

Song Jin

Assistant Professor, Department of Chemistry, University of Wisconsin-Madison
1101 University Avenue, Madison, WI 53706

Phone: (608)262-1562, FAX: (608)262-0453, E-mail: jin@chem.wisc.edu

homepage: <http://www.chem.wisc.edu/users/jin>

research group webpage: <http://jin.chem.wisc.edu/>

Academic Appointments:

8/04 to present Assistant Professor, Department of Chemistry, University of Wisconsin-Madison

1/05 to present Faculty member of Materials Science Program (MSP), UW-Madison

Education:

2002-2004 Postdoctoral Fellow Harvard University, Cambridge, MA. Advisor: Charles M. Lieber

2002 PhD in Chemistry Cornell University, Ithaca, NY. Advisor: Francis J. DiSalvo.

1997 B.S. in Chemistry Peking (Beijing) University, Beijing, China.

Awards and Honors:

Sloan Research Fellowship (2009)

ACS ExxonMobil Solid State Chemistry Fellowship Award (2008)

Research Corporation Cottrell Scholar Award (2007)

DuPont Young Professor (2007)

MIT Technology Review TR35 Award (Top 35 Young Innovators under the age of 35) (2006)

NSF CAREER Award (2006)

3M Nontenured Faculty Award (2006)

Cornell University Graduate School Travel Grants (2001)

Peking University Student Research Scholarship (1996)

Excellent Student in Honors Science Program (1996)

Outstanding Student Scholarship, Peking University (1995&1994)

Gold Medal in Chinese National Chemistry Olympiad (1992)

Teaching and Educational Outreach:

Courses taught:

- Chemistry of Nanoscale Materials (Chem 630) Fall 2005, Spring 2008
- Chemistry of Inorganic Materials (Chem 630) Fall 2008
- Fundamentals of Analytical Sciences (Chem 329) Spring 2007, Fall 2006, Spring 2006, Fall 2007
- Fundamentals of Analytical Sciences (Chem 327) Fall 2009, Spring 2005, Fall 2004

Curriculum development and outreach activities:

- Developed a new graduate course (Chem 630: Chemistry of Nanoscale Materials)
- Developed a web course on nanoscience and nanotechnology for high school teachers in collaboration with Prof. John Moore and graduate student Janice Hall
- Open-house, lab tour, and on-line chats for high school teachers participating in the on-line course for nanoscience and nanotechnology
- Discovering Nanoscience ("Nano Bootcamp") Workshop for high school students (Jan 2008 & Feb 2009)
- Lab tour and interactions with students with disability from Midwest Alliance for Science and Technology (Oct 2006 & Jan 2007)
- Invited to write a perspective on nanoelectronics for Technology Review magazine (September 2006)
- Guest lecturer on nanoscience and nanomaterials in Chem 104 and Chem 511 (Feb and May 2008)
- Interacted and interviewed with popular media on materials on energy (Oct 2008)

- Interacted and provided images for science as art at Madison airport, Madison science café, and other national and international magazines (SEED, Nano, *DeIngenieur*)

Professional Affiliation and Synergistic Activities:

1. DoD Defense Threat Reduction Agency (DTRA) Workshop “Toward a Strategic Vision for Chemical and Biological Defense”, Participant and White Paper reviewer, Aug 2008, Atlanta, Georgia.
2. Co-organizer for the symposium on 1-D Electronic and Photonic Devices at the 216th Meeting of The Electrochemical Society (2009);
Organized a symposium on 1-D nanomaterials in 233rd ACS National meeting (2007);
Program organizing committee for SPIE Optics East 2007: Nanomaterials Synthesis, Interfacing, and Integrating in Devices, Circuits, and Systems II;
Local program committee for 65th Physical Electronic Conference (PEC) in 2005.
3. Memberships: American Chemical Society (ACS), Materials Research Society (MRS), The Electrochemical Society (ECS)
4. Proposal Reviewers: NSF (DMR & CHE), NSF CREST/HBCU-RISE, DOE BES, PRF, Research Corporation, Austrian Science Fund, Belgian Science Policy Office (BELSPO), Molecular Foundry of DOE LBNL
5. Journal referees: *J. Am. Chem. Soc.* (21 papers), *Proc. Natl. Acad. Sci. (PNAS)*, *Nature Materials* (2), *Nano Lett.* (21), *Chem. Mater.* (13), *Angew. Chem.; Adv. Mater., Adv. Funct. Mater., Chem. Rev., J. Phys. Chem.* (13), *Inorg. Chem.* (2), *Small* (6), *ACS Nano* (4), *Langmuir*(2), *J. Mater. Chem.*(3), *J. Chem. Phys., Appl. Phys. Lett., Materials Today, Nanotechnology* (3), *J. Solid State Chem.*(3), *J. Mater. Res., Crys. Growth. Design, J. Crys. Growth., Electrochem. Solid-State Lett., J. Nanosci. and Nanotech., Mater. Sci. Eng., Thin Solid Films, Solid State Sci., J. Vac. Sci. Tech.*
6. Journal Advisory/Editorial Board: *Nanoscale*.

