



## Shan X. Wang

Leland T. Edwards Professor in the School of Engineering and Professor of Electrical Engineering and, by courtesy, of Radiology (Molecular Imaging Program at Stanford)

Materials Science and Engineering

 NIH Biosketch available Online

 Resume available Online

### CONTACT INFORMATION

- **Administrator**

Nuvia Pacheco - Administrative Associate

**Email** npacheco@stanford.edu

**Tel** 650 723 0197

### Bio

---

#### BIO

Dr. Wang is the Leland T. Edwards Professor in the School of Engineering and Professor of Materials Science and Engineering, jointly of Electrical Engineering and, by courtesy, of Radiology (Molecular Imaging Program at Stanford). He directs the Center for Magnetic Nanotechnology and is a leading expert in biosensors, information storage and spintronics. His research and inventions span across a variety of areas including Edge AI, magnetic biochips, in vitro diagnostics, cancer biomarkers, magnetic nanoparticles, magnetic sensors, magnetoresistive random access memory, and magnetic integrated inductors. He has over 360 publications, and holds 80+ issued or pending patents in these and interdisciplinary areas. He was named an inaugural Fred Terman Fellow, and was elected a Fellow of the Institute of Electrical and Electronics Engineers (IEEE), a Fellow of American Physical Society (APS) and a Fellow of National Academy of Inventors (FNAI) for his seminal contributions to magnetic materials, nanosensors and cancer diagnostics. He coauthored two textbooks: Magnetic Information Storage Technology (Academic Press) and Biochips and Medical Imaging (Wiley). In 2025 he was honored with an Achievement Award by IEEE Magnetics Society, its highest technical award, for his sustained contributions to magnetic nanotechnology, biosensors, and spintronics; his team won the First Place Prize of the 3rd Clarity Prediction Challenge (CPC3), and its top-performing speech foundation model will be presented at the 2026 ICASSP in Barcelona.

Dr. Wang cofounded six high-tech startups in Silicon Valley, including Curve Biosciences and Magic Lifescience. In 2023, Curve Biosciences demonstrated a circulating tumor DNA NGS assay, enabling early detection of liver cancer from cirrhosis with unprecedented sensitivity and specificity; now Curve is pioneering chronic disease care based on Whole-Body Intelligence. Magic launched clinical trials to seek FDA clearance for its rapid NAT products at POC, and was honored for its disruptive technology in ADLM 2025 Conference. Through his participation and leadership in Cancer Nanotechnology Excellence, Semiconductor Research Corp (SRC) and Microelectronics Commons, he is actively engaged in the transformative R&D of healthcare, energy-efficient computing and edge AI.

#### ACADEMIC APPOINTMENTS

- Professor, Materials Science and Engineering
- Professor, Electrical Engineering

- Professor (By courtesy), Radiology - Rad/Molecular Imaging Program at Stanford
- Member, Bio-X
- Member, Cardiovascular Institute
- Member, Maternal & Child Health Research Institute (MCHRI)
- Affiliate, Precourt Institute for Energy
- Member, Stanford Cancer Institute
- Affiliate, Stanford Woods Institute for the Environment
- Member, Wu Tsai Neurosciences Institute

### **ADMINISTRATIVE APPOINTMENTS**

- Associate Chair, Materials Science and Engineering, (2014-2019)

### **HONORS AND AWARDS**

- Achievement Award, IEEE Magnetics Society (2025)
- First Place Prize, The 3rd Clarity Prediction Challenge (CPC3), (2025)
- Fellow, National Academy of Inventors (2021)
- Leland T. Edwards Professor, Stanford University (2018)
- Bold Epic Innovator Award, XPRIZE Foundation (2017)
- Nokia Sensing XCHALLENGE Distinguished Award, XPRIZE Foundation (2014)
- Faculty Award, IBM (2013-4)
- Faculty Fellow, Stanford Center at Peking University (SCP KU) (2013)
- Fellow, American Physical Society (APS) (2012)
- Fellow, The Institute of Electrical and Electronics Engineers (IEEE) (2009)
- Keck Futures Initiative Award, National Academies (2006-7)
- Distinguished Lecturer, IEEE Magnetics Society (2001)
- Partnership Award, IBM (1999)
- Inaugural Frederick Terman Faculty Fellow, Stanford University (1994-97)
- CUSPEA Scholarship, Organized by Nobel Laureate TD Lee (1986)

### **PROGRAM AFFILIATIONS**

- Stanford SystemX Alliance

### **PROFESSIONAL EDUCATION**

- PhD, Carnegie Mellon University , Electrical and Computer Engineering (1993)

### **COMMUNITY AND INTERNATIONAL WORK**

- Fellow, Center for Innovation in Global Health (CIGH), Asia, Africa, America

### **LINKS**

- Wang Group Website: <https://wanggroup.stanford.edu>

## Research & Scholarship

---

### CURRENT RESEARCH AND SCHOLARLY INTERESTS

Dr. Wang is the Leland T. Edwards Professor in the School of Engineering and Professor of Materials Science and Engineering, jointly of Electrical Engineering and, by courtesy, of Radiology (Molecular Imaging Program at Stanford). He directs the Center for Magnetic Nanotechnology and is a leading expert in biosensors, information storage and spintronics. His research and inventions span across a variety of areas including Edge AI, magnetic biochips, in vitro diagnostics, cancer biomarkers, magnetic nanoparticles, magnetic sensors, magnetoresistive random access memory, and magnetic integrated inductors. He has over 360 publications, and holds 80+ issued or pending patents in these and interdisciplinary areas. He was named an inaugural Fred Terman Fellow, and was elected a Fellow of the Institute of Electrical and Electronics Engineers (IEEE), a Fellow of American Physical Society (APS) and a Fellow of National Academy of Inventors (FNAI) for his seminal contributions to magnetic materials, nanosensors and cancer diagnostics. He coauthored two textbooks: *Magnetic Information Storage Technology* (Academic Press) and *Biochips and Medical Imaging* (Wiley). In 2025 he was honored with an Achievement Award by IEEE Magnetics Society, its highest technical award, for his sustained contributions to magnetic nanotechnology, biosensors, and spintronics; his team won the First Place Prize of the 3rd Clarity Prediction Challenge (CPC3), and its top-performing speech foundation model will be presented at the 2026 ICASSP in Barcelona.

Dr. Wang cofounded six high-tech startups in Silicon Valley, including Curve Biosciences and Magic Lifescience. In 2023, Curve Biosciences demonstrated a circulating tumor DNA NGS assay, enabling early detection of liver cancer from cirrhosis with unprecedented sensitivity and specificity; now Curve is pioneering chronic disease care based on Whole-Body Intelligence. Magic launched clinical trials to seek FDA clearance for its rapid NAT products at POC, and was honored for its disruptive technology in ADLM 2025 Conference. Through his participation and leadership in Cancer Nanotechnology Excellence, Semiconductor Research Corp (SRC) and Microelectronics Commons, he is actively engaged in the transformative R&D of healthcare, energy-efficient computing and edge AI.

Dr. Wang obtained his PhD in Electrical and Computer Engineering from Carnegie Mellon University in 1993, MS in Physics from Iowa State University in 1988, and BS in Physics from the University of Science and Technology of China in 1986.

### CLINICAL TRIALS

- COMT Activity and Hypnotizability, Not Recruiting
- Identification of Circulating Tumor Cells in the Peripheral Blood of Lung Cancer Patients, Not Recruiting

## Teaching

---

### COURSES

#### 2025-26

- Biochips and Medical Imaging: EE 225, MATSCI 225, SBIO 225 (Win)
- Great Inventions That Matter: MATSCI 83N (Aut)

#### 2024-25

- Biochips and Medical Imaging: EE 225, MATSCI 225, SBIO 225 (Win)
- Great Inventions That Matter: MATSCI 83N (Aut)

#### 2023-24

- Biochips and Medical Imaging: EE 225, MATSCI 225 (Win)
- Great Inventions That Matter: MATSCI 83N (Aut)

- New Methods in Thin Film Synthesis: MATSCI 312 (Spr)

#### 2022-23

- Biochips and Medical Imaging: EE 225, MATSCI 225, SBIO 225 (Win)
- Great Inventions That Matter: MATSCI 83N (Aut)
- New Methods in Thin Film Synthesis: MATSCI 312 (Spr)

### STANFORD ADVISEES

#### Doctoral Dissertation Reader (AC)

Varun Dolia, Daisy O'Mahoney, Prima Dewi Sinawang, Haotian Su, Benj Wollant, Kelly Xiao, Steven Yee

#### Postdoctoral Faculty Sponsor

Rahul Lall

#### Doctoral Dissertation Advisor (AC)

Jacob Bryan, Christopher Choi, Maximus Di Perna, Sydney Fultz-Waters, Linkai Li

#### Master's Program Advisor

Vassilis Alexopoulos, Richard Luhtaru, Bryan Mendez, Hiranmai Mohan, Jane Nguyen, Aditi Oak, Will Salisbury, Aanya Tashfeen

#### Doctoral Dissertation Co-Advisor (AC)

Kenneth Brinson

#### Doctoral (Program)

Puyang Huang, Linkai Li, Vivian Sattler

### GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Anesthesia (Fellowship Program)
- Bioengineering (Phd Program)
- Stanford Cancer Imaging Training Program (SCIT) (Fellowship Program)
- Stanford Molecular Imaging Scholars Program (SMIS) (Fellowship Program)

### Publications

---

#### PUBLICATIONS

- **Flexible radio-frequency carbon nanotube transistors operating at frequencies above 100 GHz** *NATURE ELECTRONICS*  
Xia, F., Xia, T., Su, H., Gan, L., Hu, Q., Wang, W., Huang, R., Bai, T., Chen, Y., Ma, C., Long, G., Wang, S. X., Pop, et al  
2026
- **Spin-charge conversion in a two-dimensional electron gas with giant Rashba spin-orbit coupling** *PHYSICAL REVIEW APPLIED*  
Riddiford, L. J., Zheng, X., Alaei, S. P., Xue, F., Wang, S. X., Suzuki, Y.  
2026; 25 (3)
- **Magnetic retrieval of kidney stones via ureteroscopy in a porcine model** *DEVICE*  
Roquero, D., Ge, T., Holton, G. H., Kornberg, Z., Bryan, J. T., Doeve, J., Lau, H., Sheth, K., Conti, S., Mach, K. E., Wang, S. X., Liao, J. C.  
2026; 4 (1)
- **Multiplex Magnetic Biosensor Microarrays Facilitate Personalized Vaccination Schedules for SARS-CoV-2 Variants** *BIOCHIP JOURNAL*  
Um, H., Kim, S., Hwang, J., Lee, Y., Wang, S. X., Lee, J.  
2025
- **Multiplex Magnetic Biosensor Microarrays Facilitate Personalized Vaccination Schedules for SARS-CoV-2 Variants.** *Biochip journal*

Um, H. K., Kim, S., Hwang, J., Lee, Y., Wang, S. X., Lee, J. R.  
2025

- **A 64-kilobit spin-orbit torque magnetic random-access memory based on back-end-of-line-compatible  $\beta$ -tungsten** *NATURE ELECTRONICS*  
Huang, Y., Song, M., Lee, C., Chen, Y., Chiang, C., Chou, S., Hsu, L., Liu, H., Chen, G., Yang, S., Chang, Y., Wang, I., Hsin, et al  
2025
- **Magnetization switching and detection by Pt<sub>x</sub>Sn<sub>1-x</sub> alloys** *APPLIED PHYSICS REVIEWS*  
Mahendra, D. C., Sakuma, K., Santosh, K. C., Debashis, P., Gay, C., Lux, J., Rogan, C., Wilson, T., Toku, R., Adams, D., Xue, F., Plombon, J. J., Kevek, et al  
2025; 12 (2)
- **Denaturation methods for reusable magnetic biosensors. *Lab on a chip***  
Park, S., Kim, S., Wang, S. X., Lee, J. R.  
2025
- **High-Field Breakdown and Thermal Characterization of Indium Tin Oxide Transistors.** *ACS nano*  
Su, H., Lee, Y., Pena, T., Fultz-Waters, S., Kang, J., Koroglu, C., Wahid, S., Newcomb, C. J., Song, Y. S., Wong, H. P., Wang, S. X., Pop, E.  
2025
- **High-Density STT-Assisted SOT-MRAM (SAS-MRAM) for Energy-Efficient AI Applications** *IEEE TRANSACTIONS ON MAGNETICS*  
Xue, F., Hwang, W., Zhang, F., Tsai, W., Fan, D., Wang, S. X.  
2025; 61 (4)
- **Unconventional spin-to-charge conversion in MnPd<sub>3</sub>** *APPLIED PHYSICS LETTERS*  
Mahendra, D. C., Debashis, P., Gay, C., Lux, J., Zhang, Y., Adams, D., Xue, F., Rogan, C., Wilson, T., Toku, R., Kevek, J., Tronic, T. A., Clendenning, et al  
2025; 126 (11)
- **No Audiogram: Leveraging Existing Scores for Personalized Speech Intelligibility Prediction**  
Zhou, H., Mo, C., Cao, B., Li, L., Wang, S., Int Speech Commun Assoc  
ISCA-INT SPEECH COMMUNICATION ASSOC.2025: 5468-5472
- **First Comparative Thermal Evaluation of 2D Semiconductor vs. Silicon Nanosheet Transistors**  
Song, Y., Su, H., Pena, T., Persson, A. E. O., Yang, K., Yalon, E., Bennett, R. K. A., Han, Z., Neilson, K., Kang, J., Yang, J. A., Wong, H., Wang, et al  
IEEE.2025
- **Thermal Evaluation and Comparison of CAA and GAA Indium Tin Oxide Vertical Channel Transistors**  
Song, Y., Kang, J., Gu, H., Su, H., Lee, Y., Wang, S. X., Kwon, J., Wong, H., Pop, E., IEEE  
IEEE.2025
- **FP-SMR: A Fully Digital Floating-Point Processing-in-SAS-MRAM for Session-based Recommender System**  
Ali, A., Sridharan, A., Guo, C., Hwang, W., Tsai, W., Zhang, J., Chen, Y., Wang, S. X., Fan, D., ACM  
ASSOC COMPUTING MACHINERY.2025: 341-347
- **Detection of factor Xa activity using giant magnetoresistive biosensors.** *Analytica chimica acta*  
Lee, Y., Kim, S., Song, T. J., Wang, S. X., Lee, J. R.  
2024; 1331: 343347
- **Design and Validation of Specific Oligonucleotide Probes on Planar Magnetic Biosensors.** *Analytical chemistry*  
Kim, S., Im, J., Wang, S. X., Lee, J. R.  
2024
- **Enhanced spin-torque efficiency by metal insertion in the Pt/Co/MgO system** *PHYSICAL REVIEW B*  
Xue, F., Hwang, W., Klewe, C., Song, M., Su, H., Shafer, P., Tsai, W., Bao, X., Wang, S. X.  
2024; 110 (17)
- **Thermal Characterization of Ultrathin MgO Tunnel Barriers.** *Nano letters*  
Su, H., Kwon, H., Xue, F., Sato, N., Bhat, U., Tsai, W., Bosman, M., Asheghi, M., Goodson, K. E., Pop, E., Wang, S. X.  
2024

