

Academic Curriculum Vitae

CONTACT DETAILS

Nian X. Sun

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URL: www.neu.edu/sunlab; www.northeastern.edu/kecklab.

Director, W.M. Keck Laboratory of Integrated Ferroics

Director, Advanced Materials and Microsystems Laboratory

Director, Joint C+MS Program between Northeastern University and Huazhong U. of S&T

Editor: *IEEE Transactions on Magnetics*, *Journal of Sensors*, *Rare Metals*

FInstP, FIET

EDUCATION

Stanford University, California, USA

Ph.D. Materials Science and Engineering, 2002

M.S. Electrical Engineering, 2001

Dissertation: High saturation magnetization soft magnetic FeCoN thin films for GHz applications; Advisor: Professor Shan X. Wang

Chinese Academy of Sciences (CAS), Institute of Metal Research, China

M.S. Materials Science and Engineering, 1996

Thesis: Fabrication, characterization and properties of nanostructured and amorphous materials; Advisor: Professor Ke Lu

Huazhong University of Science and Technology (HUST), China

B.S. Materials Science and Engineering, 1993

B.S. Minor Electrical Engineering, 1993

RESEARCH AREA OF INTEREST

Our research interests include novel integrated magnetic, ferroelectric and multiferroic materials and microsystems for sensing, memory, power, RF and microwave electronics. Specifically, we work on materials and microsystems for biomagnetic sensing, micromagnetic neural stimulation, room-temperature electro-magneto-encephalography, different tunable RF/microwave components, including multiferroic antennas, tunable inductors, filters, phase shifters, isolators, circulators, etc., integrated thermoelectric

materials and devices, materials and devices for vibration energy harvesting applications, etc.

HIGHLIGHTS OF RESEARCH AND SCHOLARSHIP:

- First Prize, 2018 Create the Future Design Contest: Electronics/Sensors/IOT Category, NASA Tech Briefs.
- Demonstration of ultra-compact magnetoelectric antennas ($10^{-2} \sim 10^{-5} \lambda_0$) that rely on acoustic resonance, instead of electromagnetic resonance, in magnetoelectric RF nanoelectromechanical systems (NEMS) resonators. These magnetoelectric antennas have sizes of 1/10~1/100 of conventional antennas and are magnetic antennas and immune from ground plane effect.
- Our paper on magnetoelectric antennas in Nature Communications are highlighted in Science magazine, Nature News, TV news, newspapers, etc. in different languages.
- NSF Nanosystems ERC for Translational Applications of Nanoscale Multiferroic Systems (TANMS, www.tanms-erc.org), 2013~present.
- Founding Director, W.M. Keck Laboratory for Integrated Ferroics, Northeastern University, www.neu.edu/kecklab.
- The most sensitive nanoscale room temperature magnetic sensors - novel RF magnetoelectric sensors based on RF magnetoelectric nano-electromechanical systems resonators with DC magnetic field sensitivity of $1.58\text{pT/Hz}^{1/2}$.
- Novel voltage tunable RF magnetoelectric integrated inductors with 50~150% tunable inductance within 0.5~3.5GHz.
- Giant voltage tunable ferromagnetic resonance frequency range of 5820 MHz or $f_{\text{max}}/f_{\text{min}}=4.3$ in FeGaB based multiferroic composites.
- Record high electric field induced tunable magnetic field of 3500 Oe in Terfenol/PZN-PT multiferroic heterostructure.
- Demonstration of reversible E-field room-temperature control of exchange bias in AFM/FM/FE multiferroic heterostructures.
- Demonstrate a new class of non-reciprocal tunable bandpass filters with ultrawideband isolation.
- Novel RF FeGaB films with record high piezomagnetic coefficient $d\lambda/dH$ of 12ppm/Oe.
- Demonstration of antennas with self-biased magnetodielectric substrates at GHz frequencies, which show significantly enhanced antenna performance.
- New electrostatically tunable inductors with record high tunable inductance range of $L_{\text{max}}/L_{\text{min}} = 550\%$ based on multiferroics.
- Novel wideband (~20%) vibration energy harvesters with high permeability magnetic materials.
- High power density of $>20\text{mW/cm}^3$ in vibration energy harvesters.
- FeCoN films with record high saturation magnetization, which have been widely used by the information storage industry.
- 10 most outstanding full papers in the past ten years (2001~2010) in *Advanced Functional Materials*.
- >260 peer-reviewed publications and >20 US patents and patent disclosures.

- H-index of 46 in Google Scholar, with total citations of >7000.
 - >150 plenary, plenary, keynote and invited presentations, and seminars.
 - W.M. Keck Foundation Award
 - NSF CAREER Award.
 - ONR Young Investigator Award.
 - Editor, *IEEE Transactions on Magnetics; Journal of Sensors; Rare Metals*.
 - Fellow, the Institute of Engineering and Technology.
 - Fellow, the Institute of Physics.
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EMPLOYMENT

2014 ~ Present: *Professor*, Department of Electrical and Computer Engineering, Northeastern University, Boston, MA, USA

2009 ~ 2014: *Associate Professor*, Department of Electrical and Computer Engineering, Northeastern University, Boston, MA, USA

2004 ~ 2009: *Assistant Professor* Department of Electrical and Computer Engineering, Northeastern University, Boston, MA, USA

Research interests include the processing, microstructures and properties relationship of novel magnetic, ferroelectric and magnetoelectric materials; RF/microwave devices design, fabrication and characterization; materials behaviors at RF/microwave frequency range; energy harvesting materials and devices, etc. Details available at:

<http://www.northeastern.edu/sunlab>

2009 ~ present: *Founder*, *Winchester Technologies, LLC*, Winchester, MA, USA; Website: www.winchestertech.com

2013 ~ 2013 *Visiting Scientist*, Sabbatical at Research Laboratory of Electronics (RLE), EECS Dept., MIT

2001 ~ 2004: *Scientist/Advisory Development Engineer*, IBM (later with Hitachi Global Storage Technologies), San Jose, California.

- Leading the magnetic/non-magnetic thin films R&D activities for magnetic write heads at Hitachi/IBM. Won and executed multi-million-dollar funding for different projects. Purchased state of the art multi-module PVD systems for our R&D activities.
- Successfully developed several generations of high saturation magnetization soft magnetic thin films, including the Fe-Ni, Fe-Co-X and Fe-Co films for longitudinal write heads, and the high saturation magnetization laminated magnetic write poles for several generations of perpendicular recording heads.
- Successfully developed soft magnetic metal/insulator laminated films, and applied them to the magnetic write heads. Record high data transfer rate was achieved in the magnetic write heads.

1998–2001: *Research Assistant*, Stanford University, Palo Alto, California

- Novel FeCoN soft magnetic thin films were developed with a saturation magnetization of 24 kG (2.4 Tesla), which was 15 ~ 20% higher than the B_s of the available soft magnetic films at that time. These results appeared in the journal *Nature*.
- The FeCoN films, which were first developed by us, have been taken as the standard write head materials by almost all the major magnetic recording companies worldwide.

1997-1998: *Research Associate*, Chinese Academy of Sciences, China

- Melting behavior of solids and its relation to the grain/phase boundaries and surfaces. For the first time, we reported on a 5°C superheating of a bulk polycrystalline material, the element selenium with a mean grain size of around 10 μ m. This superheating of the selenium polycrystals was associated with a nearly equilibrium state grain shape when viewed from the naturally fractured surface.

1993–1996: *Research Assistant*, Chinese Academy of Sciences, China

- Synthesis, characterization, and properties of nanostructured / nanophase materials and amorphous materials, and the thermodynamics and kinetics of the phase transformation from the amorphous state to the nanostructured state.