Publications:

at UW-Madison

45. Selinsky, R. S.; Keavney, D. J.; Bierman, M. J.; Jin, S.; “Element-specific Magnetometry of EuS Nanocrystals” accepted to *Appl. Phys. Lett.*.
44. Lau, Y. H. A.; Chernak, D. J.; Bierman, M. J.; Jin, S. “Formation of PbS Nanowire Pine Trees Driven by Screw Dislocations” accepted to *J. Am. Chem. Soc.*.
43. Szczech, J. R.; Jin, S. “Epitaxially-Hyperbranched FeSi Nanowires Exhibiting Merohedral Twinning” accepted to *J. Mater. Chem.* (Invited but peer-reviewed contribution as part of a themed issue devoted to outstanding young materials chemists)
42. Nelson, C. A.; Szczech, J. R.; Xu, Q.; Lawrence, M. J.; Jin, S.; Ge, Y.; “Mesoporous Metal Oxide Nanomaterials Effectively Enrich Phosphopeptides for Mass Spectrometry-based Phosphoproteomics” *Chem. Commun.* 2009, DOI: 10.1039/b908788e.
41. Schmitt, A. L.; Higgins, J. M.; Szczech, J. R.; Jin, S. “Synthesis and Applications of Metal Silicide Nanowires” *J. Mater. Chem.*, **2009**, published online DOI: 10.1039/b910968d. (Invited Feature Article, to be featured on the cover).
40. Bierman, M. J.; Jin, S.; “Potential Applications of Hierarchical Branching Nanowires in Solar Energy Conversion” *Energy Environ. Sci.*, **2009**, 2, 1050-1059. (Invited Perspective, featured on inside front cover).
39. Morin, S. A.; La, Y.-H. Liu, C. C.; Streifer, J. A.; Hamers, R. J.; Nealey, P. F.; Jin, S. “Self-Assembly of Nanocrystal Arrays via Block Copolymer Directed Nucleation” *Angew. Chem. Intl. Ed.*, **2009**, 48, 2135-2139.
38. Metz, K. M.; Mangham, A. N.; Bierman, M. J.; Jin, S.; Hamers, R. J.; Pedersen, J. A. “Engineered Nanomaterial Transformation under Oxidative Environmental Conditions: Development of an *in vitro* Biomimetic Assay” *Environ. Sci. Technol.*, **2009**, 43, 1598-1604.

