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https://scholar.google.com/citations?user=Cy2A2foAAAAJ&hl=en&oi=sra

ACADEMIC EXPERIENCE

• GRAINGER INSTITUTE FOR ENGINEERING PROFESSOR		May 2025–Present
• INAUGURAL DIRECTOR OF WISCONSIN CHIPS CENTER	INTERDISCIPLINARY CENTER COORDINATING EFFORTS OF OVER THIRTY FACULTY ON INTEGRATED CIRCUIT DESIGN, FABRICATION, TEST AND WORKFORCE DEVELOPMENT	October 2024–Present
• PROFESSOR ELECTRICAL AND COMPUTER ENGINEERING (COURTESY APPOINTMENTS IN RADIOLOGY, BIOMEDICAL ENGINEERING AND MATERIALS SCIENCE) UNIVERSITY OF WISCONSIN-MADISON	MICROFABRICATED HIGH-FREQUENCY ELECTROMAGNETIC SENSORS; localized broadband spectroscopy and microscopy, low-dimensional devices and circuits using multifunctional scanning probes; THz spectroscopy with nonlinear transmission lines; instruments for wireless communications. Contactless sensors.	May 2004–Present (Associate September 1999–May 2004)
• ASSOCIATE PROFESSOR ELECTRICAL AND COMPUTER ENGINEERING UNIVERSITY OF DELAWARE		May 1998–August 1999 (Assistant September 1995–May 1998)
• POST-DOCTORAL RESEARCHER ABTEILUNG VON KLITZING MAX-PLANCK-INSTITUT FÜR FESTKÖRPERFORSCHUNG	CONTACTLESS HIGH-FREQUENCY SPECTROSCOPY OF LOW-DIMENSIONAL ELECTRON SYSTEMS; achieved current record (480 fs, 3.5 V) nonlinear transmission lines Primary collaborators: F. Keilmann and R. Blick	August 1993–August 1995
• DOCTOR OF PHILOSOPHY MASTER OF SCIENCE ELECTRICAL ENGINEERING STANFORD UNIVERSITY	Dissertation: "All-electronic Generation and Detection of Terahertz Radiation with Subpicosecond Pulses." Attained the first sub-ps and record 880 fs electrical pulses with GaAs nonlinear transmission lines; used these pulses for free-space signal generation and detection from 6 GHz–3 THz Advisor: D. M. Bloom	September 1988–December 1992

• BACHELOR OF SCIENCE ELECTRICAL ENGINEERING MINOR IN LATIN UNIVERSITY OF IOWA	Collegiate Scholar Award, 1987 Dean's Scholarship, 1982–86 University Scholarship, 1981–86 Member, Tau Beta Pi, Eta Kappa Nu President, IEEE Student Chapter, 1986	August 1981– May 1987

RECOGNITION

- FELLOW, IEEE, SENIOR MEMBER OPTICA (OSA), MEMBER APS, MRS

• VILAS ASSOCIATE	UNIVERSITY OF WISCONSIN	$86,400	2002-04
• ALEXANDER VON HUMBOLDT FELLOWSHIP	"Localized microwave excitation of low-dimensional electronic devices" (J.P. Kotthaus, Munich)		1999–2000 (postponed)
• PECASE AWARD NATIONAL SCIENCE FOUNDATION	"Pioneering research on nanoscale-dimension electronic circuits and development of a web-based virtual laboratory that provides student access to advanced scientific instrumentation"	$510,000 (incorporates NSF CAREER Award; one of two engineers in NSF ECS Division selected)	June 1998– May 2003
• YOUNG INVESTIGATOR PROGRAM AWARD OFFICE OF NAVAL RESEARCH	"Coherent signal generation with integrated circuits for wideband 100 GHz network measurements"	$327,394	May 1998– June 2002
• INNOVATION/TECHNICAL ACHIEVEMENT AWARD DARPA ULTRA PROGRAM	"Significant Technical Achievement by an Individual Performer"	(one of two individual awardees)	October 1997
• UNIVERSITY RESEARCH AWARD FORD MOTOR COMPANY	"All-Electronic Terahertz Spectroscopy for On-Board Exhaust-Gas Monitoring"	$150,000 (award rate < 4%)	April 1996– March 1999
• ANNUAL MEETING INVITED WORKSHOP SPEAKER OPTICAL SOCIETY OF AMERICA	"Presenting Scientific Information on the World-Wide Web"	$2,000	October 1996

INSTITUTIONAL RECOGNITION

• DEAN'S MERIT INCREASE + PROVOST'S SPECIAL MERIT INCREASE	"Extraordinarily high level of performance as an engineering faculty member"	June 1996, June 1997, June 1998

UNIVERSITY OF DELAWARE		
• FELLOW NATIONAL SCIENCE FOUNDATION	Institute for Transforming Undergraduate Education, University of Delaware	May 1997–April 1998
• FELLOW UNIVERSITY OF DELAWARE	Center for Teaching Effectiveness	May 1996–April 1997
• OUTSTANDING EDITORIAL ACHIEVEMENT AWARDS WATKINS-JOHNSON COMPANY	"A YIG-Tuned Nonlinear Transmission Line Multiplier" and two other papers	March 1992–February 1993

CURRENT AND RECENT SPONSORED RESEARCH

SOLE PRINCIPAL INVESTIGATOR UNLESS OTHERWISE NOTED

• RESEARCH GRANT ONR	PANTHER 6: Multiscale, physics-based approach for directed energy, blast and blunt traumatic brain injury prediction and prevention (co-investigator)	$451,470	September 2023–August 2027
• RESEARCH GRANT NSF	I-Corps: A Transformative National Research Commercialization Network (UW Faculty Lead)		September 2022–August 2027
• RESEARCH GRANT NIH	SBIR: Treatment of Onychomycosis Utilizing Targeted, Controlled High-Frequency Energy (Scientific PI)	$233,750	February 2021–January 2023 Phase II extension proposal January 2023-December 2025
• RESEARCH GRANT AFOSR	Self-winding Helices as Slow-wave Structures for mm and sub-mm Traveling Wave Tubes (co-PI with Francesca Cavallo (UNM) and Max Lagally (UW))	$856,319 $1,700,000	April 2019–March 2022 Phase II extension April 2022-March 2025
• RESEARCH GRANT NSF	WiMi: A Reconfigurable Platform for Millimeter-Wave Wireless Networking and Sensing (Xinyu Zhang, Parameswaran	$899,279	October 2015–June 2019

	Ramanathan and Daniel van der Weide)		
• RESEARCH GRANT AFOSR	STTR Phase I: Near-field fiber laser comb spectroscopy (NFLCS) (with Polaronyx)	$100,000	October 2009–June 2010
• RESEARCH GRANT AFOSR	Complex modulation and coherent detection for enhanced near-field far-infrared spectroscopy	$285,000	May 2008–August 2010
• RESEARCH GRANT AFOSR	Comb spectrometer development	$206,325	March 2007–November 2008
• RESEARCH GRANT NSF	RFID Partnership for Innovation in Wisconsin's Packaging and Printing Industry Cluster (Raj Veermani, PI and Marc Anderson, co-PI)	$600,000	January 2008–December 2009
• RESEARCH GRANT AGILENT TECHNOLOGIES INC.	SCANNING PROBE MICROSCOPY FOR NEAR-FIELD MICROWAVE ANALYSIS	$40,000	June 2006–May 2007
• RESEARCH GRANT NIH R01	MICROWAVE TUMOR ABLATION (F.T. Lee, Jr., PI)	$1,087,500	May 2006–April 2010
• RESEARCH GRANT NIH R01	ULTRAWIDEBAND MICROWAVE DETECTION OF BREAST CANCER (Susan Hagness, PI, Barry Van Veen, co-PI)		April 2005–March 2010
• EQUIPMENT GRANT ONR DURIP	METAL-ORGANIC CHEMICAL VAPOR DEPOSITION (MOCVD)CRYSTAL-GROWTH SYSTEM (with Dan Botez)	$198,450	May 2005–April 2006
• AIR FORCE OFFICE OF SCIENTIFIC RESEARCH	"Microfabricated Traveling Wave Tubes for High Power Millimeter-Wave and THz-regime Radiation Sources" (PI: J.H. Booske Co-PIs: H. Jiang, D. van der Weide)	$149,970	March 2005–February 2006
• RESEARCH GRANT NIH STTR	Noncontact membrane protein probe (with Prairie Technologies)	$600,000	May 2005–April 2008
• RESEARCH GRANT AFOSR	MURI: "Nanoprobe Tools for Molecular Spectroscopy and Control" (PI with co-PI's Robert Blick (UW) and Dennis Prather, University of Delaware)	$5,661,700	August 2003–July 2008
• RESEARCH GRANT ARO Breast Cancer Imaging Research Program (BCIRP)	"Compact low-cost microwave reflectometer for breast cancer detection" (PI with co-PI's Susan Hagness and Barry Van Veen)	$478,959	February 2004–January 2007