- **Experimental Demonstration of Field-Free STT-Assisted SOT-MRAM (SAS-MRAM) With Four Bits per SOT Programming Line** *IEEE ELECTRON DEVICE LETTERS*  
Hwang, W., Xue, F., Song, M., Hsu, C., Chen, T. C., Tsai, W., Bao, X., Wang, S. X.  
2024; 45 (10): 1800-1803
- **On-Device Continual Learning With STT-Assisted-SOT MRAM-Based In-Memory Computing** *IEEE TRANSACTIONS ON COMPUTER-AIDED DESIGN OF INTEGRATED CIRCUITS AND SYSTEMS*  
Zhang, F., Sridharan, A., Hwang, W., Xue, F., Tsai, W., Wang, S., Fan, D.  
2024; 43 (8): 2393-2404
- **Thermal optimization of two-terminal SOT-MRAM** *JOURNAL OF APPLIED PHYSICS*  
Su, H., Kwon, H., Hwang, W., Xue, F., Koroglu, C., Tsai, W., Asheghi, M., Goodson, K. E., Wang, S. X., Pop, E.  
2024; 136 (1)
- **The role of magnetic anisotropy in the magnetoresistance of Cr<sub>2</sub>O<sub>3</sub>/Al<sub>2</sub>O<sub>3</sub> thin film antiferromagnets** *AIP ADVANCES*  
Wisser, J. J., Xue, F., Wang, S. X., Suzuki, Y.  
2024; 14 (3)
- **Evaluation of restriction and Cas endonuclease kinetics using matrix-insensitive magnetic biosensors.** *Biosensors & bioelectronics*  
Im, J., Kim, S., Park, S., Wang, S. X., Lee, J. R.  
2024; 249: 116017
- **Unconventional Spin-Orbit Torques (SOT) in Sputtered Materials for High Density High Speed MRAM**  
Wang, S. X., IEEE  
IEEE.2024
- **Efficient Memory Integration: MRAM-SRAM Hybrid Accelerator for Sparse On -Device Learning**  
Zhang, F., Sridharan, A., Tsai, W., Chen, Y., Wang, S. X., Fan, D., ACM  
ASSOC COMPUTING MACHINERY.2024
- **High-Density STT-Assisted SOT-MRAM (SAS-MRAM) for Energy-Efficient AI Application**  
Xue, F., Hwang, W., Tsai, W., Wang, S. X., IEEE  
IEEE.2024
- **Real-time temperature correction for magnetoresistive biosensors integrated with temperature modulator.** *Biosensors & bioelectronics: X*  
Kim, S., Wang, S. X., Lee, J.  
2023; 14
- **Longitudinal analysis of anti-SARS-CoV-2 neutralizing antibody (NAb) titers in vaccinees using a novel giant magnetoresistive (GMR) assay.** *Sensors and actuators. B, Chemical*  
Ng, E., Choi, C., Wang, S. X.  
2023; 387: 133773
- **Field-free spin-orbit torque switching assisted by in-plane unconventional spin torque in ultrathin [Pt/Co]N.** *Nature communications*  
Xue, F., Lin, S. J., Song, M., Hwang, W., Klewe, C., Lee, C. M., Turgut, E., Shafer, P., Vaillonis, A., Huang, Y. L., Tsai, W., Bao, X., Wang, et al  
2023; 14 (1): 3932
- **Rapid, Point-of-Care Host-Based Gene Expression Diagnostics Using Giant Magnetoresistive Biosensors.** *ACS sensors*  
Sofia de Olazarra, A., Chen, F., Wang, T., Wang, S. X.  
2023
- **A magnetic hydrogel for the efficient retrieval of kidney stone fragments during ureteroscopy.** *Nature communications*  
Ge, T. J., Roquero, D. M., Holton, G. H., Mach, K. E., Prado, K., Lau, H., Jensen, K., Chang, T. C., Conti, S., Sheth, K., Wang, S. X., Liao, J. C.  
2023; 14 (1): 3711
- **Advances in point-of-care genetic testing for personalized medicine applications** *BIOMICROFLUIDICS*  
de Olazarra, A. S., Wang, S. X.  
2023; 17 (3): 031501

- **Observation of anti-damping spin-orbit torques generated by in-plane and out-of-plane spin polarizations in MnPd3.** *Nature materials*  
Dc, M., Shao, D. F., Hou, V. D., Vaillionis, A., Quarterman, P., Habiboglu, A., Venuti, M. B., Xue, F., Huang, Y. L., Lee, C. M., Miura, M., Kirby, B., Bi, et al  
2023
- **EFFICACY AND SAFETY OF A MAGNETIC HYDROGEL FOR STONE FRAGMENT REMOVAL: AN IN VITRO AND IN VIVO STUDY**  
Roquero, D., Ge, T., Holton, G. H., Mach, K. E., Kornberg, Z., Sun, R., Conti, S., Wang, S. X., Liao, J. C.  
LIPPINCOTT WILLIAMS & WILKINS.2023: E819
- **Energy Efficient Computing With High-Density, Field-Free STT-Assisted SOT-MRAM (SAS-MRAM)** *IEEE TRANSACTIONS ON MAGNETICS*  
Hwang, W., Xue, F., Zhang, F., Song, M., Lee, C., Turgut, E., Chen, T. C., Bao, X., Tsai, W., Fan, D., Wang, S. X.  
2023; 59 (3)
- **Large Spin-Orbit-Torque Efficiency and Room-Temperature Magnetization Switching in SrIrO<sub>3</sub>/Co-Fe-B Heterostructures** *PHYSICAL REVIEW APPLIED*  
Li, P., Channa, S., Li, X., Alahmed, L., Tang, C., Yi, D., Riddiford, L., Wisser, J., Balakrishnan, P. P., Zheng, X., Lu, D., Vaillionis, A., Wang, et al  
2023; 23 (2)
- **Point of care testing of enzyme polymorphisms for predicting hypnotizability and postoperative pain.** *The Journal of molecular diagnostics : JMD*  
Cortade, D. L., Markovits, J., Spiegel, D., Wang, S. X.  
2023
- **2-Terminal, High Density, and Magnetic Field Free SOT-MRAM**  
Hwang, W., Xue, F., Tsai, W., Wang, S. X., IEEE  
IEEE.2023
- **Quantitative and rapid detection of morphine and hydromorphone at the point of care by an automated giant magnetoresistive nanosensor platform.** *Analytical and bioanalytical chemistry*  
Cortade, D. L., Wang, S. X.  
2022
- **Giant Orbital Anisotropy with Strong Spin-Orbit Coupling Established at the Pseudomorphic Interface of the Co/Pd Superlattice.** *Advanced science (Weinheim, Baden-Wuerttemberg, Germany)*  
Kim, S., Pathak, S., Rhim, S. H., Cha, J., Jekal, S., Hong, S. C., Lee, H. H., Park, S., Lee, H., Park, J., Lee, S., Steinruck, H., Mehta, et al  
2022: e2201749
- **Magnetic supercluster particles for highly sensitive magnetic biosensing of proteins.** *Mikrochimica acta*  
Kim, S., Kim, J., Im, J., Kim, M., Kim, T., Wang, S. X., Kim, D., Lee, J.  
2022; 189 (7): 256
- **From saliva to SNP: non-invasive, point-of-care genotyping for precision medicine applications using recombinase polymerase amplification and giant magnetoresistive nanosensors.** *Lab on a chip*  
de Olazarra, A. S., Cortade, D. L., Wang, S. X.  
2022
- **A GMR-based assay for quantification of the human response to influenza.** *Biosensors & bioelectronics*  
Ravi, N., Chang, S. E., Franco, L. M., Nagamani, S. C., Khatri, P., Utz, P. J., Wang, S. X.  
2022; 205: 114086
- **An automated and mobile magnetoresistive biosensor system for early hepatocellular carcinoma diagnosis.** *Biosensors & bioelectronics*  
Yao, C., Ng, E., Wang, S. X.  
1800; 202: 113982
- **Performance Benchmarking of Spin-Orbit Torque Magnetic RAM (SOT-MRAM) for Deep Neural Network (DNN) Accelerators**  
Luo, Y., Kumar, P., Liao, Y., Hwang, W., Xue, F., Tsai, W., Wang, S. X., Naeemi, A., Yu, S., IEEE  
IEEE.2022: 73-76
- **A Self-Sustained Current Sensor for Smart Grid Application** *IEEE TRANSACTIONS ON INDUSTRIAL ELECTRONICS*  
Wang, Z., Hu, J., Ouyang, Y., Deng, Y., Zhao, G., He, J., Wang, S. X.

2021; 68 (12): 12810-12820

- **Spin-orbit torques of an in-plane magnetized system modulated by the spin transport in the ferromagnetic Co layer** *APL MATERIALS*  
Xue, F., Lin, S., Li, P., Hwang, W., Huang, Y., Tsai, W., Wang, S. X.  
2021; 9 (10)
- **Charge-spin interconversion in epitaxial Pt probed by spin-orbit torques in a magnetic insulator** *PHYSICAL REVIEW MATERIALS*  
Li, P., Riddiford, L. J., Bi, C., Wisser, J. J., Sun, X., Vailionis, A., Veit, M. J., Altman, A., Li, X., Mahendra, D. C., Wang, S. X., Suzuki, Y., Emori, et al  
2021; 5 (6)
- **Large and robust charge-to-spin conversion in sputtered conductive WTex with disorder** *MATTER*  
Li, X., Li, P., Hou, V., Mahendra, D. C., Nien, C., Xue, F., Yi, D., Bi, C., Lee, C., Lin, S., Tsai, W., Suzuki, Y., Wang, et al  
2021; 4 (5): 1639-1653
- **Tunable spin-orbit torque efficiency in in-plane and perpendicular magnetized [Pt/Co](n) multilayer** *APPLIED PHYSICS LETTERS*  
Xue, F., Lin, S., Mahendra, D. C., Bi, C., Li, X., Tsai, W., Wang, S. X.  
2021; 118 (4)
- **Giant Magnetoresistive Nanosensor Analysis of Circulating Tumor DNA Epidermal Growth Factor Receptor Mutations for Diagnosis and Therapy Response Monitoring.** *Clinical chemistry*  
Nesvet, J. C., Antilla, K. A., Pancirer, D. S., Lozano, A. X., Preiss, J. S., Ma, W. n., Fu, A. n., Park, S. M., Gambhir, S. S., Fan, A. C., Neal, J. W., Padda, S. K., Das, et al  
2021
- **Challenges toward Low-Power SOT-MRAM**  
Lin, S., Huang, Y., Song, M., Lee, C., Xue, F., Chen, G., Yang, S., Chang, Y., Wang, I., Hsin, Y., Su, Y., Wei, J., Pai, et al  
IEEE.2021
- **Ultrahigh Spin-Orbit Torque Efficiency at Spin Reorientation Transition State in Pt/Co Multilayer**  
Xue, F., Lin, S., Dc, M., Bi, C., Li, X., Tsai, W., Wang, S. X., IEEE  
IEEE.2021
- **A Novel Current Reconstruction Method Based on Elastic Net Regularization** *IEEE TRANSACTIONS ON INSTRUMENTATION AND MEASUREMENT*  
Zhao, G., Hu, J., He, J., Wang, S. X.  
2020; 69 (10): 7484–93
- **Diagnostics for SARS-CoV-2 detection: A comprehensive review of the FDA-EUA COVID-19 testing landscape.** *Biosensors & bioelectronics*  
Ravi, N., Cortade, D. L., Ng, E., Wang, S. X.  
2020; 165: 112454
- **Parametric Reconstruction of Multiple Line Currents Based on Magnetic Sensor Array** *IEEE TRANSACTIONS ON MAGNETICS*  
Zhao, G., Hu, J., Ma, H., He, J., Wang, S. X.  
2020; 56 (7)
- **Flow Homogenization Enables a Massively Parallel Fluidic Design for High-throughput and Multiplexed Cell Isolation.** *Advanced materials technologies*  
Ooi, C., Earhart, C. M., Hughes, C. E., Lee, J. R., Wong, D. J., Wilson, R. J., Rohatgi, R., Wang, S. X.  
2020; 5 (5)
- **Drive-Current-Free Switch With Internal Transduction in a Magneto Piezo-Electronic Transistor** *IEEE TRANSACTIONS ON INDUSTRIAL ELECTRONICS*  
Xue, F., Guo, Y., Sato, N., Ouyang, Y., Han, Z., Wang, S. X., Hu, J., He, J.  
2020; 67 (4): 3257–66
- **Flow Homogenization Enables a Massively Parallel Fluidic Design for High-Throughput and Multiplexed Cell Isolation** *ADVANCED MATERIALS TECHNOLOGIES*  
Ooi, C., Earhart, C. M., Hughes, C. E., Lee, J., Wong, D. J., Wilson, R. J., Rohatgi, R., Wang, S. X.  
2020
- **Carbon-coated FeCo nanoparticles as sensitive magnetic-particle-imaging tracers with photothermal and magnetothermal properties.** *Nature biomedical engineering*

