

Shouheng Sun

A. Education

Ph.D., Chemistry, Brown University, Providence, RI, 1996.
M.Sc., Chemistry, Nanjing University, Nanjing, China, 1987
B.Sc., Chemistry, Sichuan University, Chengdu, China, 1984

B. Professional Positions

Professor, Jan 2008-present, Department of Chemistry, Brown University.
Associate Professor, Jan 2005-Dec 2007, Department of Chemistry, Brown University.
Research Staff Member, June 1998-Dec 2004, IBM Thomas J. Watson Research Center.
Postdoctoral Fellow, July 1996-May 1998, IBM Thomas J. Watson Research Center
Lecturer, 1987 – 1992, Coordination Chemistry Institute/Department of Chemistry, Nanjing University.

C. Awards and Honors

Research Seed Award, Brown University (2008)
Frontier Research Award, Department of Chemistry, Brown University (2006)
Salomon Award, Brown University (2006)
Tenured, Brown University (2005)
Overseas Outstanding Scholar (B), National Science Foundation of China (2004).
Outstanding Technical Achievement Award on “Two-component nanostructured materials” (IBM, 2003)
Award for Leadership in Nanoparticle Research, Business Communication Co, Inc., 2003
Top paper of the year, National Synchrotron Light Source, Brookhaven National Laboratory, 2003.
Master Inventor (IBM, 2002)
Scientific Accomplishment Award (IBM, 2000)
IBM Employee Award (IBM, 2000)
Potter Prize (Ph.D. Thesis), Brown University (1997)
Sigma Xi Award, Brown University (1996)
Yingsong Research Prize, Nanjing University (1991)
M.Sc. Thesis Prize, Chinese Chemical Society (1989)

D. Service

1. Affiliations

Member of American Association for the Advancement of Science
Member of American Chemical Society
Member of American Physical Society
Member of Materials Research Society

2. Conference Organization

Organizer, Functional Nanomaterials for Energy and Biomedicine Applications, the 238th American Chemical Society Meeting, Aug 16-20, 2009, Washington D.C.
Co-Chair and Member of Organization Committee, Nanotechnology for the Study of Cellular and Molecular Interactions, Engineering Conferences International, 2009.
Member, Program Committee in Magnetic Nanostructures by Design, MRS Fall Meeting, 2008
Member, Program Committee for the 11th Magnetism and Magnetic Materials Conference, 2007.
Co-Organizer, Nanomagnetic Particles and Structures for Information Storage Applications, American Physical Society March Meeting, 2007, Denver, Colorado.
Publication Editor, 10th Magnetism and Magnetic Materials/Intermag Conference, 2007

Member, Program Committee for the 10th Magnetism and Magnetic Materials/Intermag Conference, Jan. 7-11, 2007, Baltimore, Maryland.

Co-Organizer, Biosensor Nanomedicine, the 2nd Annual Meeting of American Academy of Nanomedicine, September 9-10, 2006, Washington DC.

Member, International Advisory Board, the 6th International Symposium on Physics of magnetic materials (ISPMM) 2005, September 14-16, 2005, Singapore.

Member, Oversea Reviewing Committee, Chinese Academy of Science, 2004

Co-Organizer, DMP focused session on asymmetric nanoparticles, American Physical Society March Meeting, 2004.

Member, Organization Committee, the 5th International Symposium on Magnetic Materials and Applications, SOMMA 2003, Dec. 4-6, 2003, Daejeon, South Korea.

Member, International Advisory Board, NATO Advanced Research Workshop on Nanostructured Magnetic Materials and Their Applications, July 1-5, 2003, Istanbul, Turkey.

Member, Organization Committee, the 1st International Workshop on Nanostructured Materials and Magnetism, August 2002, Istanbul, Turkey.

Member, Organization Committee, International conference on fine particle magnetism, Aug 14-16, 2002, Pittsburgh, PA.

3. Community Service

- **Editorial Board Member**, 2009- present, *Nano Today*
- **Editorial Board Member**, 2009 – present, *Science of Advanced Materials (SAMs)*.
- **Editorial Advisory Board**, 2008 – present, *The Open Nanomedicine Journal*
- **Editorial Board Member**, 2008 – present, *Nano Research*.
- **Associate Editor**, 2006-present, *Nanomedicine: Nanotechnology, Biology and Medicine*.
- **Member**, Proposal evaluation board, Center for Nanoscale Materials (CNM), Argonne National Laboratory, 2007-2009.
- **Member**, NSF review panel on Nanotech exploratory research, NSF, March 4-5, 2004.
- **Member**, NSF review panel on Nanotech exploratory research, NSF, March 3-5, 2003.
- **Member**, Sub-committee in Nanomaterials and the chemical industry R&D roadmap, September 30- October 2, 2002, Baltimore, MD.
- Proposal review for NSF, NIH, PRF, DOE.
- Manuscript review for *Science; Nature; Nature Materials; Nature Nanotechnology; J. Am. Chem. Soc.; Angew. Chem Int. Ed.; Nano Lett.; Appl. Phys. Lett.; J. App. Phys.; J. Phys. Chem.; Adv. Mater.; Adv. Func. Mater.; Small; Chem. Mater.; J. Magn. Magn. Mater.; Chem. Phys. Lett; Langmuir; J. Nanoscience and Nanotechnology; Nanotechnology*.

4. Brown University Service

Member, Strategic planning committee reviewing Centers, Programs, and Institutes, Brown University, 2009.

Associate Director, 2008 – present, Institute for Molecular and Nanoscale Innovation (IMNI), Brown University.