MAJOR AWARDS & HONORS

10/2018	First Prize, Create the Future Design Contest, NASA Tech Brief
07/2014	W.M. Keck Foundation Award
06/2013	Fellow, the Institute of Engineering and Technology.
09/2012	Fellow, the Institute of Physics.
04/2012	Søren Buus Outstanding Research Award
11/2010	Ten Most Outstanding Papers in the Past Decade (2001~2010) in <i>Advanced Functional Materials</i>
05/2010	US Air Force SFFP Fellow
05/2009	US Air Force SFFP Fellow
01/2008	NSF CAREER Award
03/2007	ONR Young Investigator Award
08/2000	First Prize, IDEMA Fellowship \$25,000
06/1996	President's Fellowship, Chinese Academy of Sciences (CAS)
06/1996	Outstanding Graduate of the Institute of Metal Research, CAS
07/1993	Outstanding Graduate of Huazhong University of Science and Technology

STUDENT AWARDS & HONORS

10/2018	Hwaider Lin, First Prize, Create the Future Design Contest, NASA Tech Brief
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- 04/2018 Hwaider Lin won the 2018 Outstanding Graduate Student Award for Research, Northeastern University, which is awarded to two graduate students each year. Hwaider is the 3rd winner in our lab for the Outstanding Graduate Student Award for Research at Northeastern University following Ming Liu (2010) and Ziyao Zhou (2014). Congratulations!
- 11/2017 Hwaider Lin was among the five finalists for the Best Student Presentation Award in the 2017 MMM (Magnetism and Magnetic Materials) Conference, Pittsburgh, PA. Congratulations!
- 10/2017 Hwaider Lin won the Best Poster Award in the COMSOL Conference 2017, Boston. Congratulations!
- 08/2017 Zhiguang Wang won the 2017 1000 Young Talent Program Award, China.
- 05/2017 Dr. Satoru Emori joins the faculty in Physics Department as an assistant professor, Virginia Tech.
- 05/2017 Mr. Hwaider Lin was awarded the “Best Graduate Research Award” by the Electrical and Computer Engineering Department, Northeastern University.
- 01/2016 Dr. Zhiyao Zhou won the 2016 1000 Young Talent Program Award, China.
- 10/2015 Dr. Ziyao Zhou was awarded the Director's Postdoctoral Fellowship at Argonne National Laboratory
- 04/2015 Tianxiang Nan has been selected to receive the 2015 Chinese Government Award for Outstanding Self-Financed Students Abroad.
- 02/2015 Dr. Satoru Emori got named to Forbes' "30 Under 30 in Science" list
- 03/2014 Ziyao Zhou won the Outstanding Graduate Research Award, Northeastern University. He is one of the 2~3 best graduate students awarded every year within Northeastern University.
- 02/2014 Tianxiang Nan was selected as one of the 5 finalists in the IEEE Magnetics (Intermag) Conference 2014 in Dresden, Germany.
- 11/2013 Tianxiang Nan was selected one of the 6 finalists in the 58th Magnetism and Magnetic Materials (MMM) Annual Conference at Denver, Colorado
- 10/2013 Dr. Ming Liu won the 2013 1000 Young Talent Program Award, China.
- 04/2011 Xing Xing won the IEEE Graduate Student Travel Award to attend the Intermag (International Magnetics) Conference at Taipei
- 11/2010 Ming Liu's paper own the “Ten Most Outstanding Papers in the Past Decade (2001~2010) in *Advanced Functional Materials*”
- 08/2010 Ming Liu won the Director Postdoctoral Fellowship at Argonne National Laboratory
- 06/2010 Ming Liu won the Outstanding Student Research Award, Northeastern University. He is one of the 2~3 best graduate students awarded every year within Northeastern University.
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TEACHING EXPERIENCE

1. Fall 2004: ECE U790 Capstone Design I (Overall rating 4.2/5.0, with 5.0 being the highest score)
 2. Spring 2005: ECE U792 Capstone Design II (Overall rating 4.0/5.0)
 3. Fall 2005: ECE U698 & ECE G398 Magnetism and Magnetic Materials (Overall rating 3.6/5.0)
 4. Spring 2006: ECE U402, Electronics (Overall rating 4.3/5.0);
 5. Fall 2006: ECE U698 Magnetism and Magnetic Materials (Overall rating 4.0/5.0)
 6. Fall 2006: ECE G398 Magnetism and Magnetic Materials (Overall rating 5.0/5.0)
 7. Spring 2007: ECE U402, Electronics (Overall rating 3.1/5.0)
 8. Fall 2007: ECE U401, Introduction to ECE Labs (Overall rating 5.0/5.0 for section 1);
 9. Fall 2007: ECE U401, Introduction to ECE Labs (Overall rating 4.2/5.0 for section 2);
 10. Fall 2007: ECE U698 & G398, Magnetism and Magnetic Materials (Overall rating 4.2/5.0)
 11. Spring and Fall, 2008: I was officially relieved of teaching load due to my increased teaching load in 2007 and planned for 2009.
 12. Spring 2009: ECE U402, Electronics (two sessions, Overall rating 4.6/5.0 and 4.1/5.0)
 13. Spring 2010: EECE2412 Electronics (Overall rating: 4.4/5); EECE 7398 Magnetism and Magnetic Materials (Overall rating 4.8/5)
 14. Spring 2011: EECE2412 Electronics (Overall rating: 4.0/5); EECE 5698 Energy Harvesting Systems (Overall rating 4.0/5)
 15. Fall 2011: EECE7398 Magnetic Materials (overall rating: 5.0/5.0)
 16. Spring 2012: EECE2412 Electronics (Overall rating: 4.0 /5.0)
 17. Fall 2012: EECE2411 Introduction to ECE Lab (Overall rating: 4.5/5.0)
 18. Spring 2013: Sabbatical leave, no teaching load
 19. Fall 2013: EECE2412 Electronics (Overall rating: 3.9/5.0)
 20. Spring 2014: EECE7398 Magnetic Materials (Overall rating: 5.0/5.0)
 21. Fall 2014: EECE2412 Electronics (Overall rating: 4.3/5.0)
 22. Spring 2015: EECE7398 Magnetic Materials (Overall rating: 5.0/5.0)
 23. Fall 2015: EECE7398 Advanced Magnetic Materials (Overall rating: 4.8/5.0)
 24. Fall 2015: EECE7398 Introduction to Multiferroics (Overall rating: 4.8/5.0)
 25. Spring 2016: EECE5698 Thin Film Technologies - (Overall rating: 4.8/5.0)
 26. Fall 2016: EECE7298 Magnetic Materials: (Overall rating: 4.8/5.0)
 27. Spring 2017: EECE 5698 Introduction to Multiferroics: (Overall rating: 4.8/5.0)
 28. Fall 2017: EECE7298 Magnetic Materials: (Overall rating: 4.8/5.0)
 29. Spring 2018: EECE 5698 Introduction to Multiferroics: (Overall rating: 4.8/5.0)
 30. Fall 2018: EECE7298 Thin Film Technologies: (Overall rating: 4.8/5.0)
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CURRENT GROUP MEMBERS

- Visiting Professors/Scientists/PhD Students
 - Zhaoqiang Chu, Visiting PhD Student
 - Caijiang Lu, Visiting Professor
 - Changxing Sun, Visiting PhD Student
 - Tiejian Su, Visiting Professor
 - Jiawei Wang, Visiting Professor
 - Zengtai Zhu, Visiting PhD Student

 - Postdoctoral Scientists
 - Dr. Cheng Tu

 - Ph.D. Students:
 - Jason Adams
 - Huaihao Chen
 - Cunzheng Dong
 - Yifan He
 - Shadi Emam
 - Xianfeng Liang
 - Hwaider Lin
 - Alex Matyushov
 - Mehdi Nasrollahpour
 - Anthony Romano
 - Neville Sun
 - Yuyi Wei
 - Mohsen Zaim

 - Master Students:
 - Yang Yang
 - Yingxue Guo
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SUN GROUP ALUM

- Ph.D. graduates (total 17 graduates), their current affiliation, PhD thesis title

- Hwaider Lin, 2018 Winchester Technologies, LLC
Dissertation title: Acoustically actuated ultracompact NEMS magnetoelectric antennas
- Xingjun Wang, 2018 National Institute of Science and Technology
Dissertation title: High-Performance Magnetic Materials for RF/Microwave Devices and Memory Applications
- Tianxiang Nan, 2015 Cornell University
Dissertation title: RF NEMS magnetoelectric sensors.
- Yuan Gao, 2015 Winchester Technologies, LLC
Dissertation title: Voltage tunable integrated RF inductors
- Ziyao Zhou, 2014 Argonne National Laboratory
Dissertation title: Voltage control of magnetism.
- Ming Li, 2013 Texas Instruments
Dissertation Title: Compact Planar Ultra-wideband Antennas for Ground Penetrating Radar.
- Shawn Beguhn, 2013 MIT Lincoln Laboratory
Dissertation Title: Substrate integrated waveguide isolators utilizing magnetic materials.
- Xi Yang, 2013 UCLA
Dissertation Title: Compact, Lightweight and Power Efficient Voltage Tunable Multiferroic RF/Microwave Components.
- Qi Wang, 2013 Bingham McCutchen LLP
Dissertation Title: Pavement assessment using a dynamic pressure sensor system. (Co-advised with Prof. M. Wang)
- Young Lae Kim, 2012 Intel
Dissertation Title: Single-wall carbon nanotube arrays for nanoscale electrical interconnects. (Co-advised with Prof. Y.J. Jung)
- Jing Wu, 2012 Boston Scientific
Dissertation Title: Planar tunable RF/Microwave devices with magnetic, ferroelectric and multiferroic materials.
- Yunume Obi, 2011 Northeastern University
Dissertation Title: Synthesis, characterization and application of novel RF ferrites by low-temperature spin spray deposition.
- Xing Xing, 2011 Analog Devices Inc.
Dissertation Title: Soft magnetic materials and devices on energy applications
- Ming Liu, 2010 Professor, Xi'an Jiaotong University
Dissertation Title: E-field tuning of magnetism in multiferroic heterostructures.
- Jing Lou, 2010 Hitachi Global Storage Tech.
Dissertation Title: Electrostatically tunable microwave multiferroic heterostructures with novel magnetic materials.
- Guomin Yang, 2010 Associate Prof., Fudan University

Dissertation Title: Tunable miniaturized RF devices on magneto-dielectric substrates with enhanced performance.

