

## CURRICULUM VITA

### Yan Zhuang, Ph.D.

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#### EDUCATION

<u>Institution</u>	<u>Concentration</u>	<u>Degree/Date</u>
Johannes Kepler University, Linz, Austria	Physics	Ph.D., 2000
Beijing Laboratory of Electron Microscopy, Chinese Academy of Sciences, China	Materials of Science	M.Sc. 1992
Fudan University, China	Physics	B.Sc. 1989

#### PROFESSIONAL EXPERIENCE

<u>Institution</u>	<u>Position</u>	<u>Dates</u>
Wright State University, USA	Professor	2019-present
Wright State University, USA	Associate Professor	2013-2019
Wright State University, USA	Assistant Professor	2008-2013
Delft University of Technology, The Netherlands	Assistant Professor	2005-2008
Delft University of Technology, The Netherlands	Postdoctoral Research Fellow	2000-2005
PASTIS-CNRSM, Brindisi, Italy	Research Fellow	1995.02-08
Institute of Semiconductors, CAS, China	Research Associate	1992-1996

#### ACADEMIC AWARDS

- College of Engineering and Computer Science Outstanding Research Award, 2016
- AFOSR Summer Fellowship, 2012.
- Outstanding Scientist (Innovational Research Incentives Scheme - VIDI (2003), by Netherlands Organization for Scientific Research (equivalent to NSF Early Career Award in Netherlands, <https://www.nwo.nl/onderzoeksprogrammas/nwo-talentprogramma/projecten-vidi/2003>)
- North-South-Dialogue Scholarship Program (1996-2000)

#### RESEARCH ACHIEVEMENTS

- Demonstrated for the first time on-chip *CMOS* technology compatible magnetic thin film inductor with an operating frequency above GHz
- Demonstrated for the first time on-chip electric current-controlled tunable passives using MEMs technology
- Demonstrated for the first time a low-loss meta magnetic/metal superlattice featured skin depth cancellation at RF/MW frequencies. Such material exhibits remarkably higher conductivity than any naturally exist metal alloy, which is believed to have significant impacts in the future 5G/6G technology
- Developed a fully CMOS integratable graphene based GIM sensor to prevent Bio-/chemical attacks. The sensors were tested at U.S. Army Edgewood Chemical Biological *Center* with sub-ppb sensitivity on detection of ammonia, dimethyl methylphosphonate, sarin (GB) and VX.
- Demonstrated pseudomorphic growth of nanometer-thick yttrium iron garnet films exhibiting remarkably high crystallinity and atomically smooth surfaces with world-record narrow FMR resonant bandwidth

- Observed for the 1<sup>st</sup> time of propagation of non-reciprocal magnetostatic surface wave in an ultra-thin 20-nm-thick YIG film.
- Observed bandgap opening in bi-layered silicene by applying strain/stress through theoretical modeling using DFT.
- Demonstrated experimentally for the first time of the oxidation-resistive silicene-like thin flakes on graphene substrate.
- Demonstrated for the first time of integrated Lithium-ion battery on chips., realizing 1425 mAh/g specific capacity

## SECURED GRANTS (Total more than \$4.5 millions)

Institution: Delft University of Technology, the Netherlands

<u>Project</u>	<u>Award/Share</u>	<u>Period</u>	<u>Agency</u>	<u>Role</u>
Ferromagnetic and ferroelectric materials for monolithic RF/Microwave technology (VIDI)	€ 600,000/ € 600,000	01.2004 – 01.2009	NWO(The Netherlands)	PI
Disposable dot field effect transistor for high speed Si integrated circuits	€ 2,000,000/ € 600,000	10.2005 – 08.2008	EU-FP6-IST	PI
<u>Total: € 1,200,000</u>				

Institution: Wright State University, OH, USA

<u>Project</u>	<u>Award/Share</u>	<u>Period</u>	<u>Agency</u>	<u>Role</u>
Sensing, control and modeling for a quad-winged micro air vehicle platform	\$50,000/ \$25,000	10.2008 – 08.2009	DoD-STTR	Co-PI
Sensing testing system for design of a quad-winged micro air vehicle	\$238,157/ \$142,000	08.2009 – 08.2010	DoD- DURIP	Co-PI
Deployable low power carbon nanotube sensors	\$200,000/ \$50,000	01.2010 – 01.2011	AFRL	Co-PI
MJB3 lithography	\$10,000/ \$10,000	10.2011 – Present	AFRL	PI
Fundamentals of Low Dimensional Carbon Films Grown by Sublimation of SiC	\$78,782/ \$17,640	08.2013 – 09.2014	AFRL- DAGSI	PI
Thin film semiconductor characterization and fabrication	\$28,032/ \$28,032	07.2012 – 08.2013	AFRL	PI
Artificial cochlea	\$124,222/ \$100,000	09.2012 – 08.2013	Advratech	PI
Study on Plasmonics in 2D Materials	\$29,000/ \$29,000	07.2013 – 08.2014	AFRL	PI
Multifunctional Oxide Heterostructure	\$60,443/ \$60,443	05.2014 – 06.2015	AFRL	PI
Study on Boron Nitride Doped Graphene	\$57,000/ \$57,000	07.2014 – 08.2016	AFRL	PI
Ultra-wide band gap materials	\$25,000/ \$25,000	07.2016 – 08.2017	AFRL	PI
Growth and characterization multiferroic materials	\$109,079/ \$109,079	06.2015 – 11.2019	AFRL	PI
Graphene based impedance chemical sensor	\$2,150,000/\$2 ,150,000	08.2014 – 08.2019	CBD/DoD	PI
Assured Digital Microelectronics Education & Training Ecosystem	\$344,583/ \$29,750,000	10.2020 – 10.2023	AFRL	Co-PI
<u>Total: \$ 3,147,777</u>				