- Song, G. n., Kenney, M. n., Chen, Y. S., Zheng, X. n., Deng, Y. n., Chen, Z. n., Wang, S. X., Gambhir, S. S., Dai, H. n., Rao, J. n.  
2020
- **Spin-Orbit-Torque Material Exploration for Maximum Array-Level Read/Write Performance**  
Liao, Y., Kumar, P., Dc, M., Li, X., Zhang, D., Wang, J., Wang, S. X., Ralph, D. C., Naeemi, A., IEEE  
IEEE.2020
  - **A mountable toilet system for personalized health monitoring via the analysis of excreta.** *Nature biomedical engineering*  
Park, S. M., Won, D. D., Lee, B. J., Escobedo, D. n., Esteva, A. n., Aalipour, A. n., Ge, T. J., Kim, J. H., Suh, S. n., Choi, E. H., Lozano, A. X., Yao, C.  
n., Bodapati, et al  
2020
  - **Piezoelectric-Piezoresistive Coupling MEMS Sensors for Measurement of Electric Fields of Broad Bandwidth and Large Dynamic Range** *IEEE TRANSACTIONS ON INDUSTRIAL ELECTRONICS*  
Xue, F., Hu, J., Guo, Y., Han, G., Ouyang, Y., Wang, S. X., He, J.  
2020; 67 (1): 551–59
  - **Publisher Correction: A mountable toilet system for personalized health monitoring via the analysis of excreta.** *Nature biomedical engineering*  
Park, S. M., Won, D. D., Lee, B. J., Escobedo, D. n., Esteva, A. n., Aalipour, A. n., Ge, T. J., Kim, J. H., Suh, S. n., Choi, E. H., Lozano, A. X., Yao, C.  
n., Bodapati, et al  
2020
  - **Early multiplexed detection of cirrhosis by giant magnetoresistive biosensors with protein biomarkers.** *ACS sensors*  
Ng, E. n., Le, A. K., Nguyen, M. H., Wang, S. X.  
2020
  - **Materials Requirements of High-Speed and Low-Power Spin-Orbit-Torque Magnetic Random-Access Memory**  
Li, X., Lin, S., Dc, M., Liao, Y., Yao, C., Naeemi, A., Tsai, W., Wang, S. X.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.2020: 674–80
  - **Method of inter-turn fault detection for next-generation smart transformers based on deep learning algorithm** *HIGH VOLTAGE*  
Duan, L., Hu, J., Zhao, G., Chen, K., Wang, S. X., He, J.  
2019; 4 (4): 282–91
  - **Large voltage control of magnetic anisotropy in CoFeB/MgO/OX structures at room temperature** *APL MATERIALS*  
Xue, F., Sato, N., Bi, C., Hu, J., He, J., Wang, S. X.  
2019; 7 (10)
  - **Efficient spin current generation in low-damping Mg(Al, Fe)(2)O-4 thin films** *APPLIED PHYSICS LETTERS*  
Riddiford, L. J., Wisser, J. J., Emori, S., Li, P., Roy, D., Cogulu, E., van't Erve, O., Deng, Y., Wang, S. X., Jonker, B. T., Kent, A. D., Suzuki, Y.  
2019; 115 (12)
  - **Current sensors based on GMR effect for smart grid applications** *SENSORS AND ACTUATORS A-PHYSICAL*  
Ouyang, Y., Wang, Z., Zhao, G., Hu, J., Ji, S., He, P., Wang, S. X.  
2019; 294: 8–16
  - **Identification of Partial Discharge Defects Based on Deep Learning Method** *IEEE TRANSACTIONS ON POWER DELIVERY*  
Duan, L., Hu, J., Zhao, G., Chen, K., He, J., Wang, S. X.  
2019; 34 (4): 1557–68
  - **Overhead Transmission Line Parameter Reconstruction for UAV Inspection Based on Tunneling Magnetoresistive Sensors and Inverse Models** *IEEE TRANSACTIONS ON POWER DELIVERY*  
Wu, Y., Zhao, G., Hu, J., Ouyang, Y., Wang, S. X., He, J., Gao, F., Wang, S.  
2019; 34 (3): 819–27
  - **Quantification of cDNA on GMR biosensor array towards point-of-care gene expression analysis** *BIOSENSORS & BIOELECTRONICS*  
Ravi, N., Rizzi, G., Chang, S. E., Cheung, P., Utz, P. J., Wang, S. X.  
2019; 130: 338–43
  - **Magnetoresistive Sensor Development Roadmap (Non-Recording Applications)** *IEEE TRANSACTIONS ON MAGNETICS*

Zheng, C., Zhu, K., de Freitas, S., Chang, J., Davies, J. E., Eames, P., Freitas, P. P., Kazakova, O., Kim, C., Leung, C., Liou, S., Ognev, A., Piramanayagam, et al  
2019; 55 (4)

- **Self-healing of electrical damage in polymers using superparamagnetic nanoparticles** *NATURE NANOTECHNOLOGY*  
Yang, Y., He, J., Li, Q., Gao, L., Hu, J., Zeng, R., Qin, J., Wang, S. X., Wang, Q.  
2019; 14 (2): 151+
- **Magneto-nanosensor smartphone platform for the detection of HIV and leukocytosis at point-of-care** *NANOMEDICINE-NANOTECHNOLOGY BIOLOGY AND MEDICINE*  
Ng, E., Yao, C., Shultz, T. O., Ross-Howe, S., Wang, S. X.  
2019; 16: 10–19
- **Highly sensitive detection of DNA hypermethylation in melanoma cancer cells** *BIOSENSORS & BIOELECTRONICS*  
Nesvet, J., Rizzi, G., Wang, S. X.  
2019; 124: 136–42
- **An electrodynamic energy harvester with a 3D printed magnet and optimized topology** *APPLIED PHYSICS LETTERS*  
Wang, Z., Huber, C., Hu, J., He, J., Suess, D., Wang, S. X.  
2019; 114 (1)
- **GMR Spin-Valve Biosensors** *SPINTRONICS HANDBOOK: SPIN TRANSPORT AND MAGNETISM: NANOSCALE SPINTRONICS AND APPLICATIONS, VOL 3, 2ND EDITION*  
Lee, J., Gaster, R. S., Hall, D. A., Wang, S. X.  
edited by Tsymbal, E. Y., Zutic  
2019: 471–97
- **Interfacial engineering of SOT-MRAM to modulate atomic diffusion and enable PMA stability > 400 degrees C**  
Bi, C., Lin, S., Li, X., Simsek, T., Song, M., Tsai, W., Wang, S. X., IEEE  
IEEE.2019
- **An Automated, Quantitative, and Multiplexed Assay Suitable for Point-of-Care Hepatitis B Virus Diagnostics.** *Scientific reports*  
Gani, A. W., Wei, W. n., Shi, R. Z., Ng, E. n., Nguyen, M. n., Chua, M. S., So, S. n., Wang, S. X.  
2019; 9 (1): 15615
- **Improved detection of prostate cancer using a magneto-nanosensor assay for serum circulating autoantibodies.** *PloS one*  
Xu, L., Lee, J., Hao, S., Ling, X. B., Brooks, J. D., Wang, S. X., Gambhir, S. S.  
2019; 14 (8): e0221051
- **In Vitro Cancer Diagnostics** *NANOTHERANOSTICS FOR CANCER APPLICATIONS*  
Lee, J., Ooi, C., Wang, S. X.  
edited by Rai, P., Morris, S. A.  
2019; 5: 109–32
- **Self-healing of electrical damage in polymers using superparamagnetic nanoparticles.** *Nature nanotechnology*  
Yang, Y., He, J., Li, Q., Gao, L., Hu, J., Zeng, R., Qin, J., Wang, S. X., Wang, Q.  
2018
- **Magneto-nanosensor Smartphone Platform for the Detection of HIV and Leukocytosis at Point-of-Care.** *Nanomedicine : nanotechnology, biology, and medicine*  
Ng, E., Yao, C., Shultz, T. O., Ross-Howe, S., Wang, S. X.  
2018
- **Magnetoresistive biosensors with on-chip pulsed excitation and magnetic correlated double sampling** *SCIENTIFIC REPORTS*  
Kim, K., Hall, D. A., Yao, C., Lee, J., Ooi, C. C., Bechstein, D. J. B., Guo, Y., Wang, S. X.  
2018; 8
- **Magnetoresistive biosensors with on-chip pulsed excitation and magnetic correlated double sampling.** *Scientific reports*  
Kim, K., Hall, D. A., Yao, C., Lee, J., Ooi, C. C., Bechstein, D. J., Guo, Y., Wang, S. X.  
2018; 8 (1): 16493

- **Highly sensitive detection of DNA hypermethylation in melanoma cancer cells.** *Biosensors & bioelectronics*  
Nesvet, J., Rizzi, G., Wang, S. X.  
2018; 124-125: 136–42
- **Quantification of cDNA on GMR biosensor array towards point-of-care gene expression analysis.** *Biosensors & bioelectronics*  
Ravi, N., Rizzi, G., Chang, S. E., Cheung, P., Utz, P. J., Wang, S. X.  
2018
- **An intravascular magnetic wire for the high-throughput retrieval of circulating tumour cells in vivo** *NATURE BIOMEDICAL ENGINEERING*  
Vermesh, O., Aalipour, A., Ge, T., Saenz, Y., Guo, Y., Alam, I. S., Park, S., Adelson, C. N., Mitsutake, Y., Vilches-Moure, J., Godoy, E., Bachmann, M. H., Ooi, et al  
2018; 2 (9): 696–705
- **Two-terminal spin-orbit torque magnetoresistive random access memory** *NATURE ELECTRONICS*  
Sato, N., Xue, F., White, R. M., Bi, C., Wang, S. X.  
2018; 1 (9): 508–11
- **An intravascular magnetic wire for the high-throughput retrieval of circulating tumour cells in vivo.** *Nature biomedical engineering*  
Vermesh, O., Aalipour, A., Ge, T. J., Saenz, Y., Guo, Y., Alam, I. S., Park, S. M., Adelson, C. N., Mitsutake, Y., Vilches-Moure, J., Godoy, E., Bachmann, M. H., Ooi, et al  
2018; 2 (9): 696-705
- **A blood biomarker for monitoring response to anti-EGFR therapy.** *Cancer biomarkers : section A of Disease markers*  
Hughes, N. P., Xu, L., Nielsen, C. H., Chang, E., Hori, S. S., Natarajan, A., Lee, S., Kjar, A., Kani, K., Wang, S. X., Mallick, P., Gambhir, S. S.  
2018
- **Learning-based Data Analytics: Moving Towards Transparent Power Grids** *CSEE JOURNAL OF POWER AND ENERGY SYSTEMS*  
Chen, K., He, Z., Wang, S. X., Hu, J., Li, L., He, J.  
2018; 4 (1): 67–82
- **Longitudinal Multiplexed Measurement of Quantitative Proteomic Signatures in Mouse Lymphoma Models Using Magneto-Nanosensors.** *Theranostics*  
Lee, J. R., Appelmann, I. n., Miething, C. n., Shultz, T. O., Ruderman, D. n., Kim, D. n., Mallick, P. n., Lowe, S. W., Wang, S. X.  
2018; 8 (5): 1389–98
- **Integrated Thin-Film Magnetolectric Waveguide with Tun-able Resonance Frequency**  
El-Ghazaly, A., Evans, J., Sato, N., Montross, N., White, R. M., Wang, S. X., IEEE  
IEEE.2018
- **Thin-Film Magnetic Inductors for Gigahertz Integrated Applications**  
El-Ghazaly, A., White, R. M., Wang, S. X., IEEE  
IEEE.2018
- **Validation of Plasma TIMP-1 to Identify Lung Cancer in Smokers**  
Nair, V. S., Beggs, M., Yu, H., Carbonell, L., Wang, S. X., Vachani, A.  
AMER THORACIC SOC.2018
- **A blood biomarker for monitoring response to anti-EGFR therapy** *CANCER BIOMARKERS*  
Hughes, N. P., Xu, L., Nielsen, C. H., Chang, E., Hori, S. S., Natarajan, A., Lee, S., Kjaer, A., Kani, K., Wang, S. X., Mallick, P., Gambhir, S.  
2018; 22 (2): 333–44
- **Validation of Plasma TIMP-1 to Identify Lung Cancer in Smokers**  
Nair, V. S., Beggs, M., Yu, H., Carbonell, L., Wang, S. X., Vachani, A.  
AMER THORACIC SOC.2018
- **A blood biomarker for monitoring response to anti-EGFR therapy** *CANCER BIOMARKERS*  
Hughes, N. P., Xu, L., Nielsen, C. H., Chang, E., Hori, S. S., Natarajan, A., Lee, S., Kjaer, A., Kani, K., Wang, S. X., Mallick, P., Gambhir, S.  
2018; 22 (2): 333–44
- **Gigahertz-Band Integrated Magnetic Inductors** *IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES*

- El-Ghazaly, A., White, R. M., Wang, S. X.  
2017; 65 (12): 4893–4900
- **Current Reconstruction of Bundle Conductors Based on Tunneling Magnetoresistive Sensors**  
Zhao, G., Hu, J., Zhao, S., Wang, Z., Wang, S. X., He, J.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.2017
  - **Simultaneous Profiling of DNA Mutation and Methylation by Melting Analysis Using Magnetoresistive Biosensor Array.** *ACS nano*  
Rizzi, G., Lee, J. R., Dahl, C., Guldborg, P., Dufva, M., Wang, S. X., Hansen, M. F.  
2017; 11 (9): 8864-8870
  - **Novel Method for Magnetic Field Vector Measurement Based on Dual-Axial Tunneling Magnetoresistive Sensors** *IEEE TRANSACTIONS ON MAGNETICS*  
Zhao, G., Hu, J., Ouyang, Y., Chang, W., Wang, Z., Wang, S. X., He, J., Bi, J.  
2017; 53 (8)
  - **Denaturation strategies for detection of double stranded PCR products on GMR magnetic biosensor array** *BIOSENSORS & BIOELECTRONICS*  
Rizzi, G., Lee, J., Guldborg, P., Dufva, M., Wang, S. X., Hansen, M. F.  
2017; 93: 155-160
  - **Closed-loop model: An optimization of integrated thin-film magnetic devices** *JOURNAL OF MAGNETISM AND MAGNETIC MATERIALS*  
El-Ghazaly, A., Sato, N., White, R. M., Wang, S. X.  
2017; 432: 218-223
  - **Exchange-Biased Anisotropic Magnetoresistive Field Sensor** *IEEE SENSORS JOURNAL*  
Guo, Y., Ouyang, Y., Sato, N., Ooi, C. C., Wang, S. X.  
2017; 17 (11): 3309-3315
  - **Magnetic Nanoparticle-Based Upregulation of B-Cell Lymphoma 2 Enhances Bone Regeneration.** *Stem cells translational medicine*  
Brett, E., Zielins, E. R., Luan, A., Ooi, C. C., Shailendra, S., Atashroo, D., Menon, S., Blackshear, C., Flacco, J., Quarto, N., Wang, S. X., Longaker, M. T., Wan, et al  
2017; 6 (1): 151-160
  - **Multigene Profiling of Single Circulating Tumor Cells** *Molecular & Cellular Oncology*  
Park, S., Wong, D., Ooi, C., Nesvet, J., Nair, V. S., Wang, S. X., Gambhir, S. S.  
2017; 4 (2): e1289295
  - **Capture and Genetic Analysis of Circulating Tumor Cells Using a Magnetic Separation Device (Magnetic Sifter)** *CIRCULATING TUMOR CELLS: METHODS AND PROTOCOLS*  
Ooi, C., Park, S., Wong, D. J., Gambhir, S. S., Wang, S. X.  
edited by Magbanua, M. J., Park, J. W.  
2017; 1634: 153–62
  - **Hierarchical complexity and the size limits of life** *Proceedings of the Royal Society B: Biological Sciences*  
Heim, N. A., Payne, J. L., Finnegan, S., Knope, M. L., Kowalewski, M., Lyons, S. K., McShea, D. W., Novack-Gottshall, P. M., Smith, F. A., Wang, S. C.  
2017; 284
  - **Capture and Genetic Analysis of Circulating Tumor Cells Using a Magnetic Separation Device (Magnetic Sifter).** *Methods in molecular biology (Clifton, N.J.)*  
Ooi, C. C., Park, S. M., Wong, D. J., Gambhir, S. S., Wang, S. X.  
2017; 1634: 153–62
  - **High-throughput full-length single-cell mRNA-seq of rare cells.** *PLoS one*  
Ooi, C. C., Mantalas, G. L., Koh, W. n., Neff, N. F., Fuchigami, T. n., Wong, D. J., Wilson, R. J., Park, S. M., Gambhir, S. S., Quake, S. R., Wang, S. X.  
2017; 12 (11): e0188510
  - **A Novel High-Performance Energy Harvester Based on Nonlinear Resonance for Scavenging Power-Frequency Magnetic Energy** *IEEE Transactions on Industrial Electronics*