○ Carl Pettiford, 2008 Professor and Chair of Engineering

Dept, Liberty University

Dissertation Title: Voltage tunable RF/microwave magnetic and multiferroic devices.

- Master graduates and their affiliation
 - Tianxiang Nan , 2014 (U. Wisconsin, Madison)
 - Carl Hansen, 2013 (Raytheon) ○ Sumeet Patil, 2012 (Northeastern University)
 - Andrew Czarnecki, 2012 (Draper Laboratory)
 - Yunume Obi, 2009 (Northeastern University)
 - Xing Xing, 2009 (Northeastern University)
 - Hassan Imrane, 2007 (EMC)
 - Jianwei Wang, 2007 (Northeastern University)
 - Alexander Shrabstein, 2007 (Rhythmia Medical)
 - Vikas Vatsa, 2006 (Northrop Grumman Corporation)
 - Jalal Lagdani, 2005 (Verari Systems)

- Postdoc, Visiting Professors / Scientists and their affiliation:
 - Ivan Lisenkov, 2018, Winchester Technologies, LLC
 - Xi Yang, 2017, MGH
 - Zhiguang Wang, 2017, Xi'an Jiaotong University
 - Satoru Emori, 2016, Virginia Tech
 - Zhongqiang Hu, 2015, Xi'an Jiaotong University
 - Mingmin Zhu, 2017, Visiting PhD student
 - Haomiao Zhou, 2017, Visiting professor
 - Bin Peng, 201, Visiting professor
 - Menghui Li, 2016-2017, Global Foundry
 - Guoliang Yu, 2015-2017, Visiting PhD Student
 - Dr. Wuyun Bao, 2015-2016, Visiting Research Scientist
 - Dr. Shuiyuan Chen, 2014-2015, Visiting Professor of Physics
 - Rongdi Guo, 2015-2016, Visiting PhD student
 - Dr. Weiwei Lin, 2014-2015, Visiting professor of Electrical Engineering
 - Dr. Furong Liu, 2015-2016, Visting Professor of Materials Science
 - Yidong Luo, 2015-2016, Visiting PhD student
 - Dr. Hua Su, 2015-2016, Visiting professor of Electrical Engineering
 - Shengjun Wei, 2015-2016, Visiting PhD student
 - Dr. Quanming Zhang, 2015-2016, Visiting Scientist
 - Satoru Emori, 2014-2015, Stanford University
 - Prof. Xiaoqin Chen, 2014-2015, Visiting Professor of Physics
 - Johnny Hu, 2013-2015, Staff Scientist at UES/AFRL

- Prof. Bo Dai, 2015, Professor of Electrical Engineering
 - Prof. Wei Shi, 2014-2015, Visiting Professor of Mechatronics
 - Mr. Hongzhi Sun, 2013-2014, Visiting Senior Engineer
 - Prof. Dazhi Sun, 2013-2014, Professor of Chemistry
 - Prof. Gaojian Wu, 2013-2013, Professor of Physics
 - Prof. Li Qing, 2011-2012, Professor of Electrical Engineering
 - Prof. Shandong Li, 2010-2011, Professor of Physics
 - Dr. Jerry J. Green, 2009~2012, Winchester Technologies, LLC
- Undergraduate: ~50 undergraduate REU participants.
 - High school students and teachers: ~40

PLENARY, KEYNOTE, INVITED PRESENTATIONS AND SEMINARS (>150)

1. Neville Sun gave an invited talk entitled “RF Magnetoelectric Sensors, PicoTesla Magnetometers and Ultra-Compact Antennas”, 2018 MRS Fall Meeting, Nov. 29, 2018, Boston, MA.
2. Nian Sun gave an invited seminar entitled “Integrated Ferroics for Sensing, Power, RF, Microwave and mm-wave Electronics”, US ARMY AMRDEC, Huntsville, AL, Nov. 19, 2018.
3. Nian Sun, invited talk entitled “RF Magnetoelectric Sensors”, at The 10th APCTP Workshop on Multiferroics, November 11 (Sun), 2018 ~ November 13 (Tue), 2018, KAIST, DAEJEON, South Korea.
4. Nian Sun give an invited talk at the IEEE RAPID Conference entitled “Ultracompact Magnetoelectric Antennas and Magnetometers”, Miramar Beach, FL, August 23, 2018.
5. Nian Sun give an invited talk at Army Research Laboratory entitled “Integrated Ferroics for Sensing, Power, RF, Microwave and mm-Wave Electronics”, July 31, 2018.
6. Nian Sun give an invited talk at Analog Devices Inc. entitled “Integrated Ferroics for Sensing, Power, RF, Microwave and mm-Wave Electronics”, July 12, 2018.
7. Nian Sun give an invited talk at the DARPA MEC Workshop on Millimeter-Scale Wirelessly Powered Sensors entitled “Ultracompact Magnetoelectric Antennas and Magnetometers”, UCLA, July 27, 2018.
8. Nian Sun gave an invited seminar entitled “Integrated Ferroics for Sensing, Power, RF, Microwave and mm-Wave Electronics” at the University of Kiel on June 18, 2018 during the Kieler Woche 2018 (Kiel Week 2018).
9. Nian Sun gave a seminar at Beijing University of Technology, entitled “Integrated Ferroics for Sensing, Power, RF, Microwave and mm-Wave Electronics”, May 4, 2018, Beijing, China.
10. Nian Sun gave a seminar at Qingdao University, entitled “Integrated Ferroics for Sensing, Power, RF, Microwave and mm-Wave Electronics”, April 29, 2018, Qingdao, China.

11. Nian Sun gave a seminar at National University of Singapore, entitled “Integrated Ferroics for Sensing, Power, RF, Microwave and mm-Wave Electronics”, April 27, 2018, Singapore.
12. Nian Sun gave an invited talk at the IEEE Magnetics (Intermag2018) Conference at Singapore, entitled “Integrated Ferroics for Sensing, Power, RF, Microwave and mm-Wave Electronics”, April 28, 2018.
13. Nian Sun, invited seminar entitled “Integrated Ferroics for Sensing, Power, RF, Microwave, and mm-Wave electronics”, Oak Ridge National Laboratory, Oak Ridge, TN, 4/3/2018.
14. Nian Sun, invited seminar entitled “Integrated Ferroics for Sensing, Power, RF, Microwave, and mm-Wave electronics”, The University of Tennessee, Knoxville, TN, 4/2/2018.
15. Nian Sun, invited talk entitled “Acoustically Actuated Magnetolectric Antennas”, ARSM 2018, UCLA, 1/31/2018.
16. Nian Sun, seminar entitled “Integrated Ferroics for Sensing, RF, Microwave and mm-Wave Electronics” in MGH/Harvard Medical School, Cambridge, MA 12/20/2017.
17. Hwaider Lin, Nian Sun, invited talk entitled “Integrated Ferroics for Sensing, RF, Microwave and mm-Wave Electronics” in the Annual MRS Fall Meeting, Boston, 11/30/2017.
18. Nian Sun, invited talk entitled “Integrated Ferroics for Sensing, RF, Microwave and mm-Wave Electronics” in the 64th AVS Symposium, Tampa, FL, 11/01/2017.
19. Nian Sun, invited talk entitled “Integrated Ferroics for Sensing, RF, Microwave and mm-Wave Electronics” in the MINT Review at the University of Alabama, Tuscaloosa, AL, 10/27/2017.
20. Nian Sun, Seminar entitled “Integrated Ferroics for Sensing, Power, RF and Microwave Electronics” Tsinghua University, July 15, 2017, Beijing China.
21. Nian Sun, Seminar entitled “Integrated Ferroics for Sensing, Power, RF and Microwave Electronics” Peking University, July 15, 2017, Beijing China.
22. Nian Sun, Seminar entitled “Integrated Ferroics for Sensing, Power, RF and Microwave Electronics” Hebei University of Technology, July 13, 2017, Tianjin China.
23. Nian Sun, invited talk entitled “Integrated Ferroics for Sensing, Power, RF and Microwave Electronics” at Materials Research Society of China, Ningxia, China, July 10, 2017.
24. Nian Sun, invited talk entitled “Integrated Ferroics for Sensing, Power, RF and Microwave Electronics” at Xi'An Jiaotong University, July 6, 2017.
25. Nian Sun, invited talk entitled “Integrated Ferroics for Sensing, Power, RF and Microwave Electronics” at AFRL/Ry, WPAFB, OH, June 30, 2017.
26. Nian Sun, Plenary Talk entitled “Integrated Ferroics for Sensing, Power, RF and Microwave Electronics” at The SECOND INTERNATIONAL WORKSHOP ON THINFILMS FOR ELECTRONICS, ELECTROOPTICS, ENERGY AND SENSORS (TFE3S), June 25–27, 2017, University of Dayton Research Institute, Dayton, Ohio, USA.
27. Nian Sun, invited talk entitled “Integrated Ferroics for Sensing, Power, RF and Microwave Electronics” 3rd Euro Intelligent Materials 2017, & 3rd European Symposium on Intelligent Materials 07-09 June 2017, Kiel, Germany