## PROJECT HIGHLIGHTS

- VIDI (2004-2008) -Single PI (total grant: € 600,000)  
The prestigious award, by the Netherlands Organization for Scientific Research, is equivalent to USA NSF Early Career Program (but applicants include faculty up to the rank of associate professor). I was ranked among the top 7 national-wide from all the engineering fields in the Netherlands. The project is to develop novel ferromagnetic materials for RF inductive components, and ferroelectric materials for RF tunable devices.
- D-Dot (EU-FP6-IST) (2005-2008) - Co-PI of the project and PI in The Netherlands (total grant: € 2M)  
Developed an entirely new path to fabricate field effect transistors from strained Si bridges, manufactured by disposing embedded, sacrificial Ge islands. The goal is to promote high speed electronics, with an enhanced charge carriers' mobility, reduced short channel effects, and an improved thermal conductivity.
- DoD/CBD bio-/chemical sensor (FA8650-14-M-5076 – phase I, FA8650-15-C-5096 Phase II, FA8650-17-C-5080 Sequential phase, (2015-2018) – PI (total grant: \$ 2.15 M)  
Developed a novel bio- and chemical- sensor using single atomic layer graphene with the goal to prevent bio-/chemical attacks. The sensors have demonstrated an ultra-high sensitivity up to sub-ppb (part per billion) on detection of ammonia, dimethyl methylphosphonate, sarin (GB) and VX.
- ADMETE (FA8650-20-2-1136) (2020-) - Co-PI and PI on research (total grant: \$ 29.75 M)  
My goal in the project “Assured Digital Microelectronics Education & Training Ecosystem” is to develop techniques with high reliability and security at advanced semiconductor nodes to prevent and detect Hardware Trojans (HTs) inserted at the HDL level, and the layout level. The research has been focused on developing technology-based solutions with built-in trust measures, technologies that accelerate military-relevant circuit development, and techniques that ensure robust performance for DoD systems.

## COURSE TEACHING

I have developed EE4420, EE4460, EE7480, and EE4800 since joining WSU. ME 2700, ME4700, ME 7750 are offered within the Department of Mechanical and Materials Engineering.

### Courses Taught at Delft University of Technology, the Netherlands

Course Number	Title	Times Taught
ET 4-249	Semiconductor Components and Technology	2

### Courses Taught at Wright State University

Course Number	Title	Times Taught
EE 3450/5450	Electromagnetics	16
EE 4420/6420	Microwave engineering (I)	11
EE 445/645	Electromagnetic compatibility	1
EE 4460/6460	Microwave engineering (II)	8
EE 4910	Senior design (I)	2
EE 7480	Advanced microwave engineering	7
EE 480/680	Micro/nano- fabrication engineering for VLSI and MEMs	4
EE 7010	Linear System	2
ME 2700	Materials Science and Engineering Structure and Properties I	2
ME4700	Materials Science and Engineering Structure and Properties II	1
ME7750	Advanced Engineering Materials	1

## **STUDENT SUCCESS**

Jeon M. (Ph.D student, 2019, WSU, OH), NRC postdoc fellowship  
Brune J. (M.S. student, 2018, WSU, OH), SMART scholarship  
Garrett H. (undergraduate, 2020, WSU, OH), SMART scholarship  
Brandon Melton (undergraduate, 2021, WSU, OH), SMART scholarship  
Corey S. (undergraduate, 2020, WSU, OH), DAGSI scholarship

## **STUDENT THESIS AND PROJECTS SUPERVISED**

### Postdoc. Supervised

Frégonèse S. (2006, TUDelft, Netherlands), Disposable dot field effect transistor for high speed Si integrated circuits  
Xing Y. (2010, WSU, OH), Graphene based RF bio-/chemical sensors

### Ph.D Dissertation Supervised

Ma Y. (2011, TUDelft, Netherlands), Ferroelectric materials and artificial dielectric layer structures for microwave integrated circuit technologies  
Hussaini S. (2015, WSU, OH), Integrated Magnetic Components for RF Applications  
Myers J. (2015), Nano-Materials for Microwave and Terahertz Applications  
Brockdorf K. (2019), Graphene based RF/Microwave impedance chemical gas sensor  
Jeon H.M. (2019), Multiferroic materials for RF/microwave tunable components  
Ji. Z. H. (2019), 2-D materials and innovative devices  
Amiri P.K. (2009, TUDelft, Netherlands, Co-Advised), Magnetic materials and devices for integrated radio frequency electronics

