

Bo Pan

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EDUCATIONS

- 2008 **Ph. D** - Electrical and Computer Engineering -Georgia Institute of Technology, Atlanta, Minor in Industry Engineering,
- 2003 **MSEE** - Electrical Engineering *with honor* -**Tsinghua University**, Beijing, China
- 2000 **BSEE** - Electrical Engineering *with honor* -**Tsinghua University**, Beijing, China

WORK EXPERIENCES

May 2008 – Present

Sr. Antenna and Microwave Design Engineer, Wionics Research, Irvine, CA

- 60 GHz WPAN related

- Setting up a 60 GHz test-bed using discrete components and test beam-forming algorithm and interconnect/package/integration strategy, as well as perform channel characterization
 - System design: specs, architecture and parts selection
 - Development of 60 GHz phased arrays, sector antennas for WPAN applications
 - Development of evaluation Tx/Rx boards and parasitics full-wave modelling
 - Coordinate with parts vendors, circuit fabrication companies, die attaching/assembly service provider, and our test partner in Universities to solve unique challenges encountered for 60 GHz system design

- Ultra-Wide Band (UWB) related

- Research on WiFi interference on UWB radios and design of miniaturized UWB antennas
- Setting up, operating and maintaining an anechoic chamber for UWB system field characterization
- Responsible for specific designs, testing and writing architectural requirements documents, design guidelines, training internal and external customers, creating test methodologies and enabling third-party antenna vendors to enable the integration of UWB systems into notebooks
- Technical evaluation and field test of various UWB products as an internal user

Aug. 2003 – Apr. 2008

Graduate Research Assistant and PhD Student, GEDC, Georgia Tech, Atlanta, GA

- 60 GHz mm-wave WPAN transceiver front-end integration using the Surface Micromachining Technology
- Development of several micro-machined V-band/W-band antennas and a Ka-band elevated patch antenna for 60 GHz mm-wave WPAN
- Development of multiple micromachined filters for the 60 GHz mm-wave WPAN application
- Development of multiple miniaturized wideband/multi-band printed planar/quasi-planar antennas for emerging wireless applications such as 3G/WiFi/DAB/DVB/WiMAX

Jan. 2003- May 2003

Visiting student, Microsoft Research Asia, Beijing, China

- Implementation of FDTD (Finite difference time domain) algorithms for ultra-wideband (UWB) antenna analysis

Sep. 2000- Jan.2003

Graduate Research assistant, Tsinghua University, Beijing, China

- Design of a preamplifier IC for optic-electrical detection and a driver IC for external modulators used in fiber-optical communication systems
- Modeling of PHEMT and MESFET devices for high-speed OEIC design
- X-band microstrip wideband amplifier design, assembly and characterization

RESEARCH PUBLICATIONS

PUBLISHED BOOK CHAPTERS

- **B. Pan**, J. Papapolymerou and M. M Tentzeris “MEMS-Integrated and Micromachined Antenna Elements, Arrays and Feeding Networks”, Chapter in *Modern Antenna Handbook*, edited by Prof. Constantine A. Balanis, John& Wiley Sons Inc., 2008
- M. M Tentzeris, **B. Pan**, and R.-L. Li, “Multiband Planar Wire Antennas”, Chapter in *Multiband integrated antennas for 4G terminals*, edited by Prof. David Sanchez-Hernandez, published by Artech House, UK in 2008

PATENTS AND INVENTION DISCLOSURES

- M.Allen, Y.K.Yoon, J.W. Park, Y-H. Joung, F.Cros. J. Papapolymerou, M.M.Tentzeris and **B. Pan**, “Surface Micromachined Millimeter-scale RF System and Method”, *US Patent 7196666 B2*, March. 27, 2007
- **B. Pan**, Y. Li, J. Papapolymerou and M.M. Tentzeris, “Novel capacitive coupling scheme for integrated filter”, Invention disclosure (provisional patent application-GTRC#4263).
- **B. Pan**, Zhan Liu, Li Yang, M.M.Tentzeris, J. Papapolymerou and M. Allen, ”A low cost fast-prototyping technique for RF electronics using resin-ink printed mask”, Invention disclosure (provisional patent application-GTRC#4321)