Chair, Faculty Search Committee in NanoChemistry – AY 2008-10

Member, Faculty Search Committee in Inorganic Chemistry – AY 2007

Member, Faculty Search Committee in NanoChemistry – AY 2007-8

Departmental Colloquium Organizer – AY 2005 – 2007

Inorganic/Materials Seminar Organizer – AY 2006 -2009

Member, Graduate Admission Committee – AY 2006-2010

Curriculum Committee Member – AY 2006

Ad hoc Lab Safety Committee Member – AY 2006

Chemistry Instrument Committee – AY 2005 – 2006

Member, Faculty Search Committee in Physics – AY 2006

Member, Faculty search committee in Engineering, AY2005.

E. Teaching Experience

Chem 400 – Bioinorganic Chemistry

Chem 500 – Advanced Inorganic Chemistry

Chem 1060 – Solid State Chemistry

Chem 1700 – Nanoscale Materials: Synthesis and Applications.

F. Research Funding (Current)

- **DOE (co-PI)**: “Nanosegregated Cathode Catalysts with Ultra-Low Platinum Content”, 2009-2012.
- **NIH/NCI (PI)**: “Controlled Functionalization of Composite Magnetic Nanoparticles for Targeted Delivery of Platin-like Complex to Tumor Cells”, July 2007-July 2010.
- **NSF/DMR (PI)**: "Dumbbell nanocomposites: Controlled chemical synthesis and catalytic applications"; June 2006 - May 2009.
- **DARPA/ARO (PI)**: "High performance nanocomposite permanent magnets by rational assembly of nanoparticles"; May 2008 –April 2012.
- **Hitachi Maxwell Ltd. (PI)**: "Composite Catalysts for Fuel Cell Reactions". May 2005 – present.
- **Research Seed Fund (PI)**, Brown Univ: "Developing Highly Efficient Non-Pt Nanoparticle Catalyst for O₂ Reduction and CO Oxidation", March 2008-Feb 2009.
- **ONR/MURI (co-PI)**: "Synthesis and Processing of Nanocomposite Permanent Magnets - Approaches from the Bottom"; May 2005 - April 2010.
- **DOE/EPSCoR (co-PI)**: "Center for Spintronics and Biodetection"; June 2007- May 2010.
- **PRF/ACS (co-PI)**: "Self-Assembly of Metallic Nanoparticles Mediated by Metal-Organometallic Coordination Networks (MOMNs)"; June 2006 - August 2009.

G. Publications

1. Patents (in reverse chronological order)

17. “Dumbbell-like nanoparticles and a process of forming the same”, with Y. Yu and S. Wang, **US Patent 7288134**.
16. “Magnetic materials having superparamagnetic particles”, with S. T. Ingvarsson, P. L. Trouilloud, R. Koch, and D. Abraham, **US 2004/0253437**.
15. “Process of making metal containing iron oxide and iron sulfide based nanoparticle materials”, **US Patent 7128891**.
14. “Process of forming magnetic nanocomposites via nanoparticle self-assembly”, with H. Zeng, **US Patent 6972046**.
13. “Process of making metal containing iron oxide and iron sulfide based nanoparticle materials”, **US Patent 7410625**.
12. “Synthesis of magnetite nanoparticles and the process of forming Fe-based nanomaterials”, **US Patent 6962685**.
11. “Process of forming a multilayer nanoparticle-containing thin film self-assembly”, with S. Anders, **US Patent 6805904**.
10. “Metal salt reduction to form alloy nanoparticles”, **US Patent 6676729**.
9. “Nanoparticle structures utilizing synthetic DNA lattices”, with C. T. Black, S. M. Gates, C. B. Murray, **US Patent 6673401**.
8. Method and apparatus for linking and/or patterning self-assembled objects” (self assembly chemistry), with J. E. E. Baglin, H. Hamann, **US Patent 6866898**
7. “Method and apparatus for linking and/or patterning self-assembled objects” (apparatus for patterned self-assembly), with J. E. Baglin, H Hamann, **US Patent 6566665**.
6. “Low dielectric constant, porous film formed from regularly arrayed nanoparticles”, with S. M. Gates, C. B. Murray, **TW NI-149375**.
5. “Chemical synthesis of monodisperse and magnetic alloy nanocrystal containing thin films”, with C. B. Murray, D. K. Weller, **US Patent 6302940**.
4. “Magnetic storage medium formed of nanoparticles”, with C. T. Black, S. M. Gates, C. B. Murray, **US Patent 6162532**.
3. “Nanoparticle structures utilizing synthetic DNA lattices”, with C. T. Black, S. M. Gates, C. B. Murray, **US Patent 6265021**.
2. “Chemical synthesis of monodisperse and magnetic alloy nanocrystal containing thin films”, with C. B. Murray, D. K. Weller, **US Patent 6254662**.
1. “Methods for producing nanoparticles of transition metals”, with C. B. Murray, **US Patent 6262129**.

2. Book Chapters

1. S. Sun, D. Weller, C. Murray, "Self-assembled magnetic nanoparticle arrays" in "The physics of high density magnetic recording", eds. M. Plumer, J. van Ek, D. Weller, Springer-Verlag, Chapter 9, 2001.
2. D. J. Sellmyer, H. Zeng, M. Yan, S. Sun, Y. Liu, "New magnetic recording media", eds. Y. Liu, D. J. Sellmyer, Springer-Verlag and Tsinghua University press, Chapter 6, 2004.
3. S. Sun, "Self-assembled nanomagnets", in "Advanced magnetic nanostructures", eds. D. J. Sellmyer, R. Skomski, Klumer, Chapter 9, 2006.
4. C. Wang, S. Sun, "Chemical Synthesis of Monodisperse Magnetic Nanoparticles" in "Handbook of Modern Magnetism and Advanced Magnetic Materials," eds. S. S. P. Parkin, H. Kronmueller, John Wiley, 2007.
5. J. Xie, S. Sun, "Monodisperse Magnetic Nanoparticles: Chemical Synthesis and Surface Modification" in Encyclopedia of Inorganic Chemistry, ed R. H. Crabtree, John Wiley: Chichester. DOI: 10.1002/0470862106.ia414. 15 March 2009.
6. S. Peng, J. Kim, S. Sun, "Chemical synthesis, self-assembly and applications of magnetic nanoparticles", Annual Review of Nano Research, 2009, Vol 3.
7. N. Frey, S. Sun, "Magnetic Nanoparticles for Information Storage Applications", in Inorganic Nanoparticles: Synthesis, Applications, and Perspectives, CRC Press-Taylor and Francis Group, LLC, 2009.