### M.S. Thesis Supervised

Sun X.D. (2011, WSU, OH), Structured Silicon Macropore as Anode in Lithium Ion Batteries  
Zhou R. P. (2012), Theoretical modeling of silicene and graphene for device applications  
Wang J. H. (2012), High-k materials based large scanning angle leaky wave antenna  
Hartman G. (2013), Monolithically integrated non-reciprocal RF components  
Yao B. (2013), Selective Free-Standing Through-Wafer Porous Silicon Membrane for Integrated Meta-material Devices  
Evans J. (2013), Artificial thin film polymeric frequency selective artificial cochlea  
Gross C. (2016), Growth and characterization of molybdenum disulfide thin films  
Aditya P. (2016), Ferroelectric materials based tunable RF components  
Vishal K. (2016), Magnetostatic wave in multiferroic thin film

### Undergraduate Projects Supervised (61)

Kent Weaver, Matt Evenhoe, Mike Chapmen, Alex Pringer, Ben Steinhauer, Cory Snyder, Andy Bishop, Phillip Cooley, Mikiyas Barkneh, James Blair, Scott Metzger, Barrett Harber, Yongxing Jiang, Kartik Mathihalli, Gregory Hartman, Brian S. Marshall, Ed Brinkman, Sekou Bush, Travis Burnette, Michael Garvin, Travis Kimbrell, Dominic Mozell, Larry Schimmoeller, Joenell Rosales, Myhuong Vo, Angela West, Justin S. Wells, David I. Boyer, David A. Bricker, David A. Bricker, Mo Kaidi, John Jackson, Clinton Stiverson, David Long, Rachel Bryant, Chris Kretzler, Wayne Staigl, Hang Zhang, Riyadh Al Qahtani, Joshua Rhynard, David Rackley, Timothy Nicodemus, Jared Evans, Jason Thompson, Katelyn Nguyen, Kent Weaver, Matt Evenhoe, Mike Chapmen, Alex Pringer, Ben Steinhauer, Cory Snyder, Andy Bishop, Phillip Cooley, Broc Robers, Fahad Alenezi, M. Alhazmi, W. Gouty, K. Hamblin, A. Couch, M. Vagedes, H. Moeder and N. Wurst.

## SCHOLARSHIP

### Peer-Reviewed Journal Publications

1. K. Vishal, Z. H. Ji, and Y. Zhuang, "Strained-tuned optical properties of bilayer silicon at mid-infrared wavelengths", *Journal of Vacuum Science & Technology B* 42, 022201, 2024
2. K. Vishal, Z. H. Ji, and Y. Zhuang, "Feasibility study of dative bond formation for bilayer silicon growth under excessive strain", *Journal of Vacuum Science & Technology A* 41, 022201, 2023
3. N. L. Yue, J. Myers, L. Q. Su, W. T. Wang, F. D. Liu, R. Tsu, Y. Zhuang, and Y. Zhang, "Growth of oxidation-resistant silicene-like thin flakes and Si nanostructures on graphene", *J. Semicond.*, 2019, 40(6), 062001
4. Z. Ji, J. Myers, K. Brockdorf, N. Engel, S. Mou, H. Huang, and Y. Zhuang, "Microwave imaging of etching-induced surface impedance modulation of graphene monolayer", *Journal of Vacuum Science & Technology A* 36, 05G508 (2018)
5. K. Brockdorf, Z. Ji, N. Engel, J. Myers, S. Mou, H. Huang, and Y. Zhuang, "Imaging of edge inactive layer in micro-patterned graphene monolayer", *Materials Letters*, Vol. 211, pp. 183-186, 2018
6. H. M. Jeon, Z. Ji, and Y. Zhuang, "Compact leaky wave antenna using ferroelectric materials", *Microwave and optical technology letters*, Vol. 59, pp. 2614-2619, 2017
7. H. M. Jeon, K. Brockdorf, B. M. Howe, J. Myers, S. Mou, and Y. Zhuang, "Propagation of Non-Reciprocal Magnetostatic Surface Wave in a 20-nm-Thick Single Crystalline Yttrium Iron Garnet Film", *IEEE Electron Device Letters*, vol. 38, pp. 262-265, 2017
8. Z. Ji, R. Zhou, L. C. Lew Yan Voon, and Y. Zhuang, "Strain-induced energy band gap opening in two-dimensional bilayered silicon film", *IEEE Journal of electronic materials*, vol. 45, no. 10, pp. 5040-5047, 2016.
9. K. Brockdorf, K. Vishal, and Y. Zhuang, "Neighboring metal layer induced non-reciprocal wave propagation in a thin metallic ferromagnetic film," *IEEE Transactions on Components, Packaging and Manufacturing Technology*, vol. 6, no. 8, pp. 1245-1250, 2013, 2016.
10. J. Myers, S. Mou, K.-H. Chen, and Y. Zhuang, "Scanning microwave microscope imaging of micro-patterned CVD-grown monolayer graphene", *Applied Physics Letters*, vol. 108, 053101, 2016.
11. B. M. Howe, S. Emori, H. M. Jeon, T. M. Oxholm, J. G. Jones, K. Mahalingam, Y. Zhuang, N. X. Sun, and G. J. Brown, "Pseudomorphic Yttrium Iron Garnet Thin Films With Low Damping and Inhomogeneous Linewidth Broadening", *IEEE magnetic Letters*, vol. 6, pp. 3500504, 2015
12. G. C. Hartman, R. Fitch, and Y. Zhuang, "Nonreciprocal magnetostatic wave propagation in micro-patterned NiFe thin films", *IEEE Microwave and Wireless Components Letters*, vol. 24, pp. 484-486, 2014
13. J. Myers, T. Nicodemus, Y. Zhuang, T. Watanabe, and M. Yamaguchi, "Characterization of grain boundary conductivity of spin-sprayed ferrites using scanning microwave microscope", *Journal of Applied Physics*, Vol. 115, pp. 17A506, 2014
14. R. Zhou, L. C. Lew Yan Voon, and Y. Zhuang, "Properties of two-dimensional silicon grown on graphene substrate", *Journal of Applied Physics*, vol. 114, pp. 093711, 2013
15. I. Iramnaaz, H. Schellevis, B. Rejaei, and Y. Zhuang, "High-quality Integrated Inductors Based on Multilayered Meta-conductors", *IEEE Microwave and Wireless Components Letters*, vol. 22, pp. 345-347, 2012.
16. X. Sun, H. Huang, K. L. Chu, and Y. Zhuang, "Anodized macroporous silicon anode for integration of lithium ion batteries on chips", *IEEE Journal of electronic materials*, vol. 41, pp. 2369-2375, 2012.
17. I. Iramnaaz, H. Schellevis, B. Rejaei, and Y. Zhuang, "Self-biased low loss conductor featured with skin effect suppression for high quality RF passives", *IEEE Transaction on Magnetics*, vol. 48, pp. 4139-4142, 2012
18. Y. Xing, J. Myers, O. Obi, X. Sun, and Y. Zhuang, "Excessive grain boundary conductivity of spin-spray deposited ferrite/non-magnetic multilayer", *Journal of Applied Physics*, Vol. 111, pp. 07A512, 2012.
19. Y. Xing, J. Myers, O. Obi, X. Sun, and Y. Zhuang, "Scanning Microwave Microscopy characterization of spin-spray deposited ferrite/non-magnetic films", *IEEE Journal of electronic materials*, Vol. 41, pp. 530-534, 2012.
20. P. K. Amiri, B. Rejaei, Y. Zhuang, M. Vroubel, D. W. Lee, and S. X. Wang, "Nonreciprocal spin waves in Co-Ta-Zr films and multilayers", *IEEE Transaction on Magnetics*, vol. 45, pp. 4215-4218, 2009.
21. P. K. Amiri, B. Rejaei, Y. Zhuang, M. Vroubel, D. W. Lee, S. X. Wang, and J.N. Burghartz, "Integrated microstrip lines with Co-Ta-Zr magnetic films", *IEEE Transaction on Magnetics*, vol. 44, pp. 3103-3106, 2008.