JOURNAL PUBLICATIONS

- **B. Pan**, Y. Li, G. E. Ponchak, M. M Tentzeris and J. Papapolymerou, “A Low-loss Substrate-Independent Approach for 60 GHz Transceiver Front-end Integration using Micromachining Technologies”, *IEEE Transaction on Microwave Theory and Technology*, pp 2779-2788, Vol. 56, No 12, December 2008.
- **B. Pan**, Y. Li, M. M Tentzeris and J. Papapolymerou, “High-Performance Millimeter-wave Surface Micromachined Cavity Filters for WPAN Applications”, *IEEE Transaction on Microwave Theory and Technology*, Vol.56, No.4, pp.959-970, April 2008.
- **B. Pan**, Y. Li, G. E. Ponchak, J. Papapolymerou, and M. M Tentzeris, “A 60-GHz CPW-Fed High-gain and Broadband Integrated Horn Antenna”, will appear on *IEEE Transactions on Antennas and Propagation* 2009 April issue.
- **B. Pan**, Y. Li, M. M Tentzeris and J. Papapolymerou, “A High-Q Millimeter-Wave Air-lifted Cavity Resonator on Lossy Substrates”, *IEEE Microwave and Wireless Components Letters*, Vol. 17, No. 8, pp 571 - 573, Aug. 2007

- **B. Pan**, Y.-K.Yoon, G.E.Ponchak, M.G.Allen, J.Papapolymerou and M.M.Tentzeris, "Analysis and Characterization of a High Performance Ka-Band Surface Micromachined Elevated Patch Antenna", *IEEE Antennas and Wireless Propagation Letters*, Vol.5, pp.511-514, December 2006.
- Y. Li, **B. Pan**, C. Lugo, M. M. Tentzeris, and J. Papapolymerou, "Design and Characterization of a W-band Micromachined Cavity Filter Including a Novel Integrated Transition from CPW Feeding Lines", accepted for publication by *IEEE Transaction on Microwave Theory and Technology*.
- B. Kim, **B. Pan**, S. Nikolaou, J. Papapolymerou, M.M.Tentzeris and Y.S. Kim, "A Novel Single-feed Circular Microstrip Antenna with Reconfigurable Polarization Capability", *IEEE Transactions on Antennas and Propagation*, Vol.56, No.3, pp.630-638, March 2008.
- R. Li, **B. Pan**, J. Papapolymerou, J. Laskar and M.M. Tentzeris, "A Novel Low-Profile Broadband Dual-Frequency Planar Antenna for Wireless Handsets", *IEEE Transactions on Antennas and Propagation*, Vol.56, No.4, pp.1155-1162, April 2008.
- R. Li, **B. Pan**, J. Papapolymerou, J. Laskar and M.M. Tentzeris, "Development of a Cavity-Backed Broadband Circularly Polarized Slot/Strip Loop Antenna with a Simple Feeding Structure", *IEEE Transactions on Antennas and Propagation*, Vol.56, No.2, pp.312-318, February 2008.
- R. Li, **B. Pan**, J. Laskar and M.M.Tentzeris, "A Compact Broadband Planar Antenna for GPS, DCS-1800, IMT-2000, and WLAN Applications", *IEEE Antennas and Wireless Propagation Letters*, Vol.6, pp.25-27, April 2007.
- R Li, **B. Pan**, J. Papapolymerou, J. Laskar and M.M. Tentzeris, "Broadband low-profile antennas for wireless applications", *IET Microwaves, Antennas & Propagation*, April 2007 Page(s):396 – 400
- R. Li, **B. Pan**, J. Laskar and M.M.Tentzeris, "A Low-Profile Planar Antenna for DVB-H Terminals", *Microwave and Optical Technology Letters*, pp1630-1633, Vol.49, No.7, July 2007
- J.J. Gao, B.X. Gao, **B. Pan** and L.C. Guang, "The study on device model parameters for 10Gb/s HEMT modulator driver IC", *Microwave and optical technology letters*, pp357-360, Vol. 35, No.5, December 5, 2002
- J.J.Gao, B.X. Gao, **B. Pan** and L.C. Guang, "An Approach to Determining Parasitic Elements for Laser Diodes", *Microwave and optical technology letters*, pp191-193, Vol. 34, No.3, August 5, 2002