• RESEARCH GRANT NIH R-21	"Microcatheter microwave ablation for cancer treatment" with Fred Lee, Jr. MD	$436,500	May 2004–April 2006
• RESEARCH GRANT DARPA	"Single-Receptor Interfaces for Real-Time Kinetics" (PI with co-PI Robert Blick)	$650,000	July 2003–December 2004
• RESEARCH GRANT AFOSR	DURIP: "Device Measurement and Modeling System for Electronic Terahertz Sensing"	$290,000	May 2003–December 2003
• RESEARCH GIFT AGILENT TECHNOLOGIES	"Near field microwave probing"	$20,000	January 2003
• RESEARCH GRANT NSF NIRT	"Nanotubes and nanowires as biological sensors and actuators," with R. Hamers (PI) and L. Smith	$1,748,936	July 2002–June 2006
• RESEARCH GRANT ARO	"Space-time microwave imaging for early-stage breast cancer detection" with S. Hagness (PI) and B. Van Veen	$424,701	March 2002–March 2005
• RESEARCH GRANT ARO	"Biomolecular interaction sensing with sub-terahertz fields"	$533,227	May 2002–April 2005
• RESEARCH GRANT AFOSR	"Electronic terahertz spectroscopic imaging of explosives and weapons"	$497,102	July 2002–June 2005
• RESEARCH GRANT AFOSR/DARPA	"Broadband High-Gain Antennas for Terahertz Systems"	$99,000	July 2003–June 2004
• RESEARCH GRANT DARPA	"MOSAIC: Atomic resolution magnetic resonance force microscope imaging using very high frequency cantilevers," with M. Roukes, Caltech (PI), et al.	$348,414 (UW share)	May 2002–April 2004
• RESEARCH GRANT NIH R-21	"Space-time microwave imaging for breast cancer detection" with S. Hagness (PI) and B. Van Veen	$145,500	June 2002–March 2003
• SUPPORT GRANT UNIVERSITY OF WISCONSIN	"Nanotechnology Cluster Conference" with M. Eriksson, C.-B. Eom, and R. Carpick	$20,000	July 2002–June 2003
• RESEARCH GRANT NIH STTR	"Noncontact membrane protein probe" with Prairie Technologies, LLC	$244,000 $1,200,000	Phase I May 2002–April 2004 Phase II April 2005–March 2009
• RESEARCH GRANT DARPA/NRO	"Wideband optical arbitrary waveforms using Fourier and wavelet composition"	$982,815	December 2001–November 2004

• RESEARCH GRANT NSF NIRT	"Complex epitaxial magnetic oxide heterostructures for nanoscale spin devices," with C.-B. Eom (PI), et al.	$1,550,000	July 2002–June 2006
• RESEARCH GRANT ARO	"Solid state quantum computing using nanostructured logic gates," PI with Mark Eriksson, Bob Joynt and Max Lagally	$1,199,000	May 2001–April 2005
• RESEARCH GRANT ANALEX CORP.	"Computational tools for optimized design of advanced traveling wave tubes," with John Booske (PI)	$130,000	January 2001–December 2002
• RESEARCH GRANT DARPA	"Sonic MEMS," with Amit Lal (PI), et al.	$1,700,000	September 2000–August 2003
• RESEARCH GRANT ONR MURI	"Stochastic chemical sensing with engineered channel proteins" with Hagan Bayley: Texas A&M; Daniel Kahne: Princeton; Reza Ghadiri: Scripps; Leslie Loew: University of Connecticut	$1,196,515 $6,543,734 total	May 1999–October 2004
• RESEARCH GRANT AFOSR STTR	"Terahertz traveling wave tubes: a breakthrough innovation in coherent radiation sources," with John Booske (PI)	$600,000	March 2001–February 2002
• RESEARCH GRANT ONR	"Nanoscience of microwave-based integrated biological sensors," with Bob Hamers (PI) and Lloyd Smith	$800,000	May 2001–December 2001
• RESEARCH GRANT NSF SGER	"Measurement based channel modeling for coherent terahertz communications" with B. Van Veen (PI) and A. Sayeed	$60,000	August 2001–July 2002
• SMALL GRANT FOR EXPLORATORY RESEARCH NSF	"Scanning near-field microscopy for non-contact imaging of ion channel dynamics in the DC–THz regime," co-PI: Prof. Phillip Haydon, Iowa State University	$45,000	July 1998–June 1999
• RESEARCH GRANT DARPA INFORMATION TECHNOLOGY OFFICE ULTRASCALE COMPUTING	"Nanoscale field localization for manipulation and probing of computationally interesting biomolecules"	$763,116	September 1998–August 2003
• RESEARCH GRANT FEDERAL AVIATION ADMINISTRATION	"Terahertz spectroscopic reflection imaging to detect explosives and weapons on personnel"	$80,000 (pilot study) $605,218 (follow-on)	March 1997–January 2001

• "THE CENTER FOR NANOMACHINED SURFACES," A DELAWARE ADVANCED TECHNOLOGY CENTER STATE OF DELAWARE	CENTER DIRECTOR, with Rodel, Dupont Photomask, CFM Technologies, and Delaware Diamond Knives as industrial partners; Mark Barteau (Chem E) and Mary Wirth (Chemistry)	$6,753,897 (State portion is $2.88MM; balance from industry)	August 1997–August 1999
• RESEARCH GRANT UNIVERSITY OF DELAWARE RESEARCH FOUNDATION	"Localized FIR spectroscopy with scanning probes"	$30,000	June 1997–May 1998
• RESEARCH GRANT W. L. GORE & ASSOCIATES AND DEL. RESEARCH PARTNERSHIP	"High-frequency field scanning for smart shielding" and "Gigabit optoelectronic communications"	$210,223	October 1996–September 1999
• USER'S GRANT NSF NNUN	"Multifunctional scanning probes"	$5,000	August 1996–July 1997
• RESEARCH GRANT DARPA ELECTRONICS TECHNOLOGY OFFICE ULTRA ELECTRONICS	"Microfabricating a nanoscilloscope"	$499,717	July 1996–June 1999
• RESEARCH GRANT OFFICE OF NAVAL RESEARCH	"Probing local device fields using AC scanning force microscopy"	$441,855	July 1996–June 1999
• ENGINEERING RESEARCH EQUIPMENT GRANT NATIONAL SCIENCE FOUNDATION	"Reactive ion etcher and annealer" Co-PI with P. Berger, J. Olowolafe, and J. Kolodzey	$100,000	August 1996–July 1997

RESEARCH SUPERVISION

POST-DOCTORAL AND AFFILIATED RESEARCHERS

Alizreza Ashtiani	Microfabricated skin interfaces	May 2023-Present
Ankit Sharma	Broadband dual-polarized antennas	January 2024-Present
Matt Dwyer	Electronic THz systems	January 2016–January 2020
Marcos Martinez	Advanced Sensing with Chipless RFID	January 2016–August 2021
Chiya Saeidi	Field simulations for contactless measurements	January 2015–May 2018

Alexander Kozyrev	Nonlinear transmission lines for high power generation	January 2003–May 2015
John Grade	OptoMEMS and contactless sensors/applicators	February 2004–Present
Charles Paulson	Scanning near-field microscopy of biomolecules and cells	January 2003–February 2006
Yaqiang Wang	Microfabricated near-field electromagnetic antennas	September 2003–January 2006
Il-Seok (Sunny) Son	BioMEMS	October 2003–August 2004
George Kumar (Joint with Robert Blick)	Single-molecule biophysics	July 2003–August 2004
Kelvin Fu	Microfabricated circuits and mechanical structures for integrated optics	June 2003–December 2004
Bjoern Rosner	Near-field probes, scanning spin microscopy	June 2002–December 2002
Bhagwati Prasad	Electromagnetic spectroscopy of biomolecules and cells	March 2000–February 2001
Moises Cywiak	Interferometric near-field measurement of quartz surface properties	September 1998–September 1999
Janusz Murakowski	Detection of gas species using THz spectroscopy	May 1998–September 1999
Pavel Neuzil	Microfabrication of multifunctional scanning probes	April 1996–September 1999
Vivek Agrawal	Localized and far-field microwave spectroscopy	June 1996–December 1999
Jacob Adopley	Full-wave field calculations for micromachined antennas	February 1997–July 1997

GRADUATE ADVISEES (CURRENT)

Name	Degree	Topic	Expected Grad. Date
Tingyou Guo	Ph.D.	Self-assembled helices for traveling wave tubes	2025
Ion Kolkhuis Tanke	Ph.D.	(visiting from TU Eindhoven) Field measurements with modulated scattering	2026

GRADUATE (PAST)

Yu Huang	Ph.D.	High-frequency field mapping	2024
Yuchen Gu	Ph.D.	Using high frequencies in medical imaging	2024
Atul Bhadkhamkar	Ph.D.	Optical sources for broadband spectroscopy	2024
Matt Fayyad	M.S.	Transduction of biological signals with microwaves	2022
M.R. Naeini	Ph.D.	3D Printed Highly Integrated Microwave Components for Arrays and Sensing	2021
Aaron Day	M.S	Timing stabilization for coherent measurements	2019
Matt Dwyer	Ph.D.	Electronic THz systems in wide bandgap semiconductors	2017
Marcos Martinez	Ph.D.	Advanced Sensing with Chipless RFID	2016
Pushkar Kulkarni	Ph.D.	RF sensing circuits for medical diagnostics	2016
Madhav Venkateswaran	Ph.D.	MRI coils and RF-powered medical diagnostics	2016