22. Y. Ma, B. Rejaei, and Y. Zhuang, "Artificial dielectric shields for integrated transmission lines", *IEEE Microwave & Wireless Components Letters*, vol. 18, pp. 431-433, 2008.
23. Y. Ma, B. Rejaei, and Y. Zhuang, "Low-loss on-chip transmission lines with micro-patterned artificial dielectric shields", *IEEE Electronics Letters*, vol. 44, pp. 913-915, 2008.
24. Y. Zhuang, B. Rejaei, H. Schellevis, M. Vroubel, and J.N. Burghartz, "Magnetic-multilayered interconnects featuring skin effect suppression", *IEEE Electron Device Letters*, vol. 29, pp. 319-321, 2008.
25. S.Frégonèse, Y. Zhuang, and J. N. Burghartz, "Modeling of strained CMOS on disposable SiGe dots: Shape impacts on electrical/thermal characteristics", *Solid-State Electronics*, vol. 52, pp. 919-925, 2008.
26. P. K. Amiri, B. Rejaei, M. Vroubel, and Y. Zhuang, "Nonreciprocal spin wave spectroscopy of thin Ni-Fe stripes", *Applied Physics Letters*, vol. 91, pp. 062502, 2007.
27. B. Yan, H. T. M. Pham, Y. Ma, Y. Zhuang, and P.M. Sarro, "Fabrication of in situ ultrathin anodic aluminum oxide layers for nanostructuring on silicon substrate", *Applied Physics Letters*, vol. 91, pp. 053117, 2007.
28. S. Frégonèse, Y. Zhuang, and J. N. Burghartz, "Modeling of Strained CMOS on disposable SiGe dots: strain impacts on devices' electrical characteristics", *IEEE Transactions on Electron Devices*, vol. 54, pp. 2321, 2007.
29. P.K. Amiri, B. Rejaei, Y. Zhuang, M. Vroubel, and J.N. Burghartz, "Ferromagnetic thin films for loss reduction in on-chip transmission lines", *IEEE Transactions on Magnetics*, vol. 43, pp. 2630-2632, 2007.
30. Y. Zhuang, M. Vroubel, B. Rejaei, and J.N. Burghartz, "Integrated RF inductors with micro-patterned NiFe core", *Solid-State Electronics*, vol. 51, pp. 405-413, 2007.
31. P.K. Amiri, Y. Zhuang, H. Schellevis, B. Rejaei, M. Vroubel, Y. Ma, and J.N. Burghartz, "High-resistivity nanogranular Co-Al-O films for high-frequency applications", *Journal of Applied Physics*, vol. 101, pp. 09M508/1-3, 2007.
32. P.K. Amiri, B. Rejaei, M. Vroubel, Y. Zhuang, and J.N. Burghartz, "Experimental determination of the nonuniform shape-induced anisotropy field in Thin Ni-Fe Films", *IEEE Transactions on Magnetics*, vol. 43, pp. 1880-1883, 2007.
33. Y. Zhuang, M. Vroubel, B. Rejaei, J.N. Burghartz, and K. Attenborough, "Shape-induced ultra-high magnetic anisotropy and ferromagnetic resonance frequency in micropatterned thin NiFe film", *Journal of Applied Physics*, vol. 99, pp. 08C705, 2006.
34. M. Vroubel, Y. Zhuang, B. Rejaei, and J. N. Burghartz, "10 GHz bandstop microstrip filter using excitation of magnetostatic surface waves in a patterned NiFe ferromagnetic film", *Journal of Applied Physics*, vol. 99, pp.08P506, 2006.
35. Y. Zhuang, M. Vroubel, B. Rejaei, J.N. Burghartz, and K. Attenborough, "Magnetic properties of electroplated nano/microgranular NiFe thin films for rf application", *Journal of Applied Physics*, vol.97, pp. 1-3, 2005.
36. M. Vroubel, Y. Zhuang, B. Rejaei, J.N. Burghartz, A. Crawford, and S. Wang, "Calculation of shape anisotropy for micropatterned thin Fe-Ni films for on-chip RF applications", *IEEE Transactions on Magnetics*, vol. 40, pp. 2835-2837, 2004.
37. M. Vroubel, Y. Zhuang, B. Rejaei, and J.N. Burghartz; "Integrated tunable magnetic RF inductor", *IEEE Electron Device Letters*, vol. 25, pp. 787-789, 2004.
38. Y. Zhuang, B. Rejaei, E. Boullaard, M. Vroubel, and J.N. Burghartz, "Integrated solenoid inductors with patterned sputter-deposited Cr/Fe<sub>10</sub>Co<sub>90</sub>/Cr ferromagnetic cores", *IEEE Electron Device Letters*, vol. 24, pp. 224-226, 2003.
39. M. Vroubel, Y. Zhuang, B. Rejaei, and J.N. Burghartz, "Patterned FeNi thin film for RF and microwave components", *Journal of Magnetism and Magnetic Materials*, vol. 258-259, pp. 167-169, 2003.
40. A. Daniel, Y. Zhuang, V. Holy, J. Stangl, S. Zerlauth, F. Schaffler, G. Bauer, N. Darowski, and U.Pietsch, "X-ray grazing incidence study of inhomogeneous strain relaxation in Si/SiGe wires", *Nuclear Instruments and Methods in Physics Research B*, vol. 200C, pp. 267-272, 2003.
41. Y. Zhuang, B. Rejaei, E. Boellaard, M. Vroubel, and J.N. Burghartz, "GHz band-stop microstrip filter using patterned Ni<sub>78</sub>Fe<sub>22</sub> ferromagnetic film", *IEEE Microwave and Wireless Components Letters*, vol. 12, pp. 473-475, 2002.
42. Y. Zhuang, M. Vroubel, B. Rejaei, E. Boellaard, and J.N. Burghartz, "Investigation of microstrips with NiFe Magnetic thin film (I): experiment", *Transactions of the Magnetic Society of Japan*, vol. 2, pp. 367-370, 2002.