REFEREED CONFERENCE PUBLICATIONS

- **B. Pan**, R. Li, M.Zolghadri, T. Aytur and P. Strauch, "Broadband End-fire Antennas for Switched Sector Coverage in 60-GHz Wireless Communications", Accepted for publication by *2009 IEEE-APS Symposium*, June 2009.
- **B. Pan**, Y. Li, M.M.Tentzeris and J.Papapolymerou, "A Novel Low-loss Integrated 60 GHz Cavity Filter with Source-Load Coupling using Surface Micromachining Technology", pp. 639-642, *2008 IEEE-IMS Symposium*, Atlanta, GA, June 2008.
- Y.Li, H.Doo, **B. Pan**, M.M.Tentzeris, Z.J.Zhang and J.Papapolymerou, "Novel Enhanced-Thickness Magnetic Nanoparticle Thin-Films for System-On-Chip (SOC) Wireless Applications", pp. 97-100, *2008 IEEE-IMS Symposium*, Atlanta, GA, June 2008.
- Y.Zhao, S.Kim, Y.Li, **B. Pan**, X.Wu, M.M.Tentzeris, J.Papapolymerou and M.G.Allen, "A Micromachined Airflow Sensor Based on RF Evanescent-Mode Cavity Resonator", pp. 1199-1202, *2008 IEEE-IMS Symposium*, Atlanta, GA, June 2008.
- R.L.Li, **B. Pan**, T.Wu, K.Lim, J.Laskar and M.M.Tentzeris, "A Broadband Printed Dipole and a Printed Array for Base Station Applications", *Proc. of the 2008 IEEE-APS Symposium*, pp.1-4, San Diego, CA, July 2008.
- Y. Li, **B. Pan**, M. M. Tentzeris and J. Papapolymerou, "A Fully Micromachined W-Band Coplanar Waveguide to Rectangular Waveguide Transition", *Proc. of 2007 IEEE-IMS Symposium*, pp.1031-1034, Honolulu, Hi, June 2007
- R. Li, **B. Pan**, J. Papapolymerou, J. Laskar, M. Tentzeris, "Low-Profile Broadband Planar Antennas for DVB-H, DCS-1800, and IMT-2000 Applications", *2007 IEEE AP-S International Symposium on Antennas and Propagation*, Honolulu, Hawaii, June 10-15, 2007