Babita Yadav	M.S.	Design of Active Filter using Substrate Integrated Waveguide	2016
Vincent Chen	Ph.D.	RFID antennas	2012
Chiya Saeidi	Ph.D.	Engineering plasmonic metasurfaces to manipulate optical waves	2015
Paul Laeseke (joint with Fred Lee, Radiology)	M.D./ Ph.D.	Interstitial tumor ablation with microwaves	2009
Min Zhao (joint with Susan Hagness)	Ph.D.	Receivers for breast cancer detection	2009
Hai Huang	M.S.	Broadband antennas and interfaces	2009
Anuj Dron (joint with Susan Hagness)	M.S.	Broadband antennas for biospectroscopy	2006
Chao Qin	Ph.D.	Meta-material nearfield antennas	2007
Sung-Jin Ho	Ph.D.	Ultra-high-speed transistors	2006
Abdi Karbassi	Ph.D.	Near field probing techniques	2006
Min-Ki Choi	Ph.D.	Terahertz spectroscopy	2006
Hongjoon Kim	Ph.D.	Left-handed nonlinear transmission lines	2006
Modhurin Banerjee (joint with Tom Grist, Radiology)	M.S.	Medical imaging with microfabricated magnetic mixers	2007
Jake Shea (joint with Susan Hagness)	M.S.	Antennas for cancer detection	2007
Chih-Chuan Yen	M.S.	RFID antennas	2006
Kae-Oh Sun	Ph.D.	Compact microwave filters and wave control circuits	2006
Chris Brace (joint with Fred T. Lee, Jr, Radiology)	Ph.D.	Ablation of tumors with localized microwaves	2005
Kimberly Taylor, Biophysics	Ph.D.	Protein spectroscopy with microwaves	2005
Jim Truitt (joint with Mark Eriksson, Physics)	Ph.D.	Localized ESR, nanoscale quantum gates and quantum computation	2004
John Peck (joint with Robert Hamers, Chemistry)	Ph.D.	Biomolecule spectroscopy and near-zone antennas	2003
Douglas Lagally	M.S.	Near-field magnetic antennas	2005
Luke Palmer (joint with Susan Hagness, ECE)	M.S.	Antennas for breast cancer detection	2004
Rashmi Pathak (joint with Peter Timbie, Physics)	M.S.	Arrays of antenna-coupled microbolometers	2005
Jill Pamperin	M.S.	Metamaterial antennas	2005
Guoqing Ning (joint with Robert Blick, and Rob Carpick)	M.S.	BioMEMS and near-field scanning probes	2005
Greg Meyer		Project assistant for integration of research and teaching	2003-04

Daniel Imaizumi		Electrophysiology/microscopy of nerve cells	2001-02
Hui Liu	M.S.	Electromagnetic spectroscopy of biomolecules and cells	2001
XiaoQing Wang		Integrated terahertz electronic circuits	1998-99
Prayoot Akkaraekthalin	Ph.D.	Integrated frequency translation for low-cost, high-performance network analysis	1998
Jon Bergey	M.S.	Scanning field measurements and instrumentation	1999
Toralf Bork	M.S.	Measurement system for electromagnetic near-zone fields (thesis completed with Technical Univ. of Chemnitz-Zwickau)	1999
Tom Clupper	M.S.	Nonlinear device measurements and modeling	1999
Rob March	M.S.	Web-based remote-access instrumentation and high-frequency CMOS device and circuit models	1999
Alexander Ukhanov		Scale-model broadband antenna measurements	1996-97

TEACHING EXPERIENCE

ECE 230, CIRCUIT ANALYSIS, University of Wisconsin-Madison. Fall 2018, 2021 Spring 2019, 2020, Fall 2021, Spring 2022, Fall 2023, Spring 2024, Fall 2024. Core undergraduate circuit analysis course, based on Alexander & Sadiku and flipped-classroom approach.

ECE 270, 271, CIRCUIT LABORATORY, University of Wisconsin-Madison. Fall 2020, Spring 2021. Core undergraduate circuit laboratory courses taught using online methods.

ECE 340, ELECTRONIC CIRCUITS I, University of Wisconsin-Madison. Fall 2011, 2014, 2016-20. Core undergraduate transistor circuits course, based on Sedra & Smith and interactive quizzing.

ECE 342, ELECTRONIC CIRCUITS II, University of Wisconsin-Madison. Spring 2014. Follow-on advanced circuits course with emphasis on R.D. Middlebrook's analysis techniques and Sedra & Smith.

ECE 447, APPLIED COMMUNICATIONS SYSTEMS, University of Wisconsin-Madison. Spring 2000, Fall 2000, 2001, 2002, 2008-19, 2021, 2023, 2024 (supervised teaching by M. Martinez Fall 2018, 2020). Developed and taught advanced time- and frequency-domain analysis and design graduate level course. This course draws on electromagnetic theory for transmission lines, device physics for linear and nonlinear circuit models, time- and frequency-domain measurements, and CAD software. Final project is an ADS simulation.

ECE 547, ADVANCED COMMUNICATIONS CIRCUIT DESIGN, University of Wisconsin-Madison. Spring 2001, 2003, 2005, 2007, 2009-22, 2024, 2025 Developed and taught advanced communications circuits course, with emphasis on PLL's, transceiver architecture, IC concepts, PCM, and components; introduced laboratory and component projects for 2.4 GHz transceiver system.

ECE 420, ELECTROMAGNETIC WAVE TRANSMISSION. Fall 2008-09; SPRING 2012-13, (supervised teaching by M. Martinez Fall 2018).

ECE 601, BUSINESS FOR ENGINEERS, University of Wisconsin-Madison. Fall 2002-05. Developed and taught popular business course for primarily seniors in all engineering departments. Course features significant business planning, accounting and case analysis.

ECE 545, ADVANCED COMMUNICATIONS ENGINEERING LABORATORY, University of Wisconsin-Madison. Spring 2002, 2006, 2010, 2014, 2021. Developed and taught laboratory course on microwave and communications circuits measurements. Covered slotted-line measurements, scalar and

vector network analyzers, time-domain reflectometers, transistor amplifier design and construction, mixers, couplers, filters and computer-aided design.

SELECTED FOR NSF NEW CENTURY SCHOLARS WORKSHOP, Stanford University. Summer 1998.

ELEG467/667, HIGH-SPEED/MICROWAVE INTEGRATED CIRCUITS, University of Delaware. Spring 1995–99. Developed and taught advanced time- and frequency-domain analysis and design graduate level course. This course draws on electromagnetic theory for transmission lines, device physics for linear and nonlinear circuit models, time- and frequency-domain measurements, and CAD software (e.g., HSPICE, Libra, and Sonnet Software's *em*) for a comprehensive introduction to time- and frequency-domain IC concepts in the picosecond/GHz realm. The course features an industrially relevant final project.

ELEG661, MATERIALS & DEVICES SEMINAR, University of Delaware. Spring 1996–97. Graduate seminar with invited speakers.

SCANNING PROBE MICROSCOPY FOR MATERIALS CHARACTERIZATION, University of Delaware. Spring 1996–97. Highly ranked Engineering Outreach short course with industrial and academic participants.

ELEG312, ADVANCED ELECTRONIC CIRCUITS, University of Delaware. Autumn 1995–98. Junior-level core circuits course covering Sedra & Smith Chapters 5–8 (FETs through feedback). *Nominated by students for a University Teaching Award for 1996–97 and 1997–98 semesters.*

EE139, DESIGN PROJECT, Assistant to Professor David M. Bloom, Stanford University. Spring 1991–92. Discussed and assisted with electronic projects for seniors in EE.

EE392L, BUSINESS MANAGEMENT FOR ELECTRICAL ENGINEERS, Assistant to Consulting Professor Robert Maxfield, Stanford University. Spring 1990–91. Managed all grading, held discussions and lectured on entrepreneurship for 60 students.

IE273, ENTREPRENEURSHIP IN HIGH TECHNOLOGY, Assistant to Lecturer Charles Banfe, Stanford University. Autumn 1990–91. Selected students, managed all grading, held discussions and lectured on entrepreneurship for 60 students; awarded a departmental certificate of recognition for this work.

EE246, MICROWAVE CIRCUIT DESIGN, Assistant to Professor Bertram A. Auld, Stanford University. Winter 1989–90. Managed all grading, held discussions and lectured on microstrip resonators and computer-aided design.