37. Lau, Y. H. A.; Chernak, D. J.; Bierman, M. J.; Jin, S. "Epitaxial Growth of Hierarchical PbS Nanowires" *J. Mater. Chem.*, **2009**, *19*, 934-940.
36. Tomasik, J. H.; Jin, S.; Hamers, R. J.; Moore, J. W. "Design and Initial Evaluation of an Online Nanoscience Course for Teachers" *Journal of Nano Education*, **2009**, *1*, 48-67.
35. Higgins, J. M.; Schmitt, A. L.; Guzei, I. A.; Jin, S. "Higher Manganese Silicide Nanowires of Nowotny Chimney Ladder Phase", *J. Am. Chem. Soc.* **2008**, *130*, 16086-16094.
34. Bierman, M. J.; Lau, Y. H. A.; Kvit, A. V.; Schmitt, A. L.; Jin, S.; "Dislocation Driven Nanowire Growth and Eshelby Twist" *Science* **2008**, *320*, 1060-1063.
33. Song, Y.; Schmitt, A. L.; Jin, S. "Spin-Dependent Tunneling Transport into CrO₂ Nanorod Devices with Nonmagnetic Contacts" *Nano Lett.* **2008**, *8*, 2356-2361.
32. Gottlieb, D.; Morin, S. A.; Jin, S.; Raines R. T. "Self-Assembled Collagen-like Peptide Fibers as Templates for Metallic Nanowires" *J. Mater. Chem.* **2008**, *18*, 3865-3870. (Invited contribution to theme issue on Biology in the Service of Materials)
31. Szczech, J. R.; Jin, S. "Mg₂Si Nanocomposite Converted from Diatomaceous Earth as a Potential Thermoelectric Material" *J. Solid State Chem.* **2008**, *181*, 1565-1570. (Invited contribution to the Special Issue entitled "Solid State Chemistry on the Nanoscale: Achievements, Challenges, and Opportunities".
30. Schmitt, A. L.; Higgins, J. M.; Jin, S. "Chemical Synthesis and Magneto-transport of Magnetic Semiconducting Fe_{1-x}Co_xSi Alloy Nanowires" *Nano Lett.* **2008**, *8*, 810-815.
29. Amos, F. F.; Morin, S. A.; Streifer, J. A.; Hamers, R. J.; Jin, S. "Photodetector Arrays Directly Assembled onto Polymer Substrates from Aqueous Solution" *J. Am. Chem. Soc.* **2007**, *129*, 14296-14302.
28. Morin, S. A.; Amos, F. F.; Jin, S. "Biomimetic Assembly of Zinc Oxide Nanorods on Flexible Polymers" *J. Am. Chem. Soc.* **2007**, *129*, 13776-13777.
27. Bierman, M. J.; Lau, Y. H. A.; Jin, S.; "Hyperbranched PbS and PbSe Nanowires and the Effect of Hydrogen Gas on Their Synthesis" *Nano Lett.* **2007**, *7*, 2907-2912.
26. Zhou, F.; Szczech, J. R.; Moore, A. L.; Jin, S.; Shi, L. "Determination of Transport Properties in Chromium Disilicide Nanowires via Combined Thermoelectric and Structural Characterizations" *Nano Lett.*, **2007**, *7*, 1649-1654.
25. Szczech, J. R.; Schmitt, A. L.; Bierman, M. J.; Jin, S. "Single-Crystal Semiconducting Chromium Disilicide Nanowires Synthesized via Chemical Vapor Transport" *Chem. Mater.* **2007**, *19*, 3238-3243.
24. Song, Y.; Jin, S. "Synthesis and Properties of Metallic β₃-Ni₃Si Nanowires" *Appl. Phys. Lett.*, **2007**, *90*, 173122.
23. Song, Y.; Schmitt, A. L.; Jin, S. "Ultralong Single Crystal Metallic Ni₂Si Nanowires with Low Resistivity" *Nano Lett.*, **2007**, *7*, 965-969.
22. Bierman, M. J.; Van Heuvelen, K. M.; Schmeißer, D.; Brunold, T. C.; Jin, S. "Ferromagnetic Semiconducting EuO Nanorods" *Adv. Mater.* **2007**, *19*, 2677-2681.
21. Schmitt, A. L.; Jin, S. "Selective Patterned Growth of Silicide Nanowires without the Use of Metal Catalysts" *Chem. Mater.* **2007**, *19*, 126-128.
20. Jin, S. "Nanotechnology – the Future of Nanoelectronics" *Technology Review* **2006**, *104*, Sept-Oct, 26. (Invited commentary).
19. Schmitt, A. L.; Zhu, L.; Schmeißer, D.; Himpfel, F. J.; Jin, S. "Metallic Single-Crystal CoSi Nanowires via Chemical Vapor Deposition of Single-Source Precursor" *J. Phys. Chem. B.* **2006**, *110*, 18142-18146.
18. Schmitt, A. L.; Bierman, M. J.; Schmeißer, D.; Himpfel, F. J.; Jin, S. "Synthesis and Properties of Single-Crystal FeSi Nanowires" *Nano Lett.* **2006**, *6*, 1617-1621.

