





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

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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 β -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_xSn_{1-x} 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 MnPd₃** *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 Cr₂O₃/Al₂O₃ 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 SrIrO₃/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.
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