PROFESSIONAL ACTIVITIES AND SERVICE

- Work featured in US News & World Report
  http://www.vdwdesign.com/projects/THz/briefings/usnews-thz-aug2003.jpg (scanned copy of article)
- Work featured in "Battling Bioterror" by Noah Shachtman
  http://www.techcentralstation.com/1051/defensewrapper.jsp?PID=1051-350&CID=1051-112202A
- Work featured in Laser Focus World, April 2003 article on THz imaging
  http://lfw.pennnet.com/Articles/Article_Display.cfm?Section=ARCHI&Subsection=Display&ARTICLE_ID=174912&KEYWORD=weide&p=12
- "Terahertz imaging: T-ray specs" *Nature* **424**, 721 - 722 (14 Aug 2003) News Feature
  http://www.vdwdesign.com/projects/THz/briefings/Nature_THz_424721a_r.pdf
- Cover issue of Optical Society of America's Optics and Photonics News, April 2003
  http://www.vdwdesign.com/projects/THz/briefings/opn_thz_2003.pdf
- Organized and lead a FIAP focus session on "Biosensors & physics for high-throughput drug screening" at the APS March Meeting, 2003

- NSF annual site review team for Cornell Nanobiotechnology Center, September 2002
- NSF Panel Review, June 2002
- Coordinating Bionanofab Facility proposal
- Authored (with D. Beebe) "Keck Center for Engineered Cellular Scale Exploration" proposal
- Ph.D. thesis review for Singapore
- Mid-term review for faculty member at Rice University
- Advised MEPP program student Nicholas Thompson (2002)
- Advisor to cluster hire in Chemical Genomics
- Member of the SURE/REU research projects team
- Army Research Office proposal review, "Biological sensing with terahertz circular dichroism spectroscopy"
- Organized and Chaired Invited Special Topic Session, "THz Contrast Mechanisms in Chemical and Biological Systems," at 9th International Conference on Terahertz Electronics, Charlottesville VA, Oct 15-16, 2001.
- Co-organized UW-Madison/Promega Symposium on Biological Imaging: Solving Biological Problems with Imaging Technology, May 25, 2001
- Co-organized UW-Madison Interdisciplinary Workshop: Emerging Techniques in Screening and Imaging Science, October 19, 2000; organizing follow-on conference on high-throughput screening for DNA, proteins and therapeutic discovery for Fall 2001
- NSF PFET Review Panel, June 1997, March 1998
- Head, NSF SBIR Phase I Review Panel, October 1995
- NSF mail reviews, December 1995–Present
- Swiss NSF mail reviews, May 1997–Present
- Ireland NSF mail reviews, 2001
- Journal Reviewer, *IEEE Nano, Optics Comm.*, *Macromolecules, Appl. Phys. Lett., Proc. IEEE, IEEE Trans. Microwave Theory Tech., IEEE Electron Dev. Lett., Rev. Sci. Instrum.*
- Textbook Reviewer, *Microelectronic Circuits*, Sedra & Smith, 4th Ed., 1996; *Microwave and RF Design of Wireless Systems*, Pozar, 2001
- Member, OSA Emerging Technology Committee, 1997–2010

UNIVERSITY ACTIVITIES AND SERVICE

- Executive Director, Wisconsin CHIPS Center 2024-Present
- Faculty Senate, 2016-2022; University Budget Committee 2023-25
- University Conflict of Interest Committee, 2007-15
- Representing the College of Engineering on the Faculty Advisory Council for the Kauffman/VIEW ("Values in Entrepreneurship at Wisconsin") Campus Initiative; presented at a site visit "Discussions of Wisconsin cross-campus and entrepreneurial activities" (October 7, 2003, School of Business)
- 2003 "Conversations in Science" series, hosted by Prof. Bassam Shakashiri (October 2, 2003, Edgewood High School, Madison)

- Visited a University of Wisconsin preschool class and demonstrated separation of mixed dyes using an agar gel matrix to demonstrate a visible aspect of nanotechnology (May 2003)
- Co-chair and organizer of "NanoExpo '03," a one-and-a-half-day symposium emphasizing the emerging role of nanotechnology in our lives during the next 10 years. The conference was held May 30 and 31, 2003, in Madison. Conference website http://nano.engr.wisc.edu and report http://www.engr.wisc.edu/news/headlines/2003/Jun02.html
- Helped produce a 6-minute video short on nanotechnology at Wisconsin (May 2003)
- Hosted and co-organized a Materials Science Program Open House. This event brought together faculty of materials science and physics from regional four-year schools to introduce them to the nanoscience work going on at the University of Wisconsin (May 2003)
- Invited affiliate of the Genome Center of Wisconsin (2003)
- Initiated the UW response to NSF renewal for National Nanofabrication User's Network (NNUN)
- Co-organized and co-hosted "NanoExpo '03," a one-and-a-half-day symposium emphasizing the emerging role of nanotechnology in our lives during the next 10 years. The conference was held May 30 and 31, 2003, in Madison, Wisconsin. This conference, with local, regional, and national speakers, drew industry professionals interested in new opportunities and trends in nanotechnology, academic researchers who wished to learn about the latest nanotechnology applications, teachers at all levels who wished to exchange ideas for nano education and outreach programs, and members of the public curious about nanotechnology.
- Demonstrated wireless and optical communications to kindergarten class at Thoreau Elementary School, Madison WI for NSF 50th Anniversary Service Program, Jan 2001
- Graduate admissions committee, 2000–2016
- Curriculum committee, 2001–present
- MATHCOUNTS Day 1997: Organized and conducted demonstrations and tours of Electrical Engineering for 400 middle-school students, Jan 16, 1997
- MATHCOUNTS Day 1996: Organized and conducted demonstrations and tours of Electrical Engineering for 250 middle-school students, Jan 18, 1996
- Dupont Explorer Scouts Tour (with D. Vengroff): Organized and conducted laboratory demonstrations and tours of Electrical Engineering for 35 high-school students and parents/advisors, Feb 10, 1997

MULTIDISCIPLINARY ACTIVITIES IN TEACHING, RESEARCH AND SERVICE

- Appointments in Radiology, Biomedical Engineering and Materials Science
- Trainer (member) of UW Biophysics Degree Program, an interdisciplinary program offering the Ph.D. degree—advised Kimberly Taylor in this program.
- Two of the professionals in my laboratory (Steve Limbach [former] and Alan Betterman [current]) have degrees in biology
- Collaboration with Phil Haydon (Neuroscience, Tufts University) on local probing of protein activity in cells
- Initiated a collaboration with Homme Hellinga (Biochemistry, Duke University) on nanopore sequencing of nucleic acids
- Collaborations and student exchanges with Ed Chapman (Physiology), Gerard Marriott (Physiology), Matt Jones (Physiology), Fred Blattner (Genetics), Jo Handelsmann (Plant

Pathology), Robert Goodman (Plant Pathology) [wrote two NIH proposals with the last three people]

- Collaboration with Bob Hamers and Lloyd Smith (Chemistry), joint proposals written and funded; John Peck (my graduate student) now funded in Chemistry; regular group meetings and joint publications
- Collaboration with Ron Raines (Biochemistry) in protein stretching with scanning force microscopes as well as studying transport of cationic peptides across lipid bilayers using electrophysiology

PROFESSIONAL EXPERIENCE

START-UPS

- Board member, Free Space Photonics Inc.
- Consultant, Elephas (screening of biopsy tissue for immunotherapeutic response)
- Advisor, LastLock (wireless security systems)
- Founder and Business Development, AntenneX, B.V. (millimeter-wave antenna measurements)
- Founder and Board Member, Elucent Medical, Inc. (wireless surgical navigation)
- Founder, Accure Medical, LLC (RF treatment for finger- and toenail infection)
- Founder, ThroughPuter, LLC (Platform-as-a-Service authentication)
- Founder, President, vdW Design, LLC (Incubator, SBIR awardee)
- Founder, Board Member, Advisor, Micrablate, LLC, now NeuWave Medical, Inc. (Microwave percutaneous ablation devices; acquired by Johnson & Johnson 2016)
- Founder, President, NFI, LLC (Near-field imaging for skin cancer)
- Founder, President, Tera-X, LLC (Ultrawideband antennas, imaging radar, SBIR awardee)
- Founder, VP of Engineering, Optametra, LLC (Coherent lightwave signal analyzers; acquired by Tektronix 2011)

MICROWAVE DEVICE RESEARCH AND DEVELOPMENT, Advanced Development Department, Watkins-Johnson Company, Palo Alto, California. June 1988–July 1993. Designed and built several broadband YIG-tuned microwave oscillators; published the lowest-reported phase noise for an oscillator with a magnetostatic-wave resonator; developed and published division-wide computer-aided circuit design capabilities with Unix workstations, including nonlinear device and circuit modeling, and electromagnetic simulations; taught seminars on microwave oscillator theory, circuit simulation and MESFET analysis.

CELLULAR TELEPHONE ENGINEERING, International Cellular Subscriber Division, Motorola, Inc., Schaumburg, Illinois. August 1987–April 1988. Designed and developed a fixed-subscriber unit for remote cellular telephone installations; investigated field quality and cellular coverage in Hong Kong and Thailand; wrote a database application to track international cellular subscriber field failure types for feedback to design and production; worked with Division Management to implement Motorola's "Six-Sigma" quality program for international cellular telephones.

INTERACTIVE SPEECH AND WRITING THERAPY, sola mente, Inc., Iowa City, Iowa. August 1985–August 1987. Started and ran a university-incubated company to design and build combined speech- and handwriting-recognition device for therapeutic and language-acquisition applications.