Prior to UW-Madison

17. Oertel, C. M.; Rayburn, L. L.; Jin, S.; DiSalvo, F. J. "Monotopic binding modes for ditopic ligands: synthesis and characterization of $W_6S_8L_6$ cluster compounds." *Comptes Rendus Chimie* **2005**, *8*, 1779-1788.
16. Zheng, G; Lu, W.; Jin, S.; Lieber, C. M. "Doping and electrical transport in n-type silicon nanowires" *Adv. Mater.* **2004**, *16*, 1890-1893.
15. Whang, D.; Jin, S.; Lieber, C. M. "Large-scale hierarchical organization of nanowires for functional nanosystems" *Jap. J. Appl. Phys. Part 1.* **2004**, *43*, 4465-4470.
14. Jin, S.; Whang, D.; McAlpine, M. C.; Friedmann, R. S.; Wu, Y. Lieber, C. M. "Scalable interconnection and integration of nanowire devices without registration" *Nano Lett.* **2004**, *4*, 915-919.
13. McAlpine, M. C.; Friedmann, R. S.; Jin, S.; Lin, K. H.; Wang, W. U.; Lieber, C. M. "High-performance nanowire electronics and photonics on glass and plastic substrates" *Nano Lett.* **2003**, *3*, 1531-1535.
12. Whang, D.; Jin, S.; Wu, Y.; Lieber, C. M. "Large-scale hierarchical organization of nanowire arrays for integrated nanosystems" *Nano Lett.* **2003**, *3*, 1255-1259.
11. Whang, D.; Jin, S.; Lieber, C. M. "Nanolithography using hierarchically assembled nanowire masks" *Nano Lett.* **2003**, *3*, 951-954. (contributed equally)
10. Jin, S.; Adamchuk, J.; Xiang, B. and DiSalvo, F. J. "The dean-evans relation in ^{31}P NMR spectroscopy and its application to the chemistry of octahedral tungsten sulfide clusters" *J. Am. Chem. Soc.* **2002**, *124*, 9229-9240.
9. Jin, S. and DiSalvo, F. J. "3-D Coordination network structures constructed from $[W_6S_8(CN)_6]^{6-}$ anions" *Chem. Mater.* **2002**, *14*, 3448-3457.
8. Jin, S. Popp, F.; Boettcher, S. W.; Yuan, M.; Oertel, C. M.; DiSalvo, F. J. "Synthesis, characterization and properties of $Mo_6S_8(4\text{-tert-butylpyridine})_6$ and related $M_6S_8L_6$ cluster complexes (M = Mo, W)" *J. Chem. Soc. Dalton Trans.* **2002**, 3096-3100.
7. Jin, S. and DiSalvo, F. J. "Novel octahedral tungsten sulfidocyanide cluster anion $[W_6S_8(CN)_6]^{6-}$ " *Chem. Comm.* **2001**, 1586-1587.
6. Jin, S.; Zhou, R.; Scheuer, E. M.; Adamchuk, J.; Rayburn, L. L.; DiSalvo, F. J. Synthesis, characterization and ligand exchange studies of $W_6S_8L_6$ cluster compounds. *Inorg. Chem.* **2001**, *39*, 2666-2674. (featured on the cover)
5. Hill, L. I.; Jin, S.; Zhou, R.; Venkataraman, D.; DiSalvo, F. J. "Synthesis and characterization of oxidized $W_6S_8L_6$ clusters" *Inorg. Chem.* **2001**, *39*, 2660-2665.
4. Sogah, D. Y.; Weimer, M. W.; Jin, S.; DiSalvo, F. J.; Venkataraman, D. "Polystyrene star nanostructures with molybdenum and tungsten clusters core" *Polym. Mater. Sci. Eng.* **2001**, *84*, 845-846.
3. Jin, S.; Venkataraman, D.; DiSalvo, F. J. "Ligand substitution reactions of $W_6S_8L_6$ with tricyclohexylphosphine: ^{31}P NMR and structural studies of $W_6S_8(PCy_3)_n(4\text{-tert-butylpyridine})_{6-n}$ ($0 < n \leq 6$) complexes" *Inorg. Chem.* **2000**, *39*, 2747-2757.
2. Jin, S.; Venkataraman, D.; DiSalvo, F. J.; Peters, E. C.; Svec, F.; Fréchet, J. M. J. "Novel catalytic metal clusters supported by porous polymer monolith" *Polym. Prepr. (Am. Chem. Soc., Div. Polym. Chem.)* **2000**, *41*, 458-459.
1. Venkataraman, D.; Rayburn, L. L.; Hill, L. I.; Jin, S.; Malik, A.-S.; Turneau, K. J.; DiSalvo, F. J. "An improved high yield synthesis procedure and reactivity of $W_6S_8(4\text{-tert-butylpyridine})_6$ " *Inorg. Chem.* **1999**, *38*, 828-830.