43. M. Vroubel, Y. Zhuang, B. Rejaei, and J.N. Burghartz, "Investigation of microstrips with NiFe magnetic thin film (II): modeling", *Transactions of The Magnetic Society of Japan*, vol.2, pp. 371-376, 2002.
44. A. Daniel, V. Holy, Y. Zhuang, T. Roch, J. Grenzer, Z. Bochnicek, and G. Bauer, "GID study of strains in Si due to patterned SiO<sub>2</sub>", *Journal of Physics D: Applied Physics*, vol. 34, pp. A197-202, 2001.
45. S. Rubini, E. Milocco, L. Sorba, E. Pelucchi, A. Franciosi, A. Garulli, A. Parisini, Y. Zhuang, and G. Bauer, "Structural and electronic properties of ZnSe/AlAs heterostructures", *Physical Review B*, vol. 63, pp. 155312/1-12, 2001.
46. Y. Zhuang, V. Holý, J. Stangl, N. Darowski, J. Grenzer, U. Pietsch, S. Zerlauth, F. Schäffler, and G. Bauer, "In-plane strain and shape analysis of Si/SiGe nanostructures by grazing incidence diffraction", *Physica B: Condensed Matter*, vol. 283, pp. 130-134, 2000.
47. Z. Kovats, T. H. Metzger, J. Peisl, J. Stangl, M. Muhlberger, Y. Zhuang, F. Schaffler, and G. Bauer, "Investigation of beta -SiC precipitation in Si<sub>1-y</sub>C<sub>y</sub> epilayers by X-ray scattering at grazing incidence", *Applied Physics Letters*, vol. 76, pp. 3409-3411, 2000.
48. Y. Zhuang, A. Daniel, C. Schelling, F. Schäffler, G. Bauer, J. Grenzer, and S. Senz, "Optical and structural properties of Si/SiGe wires grown on patterned Si substrates", *Thin Solid Films*, vol. 380, pp. 51-53, 2000.
49. Y. Zhuang, C. Schelling, J. Stangl, C. Penn, S. Senz, F. Schäffler, A. Daniel, U. Pietsch, and G. Bauer, "Structural and optical properties of Si/Si<sub>1-x</sub>Ge<sub>x</sub> wires", *Thin Solid Films*, vol. 369, pp. 409-413, 2000.
50. S. Rubini, B. Bonanni, E. Pelucchi, A. Franciosi, A. Garulli, A. Parisini, Y. Zhuang, G. Bauer, and V. Holy, "ZnSe/CdTe/ZnSe heterostructures", *Journal of Vacuum Science and Technology B*, vol. 18, pp. 2263-2270, 2000.
51. S. Rubini, B. Bonanni, E. Pelucchi, A. Franciosi, Y. Zhuang, and G. Bauer, "CdTe epitaxial layers in ZnSe-based heterostructures", *Journal of Crystal Growth*, vol. 201-202, pp. 465-469, 1999.
52. Z. Pan, Y.T. Wang, Y. Zhuang, Y. W. Lin, Z.Q. Zhou, L.H. Li, R.H. Wu, and Q.M. Wang, "Investigation of periodicity fluctuations in strained (GaNAs)<sub>1</sub>/(GaAs)<sub>m</sub> superlattices by the kinematical simulation of X-ray diffraction", *Applied Physics Letters*, vol. 75, pp. 223-225, 1999.
53. Y. Zhuang, V. Holy, J. Stangl, A.A. Darhuber, P. Mikulik, S. Zerlauth, F. Schäffler, G. Bauer, N. Darowski, D. Lübbert, and U. Pietsch, "Strain relaxation in periodic arrays of Si/SiGe quantum wires determined by coplanar high resolution x-ray diffraction and grazing incidence diffraction", *Journal of Physics D: Applied Physics*, vol. 32, pp. A224-A229, 1999.
54. Y. Zhuang, J. Stangl, A. A. Darhuber, G. Bauer, P. Mikulik, V. Holy, N. Darowski, and U. Pietsch, "X-ray diffraction from quantum wires and quantum dots", *Journal of Materials Science: Materials in Electronics*, vol. 10, pp. 215-221, 1999.
55. C. Rosenblad, T. Graf, J. Stangl, Y. Zhuang, G. Bauer, J. Schulze, and H. von Känel, "Epitaxial growth at high rates with LEPECVD", *Thin Solid Films*, vol. 336, pp. 89-91, 1998.
56. N. Darowski, U. Pietsch, Y. Zhuang, S. Zerlauth, G. Bauer, D. Lübbert, and T. Baumbach, "In-plane strain and strain relaxation in laterally patterned periodic arrays of Si/SiGe quantum wires and dot arrays", *Applied Physics Letters*, vol. 73, pp. 806-808, 1998.
57. S. Heun, J.J. Paggel, L. Sorba, S. Rubini, A. Bonanni, R. Lantier, M. Lazzarino, B. Bonanni, A. Franciosi, J.-M. Bonard, J.-D. Ganiere, Y. Zhuang, and G. Bauer, "Strain and surface morphology in lattice-matched ZnSe/In<sub>x</sub>Ga<sub>1-x</sub>As heterostructures", *Journal of Applied Physics*, vol. 83, pp. 2504-2510, 1998.
58. L. Tapfer, L. De Caro, Y. Zhuang, P. Sciacovelli, and A. Sacchetti, "X-ray scattering study of quantum wires and lateral periodic heterostructures", *Thin Solid Films*, vol. 319, pp. 49-56, 1998.
59. C. Giannini, L. Tapfer, Y. Zhuang, L. De Caro, T. Marschner, and W. Stolz, "Structural ordering and interface morphology in symmetrically strained(GaIn)As/Ga(PAs) superlattices grown off-oriented GaAs(100)", *Physical Review B: Condensed Matter*, vol. 55, pp. 5276-5283, 1997.
60. Y. Zhuang, C. Giannini, L. Tapfer, T. Marschner, and W. Stolz, "Lateral periodicity in high-strained (GaIn)As/Ga(PAs) superlattices investigated by X-ray scattering techniques", *Nuovo Cimento*, vol. 19, pp. 377-383, 1997.
61. Y. Zhuang, Y.T. Wang, D.S. Jiang, Y.P. Yang, X.M. Jiang, J.Y. Wu, L.S. Xiu, and W.L. Zheng, "Study of double barrier superlattice by synchrotron radiation and double-crystal x-ray diffraction", *Applied Physics Letters*, vol. 68, pp. 1147-1149, 1996.