MICROWAVE RESONATOR RESEARCH AND DEVELOPMENT, Signal Analysis Division, Hewlett-Packard Company, Santa Rosa, California. May 1985–August 1985. Studied, measured, and reported on new magnetostatic-wave signal processing devices; improved resonator characterization by automating the HP8510A network analyzer. Taught a noontime course entitled "Latin at Lunch."

DYE LASER CONTROL ENGINEERING, Laser Isotope Separation Division, Lawrence-Livermore National Laboratory, Livermore, California. May 1984–August 1984. Observed, documented, and improved dye laser temperature control system for precise uranium isotope enrichment.

AUTOMATIC TEST EQUIPMENT ENGINEERING, Production Automation, Division of EWA, Inc., Santa Clara, California. May 1983–December 1983. Assisted in design, construction, and testing of production ATE for Apple Computer, Western Electric, and Comdial. Made engineering drawings, specified components, and wrote spreadsheets to assist in bidding.

JOURNAL PUBLICATIONS

CURRENT

1. Tairan Xi, Haotian Jiang, Jiangxu Li, Yangchen He, Yuchen Gu, Carter Fox, Louis Primeau, Yulu Mao, Jack Rollins, Takashi Taniguchi, Kenji Watanabe, Daniel van der Weide, Daniel Rhodes, Yang Zhang, Ying Wang, and Jun Xiao, "Terahertz sensing based on the nonlinear electrodynamics of the two-dimensional correlated topological semimetal $TaIrTe_4$" to appear in Nature Electronics (2025)
2. Yuchen Gu, Hai-Han Sun, and Daniel W. van der Weide, "A Near-Field Super-Resolution Network for Accelerating Antenna Characterization," IEEE Transactions on Antennas and Propagation, 73 (3) 1732-1742 (2025)
3. Shiva Hajitabarmarznaki, Shelley Scott, Marcos Martinez Argudo, Divya Prakash, Max Lagally, Daniel van der Weide, Francesca Cavallo, "Integrated Couplers of THz Radiation for Helical Slow-Wave Structures," ACS Omega 9 (33) 35973-35977 (2024)
4. A. S. Bhadkamkar, S. Carpenter, D. C. Gold, M. Beede, R. H. Goldsmith, D. van der Weide, and D. D. Yavuz, "High-power Raman lasing and efficient anti-Stokes generation in mm-sized crystalline disk resonators," Opt. Lett. 49, 2529-2532 (2024)
5. Yuchen Gu, D. Kendig and M. Shakouri, and D. W. van der Weide, "Dual Mode Split Ring Resonator Sensing and Hyperthermia Array for Skin," in IEEE Journal of Electromagnetics, RF and Microwaves in Medicine and Biology, doi: 10.1109/JERM.2024.3373537.
6. D. W. van der Weide, D. Kendig and M. Shakouri, "High-Speed Thermal Imaging Can Resolve Short RF Pulse Effects in Tissue Models," in IEEE Journal of Electromagnetics, RF and Microwaves in Medicine and Biology, doi: 10.1109/JERM.2024.3363906.
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8. Marcos Martínez Argudo, Shiva Hajitabarmarznaki, Divya J. Prakash, Matthew M. Dwyer, Max G. Lagally, Daniel W. van der Weide, and Francesca Cavallo, "Amplification of THz waves by beam-wave interaction in self-assembled helical slow-wave structures with single and double chirality", AIP Advances 12, 085121 (2022)
9. Divya J. Prakash, Matthew M. Dwyer, Marcos Martinez Argudo, Mengistie L. Debasu, Hassan Dibaji, Max G. Lagally, Daniel W. van der Weide, and Francesca Cavallo, "Self-Winding Helices as Slow-Wave Structures for Sub-Millimeter Traveling-Wave Tubes," ACS Nano 15 (1), 1229-1239 (2021)
10. A. M. Day, M. M. Dwyer and D. W. van der Weide, "Phase Perturbation as a Measurement Metric: A Novel Noncontact In-Line Production Measurement Through an All-Electronic Millimeter-Wave System Tracking Millidegree Perturbations in Phase," IEEE Microwave Magazine, vol. 22, no. 1, pp. 79-85 (2021)
11. M. Ranjbar Naeini, M. Mirmozafari and D. van der Weide, "Monolithic 3-D-Printing of an Integrated Marchand Balun with a Dipole Antenna," in *IEEE Transactions on Components, Packaging and Manufacturing Technology*. vol. 10, no. 4, pp. 654-658 (2020)

12. Mohammadreza Ranjbar Naeini and Daniel van der Weide, "Cascaded 3D-Printed X-band Components for Subsystems," *IEEE Microwave and Wireless Components Letters* 29 (5), 333 (2019)
13. C. Saeidi and D. van der Weide, "Nanoscale nonlinear circuit elements at optical frequencies," *IEEE Trans. Nanotech.,* 17 (3), 611 (2018)
14. Atul Bhadkamkar, Matthew Dwyer, and Daniel van der Weide, "Analysis of half-tapered fiber coupling for microresonators," *Opt. Express* 25, 32841-32852 (2017)
15. M. Martinez and D. van der Weide, "Compact single-layer depolarizing chipless RFID tag," *Microw. Opt. Technol. Lett*., 58, 1897–1900 (2016)
16. P.B. Kulkarni and D. van der Weide, "Wideband circularly polarized SIW cavity-backed slot antenna with sequential rotation feeding," *Microw. Opt. Technol. Lett*., 58: 2566–2570 (2016)
17. C. Saeidi and D. van der Weide, "A figure of merit for focusing metasurfaces," *Applied Physics Letters,* 106 (11), 113110 (2015)
18. C. Saeidi and D. van der Weide, "Wideband plasmonic focusing metasurfaces," *Applied Physics Letters,* 105 (5), 053107 (2014)
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20. C. Saeidi and D. van der Weide, "Nanoparticle array based optical frequency selective surfaces: theory and design: errata," *Optics Express*, vol. 21, pp. 24119-24119 (2013)
21. C. Saeidi and D. van der Weide, "Nanoparticle array based optical frequency selective surfaces: theory and design," *Optics Express* vol. 21, pp. 16170-16180 (2013)
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50. CL Brace, PF Laeseke, LA Sampson, TM Frey, D.W. van der Weide, and FT Lee Jr., "Microwave ablation with multiple simultaneously powered small-gauge triaxial antennas: Results from an in vivo swine liver model," *Radiology*, vol. 244, pp. 151-156, 2007.
51. Srijit Goswami, K. A. Slinker, Mark Friesen, L.M. McGuire, J. L. Truitt, Charles Tahan, L. J. Klein, J. O. Chu, P. M. Mooney, D. W. van der Weide, Robert Joynt, S. N. Coppersmith, and M. A. Eriksson, "Controllable valley splitting in silicon quantum devices," *Nature Physics*, vol. 3, pp. 41-45, 2007.
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BOOK SECTIONS

1. I. V. Shadrivov, M. Lapine, Y. S. Kivshar, A. Kozyrev, and D. van der Weide, "Nonlinear and Tunable Left-Handed Transmission Lines," in Nonlinear, Tunable and Active Metamaterials. vol. 200, ed: Springer International Publishing, 2015, pp. 89-103.

2. A. Kozyrev and D.W. van der Weide, "Nonlinear and Tunable Left-Handed Metamaterials," in Metamaterial, edited by Xun-ya Jiang, Intech, ISBN 978-953-51-0591-6.
3. M. Fanciulli, J. Truitt, K. Slinker, K. Lewis, D. Savage, C. Tahan, L. Klein, J. Chu, P. Mooney, A. Tyryshkin, D. van der Weide, R. Joynt, S. Coppersmith, M. Friesen, and M. Eriksson, "Si/SiGe Quantum Devices, Quantum Wells, and Electron-Spin Coherence," in Electron Spin Resonance and Related Phenomena in Low-Dimensional Structures, pp. 101-127, 2009.
4. D.W. van der Weide, John Grade, Min Ki Choi, and Alan Bettermann, "THz Spectroscopic Detection with Electronic Techniques," Proceedings of NATO Advanced Research Workshop: Terahertz Frequency Detection and Identification of Materials and Objects, Spiez, Switzerland, 2006.

1. C. A. Paulson and D.W. van der Weide, "Near-field High Frequency Probing," in Scanning Probe Microscopy, S. Kalinin and A. Gruverman, Eds. New York: Springer-Verlag, 2007, pp. 315-345. http://www.springerlink.com/content/p02166j771n03800/fulltext.pdf
2. M.K. Choi, K. Taylor, A. Bettermann, and D.W. van der Weide, "Spectroscopy with Electronic Terahertz Techniques for Chemical and Biological Sensing," Chapter 2, Volume II. Emerging Scientific Applications and Novel Device Concepts, Terahertz Sensing Technology, Editors: D. L. Woolard, M. S. Shur and W. R. Loerop, World Scientific, 2003.
3. B. T. Rosner and D.W. van der Weide, "Near-Field Microscopy Techniques," in Encyclopedia of Nanoscience and Nanotechnology, 2003.
4. D.W. van der Weide, "Electronic Sources and Detectors for Wideband Sensing in the Terahertz Regime," in Sensing with terahertz radiation, Vol. 85, Springer Series in Optical Sciences, D. M. Mittleman, Ed.: Springer, 2003.