Patents:

3. Jin, S.; Ge, Y.; Nelson, C. A.; Xu, Q. "Mesoporous metal oxide materials for phosphoproteomics" PCT/US09/56632 and 12557906, *pending*.
2. Jin, S.; Schmitt, A. L.; Song, Y. "Metal silicide nanowires and methods for their production" *US Patent* 11/506,147, *pending*.

- Lieber, C. M. ; Whang, D.; Jin, S.; Wu, Y.; McAlpine, M. C.; Friedmann, R. S. "Nanoscale arrays, robust nanostructures, and related devices" *US Patent 10/995,075, pending.*

Invited Presentations: (*planned future presentations in italics*)

2010

July	<i>Asia-Pacific Conference on Semiconducting Silicides and Related Materials</i>	<i>Tsukuba, Japan</i>
January	<i>Nanyang Technological University</i>	<i>Singapore</i>
January	<i>3rd IEEE International NanoElectronics Conference</i>	<i>Hong Kong, China</i>

2009

October	<i>10th NIH NCI IMAT meeting</i>	<i>Bethesda, MD</i>
September	DoD Nanoelectronic Devices for Defense & Security Conference	Fort Lauderdale, FL
August	238 th ACS National Meeting	Washington, DC
August	The 17th American Conference on Crystal Growth and Epitaxy	Lake Geneva, WI
May	National Center for Nanoscience and Technology, China	Beijing, China
May	Zhejiang University	Hangzhou, China
May	Peking (Beijing) University (3 lectures)	Beijing, China
April	Stanford University	Palo Alto, CA
April	University of California-Santa Cruz	Santa Cruz, CA
April	Cornell University	Ithaca, NY
April	6 th Foundation of Nanoscience Conference (FNANO09)	SnowBird, UT
April	Ohio State University	Columbus, OH
March	University of Minnesota	Minneapolis, MN
March	237 th ACS National Meeting (Delivered by student Rachel Selinsky)	Salt Lake City, UT
March	Brown University	Providence, RI
March	University of Rochester	Rochester, NY
February	Gordon Research Conference on Renewable Energy: Solar Fuels	Ventura, CA
January	University of California- Santa Barbara	Santa Barbara, CA
January	University of California- Riverside	Riverside, CA
January	University of California- Los Angeles	Los Angeles, CA
January	University of Southern California	Los Angeles, CA

2008

December	Argonne National Laboratory, Center for Nanoscale Materials	Argonn, IL
December	Materials Research Society (MRS) Fall meeting	Boston, MA
October	9 th NIH NCI IMAT meeting (Invited poster)	Cambridge, MA
October	214 th Electrochemical Society (ECS) Meeting	Honolulu, HI
September	University of Louisville	Louisville, KY
September	NSF Physical Organic Chemistry Workshop	Lake Tahoe, NV
September	Chaos and Complex Systems Seminar	Madison, WI
August	DuPont Central Research and Development	Wilmington, DE
August	236 th ACS Meeting, ExxonMobil Solid State Chem. Award Symposium	Philadelphia, PA
July	14 th Annual Research Corporation Cottrell Scholar Conference (Invited poster)	Tucson, AZ
June	3M Corporation Science and Engineering Faculty Day	St. Paul, MN
June	Max-Planck Institute, International School of Nanosci. and Nanotech.	Halle, Germany
May	Particles 2008	Orlando, FL
May	University of Central Florida	Orlando, FL
April	Indiana University	Bloomington, IN
March	2008 TMS (The Minerals, Metals & Materials Society) Annual Meeting	
	Hume-Rothery Award Symposium	New Orleans, LA
February	Purdue University	West Lafayette, IN

January	Bell Labs of Lucent Technologies	Murray Hills, NJ
January	City College of New York	New York, NY

2007

November	Boston College	Chestnut Hills, MA
June	NSF Inorganic Chemistry Workshop	Jackson Hole, WY
June	3M Corporation Science and Engineering Faculty Day (Invited poster)	St. Paul, MN
May	North American Solid State Chemistry Conference 2007	College Station, TX
May	General Motors Corporation R&D Center	Warren, MI
March	233 rd ACS National Meeting	Chicago, IL
February	Howard University	Washington D.C.