Wang, Z., Hu, J., Han, J., Zhao, G., He, J., Wang, S. X.  
2017; 64 (8): 6556-6564

- **Multilayer anisotropic magnetoresistive angle sensor** *Sensors and Actuators A: Physical*  
Guo, Y., Deng, Y., Wang, S. X.  
2017; 263: 159-165
- **Stand-Alone Stretchable Absolute Pressure Sensing System for Industrial Applications** *IEEE Transactions on Industrial Electronics*  
Guo, Y., Schütz, S., Vaghi, A., Li, Y., Guo, Z., Chang, F., Barretino, D., Wang, S. X.  
2017; 64 (11): 8739-8746
- **Electrically Tunable Integrated Thin-Film Magnetoelectric Resonators** *Advanced Materials Technologies*  
El-Ghazaly, A., Evans, J. T., Sato, N., Montross, N., Ohldag, H., White, R. M., Wang, S. X.  
2017; 2 (8)
- **Simultaneous Profiling of DNA Mutation and Methylation by Melting Analysis Using Magnetoresistive Biosensor Array** *ACS Nano*  
Rizzi, G., Lee, J., Dahl, C., Guldborg, P., Dufva, M., Wang, S. X.  
2017; 11 (9): 8864–8870
- **Multigene profiling of single circulating tumor cells.** *Molecular & cellular oncology*  
Park, S., Wong, D. J., Ooi, C. C., Nesvet, J. C., Nair, V. S., Wang, S. X., Gambhir, S. S.  
2017; 4 (2)
- **Longitudinal Monitoring of Antibody Responses against Tumor Cells Using Magneto-nanosensors with a Nanoliter of Blood.** *Nano letters*  
Lee, J. R., Chan, C. T., Ruderman, D. n., Chuang, H. Y., Gaster, R. S., Atallah, M. n., Mallick, P. n., Lowe, S. W., Gambhir, S. S., Wang, S. X.  
2017; 17 (11): 6644–52
- **Molecular profiling of single circulating tumor cells from lung cancer patients** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Park, S., Wong, D. J., Ooi, C. C., Kurtz, D. M., Vermesh, O., Aalipour, A., Suh, S., Pian, K. L., Chabon, J. J., Lee, S. H., Jamali, M., Say, C., Carter, et al  
2016; 113 (52): E8379-E8386
- **High-Resolution Analysis of Antibodies to Post-Translational Modifications Using Peptide Nanosensor Microarrays** *ACS NANO*  
Lee, J., Haddon, D. J., Gupta, N., Price, J. V., Credo, G. M., Diep, V. K., Kim, K., Hall, D. A., Baechler, E. C., Petri, M., Varma, M., Utz, P. J., Wang, et al  
2016; 10 (12): 10652-10660
- **Portable, one-step, and rapid GMR biosensor platform with smartphone interface.** *Biosensors & bioelectronics*  
Choi, J., Gani, A. W., Bechstein, D. J., Lee, J., Utz, P. J., Wang, S. X.  
2016; 85: 1-7
- **Denaturation strategies for detection of double stranded PCR products on GMR magnetic biosensor array.** *Biosensors & bioelectronics*  
Rizzi, G., Lee, J., Guldborg, P., Dufva, M., Wang, S. X., Hansen, M. F.  
2016
- **Small Molecule Detection in Saliva Facilitates Portable Tests of Marijuana Abuse.** *Analytical chemistry*  
Lee, J., Choi, J., Shultz, T. O., Wang, S. X.  
2016; 88 (15): 7457-7461
- **Effect of Mg Oxidation Degree on Rashba-Effect-Induced Torques in Ta/CoFeB/Mg(MgO) Multilayer** *IEEE TRANSACTIONS ON MAGNETICS*  
Sato, N., El-Ghazaly, A., White, R. M., Wang, S. X.  
2016; 52 (7)
- **Tunneling Magnetoresistive Sensors for High-Frequency Corona Discharge Location**  
Zhao, G., Hu, J., Ouyang, Y., Wang, Z., Wang, S. X., He, J.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.2016
- **A Novel Magnetic Energy Harvester Using Spinning Magnetoelectric Transducer**  
Wang, Z., Hu, J., Niu, J., Han, J., Wang, S. X., He, J.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.2016

- **Giant magnetoresistive sensor array for sensitive and specific multiplexed food allergen detection** *BIOSENSORS & BIOELECTRONICS*  
Ng, E., Nadeau, K. C., Wang, S. X.  
2016; 80: 359-365
- **Giant magnetoresistive sensor array for sensitive and specific multiplexed food allergen detection.** *Biosensors & bioelectronics*  
Ng, E., Nadeau, K. C., Wang, S. X.  
2016; 80: 359-365
- **Multiplex giant magnetoresistive biosensor microarrays identify interferon-associated autoantibodies in systemic lupus erythematosus** *SCIENTIFIC REPORTS*  
Lee, J., Haddon, D. J., Wand, H. E., Price, J. V., Diep, V. K., Hall, D. A., Petri, M., Baechler, E. C., Balboni, I. M., Utz, P. J., Wang, S. X.  
2016; 6
- **Effect of annealing on exchange stiffness of ultrathin CoFeB film with perpendicular magnetic anisotropy** *APPLIED PHYSICS LETTERS*  
Sato, N., White, R. M., Wang, S. X.  
2016; 108 (15)
- **Experimental and theoretical investigation of the precise transduction mechanism in giant magnetoresistive biosensors** *SCIENTIFIC REPORTS*  
Lee, J., Sato, N., Bechstein, D. J., Osterfeld, S. J., Wang, J., Gani, A. W., Hall, D. A., Wang, S. X.  
2016; 6
- **Experimental and theoretical investigation of the precise transduction mechanism in giant magnetoresistive biosensors.** *Scientific reports*  
Lee, J. R., Sato, N., Bechstein, D. J., Osterfeld, S. J., Wang, J., Gani, A. W., Hall, D. A., Wang, S. X.  
2016; 6: 18692
- **Bio-Inspired Stretchable Absolute Pressure Sensor Network.** *Sensors*  
Guo, Y., Li, Y., Guo, Z., Kim, K., Chang, F., Wang, S. X.  
2016; 16 (1)
- **Linear Control of Magneto-Electric Effect With Small Electric Fields** *IEEE MAGNETICS LETTERS*  
Xue, F., Hu, J., Wang, S. X., He, J.  
2016; 7
- **Magneto-nanosensor platform for probing low-affinity protein-protein interactions and identification of a low-affinity PD-L1/PD-L2 interaction.** *Nature communications*  
Lee, J., Bechstein, D. J., Ooi, C. C., Patel, A., Gaster, R. S., Ng, E., Gonzalez, L. C., Wang, S. X.  
2016; 7: 12220-?
- **Microfluidic multiplexed partitioning enables flexible and effective utilization of magnetic sensor arrays.** *Lab on a chip*  
Bechstein, D. J., Ng, E., Lee, J., Cone, S. G., Gaster, R. S., Osterfeld, S. J., Hall, D. A., Weaver, J. A., Wilson, R. J., Wang, S. X.  
2015; 15 (22): 4273-4276
- **Achieving Isotropic Permeability for Integrated Inductors** *IEEE TRANSACTIONS ON MAGNETICS*  
El-Ghazaly, A., Sato, N., White, R. M., Wang, S. X.  
2015; 51 (11)
- **Contactless Current Sensors Based on Magnetic Tunnel Junction for Smart Grid Applications**  
Ouyang, Y., He, J., Hu, J., Zhao, G., Wang, Z., Wang, S. X.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.2015
- **Prediction and Optimization of Linearity of MTJ Magnetic Sensors Based on Single-Domain Model**  
Ouyang, Y., He, J., Hu, J., Zhao, G., Wang, Z., Wang, S. X.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.2015
- **45 degrees Induced Magnetic Anisotropy for Isotropic High-Frequency Permeability** *IEEE TRANSACTIONS ON MAGNETICS*  
Sato, N., El-Ghazaly, A., White, R. M., Wang, S. X.  
2015; 51 (11)
- **Electric Field Sensor Based on Piezoelectric Bending Effect for Wide Range Measurement** *IEEE TRANSACTIONS ON INDUSTRIAL ELECTRONICS*

- 
- Xue, F., Hu, J., Wang, S. X., He, J.  
2015; 62 (9): 5730-5737
- **High-Density 2D Homo- and Hetero- Plasmonic Dimers with Universal Sub-10-nm Gaps** *ACS NANO*  
Zhang, M., Large, N., Koh, A. L., Cao, Y., Manjavacas, A., Sinclair, R., Nordlander, P., Wang, S. X.  
2015; 9 (9): 9331-9339
  - **Gene expression profiling of individual circulating tumor cells from non-small cell lung cancer (NSCLC) patients via integrated nanotechnologies**  
Park, S., Wong, D. J., Ooi, C., Nair, V. S., Vermesh, O., Lee, S., Suh, S., Lee, L. P., Wang, S. X., Gambhir, S. S.  
AMER ASSOC CANCER RESEARCH.2015
  - **On the importance of sensor height variation for detection of magnetic labels by magnetoresistive sensors** *SCIENTIFIC REPORTS*  
Henriksen, A., Wang, S., Hansen, M.  
2015; 5: 12282
  - **A Nonintrusive Power Supply Design for Self-Powered Sensor Networks in the Smart Grid by Scavenging Energy From AC Power Line** *IEEE TRANSACTIONS ON INDUSTRIAL ELECTRONICS*  
Han, J., Hu, J., Yang, Y., Wang, Z., Wang, S. X., He, J.  
2015; 62 (7): 4398-4407
  - **Optimum direct current magnetic bias in ferromagnetic phase for improvement of magnetoelectric effect** *APPLIED PHYSICS LETTERS*  
Xue, F., Hu, J., Wang, S. X., He, J.  
2015; 106 (26)
  - **Reduction of magnetic 1/f noise in miniature anisotropic magnetoresistive sensors** *APPLIED PHYSICS LETTERS*  
Guo, Y., Wang, J., White, R. M., Wang, S. X.  
2015; 106 (21)
  - **Increasing ferromagnetic resonance frequency using lamination and shape** *JOURNAL OF APPLIED PHYSICS*  
El-Ghazaly, A., White, R. M., Wang, S. X.  
2015; 117 (17)
  - **Great enhancement of energy harvesting properties of piezoelectric/magnet composites by the employment of magnetic concentrator** *JOURNAL OF APPLIED PHYSICS*  
Han, J., Hu, J., Wang, S. X., He, J.  
2015; 117 (17)
  - **Mobile ions generated by external direct current electric field influence direct current measurement of giant magnetoresistance current sensors** *JOURNAL OF APPLIED PHYSICS*  
Zhao, G., Hu, J., Ouyang, Y., He, J., Wang, S. X., Yuan, Z.  
2015; 117 (17)
  - **Magnetoelectric effect in shear-mode Pb(Zr, Ti)O<sub>3</sub>/NdFeB composite cantilever** *APPLIED PHYSICS LETTERS*  
Han, J., Hu, J., Wang, Z., Wang, S. X., He, J.  
2015; 106 (18)
  - **Enhanced performance of magnetoelectric energy harvester based on compound magnetic coupling effect** *JOURNAL OF APPLIED PHYSICS*  
Han, J., Hu, J., Wang, Z., Wang, S. X., He, J.  
2015; 117 (14)
  - **In-plane longitudinal converse magnetoelectric effect in laminated composites: Aiming at sensing wide range electric field** *APPLIED PHYSICS LETTERS*  
Xue, F., Hu, J., Wang, S. X., He, J.  
2015; 106 (8)
  - **A novel cylindrical torsional magnetoelectric composite based on d(15) shear-mode response** *JOURNAL OF PHYSICS D-APPLIED PHYSICS*  
Han, J., Hu, J., Wang, S. X., He, J.  
2015; 48 (4)