CONFERENCE PRESENTATIONS

PAPERS AWARDED PRIZES

1. A. Day, M. Dwyer, D. van der Weide, "Millimeter-wave thickness-deviation measurement system," in 2020 IEEE Radio and Wireless Symposium (RWS) 2020, *First Prize Student Paper Competition*.
2. C.L. Brace, P. Laeseke, L.A. Sampson, T.M. Frey, D.W. van der Weide and F.T. Lee. "Principles of microwave ablation," RSNA 2005, *Educational Exhibit Certificate of Merit.*
3. T. Löffler, T. Pfeifer, H. G. Roskos, H. Kurz, and D.W. van der Weide, "Stable optoelectronic detection of free-running microwave signals with 150-GHz bandwidth," European Conference on Optical and Beam Probing, 1995. *Best poster award.*
4. D.W. van der Weide, "A YIG-tuned nonlinear transmission line multiplier," at IEEE MTT-S International Microwave Symposium, Atlanta GA, 1993. *Student paper contest award.*
5. D.W. van der Weide, "Thin-film YIG oscillators with low phase noise and high spectral purity," at IEEE MTT-S International Microwave Symposium, Albuquerque NM, 1992. *Student paper contest award.*

INVITED

1. D.W. van der Weide, "Complex Modulation and Signal Recovery in High Frequency Measurements," 102nd ARFTG Microwave Measurement Symposium, San Antonio, TX, Jan 21-24, 2024.

2. D.W. van der Weide, "Ohm vs. Maxwell: Using electromagnetic fields as treatment modalities," Plenary invited speaker, European Computer Assisted Liver Surgery Society annual meeting, Oct. 17-19, 2019, Bern, Switzerland.
3. A. B. Kozyrev and D.W. van der Weide, "Prospects for Nonlinear Left-Handed Transmission Lines" invited presentation at Metamaterials 2007: The First International Congress on Advanced Electromagnetic Materials in Microwave and Optics, Rome, Italy, October 22-26, 2007.
4. D.W. van der Weide, John Grade, Min Ki Choi, and Alan Bettermann, "THz Spectroscopic Detection with Electronic Techniques," presented at NATO Advanced Research Workshop: Terahertz Frequency Detection and Identification of Materials and Objects, Spiez, Switzerland, 2006.
5. D.W. van der Weide and John Grade, "THz Antennas with Broadband Gain," presented at NATO Advanced Research Workshop: Terahertz Frequency Detection and Identification of Materials and Objects, Spiez, Switzerland, 2006.
6. D.W. van der Weide, "Materials contrast for electronic terahertz imaging," Spring MRS Meeting, San Francisco, CA, April 2006.
7. A. B. Kozyrev, H. Kim, A. Karbassi and D. W. van der Weide, "Higher Harmonic Generation and Parametric Instabilities in Left-Handed Nonlinear Transmission Lines", 2005 IEEE AP-S Int. Symposium and USNC/URSI National Radio Science Meeting, 3-8 July 2005, vol. 2B, pp. 209-212 (2005).
8. Interviewed about use of terahertz technology for counter-terrorism in a 30 minute show "Connect" on BBC Radio 4 by Julian Mayers, November, 2005.
9. A.B. Kozyrev, H.J. Kim, D.W. van der Weide, "Parametric gain and nonlinearities in mesoscopic media," presented at NPMS-7/SIMD-5, Maui, HI, November 28-Dec 2, 2005.
10. D.W. van der Weide, "Landscape of US THz initiatives," presented at Terahertz Sources and Systems for Security Use, Durham, UK, 2005.
11. F. Keilmann, M. Brehm, A. Schliesser, and D.W. van der Weide, "Novel FTIR Spectrometer Featuring Rapid Acquisition with a Coherent, Laser-Like Beam," presented at ICAVS-3, Lake Delavan WI, 2005.
12. D.W. van der Weide, "Stand-off detection with pulsed electronic THz systems," Joint Terahertz Imaging System Technology Assessment, Falls Church, VA, 31 August – 1 September 2005
13. D.W. van der Weide, M. Choi, K. Taylor, and A. Bettermann, "Sensing biomolecules with microwave and terahertz frequencies," presented at EMC Zürich, 2005.
14. X. Li, E. J. Bond, S. C. Hagness, B. D. Van Veen, and D. van der Weide, "Three-dimensional microwave imaging via space-time beamforming for breast cancer detection," IEEE Antennas and Propagation Society International Symposium and USNC/URSI Radio Science Meeting, San Antonio, TX, June 2002.
15. X. Li, E. J. Bond, S. Davis, M. Choi, P. Gustafson, S. C. Hagness, B. D. Van Veen, and D. van der Weide, "Computational and Experimental Investigations of Microwave Breast Cancer Detection via Space-Time Beamforming," 3rd World Congress on Microwave and Radio Frequency Applications, Sydney, Australia, September 22-26, 2002.
16. S. C. Hagness, X. Li, E. J. Bond, S. Davis, M. Choi, P. Gustafson, B. D. Van Veen, and D. van der Weide, "Microwave Imaging via Space-Time Beamforming for Breast Cancer Detection:

Experimental Studies using Breast Phantoms," XXVIIth General Assembly of the International Union of Radio Science (URSI), Maastricht, The Netherlands, August 2002.

17. X. Li, S. C. Hagness, B. D. Van Veen, and D. van der Weide, "Experimental Investigation of Microwave Imaging via Space-Time Beamforming for Breast Cancer Detection," accepted for presentation at the IEEE MTT-S International Microwave Symposium, Philadelphia, PA, June 2003.
18. X. Li, L. O. Palmer, S. C. Hagness, B. D. Van Veen, D. van der Weide, "Microwave breast cancer detection via space-time beamforming: A computational and experimental study of breast phantom and sensor design parameters," accepted for presentation at the IEEE Antennas and Propagation Society International Symposium and USNC/URSI Radio Science Meeting, Columbus, OH, June 2003.
19. D.W. van der Weide, M. Choi, K. Taylor, and A. Bettermann, "Sensing biomolecules with microwave and terahertz frequencies," presented at EMC Zurich, 2005.
20. D. van der Weide, K. Taylor, C. Paulson, D. Lagally, A. Karbassi, S. Ramachandran, B. Butler, and P. Gustafson, "SPM spectroscopy of biological and low-dimensional systems," presented at New Phenomena in Mesoscopic Systems 6 Surfaces and Interfaces in Mesoscopic Devices 4, Maui, HI, 2003 (work presented by Prof. Robert Blick).
21. S. Bhattacharjee, J. H. Booske, C. L. Kory, D.W. van der Weide, S. Limbach, S. Gallagher, A. Stevens, M. Genack, J. Welter, M. Lopez, R. M. Gilgenbach, J. Wohlbier, R. L. Ives, M. E. Read, R. Divan, and D. C. Mancini, "Investigations of folded waveguide TWT oscillators for THz radiation," presented at 4th IEEE International Conference on Vacuum Electronics, 2003.
22. D.W. van der Weide, "Terahertz systems for concealed weapons sensing," *DSTL* Ft. Halstead, UK, 30 September 2003.
23. D.W. van der Weide, "Terahertz sensing for explosives detection," *FOI-Sweden (Swedish Defense Agency)*, Linköping, Sweden, 29 August 2003
24. D.W. van der Weide, "Terahertz sensing technology," *FFI-Norway (Norwegian Defense Agency)*, Oslo, Norway, 1 September 2003
25. D.W. van der Weide, "Spectroscopy with electronic terahertz techniques for chemical and biological sensing," *Joint European Research Centre*, Ispra, Italy, 12 June 2003
26. D.W. van der Weide, "Detection of explosives, chemical and biological hazards with terahertz systems," *Gordon Conference on Illicit Substance Detection: Explosives*, Il Ciocco, Barga, Italy, 8-13 June 2003.
27. D.W. van der Weide, "Detection of chemical and biological hazards with terahertz systems," *The terahertz gap: the generation of far-infrared radiation and its applications*, Royal Society Scientific Discussion Meeting, London, England, 4-5 June, 2003.
28. D.W. van der Weide, "Detection of explosives with terahertz systems," *Expert workshop on Explosive Detection Techniques for use in Mine Clearance and Security Related Requirements*, Lake Bled, Slovenia, 2-4 June, 2003.
29. Invited speaker at 27th Annual Great Lakes Biomedical Conference, "Applications of nanotechnology," April 4, 2003.
30. K. Taylor and D.W. van der Weide, "Microwave sensing of protein conformation and binding," presented at American Physical Society March Meeting, Austin TX, 2003.