2006

November	Tulane University	New Orleans, LA
November	Louisiana State University	Baton Rouge, LA
October	ACS Mid-West Regional Meeting	Quincy, IL
October	14 th NSF Workshop on Materials Chemistry and Nanoscience	St. Louis, MO
October	<i>SPIE</i> Optics East 2006	Boston, MA
June	3M Corporate Research Laboratory	St. Paul, MN

2003 (postdoctoral)

December	Materials Research Society (MRS) Fall meeting	Boston, MA
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Thesis Advisor and Postgraduate Associate Sponsor:

- Graduate*: Jeannine Szczech (11/05-), Stephen Morin (11/05-), Jeremy Higgins (11/05-), Rachel Selinsky (11/06-), John DeGrave (11/08 -), Mark Lukowski (11/08 -), Chris Sichmeller (11/08 -).
- Postgraduate*: Chad Dooley (5/09 -).
- Ph. D. graduates*: Andrew Schmitt (01/05- 07/09), Matthew Bierman (11/04- 07/09).
- Past Graduate Student*: Lei Zhu (11/05-12/06), Pinray Huang (M.S. 11/04-6/07), Y. K. Albert Lau (M.S., 1/07-1/09); *Visiting Graduate Student*: Fan (Julien) Yang (10/08 – 9/09).
- Past Postgraduate*: Dr. Yipu Song (Ph.D. in Physics, 12/05-06/07), Dr. Fairland Amos (1/06-06/07).
- Undergraduate*: Matt O'Brien (04/08 -), Ray Haoyue Zhu (03/09 -), Dinghua Ding (02/09 -, Chem 116 then continued), Penelope Carmichael (09/09 - , exchange student from U. of Bristol).
Past undergraduate: Elvin Morales (05/09 – 08/09, REU from University of Puerto), Davin Chernak (01/08 – 05/09), Jonathan Tong (01/06- 08/09), Cory Nelson (02/07- 06/09), Justin Mallek (09/08 – 05/09), Stephen Lee (10/07 – 05/09), Jae Hyo Han (07/08 – 05/09), Miguel Caban (5/08-8/08, REU from University of Puerto Rico-Rio Piedras), Jean E. Calderón (5/07-8/07, NSEC REU from U. of Puerto Rico), Sarah Brendzel (03/08-05/08, Chem 116), Adam K. Schmitt (5/07-8/07, NSEC REU from Ball State U.); Andrew A. Lafko (01/05-12/06), David A. Maenner (01/05-05/06); Julie Feld (03/06-08/06).

Student Awards and Fellowships:

17 th American Conference on Crystal Growth Photo Contest	Matthew Bierman (Song Jin)	2009
MRS Student Gold Award	Matthew Bierman	2009
<i>Nano Today</i> Cover Competition 2009	Matthew Bierman	2009
Undergraduate Research Mentor Award	Jeremy Higgins	2009
Undergraduate Research Mentor Award	Rachel Selinsky	2009
MRS Science as Art 2 nd place winner (Fall meeting)	Matthew Bierman	2008
UW Madison Energy Hub conference poster award	Jeremy Higgins	2008
Merck Research Laboratories Fellowship	Jeremy Higgins	2008-2009
Wisconsin Distinguished Graduate Student	Andrew Schmitt	2008-2009
Research Excellence Award in Materials Chemistry	Matthew Bierman	2008

MRS Student Silver Award	Andrew Schmitt	2008
MRS Best Poster Award (Spring meeting)	Andrew Schmitt	2008
Outstanding Chemistry Teaching Award	Jeannine Szczech	2008
3M Graduate Fellowship	Stephen Morin	2007-2009
Air Product Graduate Fellowship	Matthew Bierman	2007-2008
MRS Best Poster Award (Fall meeting)	Andrew Schmitt	2006
APS User Meeting Best Poster Award	Andrew Schmitt	2006