- **Hysteretic Modeling of Output Characteristics of Giant Magnetoresistive Current Sensors** *IEEE TRANSACTIONS ON INDUSTRIAL ELECTRONICS*  
Han, J., Hu, J., Ouyang, Y., Wang, S. X., He, J.  
2015; 62 (1): 516-524
- **Pilot Application of Magnetic Nanoparticle-Based Biosensor for Necrotizing Enterocolitis.** *Journal of proteomics & bioinformatics*  
Kim, D., Fu, C., Ling, X. B., Hu, Z., Tao, G., Zhao, Y., Kastenber, Z. J., Sylvester, K. G., Wang, S. X.  
2015
- **Microfluidic multiplexed partitioning enables flexible and effective utilization of magnetic sensor arrays** *LAB ON A CHIP*  
Bechstein, D. J., Ng, E., Lee, J., Cone, S. G., Gaster, R. S., Osterfeld, S. J., Hall, D. A., Weaver, J. A., Wilson, R. J., Wang, S. X.  
2015; 15 (22): 4273-4276
- **High performance wash-free magnetic bioassays through microfluidically enhanced particle specificity.** *Scientific reports*  
Bechstein, D. J., Lee, J., Ooi, C. C., Gani, A. W., Kim, K., Wilson, R. J., Wang, S. X.  
2015; 5: 11693-?
- **Modeling the Frequency Dependence of Packaged Linear Magnetoresistive Sensors Based on MTJ** *IEEE TRANSACTIONS ON MAGNETICS*  
Ouyang, Y., Hu, J., He, J., Zhao, G., Xue, F., Wang, Z., Wang, S. X., Yuan, Z., Ding, Z.  
2014; 50 (11)
- **Spin-wave resonances in the presence of a Bloch wall** *PHYSICAL REVIEW B*  
Mullenix, J., El-Ghazaly, A., Lee, D. W., Wang, S. X., White, R. M.  
2014; 89 (22)
- **Magnetic energy harvesting properties of piezofiber bimorph/NdFeB composites** *APPLIED PHYSICS LETTERS*  
Han, J., Hu, J., Wang, S. X., He, J.  
2014; 104 (9)
- **Isolation and mutational analysis of circulating tumor cells from lung cancer patients with magnetic sifters and biochips** *LAB ON A CHIP*  
Earhart, C. M., Hughes, C. E., Gaster, R. S., Ooi, C. C., Wilson, R. J., Zhou, L. Y., Humke, E. W., Xu, L., Wong, D. J., Willingham, S. B., Schwartz, E. J., Weissman, I. L., Jeffrey, et al  
2014; 14 (1): 78-88
- **Pilot Application of Magnetic Nanoparticle-Based Biosensor for Necrotizing Enterocolitis** *Journal of Proteomics and Bioinformatics*  
Kim, D., Fu, C., Ling, X. B., Hu, Z., Tao, G., Zhao, Y., Kastenber, Z. J., Sylvester, K. G., Wang, S. X.  
2014
- **Wafer-Scale Synthesis of Monodisperse Synthetic Magnetic Multilayer Nanorods** *NANO LETTERS*  
Zhang, M., Bechstein, D. J., Wilson, R. J., Wang, S. X.  
2014; 14 (1): 333-338
- **Isolation and mutational analysis of circulating tumor cells from lung cancer patients with magnetic sifters and biochips.** *Lab on a chip*  
Earhart, C. M., Hughes, C. E., Gaster, R. S., Ooi, C. C., Wilson, R. J., Zhou, L. Y., Humke, E. W., Xu, L., Wong, D. J., Willingham, S. B., Schwartz, E. J., Weissman, I. L., Jeffrey, et al  
2013; 14 (1): 78-88
- **Functionalization of high-moment magnetic nanodisks for cell manipulation and separation** *NANO RESEARCH*  
Zhang, M., Earhart, C. M., Ooi, C., Wilson, R. J., Tang, M., Wang, S. X.  
2013; 6 (10): 745-751
- **Monte Carlo simulation on magnetic nanoscavenger-based water disinfection system**  
Zhang, M., Xie, X., Criddle, C. S., Cui, Y., Wang, S. X.  
AMER CHEMICAL SOC.2013
- **Modeling and experiments of magneto-nanosensors for diagnostics of radiation exposure and cancer.** *Biomedical microdevices*  
Kim, D., Lee, J., Shen, E., Wang, S. X.  
2013; 15 (4): 665-671
- **Nanosensor dosimetry of mouse blood proteins after exposure to ionizing radiation** *SCIENTIFIC REPORTS*

- Kim, D., Marchetti, F., Chen, Z., Zaric, S., Wilson, R. J., Hall, D. A., Gaster, R. S., Lee, J., Wang, J., Osterfeld, S. J., Yu, H., White, R. M., Blakely, et al  
2013; 3
- **Rapid Characterization of Magnetic Moment of Cells for Magnetic Separation** *IEEE TRANSACTIONS ON MAGNETICS*  
Ooi, C., Earhart, C. M., Wilson, R. J., Wang, S. X.  
2013; 49 (7): 3434-3437
  - **Rapid Characterization of Magnetic Moment of Cells for Magnetic Separation.** *IEEE transactions on magnetics*  
Ooi, C., Earhart, C. M., Wilson, R. J., Wang, S. X.  
2013; 49 (7): 3434-3437
  - **Kerr-Imaged Edge-Curling Wall Effects of Narrow Magnetic Cores** *IEEE TRANSACTIONS ON MAGNETICS*  
El-Ghazaly, A., Mullenix, J. M., White, R. M., Wang, S. X.  
2013; 49 (7): 4017-4020
  - **Integrated Transformers With Sputtered Laminated Magnetic Core** *IEEE TRANSACTIONS ON MAGNETICS*  
Mullenix, J., El-Ghazaly, A., Wang, S. X.  
2013; 49 (7): 4021-4027
  - **A 256 Pixel Magnetoresistive Biosensor Microarray in 0.18  $\mu\text{m}$  CMOS** *IEEE Radio Frequency Integrated Circuits (RFIC) Symposium in Conjunction with the IEEE MTT-S International Microwave Symposium (IMS) / Microwave Week*  
Hall, D. A., Gaster, R. S., Makinwa, K. A., Wang, S. X., Murmann, B.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.2013: 1290-1301
  - **A 256 pixel magnetoresistive biosensor microarray in 0.18 $\mu\text{m}$  CMOS.** *IEEE journal of solid-state circuits*  
Hall, D. A., Gaster, R. S., Makinwa, K., Wang, S. X., Murmann, B.  
2013; 48 (5): 1290-1301
  - **Emerging protein array technologies for proteomics** *EXPERT REVIEW OF PROTEOMICS*  
Lee, J., Magee, D. M., Gaster, R. S., LaBaer, J., Wang, S. X.  
2013; 10 (1): 65-75
  - **Magnetically ultrasensitive nanoscavengers for next-generation water purification systems.** *Nature communications*  
Zhang, M., Xie, X., Tang, M., Criddle, C. S., Cui, Y., Wang, S. X.  
2013; 4: 1866-?
  - **Effect of Magnetic Field Gradient on Effectiveness of the Magnetic Sifter for Cell Purification.** *IEEE transactions on magnetics*  
Ooi, C., Earhart, C. M., Wilson, R. J., Wang, S. X.  
2013; 49 (1): 316-320
  - **Effect of Magnetic Field Gradient on Effectiveness of the Magnetic Sifter for Cell Purification** *IEEE TRANSACTIONS ON MAGNETICS*  
Ooi, C., Earhart, C. M., Wilson, R. J., Wang, S. X.  
2013; 49 (1): 316-320
  - **Nanosensor dosimetry of mouse blood proteins after exposure to ionizing radiation.** *Scientific reports*  
Kim, D., Marchetti, F., Chen, Z., Zaric, S., Wilson, R. J., Hall, D. A., Gaster, R. S., Lee, J., Wang, J., Osterfeld, S. J., Yu, H., White, R. M., Blakely, et al  
2013; 3: 2234-?
  - **DNA Repair and Cell Cycle Biomarkers of Radiation Exposure and Inflammation Stress in Human Blood** *PLOS ONE*  
Budworth, H., Snijders, A. M., Marchetti, F., Mannion, B., Bhatnagar, S., Kwok, E., Tan, Y., Wang, S. X., Blakely, W. F., Coleman, M., Peterson, L., Wyrobek, A. J.  
2012; 7 (11)
  - **A Magneto-Nanosensor Immunoassay for Sensitive Detection of Aspergillus Fumigatus Allergen Asp f 1** *International Magnetism Conference (INTERMAG)*  
Kim, D., Wang, S. X.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.2012: 3266-68
  - **A Magneto-Nanosensor Immunoassay for Sensitive Detection of Aspergillus Fumigatus Allergen Asp f 1.** *IEEE transactions on magnetics*

- Kim, D., Wang, S. X.  
2012; 48 (11): 3266-3268
- **A Current Sensor Based on the Giant Magnetoresistance Effect: Design and Potential Smart Grid Applications** *SENSORS*  
Ouyang, Y., He, J., Hu, J., Wang, S. X.  
2012; 12 (11): 15520-15541
  - **Fluorescent Magnetic Nanoparticles for Magnetically Enhanced Cancer Imaging and Targeting in Living Subjects** *ACS NANO*  
Fu, A., Wilson, R. J., Smith, B. R., Mullenix, J., Earhart, C., Akin, D., Guccione, S., Wang, S. X., Gambhir, S. S.  
2012; 6 (8): 6862-6869
  - **Axonal Traffic Control in Live Neurons by Tailor-Designed Magnetic Forces**  
Chowdary, P. D., Xie, C., Osakada, Y., Ooi, C., Wang, S. X., Cui, B.  
CELL PRESS.2012: 379A
  - **Spin wave modes in ferromagnetic tubes** *JOURNAL OF APPLIED PHYSICS*  
Kozhanov, A., Popov, M., Zavislyak, I., Ouellette, D., Lee, D. W., Wang, S. X., Rodwell, M., Allen, S. J.  
2012; 111 (1)
  - **Nano-tools to battle cancer: magnetic nanotags, protein chips and cell sorters**  
Wang, S. X., IEEE  
IEEE.2012
  - **GMR Spin-Valve Biosensors** *HANDBOOK OF SPIN TRANSPORT AND MAGNETISM*  
Hall, D. A., Gaster, R. S., Wang, S. X.  
edited by Tsymbal, E. Y., Zutic  
2012: 715-29
  - **Raman-Active Two-Tiered Ag Nanoparticles with a Concentric Cavity** *SMALL*  
Wi, J., Sengupta, S., Wilson, R. J., Zhang, M., Tang, M., Wang, S. X.  
2011; 7 (23): 3276-3280
  - **Sombrero-Shaped Plasmonic Nanoparticles with Molecular-Level Sensitivity and Multifunctionality** *ACS NANO*  
Wi, J., Barnard, E. S., Wilson, R. J., Zhang, M., Tang, M., Brongersma, M. L., Wang, S. X.  
2011; 5 (8): 6449-6457
  - **Silicon nano-well arrays for reliable pattern transfer and locally confined high temperature reactions** *NANOTECHNOLOGY*  
Wi, J., Wilson, R. J., Lee, D., White, R. M., Wang, S. X.  
2011; 22 (30)
  - **Autoassembly Protein Arrays for Analyzing Antibody Cross-Reactivity** *NANO LETTERS*  
Gaster, R. S., Hall, D. A., Wang, S. X.  
2011; 11 (7): 2579-2583
  - **Fabrication of planar, layered nanoparticles using tri-layer resist templates** *NANOTECHNOLOGY*  
Hu, W., Zhang, M., Wilson, R. J., Koh, A. L., Wi, J., Tang, M., Sinclair, R., Wang, S. X.  
2011; 22 (18)
  - **Gradual pressure release for reliable nanoimprint lithography** *JOURNAL OF VACUUM SCIENCE & TECHNOLOGY B*  
Wi, J., Wilson, R. J., White, R. M., Wang, S. X.  
2011; 29 (3)
  - **Quantification of protein interactions and solution transport using high-density GMR sensor arrays** *NATURE NANOTECHNOLOGY*  
Gaster, R. S., Xu, L., Han, S., Wilson, R. J., Hall, D. A., Osterfeld, S. J., Yu, H., Wang, S. X.  
2011; 6 (5): 314-320
  - **Micro-structured ferromagnetic tubes for spin wave excitation** *JOURNAL OF APPLIED PHYSICS*  
Kozhanov, A., Ouellette, D., Rodwell, M., Allen, S. J., Lee, D. W., Wang, S. X.  
2011; 109 (7)

- **Magnetic, Mechanical, and Optical Characterization of a Magnetic Nanoparticle-Embedded Polymer for Microactuation** *JOURNAL OF MICROELECTROMECHANICAL SYSTEMS*  
Tsai, K. L., Ziaei-Moayyed, M., Candler, R. N., Hu, W., Brand, V., Klejwa, N., Wang, S. X., Howe, R. T.  
2011; 20 (1): 65-72
- **nanoLAB: An ultraportable, handheld diagnostic laboratory for global health** *LAB ON A CHIP*  
Gaster, R. S., Hall, D. A., Wang, S. X.  
2011; 11 (5): 950-956
- **Portable Biomarker Detection with Magnetic Nanotags.** *The ... Midwest Symposium on Circuits and Systems conference proceedings : MWSCAS. Midwest Symposium on Circuits and Systems*  
Hall, D. A., Wang, S. X., Murmann, B., Gaster, R. S.  
2010: 1779-1782
- **Magneto-Nano Chips for Ultrasensitive and Multiplex Detection of Biomarkers of Tumor and Exposure** *41st Annual Meeting of Environmental-Mutagen-Society*  
Wang, S. X.  
WILEY-BLACKWELL.2010: 699-99
- **Effects of Ionizing Radiation on Self-Renewal and Pluripotency of Human Embryonic Stem Cells** *CANCER RESEARCH*  
Wilson, K. D., Sun, N., Huang, M., Zhang, W. Y., Lee, A. S., Li, Z., Wang, S. X., Wu, J. C.  
2010; 70 (13): 5539-5548
- **Analysis of Integrated Solenoid Inductor With Closed Magnetic Core** *IEEE TRANSACTIONS ON MAGNETICS*  
Wright, J. M., Lee, D. W., Mohan, A., Papou, A., Smeyers, P., Wang, S. X.  
2010; 46 (6): 2387-2390
- **GMR biosensor arrays: Correction techniques for reproducibility and enhanced sensitivity** *BIOSENSORS & BIOELECTRONICS*  
Hall, D. A., Gaster, R. S., Osterfeld, S. J., Murmann, B., Wang, S. X.  
2010; 25 (9): 2177-2181
- **GMR biosensor arrays: A system perspective** *BIOSENSORS & BIOELECTRONICS*  
Hall, D. A., Gaster, R. S., Lin, T., Osterfeld, S. J., Han, S., Murmann, B., Wang, S. X.  
2010; 25 (9): 2051-2057
- **Silane-based functionalization of synthetic antiferromagnetic nanoparticles for biomedical applications** *11th Joint MMM-Intermag Conference*  
Zhang, M., Hu, W., Earhart, C. M., Tang, M., Wilson, R. J., Wang, S. X.  
AMER INST PHYSICS.2010
- **Structural and magnetic characterizations of high moment synthetic antiferromagnetic nanoparticles fabricated using self-assembled stamps** *11th Joint MMM-Intermag Conference*  
Koh, A. L., Hu, W., Wilson, R. J., Earhart, C. M., Wang, S. X., Sinclair, R.  
AMER INST PHYSICS.2010
- **Magnetic Nanotechnology for Biodetection** *JALA*  
Han, S., Wang, S.  
2010; 15 (2): 93-98
- **Sensitive giant magnetoresistive-based immunoassay for multiplex mycotoxin detection** *BIOSENSORS & BIOELECTRONICS*  
Mak, A. C., Osterfeld, S. J., Yu, H., Wang, S. X., Davis, R. W., Jejelowo, O. A., Pourmand, N.  
2010; 25 (7): 1635-1639
- **The influence of Fermi level pinning/depinning on the Schottky barrier height and contact resistance in Ge/CoFeB and Ge/MgO/CoFeB structures** *APPLIED PHYSICS LETTERS*  
Lee, D., Raghunathan, S., Wilson, R. J., Nikonov, D. E., Saraswat, K., Wang, S. X.  
2010; 96 (5)
- **Detection of a single synthetic antiferromagnetic nanoparticle with an AMR nanostructure: comparison between simulations and experiments** *International Conference on Magnetism (ICM 2009)*  
Donolato, M., Gobbi, M., Vavassori, P., Cantoni, M., Metlushko, V., Ilic, B., Zhang, M., Wang, S. X., Hansen, M. F., Bertacco, R.