28. Nian Sun, Invited Seminar entitled “Integrated Ferroics for Sensing, Power, RF and Microwave Electronics” Ohio State University, ElectroScience Laboratory, Columbus, OH, April 13, 2017.
29. Nian Sun, Invited Seminar entitled “Integrated Ferroics for Sensing, Power, RF and Microwave Electronics” University of Michigan, EECS Department, Ann Arbor, MI, March 8, 2017.
30. Nian Sun, invited talk entitled “Acoustically Actuated NEMS Magnetolectric Antennas” at the 2016 RF Multiferroics Workshop, UCLA, Los Angeles, CA, November 11, 2016.
31. Nian Sun, invited talk entitled “Magnetic and Magnetolectric Materials and Devices for Sensing, Power, RF and Microwave Electronics” at NAVAIR, Pax River, MD, November 7, 2016.
32. Nian Sun, invited talk entitled “Magnetic and Magnetolectric Materials and Devices for Sensing, Power, RF and Microwave Electronics” at the Gordon Research Conference on Multiferroics and Magnetolectrics, Bates College, Maine, August 11, 2016.
33. Nian Sun, invited talk entitled “Magnetic and Magnetolectric Materials and Devices for Sensing, Power, RF and Microwave Electronics” at the 2016 ShanghaiTech Workshop on Emerging Devices, Circuits and Systems (SWEDCS’2016), July 1, 2016, Shanghai, China.
34. Nian Sun, invited talk entitled “Magnetic and Magnetolectric Materials and Devices for Sensing, Power, RF and Microwave Electronics” at the 9th International Symposium on Metallic Multilayers (MML 2016), Uppsala University, Uppsala, Sweden, during June 19-23 2016.
35. Nian Sun, invited talk entitled “Magnetic and Magnetolectric Materials and Devices for Sensing, Power, RF and Microwave Electronics” at the 5th International Conference on Microwave Magnetics (ICMM 2016) June 5~8, 2016, University of Alabama, Tuscaloosa.
36. Nian Sun, invited talk entitled “Ultra-Compact Voltage Reconfigurable Magnetolectric Antennas” at the Reconfigurable Electronics Workshop 2016, May 17-18, 2016, Arlington, Virginia.
37. Nian Sun, invited talk entitled "Integrated Magnetics and Multiferroics for Sensing, Memory, Power, RF and Microwave Electronics" at MITRE Corporation, Bedford, MA, January 27, 2016.
38. Nian Sun, invited talk entitled "Integrated Magnetics and Multiferroics for Sensing, Memory, Power, RF and Microwave Electronics" at 2016 Joint MMM - Intermag Conference, San Diego, CA, January 11-15, 2016.
39. Nian Sun, invited talk entitled "Integrated Magnetics and Multiferroics for Sensing, Memory, Power, RF and Microwave Electronics" at Murata Manufacturing Corp, December 15, 2015, Boston MA.
40. Zhongqiang Hu, Nian Sun, invited talk entitled "Integrated Magnetics and Multiferroics for Sensing, Memory, Power, RF and Microwave Electronics" at the Annual MRS Meeting, Boston, MA, November 30, 2015.

41. Tianxiang Nan, Nian Sun, invited talk entitled "Integrated Magnetism and Multiferroics for Sensing, Memory, Power, RF and Microwave Electronics" at the RF Multiferroics Workshop, UCLA, Los Angeles, CA, Oct. 19~21, 2015.
42. Nian Sun, plenary talk entitled "Integrated Magnetism and Multiferroics for Sensing, Memory, Power, RF and Microwave Electronics" at the 6th Overseas Chinese Materials Science and Technology Workshop, October 17, 2015, Chongqing, China.
43. Nian Sun, invited talk entitled "Integrated Magnetism and Multiferroics for Sensing, Memory, Power, RF and Microwave Electronics" at the 10th Energy Harvesting Workshop, Virginia Tech, Sept. 17, 2015, Blacksburg, VA.
44. Nian Sun, invited presentation entitled "Integrated Magnetism and Multiferroics for Sensing, Memory, Power, RF and Microwave Electronics" on August 18, 2015 in the XXIV International Materials Research Congress, August 16-20, 2015, Cancun, Mexico.
45. Nian Sun, invited presentation entitled "Integrated RF Multiferroic Antennas" on August 17, 2015 in the XXIV International Materials Research Congress, August 16-20, 2015, Cancun, Mexico.
46. Nian Sun, plenary presentation entitled "Integrated Magnetism and Multiferroics for Sensing, Memory, Power, RF and Microwave Electronics" in the International Workshop on Thin-films for Electronics, Electro-Optics, Energy and Sensors organized by University of Dayton and University of Dayton China Institute at Suzhou, China, July 3-6, 2015.
47. Nian Sun, invited presentation entitled "Integrated Magnetism and Multiferroics for Sensing, Memory, Power, RF and Microwave Electronics" in Euro Intelligent Materials 2015, the 2nd European Symposium on Intelligent Materials, 10 - 12 June 2015 (Kiel, Germany).
48. Nian Sun, seminar in Beijing University of Technology entitled "Integrated Ferromagnetics for Sensing, Memory, Power, RF and Microwave Electronics" May 9, 2015 at Beijing.
49. Nian Sun, seminars in Peking University entitled "Integrated Ferromagnetics for Sensing, Memory, Power, RF and Microwave Electronics" May 13, 2015 at Beijing.
50. Nian Sun, two seminars in Tsinghua University entitled "Integrated Ferromagnetics for Sensing, Memory, Power, RF and Microwave Electronics" May 13, and May 15, 2015 at Beijing.
51. Nian Sun, seminar in the IEEE Antennas and Propagation Society/Boston Chapter Lecture Series entitled "Integrated Magnetism and Multiferroics for Sensing, Memory, Power, RF and Microwave Electronics" in MIT Lincoln Laboratory, 4/23/2015.
52. Nian Sun, invited talk at Raytheon entitled "Integrated Ferromagnetics for Sensing, Memory, Power, RF and Microwave Electronics" in Raytheon, Andover, MA, 3/11/2015.
53. Nian Sun, invited talk at Intel Labs, entitled "Integrated Magnetism and Multiferroics for Sensing, Memory, Power, RF and Microwave Electronics" online Teleconference, Jan 21, 2015.
54. Nian Sun, invited talk at the RF Multiferroics Workshop, UCLA (November 13, 2014) entitled "Integrated Magnetism and Multiferroics for Sensing, Memory, Power, RF and Microwave Electronics" in Los Angeles, CA.