3. Journal Publications (in reverse chronological order)

153. Y. Lu, J. Huang, C. Wang, S. Sun, J. Lou, "Cold welding of ultrathin gold nanowires", *Nature Nanotech.* **2009**.
152. C. Wang, Y. Wei, H. Jiang, S. Sun, "Tug-of-War in Nanoparticles: Competitive Growth of Au on Au-Fe₃O₄ Nanoparticles", *Nano Lett.* **2009**, 10.1021/nl903077t.
151. Y. Liu, S. Peng, Y. Ding, C. Rong, J. Kim, J. P. Liu, Z. L. Wang, S. Sun, "Synthesis and Characterization of Ferroferritorate (Fe₃BO₅) Nanorods", *Adv. Func. Mater.* **2009**, 10.1002/adfm.200900900.
150. Y. Lee, A. Loew, S. Sun, "Surface- and Structure-Dependent Catalytic Activity of Au Nanoparticles for Oxygen Reduction Reaction", *Chem. Mater.* **2009**, 10.1021/cm9013046.
149. C. Xu, Z. Yuan, N. Kohler, J. Kim, M. A. Chung, S. Sun, "FePt Nanoparticles as an Fe Reservoir for Controlled Fe Release and Tumor Inhibition", *J. Am. Chem. Soc.* **2009**, 131, 15346.
148. S. B. Kim, C. Cai, J. Kim, S. Sun, D. A. Sweigart, "Surface Modification of Fe₃O₄ and FePt Magnetic Nanoparticles with Organometallic Complexes", *Organometallics* **2009**, 28, 5341.
147. K. L. Young, C. Xu, J. Xie, S. Sun, "Conjugating Methotrexate to Magnetite (Fe₃O₄) Nanoparticles via Trichloro-s-Triazine", *J. Mater. Chem.* **2009**, 19, 6400.
146. Z. Xu, C. Shen, S. Sun, H. Gao, "Growth of Au Nanowires at the Interface of Air/Water", *J. Phys. Chem. C* **2009**, 113, 15196.
145. N. A. Frey, S. Peng, K. Cheng, S. Sun, "Magnetic Nanoparticles: Synthesis and Applications in Bioimaging and Magnetic Energy Storage", *Chem. Soc. Rev.* **2009**, 38, 2532.
144. C. Wang, C. Xu, H. Zeng, S. Sun, "Recent Progress in Syntheses and Applications of Dumbbell-like Nanoparticles", *Adv. Mater.* **2009**, 21, 3045.
143. K. Cheng, S. Peng, C. Xu, S. Sun, "Porous Hollow Fe₃O₄ Nanoparticles for Targeted Delivery and Controlled Release of Cisplatin", *J. Am. Chem. Soc.* **2009**, 131, 10637.
142. C. Xu, S. Sun, "Superparamagnetic Nanoparticles as Targeted Probes for Diagnostic and Therapeutic Applications", *Dalton Trans.* **2009**, 5583.
141. N. A. Frey, M. H. Phan, H. Srikanth, S. Srinath, C. Wang, S. Sun, "Interparticle interactions in coupled Au-Fe₃O₄ nanoparticles", *J. App. Phys.* **2009**, 105, 07B502.
140. C. Wang, S. Sun, "Facile Syntheses of Ultrathin and Single-Crystalline Au Nanowires", *Chem. Asian J.* **2009**, 4, 1028.
139. C. Wang, S. Peng, L.-M. Lacroix, S. Sun, "Synthesis of High Magnetic Moment CoFe Nanoparticles via Interfacial Diffusion in Core/Shell Structured Co/Fe Nanoparticles", *Nano Res.* **2009**, 2, 380.
138. S. Peng, S. Sun, "Chemical Synthesis of Monodisperse Magnetic Nanoparticles", *Mater. Matter* **2009**, 4, 14.
137. Z. Xu, C. Shen, Y. Hou, H. Gao, S. Sun, "Oleylamine as Both Reducing Agent and Stabilizer in a Facile Synthesis of Magnetite Nanoparticles", *Chem. Mater.* **2009**, 21, 1778.
136. C. Wang, S. Peng, R. Chan, S. Sun, "Synthesis of AuAg Alloy Nanoparticles from Core/Shell Structured Ag/Au", *Small*, **2009**, 5, 567.