IOP PUBLISHING LTD.2010

- **Portable Biomarker Detection with Magnetic Nanotags** *International Symposium on Circuits and Systems Nano-Bio Circuit Fabrics and Systems (ISCAS 2010)*  
Hall, D. A., Wang, S. X., Murmann, B., Gaster, R. S.  
IEEE.2010: 1779–82
- **Matrix-insensitive protein assays push the limits of biosensors in medicine** *NATURE MEDICINE*  
Gaster, R. S., Hall, D. A., Nielsen, C. H., Osterfeld, S. J., Yu, H., Mach, K. E., Wilson, R. J., Murmann, B., Liao, J. C., Gambhir, S. S., Wang, S. X.  
2009; 15 (11): 1327-U130
- **Small-Resistance and High-Quality-Factor Magnetic Integrated Inductors on PCB** *IEEE TRANSACTIONS ON ADVANCED PACKAGING*  
Li, L., Lee, D. W., Hwang, K., Min, Y., Hizume, T., Tanaka, M., Mao, M., Schneider, T., Bubber, R., Wang, S. X.  
2009; 32 (4): 780-787
- **Designs for a Microfabricated Magnetic Sifter** *International Magnetism Conference 2009 (INTERMAG)*  
Earhart, C. M., Nguyen, E. M., Wilson, R. J., Wang, Y. A., Wang, S. X.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.2009: 4884–87
- **Magnetostatic Spin-Wave Modes in Ferromagnetic Tube** *International Magnetism Conference 2009 (INTERMAG)*  
Kozhanov, A., Ouellette, D., Rodwell, M., Lee, D. W., Wang, S. X., Allen, S. J.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.2009: 4223–25
- **Nonreciprocal Spin Waves in Co-Ta-Zr Films and Multilayers** *International Magnetism Conference 2009 (INTERMAG)*  
Amiri, P. K., Rejaei, B., Zhuang, Y., Vroubel, M., Lee, D. W., Wang, S. X.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.2009: 4215–18
- **Nanosized corners for trapping and detecting magnetic nanoparticles** *NANOTECHNOLOGY*  
Donolato, M., Gobbi, M., Vavassori, P., Leone, M., Cantoni, M., Metlushko, V., Ilic, B., Zhang, M., Wang, S. X., Bertacco, R.  
2009; 20 (38)
- **Visualizing Implanted Tumors in Mice with Magnetic Resonance Imaging Using Magnetotactic Bacteria** *CLINICAL CANCER RESEARCH*  
Benoit, M. R., Mayer, D., Barak, Y., Chen, I. Y., Hu, W., Cheng, Z., Wang, S. X., Spielman, D. M., Gambhir, S. S., Matin, A.  
2009; 15 (16): 5170-5177
- **High Resolution Crystal Structure of the Methylcobalamin Analogues Ethylcobalamin and Butylcobalamin by X-ray Synchrotron Diffraction** *INORGANIC CHEMISTRY*  
Hannibal, L., Smith, C. A., Smith, J. A., Axhemi, A., Miller, A., Wang, S., Brasch, N. E., Jacobsen, D. W.  
2009; 48 (14): 6615-6622
- **Cryogenic tilt table** *INTERNATIONAL JOURNAL OF PRECISION ENGINEERING AND MANUFACTURING*  
Ambekar, P. P., Wang, S., Torii, R., DeBra, D.  
2009; 10 (3): 37-42
- **Formation and properties of magnetic chains for 100nm nanoparticles used in separations of molecules and cells** *7th International Conference on Scientific and Clinical Applications of Magnetic Carriers*  
Wilson, R. J., Hu, W., Fu, C. W., Koh, A. L., Gaster, R. S., Earhart, C. M., Fu, A., Heilshorn, S. C., Sinclair, R., Wang, S. X.  
ELSEVIER SCIENCE BV.2009: 1452–58
- **Formation and properties of magnetic chains for 100 nm nanoparticles used in separations of molecules and cells.** *Journal of magnetism and magnetic materials*  
Wilson, R. J., Hu, W., Fu, C. W., Koh, A. L., Gaster, R. S., Earhart, C. M., Fu, A., Heilshorn, S. C., Sinclair, R., Wang, S. X.  
2009; 321 (10): 1452-1458
- **Microfabricated magnetic sifter for high-throughput and high-gradient magnetic separation.** *Journal of magnetism and magnetic materials*  
Earhart, C. M., Wilson, R. J., White, R. L., Pourmand, N., Wang, S. X.  
2009; 321 (10): 1436-1439
- **Microfabricated magnetic sifter for high-throughput and high-gradient magnetic separation** *7th International Conference on Scientific and Clinical Applications of Magnetic Carriers*  
Earhart, C. M., Wilson, R. J., White, R. L., Pourmand, N., Wang, S. X.

ELSEVIER SCIENCE BV.2009: 1436–39

- **Synthetic antiferromagnetic nanoparticles with tunable susceptibilities** *53rd Annual Conference on Magnetism and Magnetic Materials*  
Hu, W., Wilson, R. J., Earhart, C. M., Koh, A. L., Sinclair, R., Wang, S. X.  
AMER INST PHYSICS.2009
- **Dispersion and spin wave "tunneling" in nanostructured magnetostatic spin waveguides** *53rd Annual Conference on Magnetism and Magnetic Materials*  
Kozhanov, A., Ouellette, D., Rodwell, M., Allen, S. J., Jacob, A. P., Lee, D. W., Wang, S. X.  
AMER INST PHYSICS.2009
- **Effects of polyhydroxy compounds on beetle antifreeze protein activity** *BIOCHIMICA ET BIOPHYSICA ACTA-PROTEINS AND PROTEOMICS*  
Amornwittawat, N., Wang, S., Banatiao, J., Chung, M., Velasco, E., Duman, J. G., Wen, X.  
2009; 1794 (2): 341-346
- **Dispersion in magnetostatic CoTaZr spin waveguides** *APPLIED PHYSICS LETTERS*  
Kozhanov, A., Ouellette, D., Griffith, Z., Rodwell, M., Jacob, A. P., Lee, D. W., Wang, S. X., Allen, S. J.  
2009; 94 (1)
- **Gravity Probe B(\*)** *RIVISTA DEL NUOVO CIMENTO*  
Keiser, G. M., Adams, M., BENCZE, W. J., BRUMLEY, R. W., Buchman, S., Clarke, B., Conklin, J., DeBra, D. B., DOLPHIN, M., HIPKINS, D. N., Holmes, T., Everitt, C. W., Goebel, et al  
2009; 32 (11): 555-589
- **MagArray Biochips for Protein and DNA Detection with Magnetic Nanotags: Design, Experiment, and Signal-to-Noise Ratio** *MICROARRAYS: PREPARATION, MICROFLUIDICS, DETECTION METHODS, AND BIOLOGICAL APPLICATIONS*  
Osterfeld, S. I., Wang, S. X.  
edited by Dill, K., Liu, R. H., Grodzinski, P.  
2009: 299–314
- **On-Package Magnetic Materials for Embedded Inductor Applications**  
Li, L., Lee, D., Hwang, K., Min, Y., Wang, S. X.  
edited by Bi, K., Cai, J.  
IEEE.2009: 395-+
- **Biological Variations in Depression and Anxiety Between East and West** *CNS NEUROSCIENCE & THERAPEUTICS*  
Chen, P., Wang, S., Poland, R. E., Lin, K.  
2009; 15 (3): 283-294
- **Genome-wide transcriptome analysis of 150 cell samples** *INTEGRATIVE BIOLOGY*  
Irimia, D., Mindrinos, M., Russom, A., Xiao, W., Wilhelmy, J., Wang, S., Heath, J. D., Kurn, N., Tompkins, R. G., Davis, R. W., Toner, M.  
2009; 1 (1): 99-107
- **Protein-Functionalized Synthetic Antiferromagnetic Nanoparticles for Biomolecule Detection and Magnetic Manipulation** *ANGEWANDTE CHEMIE-INTERNATIONAL EDITION*  
Fu, A., Hu, W., Xu, L., Wilson, R. J., Yu, H., Osterfeld, S. J., Gambhir, S. S., Wang, S. X.  
2009; 48 (9): 1620-1624
- **A Prospective Randomized Pilot Study of Site-specific Atlas Incorporation into Target Volume Delineation Instructions in the Cooperative Group Setting: Preliminary Results from a Southwest Oncology Group Pilot using Big Brother** *51st Annual Meeting of the American-Society-for-Radiation-Oncology (ASTRO)*  
Fuller, C. D., Duppen, J., Rasch, C. R., Kachnic, L., Wang, S. J., Chang, D., Goodman, K. A., Katz, A. W., OKUNIEFF, P., Thomas, C. R.  
ELSEVIER SCIENCE INC.2009: S136–S137
- **Multiplex protein assays based on real-time magnetic nanotag sensing** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Osterfeld, S. J., Yu, H., Gaster, R. S., Caramuta, S., Xu, L., Han, S., Hall, D. A., Wilson, R. J., Sun, S., White, R. L., Davis, R. W., Pourmand, N., Wang, et al  
2008; 105 (52): 20637-20640
- **Inhibition of Drosophila Wg Signaling Involves Competition between Mad and Armadillo/beta-Catenin for dTcf Binding** *PLOS ONE*

- Zeng, Y. A., Rahnama, M., Wang, S., Lee, W., Verheyen, E. M.  
2008; 3 (12)
- **Incidence of lymphoid neoplasms by subtype among six Asian ethnic groups in the United States, 1996-2004** *CANCER CAUSES & CONTROL*  
Daniel Carreon, J., Morton, L. M., Devesa, S. S., Clarke, C. A., Gomez, S. L., Glaser, S. L., Sakoda, L. C., Linet, M. S., Wang, S. S.  
2008; 19 (10): 1171-1181
  - **Polycarboxylates enhance beetle antifreeze protein activity** *BIOCHIMICA ET BIOPHYSICA ACTA-PROTEINS AND PROTEOMICS*  
Amornwittawat, N., Wang, S., Duman, J. G., Wen, X.  
2008; 1784 (12): 1942-1948
  - **Integrated Microstrip Lines With Co-Ta-Zr Magnetic Films** *IEEE International Magnetics Conference (INTERMAG)*  
Amiri, P. K., Rejaei, B., Zhuang, Y., Vroubel, M., Lee, D. W., Wang, S. X., Burghartz, J. N.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.2008: 3103-6
  - **Giant Magnetoresistive Sensors for DNA Microarray.** *IEEE transactions on magnetics*  
Xu, L., Yu, H., Han, S. J., Osterfeld, S., White, R. L., Pourmand, N., Wang, S. X.  
2008; 44 (11): 3989-3991
  - **Fabrication and Analysis of High-Performance Integrated Solenoid Inductor With Magnetic Core** *IEEE International Magnetics Conference (INTERMAG)*  
Lee, D. W., Hwang, K., Wang, S. X.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.2008: 4089-95
  - **Giant Magnetoresistive Sensors for DNA Microarray** *IEEE International Magnetics Conference (INTERMAG)*  
Xu, L., Yu, H., Han, S., Osterfeld, S., White, R. L., Pourmand, N., Wang, S. X.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.2008: 3989-91
  - **Determining wave vector and material property from the phase-shift of spin-wave propagation** *EPL*  
Bao, M., Wong, K., Khitun, A., Lee, J., Hao, Z., Wang, K. L., Lee, D. W., Wang, S. X.  
2008; 84 (2)
  - **TEM analyses of synthetic anti-ferromagnetic (SAF) nanoparticles fabricated using different release layers** *11th Conference on Frontiers of Electron Microscopy in Materials Science*  
Koh, A. L., Hu, W., Wilson, R. J., Wang, S. X., Sinclair, R.  
ELSEVIER SCIENCE BV.2008: 1490-94
  - **Giant magnetoresistive biochip for DNA detection and HPV genotyping** *BIOSENSORS & BIOELECTRONICS*  
Xu, L., Yu, H., Akhras, M. S., Han, S., Osterfeld, S., White, R. L., Pourmand, N., Wang, S. X.  
2008; 24 (1): 99-103
  - **Nanoscale control of exchange bias with BiFeO<sub>3</sub> thin films** *NANO LETTERS*  
Martin, L. W., Chu, Y., Holcomb, M. B., Huijben, M., Yu, P., Han, S., Lee, D., Wang, S. X., Ramesh, R.  
2008; 8 (7): 2050-2055
  - **Advances in giant magnetoresistance biosensors with magnetic nanoparticle tags: Review and outlook** *IEEE TRANSACTIONS ON MAGNETICS*  
Wang, S. X., Li, G.  
2008; 44 (7): 1687-1702
  - **Electric-field control of local ferromagnetism using a magnetoelectric multiferroic** *NATURE MATERIALS*  
Chu, Y., Martin, L. W., Holcomb, M. B., Gajek, M., Han, S., He, Q., Balke, N., Yang, C., Lee, D., Hu, W., Zhan, Q., Yang, P., Fraile-Rodriguez, et al  
2008; 7 (6): 478-482
  - **High-moment antiferromagnetic nanoparticles with tunable magnetic properties** *ADVANCED MATERIALS*  
Hu, W., Wilson, R. J., Koh, A., Fu, A., Faranesh, A. Z., Earhart, C. M., Osterfeld, S. J., Han, S., Xu, L., Guccione, S., Sinclair, R., Wang, S. X.  
2008; 20 (8): 1479-?
  - **Synthesis and characterization of PVP-coated large core iron oxide nanoparticles as an MRI contrast agent.** *Nanotechnology*  
Lee, H. Y., Lee, S. H., Xu, C., Xie, J., Lee, J. H., Wu, B., Koh, A. L., Wang, X., Sinclair, R., Wang, S. X., Nishimura, D. G., Biswal, S., Sun, et al

