

IDENTIFYING INFORMATION:

NAME: Wang, Shan X.

POSITION TITLE: Leland T. Edwards Professor, School of Engineering

PRIMARY ORGANIZATION AND LOCATION: Stanford University, Stanford, CA, USA

Professional Preparation:

ORGANIZATION AND LOCATION	DEGREE (if applicable)	RECEIPT DATE	FIELD OF STUDY
Carnegie Mellon University, Pittsburgh, PA, US	PHD	12/1993	Electrical and Computer Engineering
Iowa State University, Ames, IA, US	MS	07/1988	Physics
University of Science and Technology of China, Hefei, Not Applicable, N/A, China	BS	07/1986	Physics

Appointments and Positions

2018 - present	Leland T. Edwards Professor, School of Engineering, Stanford University, Stanford, CA, USA
2021 - present	Full Faculty Member, Molecular Imaging Program at Stanford (MIPS), Stanford, CA, US
2012 - present	Associate Faculty Member, Canary Center for Early Detection of Cancer, Stanford, CA, US
2010 - present	Full Professor by courtesy, Dept. of Radiology, Stanford School of Medicine, Stanford, CA, US
2006 - present	Full Professor, Dept. of Materials Science & Engineering, and jointly with Dept. of Electrical Engineering, Stanford University, Stanford, CA, US
2005 - present	Director, Stanford Center for Magnetic Nanotechnology, Stanford, CA, US
2004 - present	Affiliated Faculty Member, Stanford Cardiovascular Institute, Stanford, CA, US
2003 - present	Affiliated Faculty Member, Stanford Bio-X Program, Stanford, CA, US
2014 - 2019	Associate Chair, Department of Materials Science and Engineering, Stanford, CA, US
2002 - 2005	Director, Stanford Center for Research on Information Storage Materials (CRISM), Stanford, CA, US
2001 - 2006	Associate Professor, Dept. of Materials Science & Engineering, and jointly with Dept. of Electrical Engineering, Stanford University, Stanford, CA, US
1993 - 2000	Assistant Professor, Dept. of Materials Science & Engineering, and jointly with Dept. of Electrical Engineering, Stanford University, Stanford, CA, US

Products**Products Most Closely Related to the Proposed Project**

1. Dc M, Shao DF, Hou VD, Vailionis A, Quarterman P, Habiboglu A, Venuti MB, Xue F, Huang YL, Lee CM, Miura M, Kirby B, Bi C, Li X, Deng Y, Lin SJ, Tsai W, Eley S, Wang WG, Borchers JA, Tsymbal EY, Wang SX. Observation of anti-damping spin-orbit torques generated

by in-plane and out-of-plane spin polarizations in MnPd(3). *Nat Mater.* 2023 May;22(5):591-598. PubMed PMID: [37012436](#).

2. Sato N, Xue F, White R, Bi C, Wang S. Two-terminal spin-orbit torque magnetoresistive random access memory. *Nature Electronics.* 2018 September 01; 1(9):508-511. Available from: <https://doi.org/10.1038/s41928-018-0131-z> DOI: 10.1038/s41928-018-0131-z
3. Bi C, Sato N, Wang S. 6 - Spin-orbit torque magnetoresistive random-access memory (SOT-MRAM). In: Magyari-Köpe B, Nishi Y, editors. *Woodhead Publishing Series in Electronic and Optical Materials [Internet]* Woodhead Publishing; 2019/01/01/. 203-235p. Available from: <https://www.sciencedirect.com/science/article/pii/B9780081025840000073> isbn: 978-0-08-102584-0
4. Zhang F, Sridharan A, Hwang W, Xue F, Tsai W, Wang SX., Fan D. On-Device Continual Learning with STT-Assisted-SOT MRAM based In-Memory Computing. *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems.* Forthcoming.
5. Hwang W, Xue F, Zhang F, Song M, Lee C, Turgut E, Chen T, Bao X, Tsai W, Fan D, Wang S X.. Energy-Efficient Computing with High-Density, Field-Free STT-Assisted SOT-MRAM (SAS-MRAM). *IEEE Transactions on Magnetics.* 2023 March; 59(3):1-6.

Other Significant Products, Whether or Not Related to the Proposed Project

1. Gaster RS, Xu L, Han SJ, Wilson RJ, Hall DA, Osterfeld SJ, Yu H, Wang SX. Quantification of protein interactions and solution transport using high-density GMR sensor arrays. *Nat Nanotechnol.* 2011 May;6(5):314-20. PubMed Central PMCID: [PMC3089684](#).
2. Wang SX, Sun NX, Yamaguchi M, Yabukami S. Properties of a new soft magnetic material. *Nature.* 2000 Sep 14;407(6801):150-1. PubMed PMID: [11001044](#).
3. Wang S, Nickel J, Sharma M. Inversion of Spin Polarization and Tunneling Magnetoresistance in Spin-Dependent Tunneling Junctions. 1999 January 18; 82(3):616-619. Available from: <https://link.aps.org/doi/10.1103/PhysRevLett.82.616> DOI: 10.1103/PhysRevLett.82.616
4. Wang SX., Taratorin AM.. *Magnetic Information Storage Technology.* 1st ed. Cambridge, MA: Academic Press; 1999. 536p.
5. Vachani A, Lam S, Massion PP, Brown JK, Beggs M, Fish AL, Carbonell L, Wang SX, Mazzone PJ. Development and Validation of a Risk Assessment Model for Pulmonary Nodules Using Plasma Proteins and Clinical Factors. *Chest.* 2023 Apr;163(4):966-976. PubMed Central PMCID: [PMC10258433](#).

Synergistic Activities

1. Innovations in Workforce Development and Training (Curricular Materials): I have written two popular textbooks including one on information storage technology commissioned by Academic Press (1999).
2. Innovations in Teaching (Pedagogical Methods): I offer a unique undergraduate course entitled "Great Inventions That Matter" which coaches first year students on invention and innovation, plus how to write a patent application and how to protect other types of intellectual properties such as copyrights and trade secrets (2017-Present).
3. Broadening the Participation of Groups Underrepresented in STEM: I have focused my efforts in improving the pipeline to Engineering by recruiting and mentoring females and minorities

from HS, UGs, and graduates.

4. Served as Local Chair of the IEEE Magnetic Recording Conference in 2002, 2005, 2016, and 2022; Hosted Stanford Workshop on Emerging Memories and AI, 2018.
5. Served as honorary Adjunct Professor for the Department of Electrical Engineering at Tsinghua University in Beijing, China from 2022-2023.

Certification:

When the individual signs the certification on behalf of themselves, they are certifying that the information is current, accurate, and complete. This includes, but is not limited to, information related to domestic and foreign appointments and positions. Misrepresentations and/or omissions may be subject to prosecution and liability pursuant to, but not limited to, 18 U.S.C. §§ 287, 1001, 1031 and 31 U.S.C. §§ 3729-3733 and 3802.

Certified by Wang, Shan X. in SciENCv on 2024-02-08 12:54:08