135. J. Xie, J. Huang, X. Li, S. Sun, X. Chen, "Iron Oxide Nanoparticle Platform for Biomedical Applications", *Curr. Med. Chem.*, **2009**, 16, 1278.
134. C. Wang, H. Daimon, S. Sun, "Dumbbell-like Pt-Fe₃O₄ Nanoparticles and Their Enhanced Catalysis for Oxygen Reduction Reaction", *Nano Lett.* **2009**, 9, 1493.
133. S. B. Kim, C. Cai, S. Sun, D. A. Sweigart, "Incorporation of Fe₃O₄ NPs into Organometallic Coordination Polymers via NP Surface Modification", *Angew. Chem. Int. Ed.* **2009**, 48, 2907.
132. H. Xing, W. Kong, C. Kim, S. Peng, S. Sun, Z.-A. Xu, H. Zeng, "Giant positive magnetoresistance in Co@CoO nanoparticle arrays", *J. App. Phys.* **2009**, 105, 063920.
131. V. Mazumder, S. Sun, "Oleylamine-Mediated Synthesis of Pd Nanoparticles for Catalytic Formic Acid Oxidation", *J. Am. Chem. Soc.* **2009**, 131, 4588.
130. C. Xu, B. Wang, S. Sun, "Dumbbell-Like Au-Fe₃O₄ Nanoparticles for Target-Specific Platin Delivery", *J. Am. Chem. Soc.* **2009**, 131, 4216.
129. C. Wang, H. Yin, R. Chan, S. Peng, S. Dai, S. Sun, "One-Pot Synthesis of Oleylamine Coated AuAg Alloy NPs and Their Catalysis for CO Oxidation", *Chem. Mater.* **2009**, 21, 433.
128. J. Kim, C. Rong, J. P. Liu, S. Sun, "Dispersible Ferromagnetic FePt Nanoparticles", *Adv. Mater.* **2009**, 21, 906.
127. Q. Zhang, C. Dang, H. Urabel, J. Wang, S. Sun, A. Nurmikko, "Large ordered arrays of single photon sources based on II-VI semiconductor colloidal quantum dot", *Opt. Express* **2008**, 16, 19592.
126. S. Osterfeld, H. Yu, R. Gaster, S. Caramuta, L. Xu, S.-J. Han, D. Hall, R. Wilson, S. Sun, R. White, R. Davis, N. Pourmand, S. Wang, "Multiplex Protein Assays Based on Real-Time Magnetic Nanotag Sensing", *PNAS* **2008**, 105, 20637.
125. J. Kim, C. Rong, Y. Lee, J. P. Liu, S. Sun, "From Core/Shell Structured FePt/Fe₃O₄/MgO to Ferromagnetic FePt Nanoparticles", *Chem. Mater.* **2008**, 20, 7242.
124. B. Wang, C. Xu, J. Xie, Z. Yang, S. Sun, "pH Controlled Release of Chromone from Chromone-Fe₃O₄ Nanoparticles", *J. Am. Chem. Soc.* **2008**, 130, 14436.
123. S. Peng, Y. Lee, C. Wang, H. Yin, S. Dai, S. Sun, "A Facile Synthesis of Monodisperse Au Nanoparticles and Their Catalysis for CO Oxidation", *Nano Res.* **2008**, 1, 229.
122. H. Yin, C. Wang, H. Zhu, S. H. Overbury, S. Sun, S. Dai, "Colloidal Deposition Synthesis of Supported Gold Nanocatalysts Based on Au-Fe₃O₄ Dumbbell Nanoparticles", *Chem. Commun.* **2008**, 4357.
121. S. Peng, J. Xie, S. Sun, "Synthesis of Co/MFe₂O₄ (M = Fe, Mn) core/shell composite particles", *J. Solid State Chem.* **2008**, 181, 1560.
120. C. Wang, Y. Hu, C. M. Lieber, S. Sun, "Ultrathin Au Nanowires and Their Transport Properties", *J. Am. Chem. Soc.* **2008**, 130, 8902.
119. J. Xie, K. Chen, H.-Y. Lee, C. Xu, A. R. Hsu, S. Peng, X. Chen, S. Sun, "Ultra-Small c(RGDyK)-Coated Fe₃O₄ Nanoparticles and Their Specific Targeting to Integrin $\alpha_v\beta_3$ -rich Tumor Cells", *J. Am. Chem. Soc.* **2008**, 130, 7542.
118. C. Xu, G. A. Tung, S. Sun, "Size and Concentration Effect of Gold Nanoparticles on X-ray Attenuation as Measured on Computed Tomography", *Chem. Mater.* **2008**, 20, 4167.
117. H.-Y. Lee, Z. Li, K. Chen, A. R. Hsu, C. Xu, J. Xie, S. Sun, X. Chen, "PET/MRI Dual Modality Tumor Imaging Using Conjugated Radio-labeled Iron Oxide Nanoparticles", *J. Nucl. Med.* **2008**, 49, 1371.
116. W. Chen, J. Kim, S. Sun, S. Chen, "Electrocatalytic Reduction of Oxygen by FePt Alloy Nanoparticles", *J. Phys. Chem. C* **2008**, 112, 3891.
115. W. Shen, B. D. Schrag, M. J. Carter, J. Xie, C. Xu, S. Sun, G. Xiao, "Detection of DNA labeled magnetic nanoparticles using MgO-based magnetic tunnel junction sensors", *J. App. Phys.* **2008**, 103, 07A306.
114. C. Wang, H. Daimon, T. Onodera, T. Koda, S. Sun, "A General Approach to Size and Shape Controlled Synthesis of Pt Nanoparticles and Their Catalysis for Oxygen Reduction Reaction", *Angew. Chem. Int. Ed.* **2008**, 47, 3588.
113. H.-Y. Lee, S.-H. Lee, C. Xu, J. Xie, J.-H. Lee, B. Wu, A. L. Koh, X. Wang, R. Sinclair, S. X. Wang, D. G. Nishimura, S. Biswal, S. Sun, S. H. Cho, X. Chen, "In Vitro and In Vivo Test of PVP-coated Large Core Iron Oxide Nanoparticles as Macrophage Specific MRI Contrast Agent", *Nanotech.* **2008**, 19, 165101.
112. H. Zeng, S. Sun, "Syntheses, Properties and Potential Applications of Multi-Component Magnetic Nanoparticles", *Adv. Func. Mater.* **2008**, 18, 391.
111. C. Xu, J. Xie, N. Kohler, E. G. Walsh, Y. E. Chin, S. Sun, "Monodisperse magnetite (Fe₃O₄) nanoparticles coupled with nuclear localization signal (NLS) peptide for cell nuclear targeting", *Chem. Asian J.* **2008**, 3, 548.
110. C. Xu, J. Xie, D. Ho, C. Wang, N. Kohler, E. G. Walsh, J. R. Morgan, Y. E. Chin, S. Sun, "Au-Fe₃O₄ dumbbell nanoparticles as dual functional probes", *Angew. Chem. Int. Ed.* **2007**, 47, 173.
109. W. Chen, J. Kim, S. Sun, S. Chen, "Composition Effects of FePt Alloy Nanoparticles on the Electro-oxidation of Formic Acid", *Langmuir* **2007**, 23, 11303.