31. D.W. van der Weide, "All electronic terahertz spectroscopy," 2003 OSA Ultrafast Electronic and Optoelectronic Topical Meeting, January 15-17, 2003, in Washington DC.
32. X. Li, E. J. Bond, S. Davis, M. Choi, P. Gustafson, S. C. Hagness, B.D. Van Veen, and D.W. van der Weide, "Computational and Experimental Investigations of Microwave Breast Cancer Detection via Space-Time Beamforming," presented at 3rd World Congress on Microwave and Radio Frequency Applications, Sydney, Australia, 2002.
33. D.W. van der Weide, "THz sensing and screening of biomolecules and bacteria," presented at Optical Society of America Annual Meeting, Orlando FL, 2002.
34. M. Friesen, P. Rugheimer, D. E. Savage, M. G. Lagally, D.W. van der Weide, R. Joynt, and M.A. Eriksson, "A SiGe Quantum Dot Quantum Computer," presented at 6th International Conference on Quantum Communication, Measurement and Computation, Boston MA, 2002.
35. M. Friesen, P. Rugheimer, D. E. Savage, M. G. Lagally, D.W. van der Weide, R. Joynt, and M.A. Eriksson, "A SiGe Quantum Dot Quantum Computer," presented at Quantum Device Technology Workshop, Potsdam, NY, 2002.
36. X. Li, E. J. Bond, S. C. Hagness, B. D. V. Veen, and D.W. van der Weide, "Three-dimensional microwave imaging via space-time beamforming for breast cancer detection," presented at IEEE Antennas and Propagation Society International Symposium and USNC/URSI Radio Science Meeting, San Antonio TX, 2002.
37. D.W. van der Weide, "Local Electron Spin Probing with Microwaves: Interfacing to Quantum Dot Qubits in SiGe & A Route to High Power," presented at Solid State Quantum Computing (SSQC) Workshop, Yorktown Heights, NY, 2002.
38. D.W. van der Weide, K. Taylor, J. Peck, C. Wichaidit, S. Hagness, W. Cai, and R. Hamers, "Biomolecular Contrast Mechanisms and Sensing Techniques in the Terahertz Regime," presented at 9th International Conference on Terahertz Electronics, Charlottesville, 2001.
39. K. Taylor and D.W. van der Weide, "Sensing Folding of Solution Proteins with Resonant Antennas," presented at 9th International Conference on Terahertz Electronics, Charlottesville, 2001.
40. D.W. van der Weide, "Electronic terahertz systems for biodetection and bioimaging," at First International Conference on Biomedical Imaging & Sensing Applications of Terahertz Technology (BISAT '01), Leeds UK, 30 November-1 December 2001.
41. D.W. van der Weide, "Electronic THz Imaging of Explosives" Gordon Research Conference on Illicit Substances, New London CT, 8-13 July 2000.
42. D.W. van der Weide, "THz electronics" at NATO Advanced Research Workshop, Chateau de Bonas, France, 21-28 June 2000.
43. D.W. van der Weide, J. Murakowski, and F. Keilmann, "Spectroscopy with electronic THz techniques," at EurOpto '99, Munich, Germany, 1999.
44. D.W. van der Weide, "Microscopes for subvisible frequencies," at International Advanced Studies Institute, Science and Technology Series, Naval Postgraduate School, Monterey, CA, 1998.
45. D.W. van der Weide, "Electronic THz systems," at Optical Society Annual Meeting, Baltimore, MD, 1998.

46. V. Agrawal, T. Bork, S. Kee, and D.W. van der Weide, “Electronic THz reflection spectroscopy for detecting energetic materials,” at *Sixth IEEE International Conference on Terahertz Electronics*, Leeds UK, 1998.
47. D.W. van der Weide, “Multifunctional scanned probes for localizing high frequency fields,” at *APS March Meeting*, Los Angeles CA, 1998.
48. D.W. van der Weide, “Complex broadband millimeter-wave response of coupled quantum dots,” at DARPA Ultra Electronics Program Review, Santa Fe, NM, 1997.
49. D.W. van der Weide, “Terahertz spectroscopy of energetic materials,” presented at Ignition and Combustion Branch, Propulsion and Flight Division, Weapons and Materials Directorate, Army Research Laboratory, Aberdeen, MD, 1997.
50. D.W. van der Weide, “Technology and applications of electronic terahertz systems,” at Workshop on New Sources and Detectors for the Terahertz Regime, Institut für Halbleitertechnik, RWTH Aachen, Germany, 1996.
51. D.W. van der Weide and P. Neuzil, “The nanoscilloscope: Combined topography and AC field probing with a micromachined tip,” at Third Workshop on Industrial Applications of Scanned Probe Microscopy, NIST, Gaithersburg MD, 1996.
52. D.W. van der Weide, “THz spectroscopy using nonlinear transmission lines,” at International Workshop on Novel Terahertz Technology, Ministry of Post and Telecommunication, Kobe, Japan, 1995.
53. D.W. van der Weide, “Electronic generation and detection of terahertz free-space radiation using subpicosecond pulses,” at International Seminar on Terahertz Electronics, IEMN, Villeneuve d’Ascq, France, 1994.
54. D.W. van der Weide, “A free-space spectroscopy system using nonlinear transmission lines,” at SFB 254 Optoelectronics Colloquium, University of Duisburg, Germany, 1993.
55. D. M. Bloom, J. S. Bostak, D.W. van der Weide, B. A. Auld, and E. Özbay, “All-electronic generation and detection of terahertz free-space pulses and their application to a terahertz spectroscopy system,” at Nonlinear Optics for High-Speed Electronics and Optical Frequency Conversion, SPIE, Los Angeles CA, 1994.
56. J. S. Bostak, D. M. Bloom, D.W. van der Weide, B. A. Auld, and E. Özbay, “All-electronic generation and detection of terahertz free-space pulses and their application to a terahertz spectroscopy system,” at Millimeter and Submillimeter Waves, SPIE, San Diego CA, 1994.
57. D.W. van der Weide, J. S. Bostak, B. A. Auld, and D. M. Bloom, “All-electronic subpicosecond pulses for a 3-terahertz free-space signal generation and detection system,” at International Conference on Ultra-Wide Band, Short-Pulse Electromagnetics, Brooklyn NY, 1992.

PEER-REVIEWED

1. Y. Huang, A. D. Bettermann and D. W. van der Weide, "Optimization of a Near-Field Measurement System Based on Mechanically Modulated Scattering," 2025 104th ARFTG Microwave Measurement Conference (ARFTG), San Juan, PR, USA, 1-4 (2025)
2. Y. Huang, A. D. Bettermann and D. W. van der Weide, "Planar Near-Field Measurement with a Mechanically Modulated Scatterer," 2025 IEEE Topical Conference on Wireless Sensors and Sensor Networks (WiSNeT), San Juan, PR, USA, 1-3 (2025)

3. D. van der Weide, "Spatio-Temporal Localization of High Frequency Pulses for Diagnostics of Directed Energy Effects," 2024 Military Health System Research Symposium | MHSRS, Orlando, FL, August 2024
4. T. Guo, D. Prakash, J. Vijayamohanan, G. Heilmanand, C. Christodoulou, F.Cavallo and D. W. van der Weide, "Simulated and Measured Scattering Parameters of Self-Winding Helices at Millimeter Frequencies" IEEE International Vacuum Electronic Conference, Monterey, CA, USA 2024
5. Tairan Xi, Haotian Jiang, Yuchen Gu, Yulu Mao, Yangchen He, Daniel Rhodes, Daniel van der Weide, Ying Wang, Jun Xiao, "Terahertz sensing based on layered topological semimetal," APS March Meeting 2024, Minneapolis MN
6. D. van der Weide, D. Kendig, M. Shakouri, A. Shakouri, "Advanced thermal imaging can resolve short RF pulse effects in tissue," in 2023 IEEE MTT-S International Microwave Biomedical Conference (IMBioC), Leuven, Belgium 11-13 September 2023
7. Y. Gu and D. van der Weide, "Dual Mode Split Ring Resonator Sensing and Hyperthermia Array for Skin," in 2023 IEEE MTT-S International Microwave Biomedical Conference (IMBioC), Leuven, Belgium 11-13 September 2023
8. Anjali Chaudhary, Divya J Prakash, RB Jacobson, Shelley A Scott, Donald E Savage, Daniel van der Weide, Max Lagally, Francesca Cavallo, "Electroplating on Unconventional Ultra-Compliant Substrates for Travelling Wave Tube Amplifiers," Electrochemical Society Meeting Abstracts 243, 2023
9. Y. Gu, X. Zhang and D. van der Weide, "Deep Learning Accelerated Antenna Radiation Pattern Prediction for Undersampled Near-Field to Far-Field Transformation," 2023 IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting (USNC-URSI), Portland, OR, USA, 2023, pp. 33-34
10. Yu Huang, Tingyou Guo, Yuchen Gu, Alan Bettermann, Dan van der Weide, "X-band Field Mapping System for Antenna Pattern Measurements," IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting, July 23–28, 2023, Portland, Oregon
11. Tingyou Guo, Yu Huang, Yuchen Gu, Alan Bettermann, Daniel W. van der Weide, "Mechanically Tunable Dual-Port X-band Helical Antenna," IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting, July 23–28, 2023, Portland, Oregon
12. T. Guo, Y. Huang, Y. Gu, A. Bettermann and D. W. van der Weide, "Mechanically Reconfigurable Helix in a Feedback Oscillator," 2023 IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting (USNC-URSI), Portland, OR, USA, 2023, pp. 399-400
13. Yu Huang, Tingyou Guo, Yuchen Gu, Alan Bettermann, Daniel van der Weide, "Free-Running X-Band Electric Field Mapping with Acoustically Modulated Scattering," IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting, July 23–28, 2023, Portland, Oregon
14. A Chaudhary, DJ Prakash, SA Scott, D van der Weide, MG Lagally, and F Cavallo, "Electroplated and Self-Assembled Helical Slow-Wave Structures obtained by Wet and Dry

Release Methods," 2022 15th UK-Europe-China Workshop on Millimetre-Waves and Terahertz Technologies (UCMMT).