55. Nian Sun, invited seminar at Argonne National Laboratory (November 14, 2014) entitled "Integrated Magnetics and Multiferroics for Sensing, Memory, Power, RF and Microwave Electronics" in Argonne, IL.
56. Nian Sun, invited talk at PIERS 2014 Guangzhou (August 25, 2014) entitled "Integrated Magnetics and Multiferroics for Sensing, Memory, Power, RF and Microwave Electronics" in Guangzhou, China.
57. Nian Sun, invited seminar at Huazhong University of Science and Technology (August 24, 2014), entitled "Integrated Magnetics and Multiferroics for Sensing, Memory, Power, RF and Microwave Electronics".
58. Nian Sun, invited seminar at Nanjing University and Nanjing Technology University (August 22, 2014), entitled "Integrated Magnetics and Multiferroics for Sensing, Memory, Power, RF and Microwave Electronics".
59. Nian Sun, invited seminar at the Shanghai Institute of Ceramics, Chinese Academy of Sciences (August 21, 2014) entitled "Integrated Magnetics and Multiferroics for Sensing, Memory, Power, RF and Microwave Electronics".
60. Nian Sun, invited seminar at the Institute of Physics, Chinese Academy of Sciences (August 20, 2014), entitled "Integrated Magnetics and Multiferroics for Sensing, Memory, Power, RF and Microwave Electronics".
61. Nian Sun, invited presentation at ICC-5 Beijing (5th International Ceramics Congress) (August 19, 2014) entitled "Integrated Magnetics and Multiferroics for Sensing, Memory, Power, RF and Microwave Electronics".
62. Nian Sun, invited presentation at the Gordon Reserach Conference (GRC) on Multiferroics and Magnetoelectrics, entitled "Integrated Magnetics and Multiferroics for Sensing, Memory, Power, RF and Microwave Electronics" at Biddeford, ME, on August 12, 2014.
63. Nian Sun, invited presentation at the 2014 NSF Workshop on Noninvasive Imaging of Brain Function at Arlington, VA, entitled "Nanofabricated Magnetoelectric Sensor Arrays for Room-Temperature Magnetoencephalography" on July 23, 2014.
64. Nian Sun, invited presentation at WPAFB, Dayton OH, entitled "Integrated Magnetics and Multiferroics for Sensing, Memory, Power, RF and Microwave Electronics" on July 10, 2014.
65. Nian Sun, invited talk at the International Conference Microwave Magnetics (ICMM 2014) at Tohoku University, Japan entitled "Integrated Magnetics and Multiferroics for Sensing, Memory, Power, RF and Microwave Electronics" on June 30, 2014.
66. Nian Sun, seminar at Xi'an Jiaotong University entitled "Integrated Magnetics and Multiferroics for Sensing, Memory, Power, RF and Microwave Electronics" on June 18, 2014.
67. Nian Sun, seminar at Tsinghua University entitled "Integrated Magnetics and Multiferroics for Sensing, Memory, Power, RF and Microwave Electronics" on June 16, 2014.
68. Nian Sun, Invited Presentation entitled "Integrated Magnetics and Multiferroics for Sensing, Power, RF and Microwave Electronics" in Nian Sun, Invited Presentation entitled "Integrated Multiferroics for Sensing, Power, RF and Microwave Electronics" in at ISAF/IWATMD/PFM 2014 at The Penn State University, May 15, 2014.

69. Nian Sun, invited seminar co-sponsored by IEEE Boston GRS, AESS, PELS, MAG, IM, AP, which is entitled "Integrated Magnetics and Multiferroics for Sensing, Power, RF and Microwave Electronics" at the Kostas Research Institute for Homeland Security, Northeastern University, Burlington, MA, April 9, 2014.
70. Nian Sun, an invited presentation in the GRC Technology Transfer e-Workshop entitled "Integrated Magnetics and Multiferroics for Sensing, Power, RF and Microwave Electronics", April 9, 2014.
71. Nian Sun, invited department seminar entitled "Integrated Magnetics and Multiferroics for Sensing, Power, RF and Microwave Electronics" in Materials Science and Engineering Department, University of Connecticut, March 28, 2014.
72. Nian Sun, Invited Presentation entitled "Integrated Multiferroics for Sensing, Power, RF and Microwave Electronics" in NanoGiga Challenges, Arizona State University, Tempe, AZ, March 14, 2014.
73. Nian Sun, invited presentation entitled "Integrated Multiferroics for Sensing, Power, RF and Microwave Electronics" to The NSF Nanosystems Engineering Research Center for Translational Applications of Nanoscale Multiferroic Systems (TANMS) on March 7, 2014.
74. Nian Sun, invited presentation on "Integrated Multiferroic Heterostructures and LowPower Devices for Sensing, Power, RF and Microwave Electronics" at US Army Research Laboratory, Adelphi, MD on February 28, 2014.
75. Nian Sun, Invited Presentation on "Strong Magnetoelectric Coupling in Multiferroic Heterostructures and Devices", in EMA 2014, Orlando, Jan 22~24, 2014.
76. Tianxiang Nan and Nian Sun on "Self-Biased 215MHz Magnetoelectric NEMS Resonator for Ultra-Sensitive DC Magnetic Field Detection", Invited presentation at the Materials Science & Technology Conference (MS&T 2013) at Montreal, Quebec, Canada, October 28~31, 2013.
77. Nian Sun on "Strong Magnetoelectric Coupling in Multiferroic Heterostructures and Devices" Invited presentation at the Materials Science & Technology Conference (MS&T 2013) at Montreal, Quebec, Canada, October 28~31, 2013.
78. Nian Sun, Invited Presentation in Rogers Corporation R&D Meeting, "RF/Microwave Magnetics and Multiferroics and Collaboration Opportunities with Rogers Corporation", Kostas Reserach Institute, Burlington, MA, September 19, 2013.
79. Nian Sun, "Strong Magnetoelectric Coupling in Multiferroic Heterostructures and LowPower Devices", Invited presentation at PIERS 2013 Stockholm, Sweden, August 14, 2013.
80. Nian Sun, "Integrated Magnetics for Sensing, Power, RF and Microwave Electronics", Seminar at Kilby Labs, Texas Instruments, Dallas, Texas, August 2, 2013.
81. N. X. Sun, "Strong Magnetoelectric Coupling in Multiferroic Materials and Devices", invited seminar at Texas Instruments, Santa Clara, CA, June 19, 2013.
82. N. X. Sun, "Strong Magnetoelectric Coupling in Multiferroic Materials and Devices", invited seminar at University of Dayton, Dayton, OH, June 13, 2013.
83. N. X. Sun, "Strong Magnetoelectric Coupling in Multiferroic Materials and Devices", invited seminar at Wright Patterson Air Force Base, Dayton, OH, June 12, 2013.

84. N. X. Sun, Invited presentation "Strong Magnetoelectric Coupling in Multiferroic Materials and Devices", invited seminar at Tsinghua University, Beijing, China, May 31, 2013.
85. N. X. Sun, Invited presentation "Strong Magnetoelectric Coupling in Multiferroic Materials and Devices", invited seminar at Peking University, Beijing, China, May 30, 2013.
86. N. X. Sun, Invited presentation "Strong Magnetoelectric Coupling in Multiferroic Materials and Devices", invited seminar at Institute of Physics, Chinese Academy of Sciences, Beijing, China, May 29, 2013.
87. N. X. Sun, Invited presentation "Strong Magnetoelectric Coupling in Multiferroic Materials and Devices", invited seminar at University of Electronic Science and Technology of China, Chengdu, China, May 28, 2013.
88. N. X. Sun, Invited presentation "Strong Magnetoelectric Coupling in Multiferroic Materials and Devices", in the 5th APCTP Workshop on Multiferroics, Singapore, May 25, 2013.
89. N. X. Sun, Invited presentation "Strong Magnetoelectric Coupling in Multiferroic Materials and Devices", Seminar at The National University of Singapore, Singapore, May 21, 2013.
90. N.X. Sun, "Voltage Control of Magnetism in Multiferroic Heterostructures and Low Power Devices", Invited presentation in Electronic Materials and Applications (EMA) 2013, Orlando, Florida, January 25, 2013.
91. N. X. Sun, Invited presentation "Voltage Control of Magnetism in Multiferroic Heterostructures and Devices", INRS-EMT, Univ. du Quebec, Canada, November 9, 2012.
92. N. X. Sun, "Voltage Control of Magnetism in Multiferroic Heterostructures and Low Power Devices", Invited presentation at Queen Mary University of London, London, U.K., Sept. 28, 2012.
93. N. X. Sun, "Voltage Control of Magnetism in Multiferroic Heterostructures and Devices", Invited presentation in the workshop on Magnetoelectric Phenomena and Devices, The Royal Society, London, U.K., Sept. 24~25, 2012.
94. N.X. Sun, "Voltage Control of Magnetism in Multiferroic Heterostructures and LowPower Tunable Devices", Intel Workshop on Tunable Devices and RF MEMS Status, Hillsboro OR, August 16, 2012.
95. N.X. Sun, "Voltage Control of Magnetism in Multiferroic Heterostructures and LowPower Devices", 7th Multifunctional Materials Workshop (MFM-7), Gamboa, Panama, August 5~9, 2012.
96. N.X. Sun, "Strong Converse Magnetoelectric Coupling in Multiferroic Heterostructures and Devices" at ISIF 2012, Hong Kong, June 19, 2012.
97. N.X. Sun, "Voltage Control of Magnetism in Layered Multiferroic Heterostructures, a New Paradigm for Tunable RF/Microwave Components and Spintronics" at Wuhan University, June 14, 2012.
98. N. X. Sun, "Voltage Control of Magnetism in Layered Multiferroic Heterostructures, a New Paradigm for Tunable RF/Microwave Components and Spintronics" at Tsinghua University, June 8, 2012.