- **B. Pan**, R.Li, J.Papapolymerou, M.M.Tentzeris and J.Laskar, "A Cavity-Backed Broadband Circularly Polarized Slot/Strip Loop Antenna with a Simple Feeding Structure," *Proc. of 2006 IEEE-AP Symposium*, pp.2595-2598, Albuquerque,NM, July 2006.
- **B. Pan**, R.Li, J.Papapolymerou, M.M.Tentzeris and J.Laskar, "Low-Profile Broadband and Dual-Frequency Two-Strip Planar Monopole Antennas," *Proc. of 2006 IEEE-AP Symposium*, pp.2665-2668, Albuquerque,NM, July 2006.
- **B. Pan**, G. Dejean, Y.Yoon, J.Papapolymerou, M.M.Tentzeris and M.Allen, "High Performance System-on-Package Integrated Yagi-Uda Antennas for W-band Applications and mm-Wave Ultra-Wideband Data Links", *Proc. of the 2006 ECTC*, pp.1712-1717, San Diego, CA
- **B. Pan**, Y.Yoon, J.Papapolymerou, M.M.Tentzeris and M.Allen, "A High Performance Surface-Micromachined Elevated Patch Antenna", *Proc. of the 2005 IEEE-AP Symposium*, Washington DC, July 2005.
- Y.-K. Yoon, **B. Pan**, J. Papapolymerou, M. Tentzeris, and M.G. Allen, "A Vertical W-Band Surface-Micromachined Yagi-Uda Antenna", *Proc. of the 2005 IEEE-AP Symposium*, Washington DC, July 2005.
- **B. Pan**, Y.Yoon, Y.Z.Zhao, J.Papapolymerou, M.M.Tentzeris and M.Allen, "A Broadband Surface-Micromachined 15-45 GHz Microstrip Coupler", *Proc. of the 2005 IEEE-IMS Symposium*, Long Beach, CA, June 2005.
- Y.-K. Yoon, **B. Pan**, J. Papapolymerou, M. Tentzeris, and M.G. Allen, "Surface Micromachined Millimeter-Wave Components", *Proc. of the 13th International Conference on Solid-State Sensors, Actuators and Microsystems*, Seoul, Korea, 2005
- **B. Pan**, Y.Yoon, P.Kirby, J.Papapolymerou, M.M.Tentzeris and M.Allen, "A W-band Surface Micromachined Monopole for Low-cost Wireless Communication Systems", *2004 IEEE-IMS Symposium*, pp.1935-1938, Fort-Worth, TX, June 2004
- **B. Pan** and B. X. Gao, "Design of Wideband Current-mode CMOS Fiber-Optic Preamplifier Using Z Matrix Analysis", *Proceeding of 3rd International Conference on Microwave and Millimeter Wave Technology*, Aug. 2002
- **B. Pan**, J. Gao and B.X. Gao, "10Gb/s External Modulator Module using Capacitive and Inductive Peaking Technology", *Proceeding of SPIE OM'01*,2001

EXPERIENCES OF REVIEWING OTHERS' WORK

- *IEEE Transactions on Antennas and Propagation*, since November 2006(3)
- *IEEE Microwave and Wireless Components Letters*, March June 2007(7)
- *IEEE Antenna and Propagation Letters*, since September 2007(1)
- *IEEE Transaction on Components and Packaging Technologies*, since February 2008(1)
- *JEMWA/PIER Journals*, since Jan2009 (1)

HONORS AND AWARDS

- Excellent Graduate Student Tsinghua University
- Nortel Network First Prize Scholarship Tsinghua University
- Excellent Undergraduate Student Award Tsinghua University
- Intel Information Science First Prize Scholarship, College of Information Science and Technology Tsinghua University
- Sony Outstanding Student of Beijing First Prize Scholarship
- 12.9 First Prize Scholarship Tsinghua University
- 2nd place out of over 50,000 students in National Entrance Exams for Universities, Gansu Province, China
- President of Tsinghua-Alumni association-Georgia Tech 2005-present
- VP of Tsinghua-Alumni association Georgia, USA 2006-present

MEMBERSHIP AND ASSOCIATIONS

- IEEE since 2004
- Sigma Xi since 2008
- Steering Committee member of IEEE MTT-s 2010
- Georgia Electronic Design Center, Student researcher 2003-2008
- NSF Packaging Research Center, Student researcher 2003-2008

LIST OF SPECIAL SKILLS

- Expert in RF/Microwave/Millimeter-wave Design, Simulation, modeling, and theoretical analysis using many software suites,
 - Agilent ADS, Ansoft HFSS, Zeland Agilent Momentum, Flomerics Microstripes, Pspice, Hspice, OrCAD, Visual C++, LaTeX, AutoCAD, Matlab
- Expert in Semiconductor Fabrication
 - Micro/nano-fabrication Equipment:
 - E-beam lithography system, FEI Nova Nanolab 200 FIB/SEM, DC sputterer, E-beam evaporator,
 - Filament Evaporator, Aligner, Reactive Ion Etching (RIE) machine, Plasma Enhanced Chemical Vapor
 - Deposition (PECVD), Profilometer, Optical microscope, Scanning Electron Microscope (SEM),
 - Wirebonder, Polisher, etc
- Measurement Equipment:
 - Agilent 8510XF mm-wave network analyzer, 8510C network analyzer, other types of PNA/ENA, power meters, spectrum analyzer, probe-station, various signal sources, anechoic chamber, etc