108. S.-H. Chung, M. Grimsditch, A. Hoffmann, S. D. Bader, J. Xie, S. Peng, S. Sun, "Magneto-Optic Measurement of Brownian Relaxation of Magnetic Nanoparticles", *J. Magn. Magn. Mater.* **2007**, 320, 91.
107. Y. Hou, Z. Xu, C. Rong, J. P. Liu, S. Sun, "A facile synthesis of SmCo₅ nanomagnets from core/shell Co/Sm₂O₃ nanoparticles", *Adv. Mater.* **2007**, 19, 3349.
106. J. Xie, C. Xu, N. Kohler, Y. Hou, S. Sun, "Controlled PEGylation of monodisperse Fe₃O₄ nanoparticles for reduced non-specific uptake by macrophage cells", *Adv. Mater.* **2007**, 19, 3163.
105. Y. Hou, S. Sun, C. Rong, J. P. Liu, "SmCo₅/Fe nanocomposites synthesized from reductive annealing of oxide nanoparticles", *App. Phys. Lett.* **2007**, 91, 153117.
104. W. Chen, J. Kim, L. P. Xu, S. Sun, S. Chen, "Langmuir-Blodgett Thin Films of Fe₂₀Pt₈₀ Nanoparticles for the Electrocatalytic Oxidation of Formic Acid", *J. Phys. Chem. C* **2007**, 111, 13452.
103. C. Wang, Y. Hou, J. Kim, S. Sun, "A general strategy for synthesizing FePt nanowires and nanorods", *Angew. Chem. Int. Ed.* **2007**, 46, 6333.
102. Y. Hou, Z. Xu, S. Sun, "Controlled synthesis and chemical conversions of FeO nanoparticles", *Angew. Chem. Int. Ed.* **2007**, 46, 6329.
101. Z. Xu, Y. Hou, S. Sun, "Magnetic core/shell Fe₃O₄/Au and Fe₃O₄/Au/Ag nanoparticles with tunable plasmonic properties", *J. Am. Chem. Soc.* **2007**, 129, 8698.
100. G. S. Chaubey, C. Barcena, N. Poudyal, C. Rong, J. Gao, S. Sun, J. P. Liu, "Synthesis and stabilization of CoFe nanoparticles", *J. Am. Chem. Soc.* **2007**, 129, 7214.
99. C. Wang, H. Daimon, Y. Lee, J. Kim, S. Sun, "Synthesis of Monodisperse Pt Nanocubes and Their Enhanced Catalysis for Oxygen Reduction", *J. Am. Chem. Soc.* **2007**, 129, 6974.
98. C. Xu, S. Sun, "Monodisperse magnetic nanoparticles for biomedical applications", *Polym. Int.* **2007**, 56, 821.
97. N. A. Frey, S. Srinath, H. Srikanth, C. Wang, S. Sun, "Static and dynamic magnetic properties of composite Au-Fe₃O₄ nanoparticles", *IEEE Trans. Magn.* **2007**, 43, 3094.
96. S. Peng, S. Sun, "Synthesis and characterization of hollow Fe₃O₄ nanoparticles", *Angew. Chem. Int. Ed.* **2007**, 46, 4155.
95. S.-H. Chung, A. Hoffmann, L. Chen, S. Sun, K. Guslienko, M. Grimsditch, S. D. Bader, "Substrate-free Biosensing using Brownian Rotation of Bio-conjugated Magnetic Nanoparticles", *J. Magn.* **2006**, 11, 189.
94. J. Xie, C. Xu, Z. Xu, Y. Hou, K. L. Young, S. X. Wang, N. Pourmand, S. Sun, "Linking Hydrophilic Macromolecules to Monodisperse Magnetite (Fe₃O₄) Nanoparticles via Trichloro-*s*-Triazine", *Chem. Mater.* **2006**, 18, 5401.
93. C. Antoniak, J. Lindner, M. Spasova, D. Sudfeld, M. Acet, M. Farle, K. Fauth, U. Wiedwald, H.-G. Boyen, P. Ziemann, F. Wilhelm, A. Rogalev, S. Sun, "Enhanced orbital magnetism in Fe₅₀Pt₅₀ nanoparticles", *Phys. Rev. Lett.* **2006**, 97, 117201.
92. S. Peng, C. Wang, J. Xie, S. Sun, "Synthesis and stabilization of monodisperse Fe nanoparticles", *J. Am. Chem. Soc.* **2006**, 128, 10676.
91. M. Chen, J. Kim, J. P. Liu, H. Fan, S. Sun, "Synthesis of FePt nanocubes and their oriented self-assembly", *J. Am. Chem. Soc.* **2006**, 128, 7132.
90. W. Chen, J. Kim, S. Sun, S. Chen, "Electro-oxidation of formic acid catalyzed by FePt nanoparticles", *Phys. Chem. Chem. Phys.* **2006**, 8, 2779.
89. J. Xie, S. Peng, N. Brower, N. Pourmand, S. X. Wang, S. Sun, "One-pot synthesis of monodisperse iron oxide nanoparticles for potential biomedical applications", *Pure Appl. Chem.* **2006**, 78, 1003.
88. G. Li, S. Sun, S. Wang, "Spin valve biosensors: signal dependence on nanoparticle position", *J. Appl. Phys.* **2006**, 99, 08P107.
87. G. Li, S. Sun, D. B. Robinson, R. J. Wilson, R. L. White, N. Pourmand, S. X. Wang, "Spin valve sensors for ultra-sensitive detection of superparamagnetic nanoparticles for biological applications", *Sensors and Actuators A-Physical* **2006**, 126, 98.
86. S. Sun, "Recent advance in chemical synthesis, assembly and applications of FePt nanoparticles" (invited), *Adv. Mater.* **2006**, 18, 393.
85. H. Zeng, C. T. Black, R. L. Sandstrom, C. B. Murray, S. Sun, "Magneto-transport of magnetite nanoparticle arrays", *Phys. Rev. B* **2006**, 73, 20402.
84. N.T. Gorham, R.C. Woodward, T.G. St Pierre, B.D. Terris, S. Sun, "Apparent magnetic energy-barrier distribution in FePt nanoparticles", *J. Magn. Magn. Mater.* **2005**, 295, 174.
83. T. Thomson, S. L. Lee, M. F. Toney, C. D. Dewhurst, F. Y. Ogrin, C. J. Oates, S. Sun, B. D. Terris, "Agglomeration and sintering in annealed FePt nanoparticle assemblies studied by small angle neutron scattering and x-ray diffraction", *Phys. Rev. B* **2005**, 72, 64441.