15. DJ Prakash, J Vijayamohanan, G Heilman, A Chaudhary, MG Lagally, D van der Weide, C Christodoulou, and F Cavallo, "Characterization of Self-Assembled Helical Slow-Wave Structures for Millimeter-Wave Traveling-Wave Tube Amplifiers," 2022 15th UK-Europe-China Workshop on Millimetre-Waves and Terahertz Technologies (UCMMT).
16. Y. Gu, M. Fayyad and D. van der Weide, "Balanced Near-Field Applicator for Controlled Microwave Tissue Exposure," 2022 IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting (AP-S/URSI), Denver, CO, USA, 2022, pp. 1324-1325
17. S. Hajitabarmarznaki, M. R. Naeini and D. W. van der Weide, "Evaluation of Self-Assembled (Sub)Millimeter-Wave Helical Antennas," 2022 IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting (AP-S/URSI), Denver, CO, USA, 2022, pp. 539-540
18. D. J. Prakash, M. Martinez Argudo, S. Hajitabarmarznaki, Daniel W. van der Weide, and Francesca Cavallo, "Design and Fabrication of Devices for Characterization of Cold Parameters in Self Assembled Helices," 23rd IEEE International Vacuum Electronics Conference (IVEC), Monterey (CA), April 25-29, 2022.
19. D. J. Prakash, M. Martinez Argudo, D.W. van der Weide, and F. Cavallo, "Design and Fabrication of Self-Assembled Metal Helices for Millimeter-through-THz Traveling Wave Tube Amplifiers," 14th UK, Europe, China Millimeter Waves and Terahertz Technology Workshop, 13-15 September 2021, Virtual Meeting.
20. M. Martinez Argudo, D. J. Prakash, F. Cavallo, and D.W. van der Weide, "Modeling of Self-Winding Helices for Sub-Millimeter Traveling Wave Tube Amplifiers," 14th UK, Europe, China Millimeter Waves and Terahertz Technology Workshop, 13-15 September 2021, Virtual Meeting.
21. M. Martinez Argudo, D. J. Prakash, D. van der Weide, and F. Cavallo, "Parametric Modeling of Self-Winding Helices for Sub-Millimeter Traveling Wave Tube Amplifiers," 63rd Electronic Materials Conference, Virtual Meeting, June 23-25, 2021.
22. M. R. Naeini and D. van der Weide, "3D-printed High-Directivity H-plane Horn Antenna with High Front-to-Back Ratio Using Soft and Hard Walls," IEEE Radio and Wireless Symposium (RWS), Virtual Conference, pp. 45-47, 2021.
23. Venkateswaran M, Kurpad K, Brown JE, Fain S, van der Weide D, "Wireless Power Harvesting During MRI." Annual Int Conf IEEE Eng Med Biol Soc. 2020 July, 1469-1472. doi: 10.1109/EMBC44109.2020.9175648. PMID: 33018268.
24. S. H. Dibaji, D. J. Prakash, M. M. Dwyer, S. A. Scott, D. W. van der Weide, M. G. Lagally, and F. Cavallo, "Self-winding Helices as Slow-wave Structures for THz Frequencies," 62nd Electronic Materials Conference, Ohio State University, Columbus (OH), June 24-26, 2020.
25. M. Ranjbar Naeini, Yuchen Gu, and D. van der Weide, "High-Performance Probe for Near-field Antenna Measurement," *2020 IEEE MTT-S International Microwave Symposium (IMS)*, Los Angeles, CA, USA, 2020.
26. A. M. Day, M. M. Dwyer, M. Martinez, D. W. van der Weide, "Broadband 300 GHz Chipless RFID System," *2020 IEEE MTT-S International Microwave Symposium (IMS)*, Los Angeles, CA, USA, 2020.

27. M. Ranjbar Naeini and D. van der Weide, “3-D Printed Frequency-Scanning Antenna with Suppressed Open-Stopband,” *2020 IEEE Radio and Wireless Symposium (RWS)*, San Antonio, TX, USA, 2020.
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142. D.W. van der Weide and P. Neuzil, "The nanoscilloscope: Combined topography and AC field probing with a micromachined tip," at 40th International Conference on Electron, Ion, Photon Beam Technology and Nanofabrication, Atlanta GA, 1996.

143. D.W. van der Weide and F. Keilmann, "Picosecond dual-source interferometer extending Fourier-transform spectrometer to microwave regime," at MTT-S International Microwave Symposium, IEEE, San Francisco CA, 1996.

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151. D.W. van der Weide, J. S. Bostak, B. A. Auld, and D. M. Bloom, "All-electronic subpicosecond pulses for terahertz signal generation and detection," at Seventeenth International Conference on Infrared and Millimeter Waves, SPIE, Pasadena CA, 1992.

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SELECTED SEMINARS, REVIEWS, AND WORKSHOPS

D.W. van der Weide, "Multidimensional modulation formats for covcom," in UW–Madison Cyber Research Forum with U.S. Cyber Command, Addressing Key Issues in Digital Defense, Nov 21, 2024.

D.W. van der Weide, "Entrepreneurial journey," in UW–Madison Morgridge Entrepreneurial Bootcamp, June 5, 2024.

D.W. van der Weide, "Outlook for detecting explosive and biological hazards with terahertz systems," in GTI Laboratory Journal Europe, 2006.

D.W. van der Weide, "Molecular-scale bioelectronic interfaces: How will microelectronics and molecular-scale biology converge?" Presentation at University of Rochester, Rochester NY, April 7, 2006.

D.W. van der Weide, "Stand-off detection with pulsed electronic THz systems," Joint Terahertz Imaging Systems Technology Assessment Conference, Falls Church VA, Aug. 31, 2005.

D.W. van der Weide, "Making RFID Mainstream," Wisconsin Technology Network, September 2005.

D.W. van der Weide, S. Ramachandran, and P. Gustafson, "Microwave measurement of single alpha-hemolysin activity," Biophysical Society Annual Meeting, San Antonio TX, 2003.

K. Taylor and D.W. van der Weide, "Microwave sensing of protein conformation and binding," Biophysical Society Annual Meeting, San Antonio TX, 2003.

D.W. van der Weide, "Solid State Quantum Computing using Nanostructured Logic Gates: Clocking and Probing with Microwaves," Invited Quantum Information Sciences Seminar, University of Illinois, Urbana-Champaign, October 9, 2002.

D.W. van der Weide, "Short pulse generation and measurement approaches for spectroscopy and (bio)sensing," Invited seminar, Agilent Laboratories, Palo Alto, CA, May 2002.

D.W. van der Weide, "Near field probing of biomolecules," Invited seminar, Agilent Technologies, Santa Rosa CA, May 2002.

D.W. van der Weide, "Short pulse generation and measurement approaches for spectroscopy and (bio)sensing," Invited seminar, Lawrence-Livermore National Laboratory, January 7, 2002.

D.W. van der Weide, "Terahertz Interactions with Molecules, both Real and Artificial," Physical Chemistry Seminar, University of Wisconsin-Madison, October 3, 2000.

SELECTED PATENTS

(use (Dan*) inventor:(van der Weide,) - Google Patents for a more complete list >80 total)

	PAT. NO.	Title
17	7,768,458	Systems, methods and devices for improved imaging
16	7,725,151	Apparatus and method for near-field imaging of tissue
15	7,691,298	Plastic cantilevers for force microscopy
14	7,467,015	Segmented catheter for tissue ablation
13	7,368,305	High aspect ratio micromechanical probe tips and methods of fabrication
12	7,345,610	High speed digital-to-analog converter
11	7,244,254	Air-core microwave ablation antennas
10	7,183,055	Direct radio-frequency detection of nucleotide hybridization at microelectrodes
9	7,179,587	Method and apparatus for high frequency interfacing to biochemical membranes
8	7,146,282	Mechanical force detection of magnetic fields using heterodyne demodulation
7	7,135,917	Left-handed nonlinear transmission line media
6	6,845,655	Heterodyne feedback system for scanning force microscopy and the like
5	6,801,029	Microwave dielectric spectroscopy method and apparatus
4	6,649,402	Microfabricated microbial growth assay method and apparatus
3	6,597,010	Solid-state quantum dot devices and quantum computing using nanostructured logic gates
2	5,936,237	Combined topography and electromagnetic field scanning probe microscope
1	5,748,309	Coherent periodically pulsed radiation spectrometer