99. N.X. Sun, "Voltage Control of Magnetism in Layered Multiferroic Heterostructures, a New Paradigm for Tunable RF/Microwave Components and Spintronics" at Peking University, June 4, 2012.
100. N.X. Sun, "E-field Control of Magnetism in Layered Multiferroic Heterostructures, a New Paradigm for Tunable RF/Microwave Components and Spintronics", MIT S3TEC/ Mechanical Engineering Micro Nano Joint Seminar presentation on April 18th, 2012.
101. N.X. Sun, E-field Control of Magnetism in Layered Multiferroic Heterostructures and Devices, a New Paradigm for Tunable RF/Microwave Components and Spintronics, ARO Complex Oxides Materials Workshop, Tucson, January 25, 2012.
102. N.X. Sun, E-field tunable RF magnetic inductors and transformers, Intel, Hillsboro, OR. January 13, 2012.
103. N.X. Sun, E-field Control of Magnetism in Layered Multiferroic Heterostructures and Devices, a New Paradigm for Tunable RF/Microwave Components and Spintronics, Invited talk at the Materials Research Society (MRS) Fall Meeting, November 28, 2011.
104. N.X. Sun, E-field Control of Magnetism in Layered Multiferroic Heterostructures and Devices, a New Paradigm for Tunable RF/Microwave Components and Spintronics, Invited talk at The University of New Orleans on November 16, 2011.
105. N.X. Sun, E-field Control of Magnetism in Layered Multiferroic Heterostructures and Devices, a New Paradigm for Tunable RF/Microwave Components and Spintronics, Invited talk at the MS&T 2011 Conference at Columbus, OH on October 19, 2011.
106. N.X. Sun, E-field Control of Magnetism in Layered Multiferroic Heterostructures and Devices, a New Paradigm for Tunable RF/Microwave Components and Spintronics, August 18, 2011, Peking University, Beijing, China.
107. N.X. Sun, E-field Control of Magnetism in Layered Multiferroic Heterostructures and Devices, a New Paradigm for Tunable RF/Microwave Components and Spintronics, July 22, 2011, Intel, Hillsboro, OR.
108. N.X. Sun, E-field Control of Magnetism in Layered Multiferroic Heterostructures and Devices, a New Paradigm for Tunable RF/Microwave Components and Spintronics, March 1, 2011, UCLA, Los Angeles, CA, 2011.
109. N. X. Sun, "Multiferroic Metamaterials: A New Paradigm on Compact, Lightweight and Tunable RF Devices", Dec. 7, 2010, WPAFB, OH.
110. Jing Lou, Gerry Pellegrini and N. X. Sun, "Investigation on Direct and Converse Magnetolectric Coupling and Their Relation", Raytheon, Sudbury, MA , Nov. 23, 2010.
111. N. X. Sun, "Novel Tunable RF/Microwave Multiferroic Heterostructures and Devices", NSF-SRC Initiative for Nanotechnology November 16, 2010, Dallas, TX.
112. N. X. Sun "Multiferroic Heterostructures with Giant Magnetolectric Coupling", October 20, 2010, MS&T2010, Houston, TX, USA.
113. Xing Xing and N. X. Sun, "Integrated Magnetic Inductors and Transformers on Si", Analog Devices Inc. Limerick, Ireland, October 12, 2010.
114. N. X. Sun, "Multiferroic Heterostructures: Physics, Materials and Devices", Ferrosolutions, Inc. Oct. 5, 2010.

115. N. X. Sun, "RF Magnetic Films and Their Applications in Integrated Magnetic Devices", October 14, 2010, PWR'SoC10, Cork, Ireland.
116. Ming Liu, Jing Lou, Guomin Yang, Carl Pettiford, Yunume Obi, Xing Xing, N. X. Sun, "Microwave Multiferroic Heterostructures and Tunable RF/Microwave Devices", ICMM 2010, Boston, MA June 1~4, 2010.
117. N. X. Sun, "Microwave Magnetic and Multiferroic Films: A New Paradigm on RF/Microwave Devices", June 14, 2010, WPAFB, OH.
118. N. X. Sun, D. Oates, G. Dionne, "Multiferroic Heterostructures: A New Paradigm on Compact, Lightweight and Tunable RF/Microwave Devices", June 28, 2010, RXPSO, WPAFB, OH.
119. M. Liu, J. Lou and N. X. Sun, "Electric field control of magnetism", 2010 IEEE 7th International Symposium on Metallic Multilayers, Sept. 19~24, 2010, Berkeley, CA.
120. N. X. Sun, Novel Magnetic and Multiferroic Materials and Devices for Integrated Circuits, Analog Device Inc., Wilmington, MA. February 2, 2010.
121. N. X. Sun, Novel Microwave Multiferroic Materials and Their Applications in Tunable Filters with Large Tunable Range, MIT Lincoln Library, Lexington MA, March 8, 2010.
122. N. X. Sun, X. Xing, B.X. Chen, Integrated Magnetic Transformers and Inductors for Power Electronics, Analog Device Inc., Wilmington, MA, April 9, 2010.
123. N. X. Sun, "Multiferroic Heterostructures: A New Paradigm on Tunable RF/Microwave Devices", MIT Lincoln Library, Lexington MA, April 15, 2010.
124. Nian X. Sun, Jing Lou, Ming Liu, Guomin Yang, Carl Pettiford, Yunume Obi, Xing Xing, Andrew Daigle, Jianwei Wang, Hassan Imrane, "Multiferroic and Magnetodielectric Materials and Devices for Advanced RF/Microwave Components", Oakland University, Rochester, MI, Oct. 22, 2009.
125. Nian X. Sun, "Novel Multifunctional Materials and Devices for Advanced RF/Microwave Passive Components", Air Force research Laboratory, Dayton, OH, July 9, 2009.
126. Nian X. Sun, "Novel Multifunctional Materials and Devices for Monolithic Microwave Integrated Circuits", University of Dayton, June 19, 2009.
127. G. M. Yang, X. Xing, A. Daigle, O. Obi, S. Stoute, M. Liu, N. X. Sun, "Miniaturized Antennas with Improved Performance by Using Magneto-dielectric Substrate/Superstrate at GHz (Invited)", MRS Spring Meeting, San Francisco, April 13~17, 2009.
128. J. Lou, D. Reed, M. Liu and N. X. Sun, "Tunable Devices Based on Multiferroic Heterostructures (Invited)", MRS Spring Meeting, San Francisco, April 13~17, 2009.
129. N. X. Sun "Microwave Multiferroics: Physics, Materials and Devices (Invited Tutorial)", MRS Spring Meeting, San Francisco, April 13~17, 2009.
130. J. Lou, D. Reed, M. Liu, O. Obi, S. Stoute, N. Pwint, and Nian X. Sun "Giant Magnetoelectric Coupling in Multiferroic Heterostructures (Invited)", Intermag 2009, Sacramento, CA, May 5, 2009.
131. J. Lou, M. Liu, R. David, O. Obi, S. Stoute, C. Pettiford and Nian X. Sun, "Novel Multiferroic Materials with Giant Tunability", 33rd International Conference and Exposition on Advanced Ceramics and Composites, Daytona Beach, Florida, USA, Jan 18~23, 2009.