82. Y. Li, Q. Zhang, A. N. Nurmikko, S. Sun, "Enhanced magneto-optical response in dumbbell like Ag-CoFe₂O₄ nanoparticle pairs", *Nano Lett.* **2005**, 5, 1689.
81. J. A. Reingold, K. L. Virkaitis, G. B. Carpenter, S. Sun, D. A. Sweigart, P. T. Czech, K. R. Overly, "Chemical and electrochemical reduction of polyarene manganese tricarbonyl cations: hapticity changes and generation of syn-and anti-facial bimetallic η^4, η^6 -naphthalene complexes", *J. Am. Chem. Soc.* **2005**, 127, 11146.
80. S. G. Grancharov, H. Zeng, S. Sun, S. X. Wang, S. O'Brien, C. B. Murray, J. R. Kirtley, G. A. Held, "Bio-functionalization of monodisperse magnetic nanoparticles and their use as biomolecular labels in a magnetic tunnel junction based sensor", *J. Phys. Chem. B* **2005**, 109, 13030.
79. S. X. Wang, S.-Y. Bae, G. Li, S. Sun, R. L. White, J. T. Kemp, C. D. Webb, "Towards a magnetic microarray for sensitive diagnostics", *J. Magn. Magn. Mater.* **2005**, 293, 731.
78. D. B. Robinson, H. H. J. Persson, H. Zeng, G. Li, N. Pourmand, S. Sun, S. X. Wang, "DNA-functionalized MFe₂O₄ (M = Fe, Co, Mn) nanoparticles and their hybridization to DNA-functionalized surfaces", *Langmuir* **2005**, 21, 3096.
77. H. Yu, M. Chen, P. M. Rice, S. X. Wang, R. L. White, S. Sun, "Dumbbell-like bifunctional Au-Fe₃O₄ nanoparticles", *Nano Lett.* **2005**, 5, 379.
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3. Q. Meng, S. Sun, X. Bu, X. You, "Synthesis of phenyl-based alkyne dicobalt complexes", *Gaodeng Xuexiao Huaxue Xuebao (Chem. J. Chinese Univ.)* **1988**, 9, 856.
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1. Q. Meng, S. Sun, X. Bu, X. You, "Synthesis of ether-based alkyne dicobalt complexes", *Youji Huaxue (Org. Chem.)* **1988**, 8, 139.

