening effect of single-atomic-layer graphene in metal-graphene nanolayered composites** *Nature Communications*
Kim, Y., Lee, J., Yeom, M., S., Shin, J., W., Kim, H., Cui, Y.
2013; 2114 (4)
- **Performance enhancement of metal nanowire transparent conducting electrodes by mesoscale metal wires** *Nature Communications*
Hsu, P., C., Wang, S., Wu, H., Narasimhan, V., K., Kong, D., Lee, H., R., Cui, Y.
2013; 2522 (4)
- **Self-healing chemistry enables the stable operation of silicon microparticle anodes for high-energy lithium-ion batteries** *Nature Chemistry*
Wang, C., Wu, H., Chen, Z., McDowell, M., T., Cui, Y., Bao, Z.
2013
- **High-performance hollow sulfur nanostructured battery cathode through a scalable, room temperature, one-step, bottom-up approach** *PNAS*
Li, W., Zheng, G., Yang, Y., Seh, Z., W., Liu, N., Cui, Y.
2013
- **Stable cycling of lithium sulfide cathodes through strong affinity with a bifunctional binder** *Chemical Science*
Seh, Z., W., Zhang, Q., Li, W., Zheng, G., Yao, H., Cui, Y.
2013
- **Critical-temperature/Peierls-stress dependent size effects in body centered cubic nanopillars** *Applied Physics Letters*
Han, S., M., Feng, G., Jung, J., Y., Jung, H., J., Groves, J., R., Nix, W., D., Cui, Y.
2013; 102: 41910
- **Electrochemical tuning of vertically aligned MoS₂ nanofilms and its application in improving hydrogen evolution reaction**
Wang, H., Lu, Z., Xu, S., Kong, D., Cha, J., J., Zheng, G., Cui, Y.
2013
- **Conducting nano-sponge electroporation for affordable and high-efficiency disinfection of bacteria and viruses in water.** *Nano Letters*
Liu, C., Xie, X., Zhao, W., Liu, N., Maraccini, P., A., Sassoubre, L., M., Cui, Y.
2013; 9 (13): 4288-4293
- **All-back-contact ultra-thin silicon nanocone solar cells with 13.7% power conversion efficiency** *Nature Communications*
Jeong, S., McGehee, M., D., Cui, Y.
2013; 2950 (4)
- **Understanding the Role of Different Conductive Polymers in Improving the Nanostructured Sulfur Cathode Performance** *Nano Letters*
Li, W., Zhang, Q., Zheng, G., Seh, Z., W., Yao, H., Cui, Y.
2013; 13: 5534-5540

- **Understanding the Lithiation of Silicon and Other Alloying Anodes for Lithium-Ion Batteries (25th Anniversary Article)** *Advanced Materials*
McDowell, M., T., Lee, S., W., Nix, W., D., Cui, Y.
2013
- **Microbial battery for efficient energy recovery.** *PNAS*
Xie, X., Ye, M., Hsu, P., C., Liu, N., Criddle, C., S., Cui, Y.
2013
- **Large-Area Free-Standing Ultrathin Single-Crystal Silicon as Processable Materials** *Nano Letters*
Wang, S., Weil, B., Li, Y., Wang, K., X., Garnett, E., Fan, S., Cui, Y.
2013
- **Antimicrobial Nanomaterials for Water Disinfection** *in Nano-Antimicrobials*
Liu, C., Xie, X., Cui, Y.
2012: 465-494
- **The surface surfaces** *Nature Nanotechnology*
Cha, J., J., Cui, Y.
2012; 7: 85-86
- **High-capacity micrometer-sized Li(2)S particles as cathode materials for advanced rechargeable lithium-ion batteries** *JACS*
Yang, Y., Zheng, G., Misra, S., Nelson, J., Toney, M., F., Cui, Y.
2012; 37 (134): 15387-94
- **Copper hexacyanoferrate battery electrodes with long cycle life and high power** *Nature Communications*
Wessells, C., D., Huggins, R., A., Cui, Y.
2011; 2:550
- **Carbon nanotube-coated macroporous sponge for microbial fuel cell electrodes** *Energy Environ. Sci.*
Xie, X., Ye, M., Hu, L., Liu, N., McDonough, J., R., Chen, W., Cui, Y.
2011
- **Symmetrical MnO₂ Carbon Nanotube Textile Nanostructures for Wearable Pseudocapacitors with High Mass Loading** *ACS Nano*
Hu, L., Chen, W., Xie, X., Liu, N., Yang, Y., Wu, H., Cui, Y.
2011
- **Low-Temperature Self-Catalytic Growth of Tin Oxide Nanocones over Large Area** *ACS Nano*
Jeong, S., McDowell, M., T., Cui, Y.
2011; 5: 5800-5807
- **Low Reflectivity and High Flexibility of Tin-Doped Indium Oxide Nanofiber Transparent Electrodes** *Journal of the American Chemical Society*
Wu, H., Hu, L., Carney, T., Ruan, Z., Kong, D., Yu, Z., Cui, Y.