132. N.X. Sun, "Novel Microwave Multiferroic Heterostructures and Devices", Multifunctional Materials Workshop, January 4~8, 2009, Copper Canyon, Mexico.
133. N.X. Sun, "Novel Microwave Multiferroic Heterostructures and Devices", MIT Lincoln Laboratory, Lexington, MA, December 19, 2008.
134. Jing Lou, David Reed, Carl Pettiford, Ming Liu, Nian X. Sun, "Novel FeGaB thin films and giant microwave tunability in FeGaB/PMN-PT multiferroic composites", International Conference on Microwave Magnetism (ICMM), Fort Collins, Sept. 12~15, 2008.
135. G. M. Yang, X. Xing, A. Daigle, O. Obi, S. Stoute, J. Lou, M. Liu, N. X. Sun "Miniaturized Antennas with Improved Performance by Loading Self-Biased Ferrite Films at GHz", International Conference on Microwave Magnetism (ICMM), Fort Collins, Sept. 12~15, 2008.
136. Nian X. Sun, "Magnetic and Multiferroic Materials and Their Applications in Novel RF/Microwave Devices", Invited Seminar at Physics Department, University of Delaware, August 6, 2008.
137. Nian X. Sun, "Magnetic and Multiferroic Materials and Their Applications in Novel RF/Microwave Devices", Invited Seminar at Department of Advanced Materials and Nanotechnology, Peking University, China, June 24, 2008.
138. Nian X. Sun, "Magnetic and Multiferroic Materials and Their Applications in Novel RF/Microwave Devices", Invited Seminar at the Department of Materials Science and Engineering, Tsinghua University, Beijing, June 25, 2008.
139. Nian X. Sun, "Magnetic and Multiferroic Materials and Their Applications in Novel RF/Microwave Devices", Invited Seminar at Department of Electronics Engineering, Huazhong University of Science and Engineering, China, July 1, 2008.
140. Nian X. Sun, "Magnetic and Multiferroic Materials and Their Applications in Novel RF/Microwave Devices", Invited Seminar at Physics Department, Hunter College, New York City, May 28, 2008.
141. Nian X. Sun (invited speaker and session Chair) "Novel microwave magnetic thin films and devices ", ONR Review, Rensselaer Polytechnic Institute, Troy, NY, Aug 6 - Aug 10, 2007.
142. Nian X. Sun (Keynote speaker) "Advanced microwave magnetic thin films and devices for MMIC and RFIC", IMAPS New England 34th Symposium, Boxborough, MA, May 1st, 2007.
143. N. X. Sun "Frontier on magnetic write head materials" Chinese Academy of Sciences, China, 08/22/2006.
144. V. G. Harris, Zhaohui Chen, Yajie Chen, Soack Yoon, Tomokuza Sakai, Anton Gieler, Aria Yang, and Yongxue He, K. S. Ziemer, Nian X. Sun and Carmine Vittoria "Self-biased Ba-hexaferrite films for next generation non-reciprocal u-wave and mm-wave devices", The 50th Magnetism and Magnetic Materials (MMM) Conference/American Institute of Physics, 11/1/2005.
145. N. X. Sun, S. X. Wang, "Damping Criteria of Magnetization in Ferromagnetic Ellipsoids", The Magnetic Recording Conference (TMRC) 2003, Santa Clara, California, USA, August 18~23, 2003.

146. S. X. Wang, N. X. Sun, A. M. Crawford, "Advanced soft magnetic materials for recording heads and integrated circuits", Materials Research Society (MRS) Spring Conference, Section E6.3, San Francisco, April 4, 2002.
147. N. X. Sun, S. X. Wang, T. J. Silva and A. B. Kos, "High Saturation Magnetization Soft Magnetic Fe-Co-N Films for GHz Applications", National Institute of Standards and Technology (NIST) Seminar, Boulder, CO, August 27, 2001.
148. N. X. Sun, S. X. Wang, and T. J. Silva, "Soft magnetism and high frequency behavior of Fe-Co-N thin films", The Magnetic Recording Conference (TMRC) 2001, Minneapolis, MN, USA, August 20-24, 2001.
149. N. X. Sun and S. X. Wang, "High moment soft magnetic Fe-Co-N films for write head applications", Headway Corporation, October 2000.
150. N. X. Sun and S. X. Wang, Chin-Ya Hung, Chester X. Chien and Hua-Ching Tong, "Microstructure and magnetic properties of high saturation magnetization FeCo-N thin films", The Materials Research Society (MRS) Spring Conference, Section F9.2, 2000.
151. K. Lu, Y.H. Zhao, K. Zhang, N.X. Sun, and H.Y. Zhang, "Microstructure of nanocrystalline element selenium", *The 8th International Symposium on Physics of Materials*, Hangzhou, China, October, 1996.

PROFESSIONAL SERVICES

1. Program Committee, 2015, 2017, and 2019 Euro Intelligent Materials, Kiel U., Germany
2. Lead Organizer for the Symposium on Multiferroics and Magnetoelectrics in the Materials Research Society (MRS) Fall Meetings, 2011, 2013, 2015, 2017, 2019.
3. Program Committee, IEEE International Magnetics Conference (Intermag), 2007-2019.
4. Program Committee, Joint MMM-Intermag Conference, 2008-2019.
5. Program Committee, Magnetism and Magnetic Materials Conference (MMM), 2007-2019.
6. Executive Committee of MIND, American Vacuum Society (AVS), since 2014.
7. Vice Chair of Program Committee, 2018 IEEE APS/URSI Radio Science Meeting, Boston, MA.
8. Program committee for 2019 IEEE APS/URSI Radio Science Meeting, Atlanta, GA.
1. Vice Chair, Program Committee for 2018 IEEE APS/URSI Radio Science Meeting, Boston, Massachusetts.
2. Program Committee, International Conference on Magnetism (ICM 2018), San Francisco, CA, July 15~20, 2018.
3. Lead Organizer for the Symposium on Multiferroics and Magnetoelectrics in the Materials Research Society (MRS) Fall Meeting 2017.
4. International Advisory Board Member of the 6th Biannual International Conferences on Modern Materials and Technologies (CIMTEC), Symposium "Recent Advances in Multiferroic and Magnetoelectric Materials and Applications" CIMTEC 2016,

- Italy.
5. International Advisory Committee, and Technical Program Committee, The 2nd International Workshop on Thin-films for Electronics, Electro-Optics, Energy and Sensors (TFE3S), Dayton, OH, USA, June 25-27, 2017.
 6. International Advisory Committee, International Workshop on Thin-films for Electronics, Electro-Optics, Energy and Sensors, Suzhou, Peoples Republic of China, July 4-6, 2015.
 7. Chair of the Program Committee, *Frontier of Magnetic NanoTech and Spintronics*, May 10, 2015, co-sponsored by IEEE, Stanford University and Peking University, Stanford Center at Peking University, China.
 8. Advisory School Committee, Muraco Public School, Winchester, MA
 9. 2016 International Conference on Advanced Material and Energy Sustainability [AMES2016]
 10. Technical Program Committee, AES 2016, the 4th Advanced Electromagnetics Symposium, Spain.
 11. Local host and co-organizer for the Power Supply on Chip International Workshop, 2014 (PwrSoC2014) at Northeastern University between Oct. 5~8, 2014.
 12. Scientific Advisory Board Member, 2014, *NSF Nanosystems Engineering Research Center for Translational Applications of Nanoscale Multiferroic Systems (TANMS)*.
 13. Guest editor, *Advances in Condensed Matter Physics*, 2014
 14. Editor, *IEEE Transactions on Magnetics*, since 2012
 15. Editorial board, *AIMS Materials Science*, since 2013
 16. *National Science Foundation* Panelist, 2013
 17. Program Organizer, *Materials Science and Technology (MS&T)* 2011, 2012
 18. *National Science Foundation* Panelist 2005 – 2019
 19. *National Institute of Health*, Panelist 2018
 20. Proposal Reviewer for *NSF, NIH, DFG, EU, ARO, DOE, AFOSR, ONR, etc*
 21. Journal reviewer for *Nature, Nature Physics, Nature Materials, Communications, Nano Letters, Applied Physics Letter, Journal of Applied Physics, IEEE Transactions on Magnetics, IEEE Transactions on Microwave Theory and Techniques, Philosophical Magazine Letters, Journal of Physics Condensed Matter, Nanotechnology, Journal of Magnetism and Magnetic Materials, Nanotechnology, Journal of Magnetism and Magnetic Materials, Journal of the American Ceramic Society, etc.*
 22. Advisor for Research Experience for Undergraduates (REU), Research Experience for Teachers (RET), and Young Scholar Program (YSP) programs.
 23. Session Chair, Intermag, MMM, Joint Intermag/MMM, 2005~2019.
 24. Editor and Technical Committee, International Conference on Microwave Magnetics (ICMM), Fort Collins, Colorado, Sept. 11~15, 2008.
 25. Symposium Organizer, MRS Spring 2009 Conference
 26. Intern at the Museum of Science, Boston working on the design and creation of the *Magic of Magnetism* program.
 27. Symposium Organizer: International Meeting on Ferroelectrics (IMF) and IEEE International Symposium on Applications of Ferroelectrics (ISAF 2009), Xi'an, China.