62. S.F. Cui, Y.T. Wang, Y. Zhuang, M. Li, and Z.H. Mai, "In-plane X-ray scattering of epitaxial structures", *Journal of Crystal Growth*, vol. 152, pp. 354-358, 1995.
63. S.F. Cui, J.H. Li, M. Li, C.R. Li, Y.S. Gu, Z.H. Mai, Y. Zhuang, and Y.T. Wang, "Determination of surface roughness of InP (001) wafers by X-ray scattering", *Journal of Applied Physics*, vol. 76, pp. 4154-4158, 1994.
64. J.H. Li, S.F. Cui, M. Li, C.R. Li, Z.H. Mai, Y. Zhuang, and Y.T. Wang, "Surface scattering of x-ray from InP (001) wafers", *Applied Physics Letters*, vol. 65, pp. 3317-3319, 1994.
65. M. Li, Z.H. Mai, S.F. Cui, J.H. Li, Y.S. Gu, Y.T. Wang, and Y. Zhuang, "X-ray scattering from a rough surface and damaged layer of polished wafer", *Journal of Physics D: Applied Physics*, vol. 27, pp. 1929-1932, 1994.
66. Y. Zhuang, Z. Zhang, and D.B. Williams, "A transmission electron microscopy study of interphase dislocation between decagonal quasicrystalline and crystalline phase in Al<sub>75</sub>Ni<sub>10</sub>Fe<sub>15</sub> alloy", *Journal of Non-crystalline Solids*, vol. 153\154, pp. 119-122, 1993.
67. Z. Zhang, and Y. Zhuang, "A transmission electron microscopy study of dislocations in Al<sub>70</sub>Ni<sub>10</sub>Co<sub>20</sub> and Al<sub>75</sub>Ni<sub>10</sub>Fe<sub>15</sub> decagonal quasicrystals", *Philosophical Magazine Letters*, vol. 65, pp. 203-209, 1992.