H. Invited Conference Presentations

50. "Developing multifunctional magnetic nanoparticles for imaging and delivery applications", **MRS Fall Meeting**, Nov 29 – Dec 3, 2009, Boston, MA.
49. **Tutorial**: "Magnetic nanoparticles and their applications in biomedicine", **MRS Fall Meeting**, November 29 - Dec.3, 2009, Boston, MA.
48. "SmCo-based exchange spring nanocomposites", **Advanced Light Source User's Meeting**, Oct 15-17, 2009, Lawrence Berkeley National Lab.
47. "Highly efficient nanoparticle catalyst for fuel cell applications", **Advanced Light Source User's Meeting**, Oct 15-17, 2009, Lawrence Berkeley National Lab.
46. "Functional Nanoparticles: Synthesis and Potential Applications", **MRS Spring Meeting**, April 13-17, 2009, San Francisco, CA.
45. "Developing multifunctional nanoparticles for imaging and delivery applications", the **237th American Chemical Society Meeting**, March 22-26, 2009, Salt Lake City, UT
44. "Functional Nanoparticles: Synthesis and Applications", **TMS 2009 Annual Meeting**, Feb 15-19, 2009, San Francisco, CA
43. "Dispersible Ferromagnetic FePt Nanoparticles", **Asian Magnetic Conference**, Dec 10-13, 2008. Busan, South Korea.
42. "Synthesis and self-assembly approaches to polymer-inorganic hybrid nanoparticles", **PMSE symposium, ACS Spring Meeting**, April 6-10th, 2008. New Orleans, LA.
41. "Monodisperse magnetic NPs: Chemical synthesis and potential applications", **ACS RI Section Meeting**, January 31, 2008, Providence, RI
40. **Tutorial**: "Chemical synthesis of magnetic nanocomposites", **MRS Fall Meeting**, November 26-30, 2007, Boston, MA.
39. "Developing multifunctional magnetic nanoparticles for imaging and delivery applications", **1st Annual Molecular and Cellular Imaging Symposium**, September 27-28, Yale University.
38. "Monodisperse magnetic nanoparticles and their nanomagnetic applications", **Workshop in Integrated Nanostructured Systems**, University at Buffalo, May 18-19, 2007.
37. "FePt nanoparticle arrays for information storage applications", **ACS Mid-Atlantic Regional Meeting**, May 16-18, 2007, Collegeville, PA.
36. "Shape induced texture of magnetic nanoparticles", **MRS Spring Meeting**, April 9-13, 2007, San Francisco, CA.
35. "Magnetic nanoparticles for biomagnetic applications", **the 2nd Annual Meeting of American Academy of Nanomedicine**, September 9-11, 2006, Washington DC.
34. "Monodisperse magnetic nanoparticles: chemical synthesis and potential nanomagnetic applications", **International Workshop on Nanomaterials, Devices and Physical Properties**, July 14-16, 2006, Beijing.
34. "Chemical synthesis and assembly of magnetic nanomaterials", **Pacificchem 2005**, December 15-20, 2005, Hawaii.
33. "Magnetic nanoparticles for biomagnetic applications", **Maui Symposium on Magnetic Materials at the Interface between Polymer Science and Biology**, December 10-14, 2005, Maui, Hawaii.
32. **Paul Sabatier Lecture on magnetic nanomaterials**, "Synthesis, self-assembly and applications of monodisperse magnetic nanoparticles", Sept 29-Oct 1, 2005, Toulouse, France.
31. "Chemical synthesis of functional nanomaterials", **40th IUPAC Congress**, August 14-19, 2005, Beijing, China.
30. "Magnetic nanoparticles for biomagnetic applications", **MRS Spring Meeting**, March 28-April 1, 2005, San Francisco, CA.
29. "Self-assembled nanomagnets", **APS March Meeting**, March 21-25, 2005, Los Angeles, CA.

28. "Magnetic bead fabrication for bio-medical applications", **the 51st AVS Symposium**, Nov. 14-19, 2004, Anaheim, CA.
27. Lecture, "Self-assembled nanomagnets", **NSF MRSEC Review and Symposium**, University of Nebraska-Lincoln, Sept 23-24, 2004.
26. "FePt and oxide coated FePt nanoparticles", **International symposium on magneto-optical recording**, May 16-19, 2004, Yokohama, Japan.
25. **Tutorial talk**, "Chemical synthesis and self-assembly of monodisperse magnetic nanoparticles", **Workshop on Correlation of Structure and Magnetism in Novel Magnetic Nanoparticles**, Feb. 25-29, 2004, Bonn, Germany.
24. **Keynote Speech**, "Self-assembled nano-magnets for future high density information device applications", **the 21st Century COE Program on System Construction of Global-Network Oriented Information Electronics**, Jan. 29-30, 2004, Sendai, Japan.
23. "Improved preparation of MPt (M = Fe, Co) nanoparticles", **the 9th Joint MMM/Intermag Conference**, January 5-9, 2004, Anaheim, CA.
22. **Keynote Speech**, "Monodisperse magnetic nanoparticles: Chemical synthesis and self-assembly", **the 5th International Symposium on Magnetic Materials and Applications**, December 4-6, 2003, Daejeon, South Korea.
21. "Magnetic nanoparticle arrays for information technology applications", **Emerging Information Technology Conference**, Oct. 31-Nov.1, 2003, Princeton, New Jersey.
20. "Progress in exchange-spring nanocomposites via self-assembly", **DOE CESP annual workshop on nanocomposite magnetic materials**, October 19-21, 2003, Pacific Grove, California.
19. "Polymer-mediated self-assembly of magnetic nanoparticles", **Symposium of Smart nano-assemblies, 226th American Chemical Society Meeting**, September 7-9, 2003, New York, NY.
18. "Monodisperse magnetic nanoparticles: chemical synthesis and self-assembly", **NATO Advanced Research Workshop on Nanostructured Magnetic Materials and Their Applications**, July 1-5, 2003, Istanbul, Turkey.
17. "Synthesis and assembly of magnetic nanoparticles", **the 77th ACS Colloid and Surface Science Symposium**, June 15-18, 2003, Atlanta, GA.
16. **Tutorial talk**, "How to create self-assembled nanostructures", **the 47th Annual Conference on Magnetism and Magnetic Materials**, November 11-15, 2002, Tempa, Florida.
15. "Magnetic nanoparticles for DNA labeling", **the 47th Annual Conference on Magnetism and Magnetic Materials**, November 11-15, 2002, Tempa, Florida.
14. "Exchange-spring nanocomposites via self-assembly", **DOE CESP annual workshop on nanocomposite magnetic materials**, October 20-22, 2002, Stony Brook, New York.
13. "Chemical synthesis and assembly of magnetic nanoparticles", **the 8th international conference on electronic materials**, June 10-14, 2002, Xian, China.
12. "Self assembling iron platinum nanoparticles", **International symposium on magneto-optical recording**, May 5-8, 2002. Brittany, France
11. "FePt Nanoparticle and FePt Nanocrystal Assembly", **The 15th International Vacuum Congress, IUUSTA/AVS**, Oct 28-Nov. 2, 2001, San Francisco, CA.
10. "Monodisperse Magnetic Nanomaterials: Synthesis, Assembly and Applications", **International Workshop on Nanoscience and Nanotechnology**, 16 – 18 July 2001, Beijing, China.
9. "Magnetic nanoparticles and nanoparticle assemblies", **International Conference on Materials for Advanced Technologies**, 1-6 July 2001, Singapore.
8. "Monodispersed FePt nanoparticles and ferromagnetic FePt nanocrystal superlattices", **the 8th Joint MMM-Intermag Conference**, Jan 2001, San Antonio, TX.
7. "Magnetic nanoparticles and nanocrystal superlattices", **the 3rd Annual Technology and Business Opportunities Conference on FINE, ULTRAFINE, AND NANOPOWDERS 2000**, October 2000, Montreal, Quebec, Canada.
6. "Nanoparticle array for magnetic recording", **the International Symposium on Research and Education in the 21st Century (ISRE 2000)**, August 2000, Sendai, Japan.
5. "Chemical synthesis and assembly of monodisperse magnetic nanoparticles", **the 7th Annual International Conference on Composites Engineering**, July 2000, Denver, CO.
4. "Chemical approach to hard magnetic FePt nanocrystal assembly", **the 10th Annual NSIC Meeting**, June 2000, Monterey, CA.
3. "Chemical Synthesis of monodisperse Co and FePt magnetic nanoparticles", **Advances in Materials Chemistry, ACS New England Regional Meeting**, June 2000, Storrs, CT.