28. Guest editors for ~10 different journals.

UNIVERSITY SERVICES

1. Faculty Mentor for Professor Hui Fang, Electrical and Computer Engineering Department, Northeastern University, Since 2016.
2. Faculty Mentor for Professor Yongmin Liu, Electrical and Computer Engineering Department, Northeastern University, Since 2014.
3. Director, Joint 3+2 Educational Program between Northeastern University and Huszhong University of Science and Technology (HUST), China, since 2014
4. Graduate Admissions Committee, since 2014 5. COE T&P committee, 2015, 2016
6. COE Research Committee, 2014, 2015, 2016, 2017, 2018
7. COE Sabbatical Committee, 2014, 2015, 2016, 2017, 2018
8. Administrator Evaluation Committee for the Chair of the Department of Philosophy and Religion, 2014
9. EE Hiring Committee, 2014
10. Lead for Joint 3+2 Educational Program between Northeastern University and Huszhong University of Science and Technology (HUST), China, 2013
11. EE hiring committee, 2013
12. Graduate Admissions Committee, 2013 - 2019
13. COE Sabbatical Committee, 2013
14. ECE Chair Hiring Committee, 2013
15. Administrator Evaluation Committee for the Chair of the Department of Psychology, 2012
16. ECE Chair Hiring Committee, 2012
17. Graduate Admissions Committee, 2012
18. Chair, EE Hire Committee, 2012
19. Graduate Admissions Committee, 2011
20. COE Tenure and Promotion Committee, 2011
21. Chair, EE Hire Committee, 2011
22. Chair, EE Hire Committee, 2010
23. COE Tenure and Promotion Committee, 2010
24. Graduate Admissions Committee, 2010
25. Graduate Admissions Committee, 2009
26. ECE Department Merit Committee, 2009
27. Graduate admissions committee, 2008
28. Chair, ECE Distinguished Lecture Series Committee, 2007 ~ 2012
29. ECE Department Merit Committee, 2006 ~ 2007
30. Graduate Admissions Committee, 2007
31. Undergraduate Study Committee, 2007
32. Graduate Committee, 2006

COMMUNITY SERVICES

1. **Magic of Magnetism Program with Museum of Science, 2005~2014:** Working closely with Museum of Science, Boston to design and develop an interactive Magic of Magnetism program for the Museum of Science (MoS) Boston, together with the Cahners Computer Place at the MoS for educating the general public on the topics of magnetism and how it is linked to everyday life. As Developed part of the Magic of Magnetism program. The Magic of Magnetism website developed with my students for educating the general public on magnetism has received positive feedback
 2. **School Council of Muraco Primary School, Winchester, MA: 2014~2016.** I was on the School Council of Muraco Primary School at Winchester, gathering every month within the council members and the Muraco School principal Mrs. Laurie Kirby, discussing how we can boost the technology and science education, organize different Science Fair activities, etc.
 3. **Winchester Science Club: 2008~present.** I and several of my friends together organized the Winchester Science Club for training the kids on science and technology topics. We have a total of 10~20 kids with ages ranging from 6~10 years old when we started in 2008, who have been trained on different topics. I have organized several science training topics on Magic of Magnets, Compass, Motors, Information Storage, etc.
 4. **Winchester Technology Series: 2015~2016.** Through a long time of communication with the Muraco School principal, Mrs. Laurie Kirby, and the Muraco School Council, I started the Winchester Technology Series at Muraco School in training 3rd~5th graders with the help of ~10 middle school students in our Winchester Science Club. We have covered different science and technology topics, including: Magic of magnetism, Motors, Brain Controlled Race Cars, QR (quick recognition) Codes, Color Changing Chemical Reactions, Microscope Imaging, PC Building, and Building Your Own Battery. This Winchester Technology Series at Muraco School have been extremely welcomed by the Muraco School students and staff.
 5. **Muraco School Science Fairs: 2005~2016.** I and my graduate students at Northeastern University have been offering Science Fair activities at Muraco School, Winchester, MA on training 3rd~5th graders on Magic of Magnets, Compass, Motors, Information Storage, etc.
 6. **Mentoring of high school students: 2005~2017:** Mentored >40 high school students through NSF, and through NU's Young Scholar program and the Research Experience for Teachers (RET). Providing recommendation letters for high school students who apply for colleges. High school students from our lab have been admitted by MIT, Brown, University of Chicago, UIUC, etc.
 7. **Mentoring of high school and community college teachers:** Mentored 12 high school teachers and community college teachers.
 8. **Sandlot soccer coach for primary school kids: 2009~2011.** Coached kids of 7~9 years old for basic soccer skill training, soccer games, etc.
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PROFESSIONAL MEMBERSHIPS:

Fellow, the Institute of Physics (IoP)
Fellow, the Institute of Engineering and Technology (IET)
Senior Member, IEEE
Member, Materials Research Society (MRS)
Member, American Ceramics Society
Member, the Minerals, Metals & Materials Society (TMS)

PATENTS, PATENT APPLICATIONS, AND PATENT DISCLOSURES

1. **US Patent 9,315,078**, Real-time wireless dynamic tire pressure sensor and energy harvesting system.
2. **WO 2014052913 A1, US20150255846**, Magnetostatic surface wave nonreciprocal tunable bandpass filters.
3. **International Patent No. 20,160,003,924** Systems and methods for magnetic field detection
4. **U.S. Application No: 61/576439**, A new E-field writable magnetic random access memory based on multiferroics
5. **U.S. Patent 8,816,540**, High energy density vibration energy harvesting device with high- μ materials
6. **U.S. Application No. 61/524,913**, Electrostatically tunable magnetoelectric inductors with large inductance tunability
7. **US Patent 7,009,812**: Magnetic transducer for perpendicular magnetic recording with single pole write head with trailing shield
8. **US Patent 7,120,988**: Method for forming a write head having air bearing surface
9. **US Patent 7,588,884**: Methods for enhancing wafer alignment marks
10. **US Patent 7,565,732**: Method of manufacturing a write pole
11. **US Patent 7,649,712**: Self aligned wrap around shield for perpendicular magnetic recording
12. **US Patent 7,656,611** Laminated high moment magnetic films antimagnetic coupling as write pole of perpendicular recording head.
13. **US Patent 7449790**, Methods and systems of enhancing stepper alignment signals and metrology
14. **US Patent 7464457**, Method for forming a write head having an air bearing surface (ABS)
15. **US Patent 11469132**: Write pole fabrication for perpendicular recording
16. **US Patent 10927875**: Laminated high moment magnetic films with antiferromagnetic coupling as write pole of perpendicular magnetic recording head
17. **US Patent 10931649**: Write pole and method of manufacturing the same
18. **US Patent 10928466**: Methods and systems of enhancing stepper alignment signals and metrology alignment target signals
19. **US Patent 10883327**: Magnetic head having a deposited second magnetic shield and fabrication method thereof
20. **US Patent 111167532**: Self aligned wrap around shield for perpendicular magnetic recording

21. **Disclosure HSJ8-2003-0546:** RIE enhanced 1st layer alignment marks defined by K3 layer
 22. **Disclosure HSJ8-2004-0083:** Method to fabricate self-Aligning side/trailing shield by ALD or CVD variants for perpendicular recording.
 23. **Disclosure HSJ8-2004-0087:** High saturation magnetization soft magnetic seed layer deposition after photolithography process.
 24. **Disclosure HSJ8-2004-0112:** High moment laminated films with antiferromagnetic coupling as write pole of perpendicular magnetic recording head.
 25. **Disclosure HSJ8-2004-0122:** A novel method to enhance stepper alignment/metrology signal on shallow marks.
 26. **Disclosure HSJ8-2003-0434:** CMP assisted lift-off process for patterning deposited shield 2
 27. **Disclosure HSJ8-2003-0128:** CMP assisted trailing shield write pole fabrication for perpendicular recording.
 28. **Disclosure HSJ8-2003-0038:** Notched single pole writer with trailing shield (SPT) head and fabrication design for perpendicular magnetic recording.
 29. **Disclosure SJO8-2002-0190:** Co-based amorphous alloy films laminated with insulator for GHz frequency applications in magnetic write heads and inductors, etc.
 30. **Disclosure SJO8-2002-0145:** High moment sputtered Fe-rich thin films for recording head applications.
 31. **Disclosure SJO8-2002-0140:** High moment soft magnetic CoFe films on thin NiFe underlayers.
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