### Conference Proceeding and Presentation

1. I. Iramnaaz, T. Sandoval, Y. Zhuang, H. Schellevis, B. Rejaei, "Ultra-high quality factor RF inductors using low loss conductor featured with skin effect suppression for Standard CMOS/BiCMOS", *IEEE 61st ECTC*, Lake Buena Vista, FL, pp. 163-168, May, 2011.
2. I. Iramnaaz, Y. Xing, K. Xue, Y. Zhuang, and R. Fitch, "Graphene based RF/microwave impedance sensing of DNA", *IEEE 61st ECTC*, Lake Buena Vista, FL, pp. 1030-1034, May, 2011.
3. S. Cheekati, Y. Xing, Y. Zhuang, and H. Huang, "Nanographene Platelets and Their Composites for Li-Ion Batteries", *ECS Transactions*, 33(39), 23-32, 2011
4. S. Cheekati, Y. Xing, Y. Zhuang, and H. Huang, "Lithium storage in nano graphene platelets", *Ceramic Transaction*, vol. 124, pp. 117-127, 2011.
5. Y. Xing, H. Huang and, and Y. Zhuang, "Evaluation of graphene and graphene derivatives for impedance based sensing", *MRS Proceedings*, 1303: mrsf10-1303-y10-35, 2011
6. (Invited) Y. Zhuang, M. Vroubel, B. Rejaei, and J. N. Burghartz, "Thin film magnetic materials for RFIC passives", *Proc. IEEE Bipolar/BiCMOS Circuit and Technology Meeting (BCTM 2005)*, pp. 26-32, Santa Barbara, CA, October 9-11, 2005.
7. B. Rejaei, M. Vroubel, Y. Zhuang, and J.N. Burghartz, "Assessment of ferromagnetic integrated inductors for Si-technology", *Digest of Papers 4th Topical Meeting on Silicon Monolithic Integrated Circuits in RF Systems*, pp.100-103, Garmisch, Germany, April, 2003.
8. Y. Zhuang, M. Vroubel, B. Rejaei, and J. Burghartz, "Ferromagnetic RF inductors and transformers for standard CMOS/BiCMOS", *Technical Digest IEDM 2002*, pp. 18.06/1-18.06/4, San Francisco, CA, USA, December, 2002.
9. Y. Zhuang, C. Schelling, T. Roch, A. Daniel, F. Schäffler, G. Bauer, J. Grenzer, U. Pietsch, and S. Senz, "Investigation of inhomogeneous in-plane strain relaxation in Si/SiGe quantum wires by high resolution x-ray diffraction", *Mat. Res. Soc. Symp. Proc.*, vol. 590, pp. 207, 2000.
10. K. Brockdorf, J. Myers, \*Z. Ji, H. Huang, N. Engel, and Y. Zhuang, "Microwave Imaging of Plasma Etched CVD Graphene Using Scanning Microwave Microscope", *TMS 2017 146<sup>th</sup> Annual Meeting and Exhibition*, February 26 – March 2, 2017, San Diego, California
11. Z. Ji, and Y. Zhuang, "Band Gap Opening in 2D Bi-layered Silicon Film", *TMS 2017 146<sup>th</sup> Annual Meeting and Exhibition*, February 26 – March 2, 2017, San Diego, California
12. Y. Zhuang, "Magnetic thin films for Si RF technology", *International Workshop on Thin-films for Electronics, Electro-Optics, Energy and Sensors (TFE3S 2017)* 25-27 June 2017, Dayton, Ohio
13. F. Kumar Vishal, \*G. C. Hartman, and Y. Zhuang, "Neighboring metal layer induced non-reciprocal wave propagation in a thin metallic ferromagnetic film", poster presentation at *13<sup>th</sup> Joint MMM-Intermag Conference*, Jan. 11-15 2016, San Diego, California.