2. “Magnetic thin films prepared from monodisperse cobalt-based nanocrystals”, **MRS spring meeting**, April 1999, San Francisco, CA.

1. “Synthesis of monodisperse elemental and alloy magnetic nanocrystals and their assembly into 3-D superlattices”, **the 43rd Annual Conference on Magnetism and Magnetic Materials**, November 1998, Miami, Florida.

I. Seminar and Colloquium

- Seminar, Peking University, China, July 2009.
- Seminar, Lanzhou University, China, July 2009.
- Seminar, Sichuan University, China, July 2009.
- Seminar, Nanjing University, China, June 2009.
- Seminar, Korea Institute of Science and Technology, South Korea, Dec 9, 2008.
- Seminar, Korea University, South Korea, Dec 9, 2008.
- Seminar, Seoul National University, South Korea, Dec 8, 2008.
- Seminar, Department of Chemistry, the University of Pennsylvania, Sept 30, 2008.
- Seminar, University of Science and Technology, China, July 2008.
- Seminar, Peking University, China, July 2008
- Nanomaterials Seminar, Indiana University, Nov 7, 2007.
- Nanobiotech seminar, Stanford University, Jan. 23, 2007.
- Seminar, Department of Chemistry, Beijing University, July 18, 2006.
- Seminar, Department of Chemistry, Tsinghua University, July 17, 2006.
- Seminar, Center of Nanotechnology, University of Washington, April 25, 2006.
- Seminar, Department of Chemistry and Biochemistry, University of Massachusetts-Dartmouth, Feb 1, 2006.
- Colloquium, Department of Physics, Brown University, Sept. 12, 2005.
- Colloquium, Department of Chemistry and Physics and MINT Center, University of Alabama, Sept. 22, 2004
- Colloquium, Department of Chemistry and Advanced Materials Research Institute, University of New Orleans, April 18, 2004.
- Colloquium, Department of Chemistry and Biochemistry, Southern Illinois University, April 18, 2003.
- Condensed Matter Physics Seminar, Department of Physics and Astronomy, University of Delaware, April 8, 2003.
- Seminar, Department of Materials Science and Engineering, Johns Hopkins University, March 27, 2003.
- Seminar, Department of Materials Science and Engineering, University of Illinois at Urbana-Champaign. March 18, 2003.
- Seminar, Chemical and Biomolecular Engineering, Johns Hopkins University, Feb 27, 2003.
- Seminar, Department of Chemistry, Duke University, Jan. 30, 2003.
- Seminar, Department of Chemical Engineering, Univ. of Rochester, Sept 11, 2002.
- MRSEC seminar, Columbia University, March 27, 2002.
- Special Colloquium, Materials Science Division (MSD), Argonne National Lab, Jan.23, 2002.
- Seminar, Materials Science and Engineering, Stanford University, Nov. 02, 2001.
- Colloquium, Department of Chemistry, Brown University, September 25, 2000.

J. Selected Research Highlights

The Providence Journal, “Zero in on a targeted treatment of cancer” by Wayne Miller, May 4, 2009.

Bloomberg News/the Providence Journal, “Brown chemists extend life of fuel cell”, March 25, 2009, by Halia Pavliva.

Providence Business News, “Brown study may mean cheaper fuel cells”, March 25, 2009, By Susan A. Baird.

Chemistry World, “Producing powerful palladium particles”, March 24, 2009, by Lewis Brindley

Brown University Press Release, March 17, 2009, “Brown Chemists Create More Efficient Palladium Fuel Cell Catalysts” by Richard Lewis. Also highlighted by **NSF News Service**, Science 360.

Brown Daily Herald, March 16, 2009, “The (nano)future of cancer treatment” by Matthew Scult.

Chemistry World, “Nanodumbbells target cancer cells”, March 16, 2009, by Hayley Birch.

Health Check: Breast cancer research, April 1, 2009, reported by NBC 10’s Barbara Morse Silva

Brown University Press Release, March 10, 2009, “Twin Nanoparticle Shown Effective at Targeting, Killing Breast Cancer Cells” by Richard Lewis. Also highlighted by **Japan Herald**, **Science Daily** etc web news service.

Chemical & Engineering News, April 21, 2008. "Catalyst Shape Matters" by Bethany Halford.

Providence Business News, April 21, 2008. "Brown chemists making progress in fuel research" by David Ortiz.

Brown University Press Release, April 10, 2008, "Brown Chemists Find Platinum Nanocube Improves Fuel Cells" by Richard Lewis.

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