2008; 19 (16): 165101

- **Effects of geometries on permeability spectra of CoTaZr magnetic cores for high frequency applications** *52nd Annual Conference on Magnetism and Magnetic Materials*  
Lee, D. W., Wang, S. X.  
AMER INST PHYSICS.2008
- **Inductively coupled circuits with spin wave bus for information processing** *JOURNAL OF NANOELECTRONICS AND OPTOELECTRONICS*  
Khitun, A., Bao, M., Lee, J., Wang, K. L., Lee, D. W., Wang, S. X., Roshchin, I. V.  
2008; 3 (1): 24-34
- **Preparation, structural and magnetic characterization of synthetic anti-ferromagnetic (SAF) nanoparticles** *PHILOSOPHICAL MAGAZINE*  
Koh, A. L., Hu, W., Wilson, R. J., Wang, S. X., Sinclair, R.  
2008; 88 (36): 4225-4241
- **Giant magneto resistive biochips for biomarker detection and genotyping: An overview**  
Wang, S. X.  
edited by Bland, J. A., Lonescu, A.  
AMER INST PHYSICS.2008: 101-10
- **Design and fabrication of integrated solenoid inductors with magnetic cores**  
Lee, D., Hwang, K., Wang, S. X., IEEE  
IEEE.2008: 701-+
- **Giant Magnetoresistive Biosensors for Molecular Diagnosis: Surface Chemistry and Assay Development** *Conference on Biosensing*  
Yu, H., Osterfeld, S. J., Xu, L., White, R. L., Pourmand, N., Wang, S. X.  
SPIE-INT SOC OPTICAL ENGINEERING.2008
- **The Bacillus subtilis RNA helicase YxiN is distended in solution** *BIOPHYSICAL JOURNAL*  
wang, s., Overgaard, M. T., Hu, Y., McKay, D. B.  
2008; 94 (1): L1-L3
- **Strength of coronal mass ejection-driven shocks near the sun and their importance in predicting solar energetic particle events** *ASTROPHYSICAL JOURNAL*  
Shen, C., Wang, Y., Ye, P., Zhao, X. P., Gui, B., Wang, S.  
2007; 670 (1): 849-856
- **Genetic variation and population structure in Native Americans** *PLOS GENETICS*  
Wang, S., Lewis, C. M., Jakobsson, M., Ramachandran, S., Ray, N., Bedoya, G., Rojas, W., Parra, M. V., Molina, J. A., Gallo, C., Mazzotti, G., Poletti, G., Hill, et al  
2007; 3 (11): 2049-2067
- **Interleukin-8 modulates growth and invasiveness of estrogen receptor-negative breast cancer cells** *INTERNATIONAL JOURNAL OF CANCER*  
Yao, C., Lin, Y., Chua, M., Ye, C., Bi, J., Li, W., Zhu, Y., Wang, S.  
2007; 121 (9): 1949-1957
- **Room temperature exchange bias and spin valves based on BiFeO<sub>3</sub>/SrRuO<sub>3</sub>/SrTiO<sub>3</sub>/Si (001) heterostructures** *APPLIED PHYSICS LETTERS*  
Martin, L. W., Chu, Y., Zhan, Q., Ramesh, R., Han, S., Wang, S. X., Warusawithana, M., Schlom, D. G.  
2007; 91 (17)
- **CpG island methylation in a mouse model of lymphoma is driven by the genetic configuration of tumor cells** *PLOS GENETICS*  
Opavsky, R., Wang, S., Trikha, P., Raval, A., Huang, Y., Wu, Y., Rodriguez, B., Keller, B., Liyanarachchi, S., Wei, G., Davuluri, R. V., Weinstein, M., Felsner, et al  
2007; 3 (9): 1757-1769
- **Patterning of high density magnetic nanodot arrays by nanoimprint lithography** *53rd International Symposium of the American-Vacuum-Society*  
Hu, W., Wilson, R. J., Xu, L., Han, S., Wang, S. X.  
A V S AMER INST PHYSICS.2007: 1294-97

- **Tensor nature of permeability and its effects in inductive magnetic devices** *10th Joint Magnetism and Magnetic Materials Conference/ International Magnetism Conference*  
Li, L., Lee, D. W., Wang, S. X., Hwang, K., Min, Y., Mao, M., Schneider, T., Bubber, R.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.2007: 2373–75
- **Analytical formula for the tunneling current versus voltage for multilayer barrier structures**  
Chapline, M. G., Wang, S. X.  
AMER INST PHYSICS.2007
- **Branch migration displacement assay with automated heuristic analysis for discrete DNA length measurement using DNA microarrays** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Pourmand, N., Caramuta, S., Villablanca, A., Mori, S., Karhanek, M., Wang, S. X., Davis, R. W.  
2007; 104 (15): 6146-6151
- **Spin filter based tunnel junctions** *JOURNAL OF APPLIED PHYSICS*  
Chapline, M. G., Wang, S. X.  
2006; 100 (12)
- **A novel zero-drift detection method for highly sensitive GMR biochips** *41st IEEE International Magnetism Conference (Intermag 2006)*  
Han, S., Xu, L., Wilson, R. J., Wang, S. X.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.2006: 3560–62
- **A methodology for finite element modeling of magnetic inductive devices with in-plane multidomain pattern**  
Jury, J. C., Wang, S. X.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.2006: 3222–24
- **Permeability of fine magnetic particles: Measurements, calibration, and pitfalls** *41st IEEE International Magnetism Conference (Intermag 2006)*  
Lee, D. W., Wang, S. X., Tang, Y. J., Hong, J., Berkowitz, A. E.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.2006: 3335–37
- **Room-temperature spin filtering in a CoFe<sub>2</sub>O<sub>4</sub>/MgAl<sub>2</sub>O<sub>4</sub>/Fe<sub>3</sub>O<sub>4</sub> magnetic tunnel barrier** *PHYSICAL REVIEW B*  
Chapline, M. G., Wang, S. X.  
2006; 74 (1)
- **Spin valve sensors for ultrasensitive detection of superparamagnetic nanoparticles for biological applications.** *Sensors and actuators. A, Physical*  
Li, G., Sun, S., Wilson, R. J., White, R. L., Pourmand, N., Wang, S. X.  
2006; 126 (1): 98-106
- **Spin valve biosensors: Signal dependence on nanoparticle position** *JOURNAL OF APPLIED PHYSICS*  
Li, G., Sun, S., Wang, S. X.  
2006; 99 (8)
- **Peptide-labeled near-infrared quantum dots for imaging tumor vasculature in living subjects** *NANO LETTERS*  
Cai, W. B., Shin, D. W., Chen, K., Gheysens, O., Cao, Q. Z., Wang, S. X., Gambhir, S. S., Chen, X. Y.  
2006; 6 (4): 669-676
- **Spin valve sensors for ultrasensitive detection of superparamagnetic nanoparticles for biological applications** *SENSORS AND ACTUATORS A-PHYSICAL*  
Li, G. X., Sun, S. H., Wilson, R. J., White, R. L., Pourmand, N., Wang, S. X.  
2006; 126 (1): 98-106
- **CMOS integrated DNA Microarray based on GMR sensors** *IEEE International Electron Devices Meeting*  
Han, S., Xu, L., Yu, H., Wilson, R. J., White, R. L., Pourmand, N., Wang, S. X.  
IEEE.2006: 451–454
- **A novel method for STR-based DNA profiling using microarrays** *JOURNAL OF FORENSIC SCIENCES*  
Kemp, J. T., Davis, R. W., White, R. L., Wang, S. X., Webb, C. D.  
2005; 50 (5): 1109-1113

- **Bio-functionalization of monodisperse magnetic nanoparticles and their use as biomolecular labels in a magnetic tunnel junction based sensor** *JOURNAL OF PHYSICAL CHEMISTRY B*  
Grancharov, S. G., Zeng, H., Sun, S. H., Wang, S. X., O'Brien, S., Murray, C. B., Kirtley, J. R., Held, G. A.  
2005; 109 (26): 13030-13035
- **Observation of the Verwey transition in thin magnetite films** *JOURNAL OF APPLIED PHYSICS*  
Chapline, M. G., Wang, S. X.  
2005; 97 (12)
- **Room-temperature spin coherence in ZnO** *APPLIED PHYSICS LETTERS*  
Ghosh, S., Sih, V., Lau, W. H., Awschalom, D. D., Bae, S. Y., Wang, S., Vaidya, S., Chapline, G.  
2005; 86 (23)
- **Composite-an isotropy amorphous magnetic materials for high-frequency devices** *49th Annual Conference on Magnetism and Magnetic Materials*  
Lee, D. W., Crawford, A. M., Wang, S. X.  
AMER INST PHYSICS.2005
- **Soft magnetic granular material Co-Fe-Hf-O for micromagnetic device applications** *49th Annual Conference on Magnetism and Magnetic Materials*  
Li, L. L., Crawford, A. M., Wang, S. X., Marshall, A. F., Mao, M., Schneider, T., Bubber, R.  
AMER INST PHYSICS.2005
- **Towards a magnetic microarray for sensitive diagnostics** *5th International Conference on Scientific and Clinical Applications of Magnetic Carriers*  
Wang, S. X., Bae, S. Y., Li, G. X., Sun, S. H., White, R. L., Kemp, J. T., Webb, C. D.  
ELSEVIER SCIENCE BV.2005: 731–36
- **DNA-functionalized MFe<sub>2</sub>O<sub>4</sub> (M = Fe, Co, or Mn) nanoparticles and their hybridization to DNA-functionalized surfaces** *LANGMUIR*  
Robinson, D. B., Persson, H. H., Zeng, H., Li, G. X., Pourmand, N., Sun, S. H., Wang, S. X.  
2005; 21 (7): 3096-3103
- **Growth and characterization of copper nanoclusters embedded in SiC matrix** *THIN SOLID FILMS*  
Shin, D. W., Wang, S. X., Marshall, A. F., Kimura, W., Dong, C. L., Augustsson, A., Guo, J. H.  
2005; 473 (2): 267-271
- **Dumbbell-like bifunctional Au-Fe<sub>3</sub>O<sub>4</sub> nanoparticles** *NANO LETTERS*  
Yu, H., Chen, M., Rice, P. M., Wang, S. X., White, R. L., Sun, S. H.  
2005; 5 (2): 379–82
- **Shape-controlled synthesis and shape-induced texture of MnFe<sub>2</sub>O<sub>4</sub> nanoparticles** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*  
Zeng, H., Rice, P. M., Wang, S. X., Sun, S. H.  
2004; 126 (37): 11458-11459
- **Calculation of shape anisotropy for micropatterned thin Fe-Ni films for on-chip RF applications** *9th Joint Magnetism and Magnetic Materials Conference/ International Magnetism Conference*  
Vroubel, M., Zhuang, Y., Rejaei, B., Burghartz, J. N., Crawford, A. M., Wang, S. X.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.2004: 2835–37
- **Model and experiment of detecting multiple magnetic nanoparticles as biomolecular labels by spin valve sensors** *9th Joint Magnetism and Magnetic Materials Conference/ International Magnetism Conference*  
Li, G. X., Wang, S. X., Sun, S. H.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.2004: 3000–3002
- **Effect of patterned magnetic shields on high-frequency integrated inductors** *9th Joint Magnetism and Magnetic Materials Conference/ International Magnetism Conference*  
Crawford, A. M., Wang, S. X.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.2004: 2017–19
- **Biochemical stability of components for use in a DNA detection system** *9th Joint Magnetism and Magnetic Materials Conference/ International Magnetism Conference*

- Joshi, V., Li, G. X., Wang, S. X., Sun, S. H.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.2004: 3012–14
- **Inelastic electron tunnelling spectroscopy of magnetic tunnel junctions with AlN and AlON barriers** *International Conference on Magnetism (ICM 2003)*  
Sharma, M., Bae, S. Y., Wang, S. X.  
ELSEVIER SCIENCE BV.2004: 1952–1953
  - **Monodisperse MFe<sub>2</sub>O<sub>4</sub> (M = Fe, Co, Mn) nanoparticles** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*  
Sun, S. H., Zeng, H., Robinson, D. B., Raoux, S., Rice, P. M., Wang, S. X., Li, G. X.  
2004; 126 (1): 273-279
  - **Damping criteria of magnetization in ferromagnetic ellipsoids** *14th Annual Magnetic Recording Conference*  
Sun, N. X., Wang, S. X.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.2004: 253–56
  - **Analytical and micromagnetic modeling for detection of a single magnetic microbead or nanobead by spin valve sensors** *International Magnetism Conference*  
Li, G. X., Wang, S. X.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.2003: 3313–15
  - **Detection of single micron-sized magnetic bead and magnetic nanoparticles using spin valve sensors for biological applications** *47th Annual Conference on Magnetism and Magnetic Materials*  
Li, G. X., Joshi, V., White, R. L., Wang, S. X., Kemp, J. T., Webb, C., Davis, R. W., Sun, S. H.  
AMER INST PHYSICS.2003: 7557–59
  - **Fe<sub>3</sub>O<sub>4</sub> and its magnetic tunneling junctions grown by ion beam deposition** *JOURNAL OF APPLIED PHYSICS*  
Aoshima, K., Wang, S. X.  
2003; 93 (10): 7954–56
  - **Anisotropy dispersion effects on the high frequency behavior of soft magnetic Fe-Co-N thin films** *47th Annual Conference on Magnetism and Magnetic Materials*  
Sun, N. X., Wang, S. X.  
AMER INST PHYSICS.2003: 6468–70
  - **Transport in magnetically doped magnetic tunnel junctions** *International Magnetism Conference (Intermag Europe 2002)*  
Bae, S. Y., Wang, S. X.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.2002: 2721–23
  - **High-frequency microinductors with amorphous magnetic ground planes** *International Magnetism Conference (Intermag Europe 2002)*  
Crawford, A. M., Gardner, D., Wang, S. X.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.2002: 3168–70
  - **Measurement and analysis of noise sources in giant magnetoresistive sensors up to 6 GHz** *IEEE TRANSACTIONS ON MAGNETICS*  
Jury, J. C., Klaassen, K. B., van Peppen, J. C., Wang, S. X.  
2002; 38 (5): 3545-3555
  - **Soft magnetism of Fe-Co-N thin films with a Permalloy underlayer** *JOURNAL OF APPLIED PHYSICS*  
Sun, N. X., Wang, S. X.  
2002; 92 (3): 1477–82
  - **Optimization of granular double-layer perpendicular media** *1st North American Perpendicular Magnetic Recording Conference (NAPMRC)*  
Bertero, G. A., Wachenschwanz, D., Malhotra, S., Velu, S., Bian, B., Stafford, D., Wu, Y., Yamashita, T., Wang, S. X.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.2002: 1627–31
  - **Intermixing effects in ultrathin barrier magnetic tunneling junctions** *46th Annual Conference on Magnetism and Magnetic Materials*  
Li, Y., Wang, S. X.  
AMER INST PHYSICS.2002: 7950–52
  - **Epitaxial growth and characterization of Fe<sub>3</sub>O<sub>4</sub> on Ru underlayer**  
Aoshima, K., Wang, S. X.