2010
- **Amorphous silicon core-shell nanowire solar cells**
Zhu, J., Xu, Y., Wang, Q., Cui, Y.
2010
- **High Speed Water Sterilization Using One-Dimensional Nanostructures** *Nano Letters*
Schoen, D., T., Schoen, A., P., Hu, L., Kim, H., S., Heilshorn, S., C., Cui, Y.
2010; 10: 3628-3632
- **Silicon nanowire hybrid photovoltaics**
Garnett, E., C., Peters, C., Brongersma, M., Cui, Y., McGehee, M., D.
2010
- **More solar cells for less** *Nature Materials*
Zhu, J., Cui, Y.
2010; 9: 183-184

- **Phase-Change Nanowires for Non Volatile Memory**
Meister, S., Peng, H., Cui, Y.
2007
- **Nanowires for Nanoscale Electronics, Biosensors and Energy Applications (invited paper)**
Meister, S., Chan, C., K., Peng, H., Cui, Y.
2007
- **Mechanical and Electrical Properties of CdTe Tetrapods Studied by Atomic Force Microscopy** *J. Chem. Phys.*
Fang, L., Park, J., Y., Cui, Y., Alivisatos, P., Shcrier, J., Lee, B.
2007; 127: 184704
- **Electrical Transport Through a Single Nanoscale Semiconductor Branch Point** *Nano Letters*
Cui, Y., Banin, U., Bjork, M., Alivisatos, A., P.
2005; 5: 1519-1523
- **Multiplexed Electrical Detection of Cancer Markers with Nanowire Sensor Arrays** *Nature Biotech.*
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- **Colloidal Nanocrystal Heterostructures with Linear and Branched Topology** *Nature*
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- **Lithographically Directed Self-Assembly of Nanostructures** *J. Vac. Sci. Tech.*
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- **Controlled Growth and Structures of Molecular-Scale Silicon Nanowires** *Nano Letters*
Wu, Y., Cui, Y., Huynh, L., Barlett, C., Lieber, C., M.
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- **Integration of Colloidal Nanocrystals into Lithographical Patterned Devices** *Nano Letters*
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- **in Molecular Nanoelectronics** *Nanowires as Building Blocks for Nanoscale Electronics and Optoelectronic*
Duan, X., Huang, Y., Cui, Y., Lieber, C., M.
edited by Reed, M., Lee, T.
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- **Nanowire Crossbar Arrays as Address Decoders for Integrated Nanosystems** *Science*
Zhong, Z., Wang, D., Cui, Y., Bockrath, M., W., Lieber, C., M.
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- **High Performance Silicon Nanowire Field Effect Transistors** *Nano Letters*
Cui, Y., Zhong, Z., Wang, D., Wang, W., U., Lieber, C., M.
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- **Nanowires as Building Blocks for Nanoscale Electronics and Optoelectronics** *in Molecular Nanoelectronics*
Duan, X., Huang, Y., Cui, Y., Lieber, C., M.
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- **in Nanowires and Nanobelts- Materials, Properties, and Devices** *Nanowires as Building Blocks for Nanoscale Science and Technology*
Cui, Y., Duan, X., Huang, Y., Lieber, C., M.
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- **Nanowires as Building Blocks for Nanoscale Science and Technology** in *Nanowires and Nanobelts- Materials, Properties, and Devices*
Cui, Y., Duan, X., C., Y., Huang
edited by Wang, Z., L.
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- **Gallium Nitride Nanowire Nanodevices** *Nano Letters*
Huang, Y., Duan, X., Cui, Y., Lieber, C., M.
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- **Diameter-Controlled Synthesis of Single Crystal Silicon Nanowires** *App. Phys. Lett.*
Cui, Y., Lauhon, L., J., Gudiksen, M., S., Wang, J., Lieber, C., M.
2001; 78: 2214-2216
- **Functional Nanoscale Electronic Devices Assembled using Silicon Nanowire Building Block** *Scienc*
Cui, Y., Lieber, C., M.
2001; 291: 851-853
- **Indium Phosphide Nanowires as Building Blocks for Nanoscale Electronic and Optoelectronic Devices** *Nature*
Duan, X., Huang, Y., Cui, Y., Wang, J., Lieber, C., M.
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- **Logic Gates and Computation from Assembled Nanowire Building Blocks** *Science*
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- **Nanowire Nanosensors for Highly-Sensitive, Selective and Integrated Detection of Biological and Chemical Species** *Scienc*
Cui, Y., Wei, Q., Park, H., Lieber, C., M.
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- **Highly Polarized Photoluminescence and Polarization-Sensitive Photodetectors from Single Indium Phosphide Nanowires** *Science*
Wang, J., Gudiksen, M., K., Duan, X., Cui, Y., Lieber, C., M.
2001; 293: 1455-1457
- **Doping and Electrical Transport in Silicon Nanowires** *J. Phys. Chem.*
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