14. H. M. Jeon, K. Brockdorf, J. Myers, F. Kumar Vishal, N. X. Sun, B. M. Howe, and Y. Zhuang, "Non-reciprocal magnetostatic surface wave propagation in a 20nm thick single crystalline yttrium iron garnet film", oral presentation at 13<sup>th</sup> Joint MMM-Intermag Conference, Jan. 11-15 2016, San Diego, California.
15. K. Brockdorf, J. Myers, H. Huang, S. Mou, and Y. Zhuang Graphene-based chemical sensor with sub-ppb sensitivity, poster presentation at Nano for Defense 015, City of Industry, CA, 16-19, Nov. 2015
16. Z. Ji, L. C. Lew Yan Voon, R. Zhou, and Y. Zhuang, "Induced Energy Band Gap Opening of Low Dimensional Silicon Film", oral presentation at Nano for Defense 015, City of Industry, CA, 16-19, Nov. 2015
17. J. Evans, B. Goldenberg, Y. Zhuang "Piezoelectric Thin Film Membrane Based Frequency Selective Artificial Cochlea" abstract accepted MRS, 2014 fall
18. L. C. Lew Yan Voon, R. Zhou, and Y. Zhuang, "Properties of silicene on graphene", APS March Meeting, March 18-22, 2013. Baltimore, MD, 2013
19. X. Sun, H. Huang, K. L. Chu, and Y. Zhuang, "Three-dimensional macroporous silicon membrane for lithium ion batteries", IEEE 62<sup>nd</sup> ECTC, 2012
20. S. Cheekati, Y. Xing, Y. Zhuang, and H. Huang, "Li storage in nano-graphene platelets and their composites", poster, Material Research Society, Fall Meeting, Boston, MA, December, 2010.
21. S. Cheekati, Y. Xing, Y. Zhuang, and H. Huang, "Graphene platelets and their manganese composites for lithium ion batteries", Conference: 218th Meeting of the Electrochemical-Society (ECS), Las Vegas, OCT 10-15, 2010.
22. Y. Zhuang, M. Vroubel, B. Rejaei, E. Boellaard, and J.N. Burghartz, "Microstrips with micro-patterned Ni<sub>78</sub>Fe<sub>22</sub> ferromagnetic film for RF passives", Proc. SAFE 2002, pp. 136-140, Veldhoven, The Netherlands, November, 2002.
23. M. Vroubel, B. Rejaei, Y. Zhuang, and J.N. Burghartz, "Patterned magnetic thin films for RF applications", SCEE-2002, pp. 195-196, Eindhoven, The Netherlands, June, 2002.
24. M. Vroubel, B. Rejaei, Y. Zhuang, and J.N. Burghartz, "Permeability and resonance frequency of patterned magnetic thin films", SAFE 2001, pp. 1-5, Veldhoven, the Netherlands, November, 2001.
25. Y. Zhuang, B. Rejaei, E. Boellaard, M. Vroubel, and J.N. Burghartz, "Study of magnetic on-chip inductors", Proc. SAFE 2001, pp. 229-233, Veldhoven, the Netherlands, November, 2001.
26. D.S. Jiang, L.Q. Cui, W.G. Wu, C.Y. Song, Y. Zhuang, Y.T. Wang, and R.Z. Wang, "Structural and photoelectric studies on double barrier quantum well IR detectors", Proceedings of the Eighth International Conference on Narrow Gap Semiconductors, World Scientific, Singapore, vol. 172, 1998.
27. W.G. Wu, D.S. Jiang, L.Q. Cui, C.Y. Song, and Y. Zhuang, "Structural and photoelectric studies on double barrier quantum well infrared detectors", 1997 IEEE Hong Kong Electron Devices Meeting, New York, NY, USA, 1997.
28. Y. Zhuang, Y.T. Wang, W.Q. Ma, W. Wang, X.P. Yang, Z.G. Chen, D.S. Jiang, and H.Z. Zheng, "X ray diffraction analysis of self-organized InAs quantum dots", Proc. SPIE vol. 2897, pp. 75, 1996.

### Book Chapter

1. Y. Zhuang, J. Myers\*, Z. Ji\*, K. Vishal\*, "SMM studies on high-frequency electrical properties of nanostructured materials", Accepted, Book chapter, "Modeling, Characterization and Production of Nanomaterials – 2nd Edition", Elsevier

### Technical Reports

1. Y. Zhuang, H. Huang, "Graphene based impedance chemical sensor", SBIR phase I, 2014
2. Y. Zhuang, H. Huang, "Graphene based impedance chemical sensor", SBIR phase II, 2017

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Invited speaker at AFRL, Dayton, USA, June 14, 2012  
Invited speaker at AFRL, Dayton, USA, Feb. 16, 2011  
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