---

AMER INST PHYSICS.2002: 7146-48

- **Junction area dependence of tunneling magnetoresistance** *International Symposium on Physics of Magnetic Materials/International Symposium on Advanced Magnetic Technologies*  
Lee, S. S., Wang, S. X., Park, C. M., Rhee, J. R., Yoon, C. S., Chang, P. J., Kim, C. K.  
ELSEVIER SCIENCE BV.2002: 129-31
- **Extending the bandwidth of magnetic tunnel junction sensors by a buffer amplifier** *IEEE TRANSACTIONS ON MAGNETICS*  
Jury, J. C., Wang, S. X.  
2002; 38 (1): 295-297
- **Designing disk drive interconnects to obtain a desired transmitted write current waveform** *12th Annual Magnetic Recording Conference (TMRC)*  
Jury, J. C., Batra, S., Wang, S. X.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.2002: 55-60
- **High-frequency behavior and damping of Fe-Co-N-based high-saturation soft magnetic films** *12th Annual Magnetic Recording Conference (TMRC)*  
Sun, N. X., Wang, S. X., Silva, T. J., Kos, A. B.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.2002: 146-50
- **Oxidation kinetics of tunnel barrier and its effect on exchange bias of proximity interface** *APPLIED PHYSICS LETTERS*  
Bae, S. Y., Shin, K. H., Lee, J. H., Rhie, K. W., Lee, K. I., Ha, J. G., Wang, S. X.  
2001; 79 (25): 4130-4132
- **Microstructures of FeTaN films in the neck region of magnetic recording heads** *8th Joint Magnetism and Magnetic Materials International Magnetism Conference (MMM-INTERMAG)*  
Hong, J., Wang, S. X.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.2001: 3039-42
- **Epitaxial growth of aluminum on permalloy** *THIN SOLID FILMS*  
Li, Y., Wang, S. X., Khanna, G., Clemens, B. M.  
2001; 381 (1): 160-163
- **Spin-dependent tunneling junctions with AlN and AlON barriers** *APPLIED PHYSICS LETTERS*  
Sharma, M., Nickel, J. H., Anthony, T. C., Wang, S. X.  
2000; 77 (14): 2219-2221
- **Properties of a new soft magnetic material** *Nature*  
Wang, S. X., Sun, N. X., Yamaguchi, M., Yabukami, S.  
2000; 407 (6801): 150-1
- **Sandwich films - Properties of a new soft magnetic material** *NATURE*  
Wang, S. X., Sun, N. X., Yamaguchi, M., Yabukami, S.  
2000; 407 (6801): 150-51
- **Electrostatic discharge testing of tunneling magnetoresistive (TMR) devices** *International Magnetism Conference (INTERMAG 2000)*  
Wallash, A., Hillman, J., Sharma, M., Wang, S. X.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.2000: 2809-11
- **Electronic scattering from Co/Cu interfaces: In situ measurement, comparison with microstructure, and failure of semiclassical free-electron models**  
Bailey, W. E., Wang, S. X., Tsymbal, E. Y.  
AMER INST PHYSICS.2000: 5185-87
- **Magnetic properties, microstructures, and corrosion resistance of high-saturation FeMoN and FeRhN films for recording heads** *IEEE TRANSACTIONS ON MAGNETICS*  
Wang, S. X., Sin, K., Hong, J., Nguyentran, L.  
2000; 36 (2): 513-20
- **Electronic scattering from Co/Cu interfaces: In situ measurement and comparison with theory** *PHYSICAL REVIEW B*

- Bailey, W. E., Wang, S. X., Tsymbal, E. Y.  
2000; 61 (2): 1330-1335
- **In-situ conductance measurement of surface specularity of NiFe, Co, Cu, Ag and Ta thin films** *1999 International Magnetism Conference (INTERMAG 99)*  
Yamada, K., Bailey, W. E., Fery, C., Wang, S. X.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC. 1999: 2979–81
  - **In-situ characterization of oxide growth for fabricating spin-dependent tunnel junctions**  
Wee, A. T., Wang, S. X., Sin, K.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC. 1999: 2949–51
  - **Study of DC plasma oxidized Al<sub>2</sub>O<sub>3</sub> barriers in spin dependent tunneling junctions using high resolution transmission electron microscopy** *1999 International Magnetism Conference (INTERMAG 99)*  
Clark, T. E., Mancoff, F. B., Wang, S. X., Clemens, B. M., Sinclair, R.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC. 1999: 2922–24
  - **Trellis codes for transition jitter noise**  
Wilson, B. A., Wang, S. X.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC. 1999: 2328–30
  - **Magnetic properties and high-frequency responses of high moment FeTaN/AlN laminates for high-data-rate magnetic recording** *IEEE TRANSACTIONS ON MAGNETICS*  
Hong, J. G., Furukawa, A., Sun, N. X., Wang, S. X., Grimes, C. A., Sahu, S.  
1999; 35 (5): 2502-2504
  - **Determination of barrier oxidation states in spin dependent tunneling structures** *JOURNAL OF APPLIED PHYSICS*  
Sharma, M., Wang, S. X., Nickel, J. H.  
1999; 85 (11): 7803-7806
  - **Direct measurement of surface scattering in giant magnetoresistance spin valves** *JOURNAL OF APPLIED PHYSICS*  
Bailey, W. E., Fery, C., Yamada, K., Wang, S. X.  
1999; 85 (10): 7345–48
  - **Spin-dependent tunneling junctions with Fe<sub>55</sub>Ni<sub>45</sub> electrodes and in situ resistive measurement of oxide growth** *APPLIED PHYSICS LETTERS*  
Wee, A. T., Sin, K. S., Wang, S. X.  
1999; 74 (17): 2528-2530
  - **Investigation of ion beam deposited spin valve interface structure by Co-59 nuclear magnetic resonance**  
Jedryka, E., Bailey, W. E., Wojcik, M., Nadolski, S., Wang, S. X.  
AMER INST PHYSICS. 1999: 4439–41
  - **Magnetic and microstructural characterization of FeTaN high saturation materials for recording heads**  
Wang, S. X., Hong, J. G.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC. 1999: 782–87
  - **Inversion of spin polarization and tunneling magnetoresistance in spin-dependent tunneling junctions** *PHYSICAL REVIEW LETTERS*  
Sharma, M., Wang, S. X., Nickel, J. H.  
1999; 82 (3): 616-619
  - **Epitaxial growth of atomically flat spin dependent tunneling junctions** *Symposium on Epitaxial Growth-Principles and Applications*  
Li, Y., Wang, S. X., Mancoff, F. B., Clemens, B. M.  
MATERIALS RESEARCH SOCIETY. 1999: 73–78
  - **Study of natural oxidation of ultra-thin aluminum layers with in-situ resistance measurement** *Symposium U on In Situ Process Diagnostics and Modelling, at the 1999 MRS Spring Meeting*  
Fery, C., Bailey, W. E., Yamada, K., Wang, S. X.  
MATERIALS RESEARCH SOCIETY. 1999: 185–190

- **Novel sol-gel processing for polycrystalline and epitaxial thin films of La<sub>0.67</sub>Ca<sub>0.33</sub>MnO<sub>3</sub> with colossal magnetoresistance** *JOURNAL OF MATERIALS RESEARCH*  
Bae, S. Y., Wang, S. X.  
1998; 13 (11): 3234-3240
- **Effect of microstructure on resistivity and GMR ratio in ion beam deposited spin valves**  
Bailey, W. E., Guarisco, D., Wang, S. X.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.1998: 957-59
- **Texture and magnetic properties of FeTaN films bias-sputtered on sloping surfaces**  
Hong, J., Wang, S. X., Rook, K.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.1998: 1444-46
- **Spin-dependent tunneling junctions with hard magnetic layer pinning** *7th Joint Magnetism and Magnetic Materials / International Magnetism Conference*  
Bobo, J. F., Mancoff, F. B., Bessho, K., Sharma, M., Sin, K., Guarisco, D., Wang, S. X., Clemens, B. M.  
AMER INST PHYSICS.1998: 6685-87
- **Microstructures and properties of high saturation soft magnetic materials for advanced recording reads** *Symposium L on Materials for High-Density Magnetic Recording / Symposium M on Integrated Magneto-Optics at the MRS Spring Meeting*  
Wang, S. X., Hong, J., Sin, K.  
MATERIALS RESEARCH SOCIETY.1998: 5-5
- **Read-back nonlinearity in longitudinal keptered recording**  
Wilson, B. A., Wang, S. X., Coughlin, T. M.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.1998: 51-56
- **Intra- and inter-pattern non-linearities in high density magnetic recording**  
Taratorin, A., Cheng, D., Arnett, P., Olson, R., Diola, T., Fitzpatrick, J., Wang, S. X., Wilson, B.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.1998: 45-50
- **Colossal magnetoresistance in sol-gel derived epitaxial thin film of co-doped La<sub>1-x</sub>CaxMnOx** *JOURNAL OF ELECTRONIC MATERIALS*  
Bae, S. Y., Snyder, D. J., Wang, S. X.  
1998; 27 (1): 1-7
- **Domain structures and magnetic properties of FeN films sputter-deposited on sloping surfaces**  
Sin, K. S., Wang, S. X.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.1997: 2833-35
- **Corrosion resistance of low coercivity, high moment FeXN (X=Rh, Mo) thin film head materials**  
Nguyentran, L., Sin, K., Hong, J. I., Pizzo, P. P., Wang, S. X.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.1997: 2848-50
- **The dependence of overwrite on non-linear transition shift**  
Taratorin, A., Wilson, B., Wang, S. X.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.1997: 2689-91
- **Linearizing the read process for write nonlinearity measurements**  
Wilson, B. A., Wang, S. X., Taratorin, A. M.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.1997: 2692-94
- **Linearizing the read process for write nonlinearity measurements**  
Wilson, B. A., Wang, S. X., Taratorin, A. M.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.1997: 2692-94
- **Ion beam deposition and structural characterization of GMR spin valves**  
Wang, S. X., Bailey, W. E., Surgers, C.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.1997: 2369-74
- **Soft a-CoZr-based spin valves**

- 
- Bailey, W. E., Sin, K., Wang, S. X.  
AMER INST PHYSICS.1997: 4007–
- **Generalized method for measuring read-back nonlinearity using a spin stand**  
Wilson, B. A., Wang, S. X., Taratorin, A. M.  
AMER INST PHYSICS.1997: 4828–30
  - **Effects of lamination on soft magnetic properties of FeN films on sloping surfaces** *41st Annual Conference on Magnetism and Magnetic Materials*  
Sin, K., Wang, C. T., Wang, S. X., Clemens, B. M.  
AMER INST PHYSICS.1997: 4507–9
  - **Non-linear interactions in a series of transitions**  
Taratorin, A., Fitzpatrick, J., Wang, S. X., Wilson, B.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.1997: 956–61
  - **Effect of ion bombardment on the long-range chemical order in FePd films** *JOURNAL OF APPLIED PHYSICS*  
Surgers, C., Kay, E., Wang, S. X.  
1996; 80 (10): 5753–58
  - **FeN/AIN multilayer films for high moment thin film recording heads**  
Sin, K., Wang, S. X.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.1996: 3509–11
  - **Granular magnetic cobalt metal/polymer thin film system**  
Hong, J., Kay, E., Wang, S. X.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.1996: 4475–77
  - **Stress and magnetic properties in high moment FeN thin films**  
Sin, K., Wang, S. X.  
AMER INST PHYSICS.1996: 5901–3
  - **Structural comparisons of ion beam and de magnetron sputtered spin valves by high-resolution transmission electron microscopy** *40th Annual Conference on Magnetism and Magnetic Materials*  
Bailey, W. E., Zhu, N. C., Sinclair, R., Wang, S. X.  
AMER INST PHYSICS.1996: 6393–95
  - **MAGNETIC-PROPERTIES OF NIFE SPUTTERED ON SLOPING SURFACES** *1995 IEEE International Magnetics Conference (INTERMAG 95)*  
Jones, R. E., Williams, J., Spector, L., Lin, C. J., Wang, S., Pichai, S., Clemens, B. M.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.1995: 3817–19
  - **MODELING OF SUBMICRON TRACKWIDTH INDUCTIVE WRITE HEAD DESIGNS**  
WANG, S. X., WEBB, P. R.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.1995: 2687–89
  - **A PERPENDICULAR CONTACT RECORDING HEAD WITH HIGH MOMENT LAMINATED FEALN/NIFE POLE TIPS**  
WANG, S., LOUIS, E., WOLFSON, J., ANDERSON, R., KRYDER, M. H.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.1994: 3897–99
  - **FEALN/SIO2 AND FEALN/AL2O3 MULTILAYERS FOR THIN-FILM RECORDING-HEADS (INVITED)**  
KRYDER, M. H., WANG, S., ROOK, K.  
AMER INST PHYSICS.1993: 6212–17
  - **MICROSTRUCTURAL INVESTIGATIONS OF FEN AND FEALN THIN-FILMS FOR RECORDING HEAD APPLICATIONS**  
ROGERS, D. J., WANG, S., LAUGHLIN, D. E., KRYDER, M. H.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.1992: 2418–20
  - **IMPROVED HIGH MOMENT FEALN/SIO2 LAMINATED MATERIALS FOR THIN-FILM RECORDING-HEADS**  
WANG, S., OBERMYER, K. E., KRYDER, M. H.  
IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.1991: 4879–81

- **NITROGEN-DOPED IRON-FILM-BASED LAMINATED MATERIALS FOR THIN-FILM RECORDING-HEADS**

WANG, S., KRYDER, M. H.  
AMER INST PHYSICS.1991: 5625-27

- **HIGH MOMENT SOFT AMORPHOUS COFEZRRE THIN-FILM MATERIALS**

WANG, S., GUZMAN, J. I., KRYDER, M. H.  
AMER INST PHYSICS.1990: 5114-16

- **RF-DIODE-SPUTTERED IRON NITRIDE FILMS FOR THIN-FILM RECORDING HEAD MATERIALS**

WANG, S., KRYDER, M. H.  
AMER INST PHYSICS.1990: 5134-36

- **SYNTHESIS, STRUCTURE, AND PROPERTIES OF SR<sub>2</sub>CUO<sub>2</sub>CL<sub>2</sub> *PHYSICAL REVIEW B***

MILLER, L. L., WANG, X. L., WANG, S. X., STASSIS, C., JOHNSTON, D. C., FABER, J., LOONG, C. K.  
1990; 41 (4): 1921-25