BIOGRAPHICAL SKETCH

NAME	POSITION TITLE
Thomas Weller	Professor

EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE	YEAR(s)	FIELD OF STUDY
University of Michigan, Ann Arbor	B.S.(Summa cum laude)	1988	Electrical Engineering
University of Michigan, Ann Arbor	M.S.	1991	Electrical Engineering
University of Michigan, Ann Arbor	Ph. D.	1995	Electrical Engineering

Experience

- 2018-present – Professor and School Head, Electrical Engineering and Computer Science, College of Engineering, Oregon State University
- 2012-2018 Chair of Electrical Engineering, College of Engineering, University of South Florida, Tampa.
- 05/08 to 11/11 – Associate Dean for Research, College of Engineering, University of South Florida. Implemented a non-tenure earning (research) faculty track, annual college research symposium, annual faculty research award, young faculty CAREER program, interdisciplinary scholarship seed-funding program, Eminent Scholars Lecture Series, and College of Engineering Research Council.
- 08/06 to 08/18 – Professor, Electrical Engineering Department, University of South Florida and Director of the Center for Wireless and Microwave Information Systems (the WAMI Center). Directed a research group studying new antenna technologies, tunable microwave electronics and microwave/mm-wave sensors. Co-developed the NSF- and Hewlett Packard-sponsored Wireless and Microwave Instructional Laboratory. Taught undergraduate and graduate courses in the areas of electromagnetics and wireless/microwave circuit and system design. Successful fundraising to support Center activities including graduate student fellowships, major equipment purchases, undergraduate student project support.
- 05/01 to 2006 – Associate Professor, Electrical Engineering Department, University of South Florida.
- 4/01 to present – Co-founder and Technical Consultant to Modelithics, Inc., a company specializing in RF/microwave characterization and modeling.
- 08/95 to 05/01 – Assistant Professor, Electrical Engineering Department, University of South Florida.
- 03/97 to 04/98 – Technical consultant to Lockheed Martin Microwave, Rancho Cordova, CA. Provided consultation on the design and simulation of microwave (1-10 GHz) passive components.
- 09/90 to 05/95 – Graduate Student Research Assistant, University of Michigan. Performed research in the fields of microwave/mm-wave micromachining and numerical electromagnetic simulation.
- 07/88 to 08/90 – Member of Technical Staff – Systems Engineer, Space and Communications Group, Hughes Aircraft Company, Los Angeles, CA. Performed communications subsystem engineering tasks and contributed to several commercial satellite proposal efforts. Participated in internal research and development projects to study the performance of satellite communications links for high-definition television and developed a rack-mounted satellite link simulator.
- 10/88 to 08/89 – Software Systems Engineer, Edge Technology, Pleasanton, CA. Developed software focusing on commercial robotics applications.

- 05/86 to 05/88 – Research Engineering Asst., Environmental Research Institute of Michigan. Performed statistical data analysis and developed application-specific software to analyze satellite remote sensing data.

Expertise

Tunable and reconfigurable microwave circuits, microwave/mm-wave sensors, passive circuits and interconnects, planar and 3D electrically-small antennas, equivalent circuit modeling, micromachining/MEMS, hybrid and MMIC packaging, numerical electromagnetic modeling, digital additive manufacturing for RF/microwave/mm-wave applications.

Awards and Distinctions

- Fellow, IEEE (2018)
- Distinguished Service Award, Wireless & Microwave Technology Conference Executive Committee (2017)
- Courtesy Professor, USF Institute for Advanced Discovery & Innovation (2017 – 2018)
- Fellow, National Academy of Inventors (2016)
- William R. Jones Outstanding Mentor Award, Florida Education Fund (2010)
- USF Diversity Honor Roll (2010)
- USF Academy of Inventors, Charter Member (2009 – 2018)
- IEEE MTT Society Outstanding Young Engineer (2005)
- University of South Florida President's Award for Faculty Excellence (2003)
- IBM Faculty Partnership Award (2000, 2001)
- National Science Foundation CAREER Award (1999)
- IEEE MTT Society Microwave Prize for Best Technical Paper (1996) - For significant contributions to the field of endeavor in the Microwave Theory and Techniques Society, for the paper entitled *Terahertz-Bandwidth Characteristics of Coplanar Transmission Lines on Low Permittivity Substrates*
- *MTT-S International Microwave Symposium*, Student Paper Competition Award (1995)
- NASA Graduate Fellowship (1994-1995)
- University of Michigan Regents Scholarship
- James B. Angell Scholar (University of Michigan)
- Student Awards
  1. *IEEE Microwave Theory and Techniques Society Graduate Student Fellowship* (Student: Arya Menon, 2019)
  2. *USF Outstanding Teaching Assistant Award*, *STEM* (Student: Arya Menon, 2018)
  3. *IEEE Microwave Theory and Techniques Society Graduate Student Fellowship* (Student: Mohamed Abdin, 2018)
  4. *Wireless and Microwave Technology Conference*, Student Paper Competition – First Prize (Student: D. Hawatmeh, 2017)
  5. *USF College of Engineering Research Day Poster Competition Prize* (Student: Denise Lugo, 2016)
  6. *USF College of Engineering Research Day Poster Competition Prize* (Student: Michael Grady, 2016)
  7. *Radio and Wireless Week*, Student Paper Competition Finalist (Student: Ramiro Ramirez, 2017).
  8. *Wireless and Microwave Technology Conference*, Student Research Poster Competition – First Prize (Student: M. Grady, 2016)
  9. *USF College of Engineering Research Day Poster Competition Prize* (Student: Eduardo Rojas, 2015)
  10. *USF College of Engineering Research Day Poster Competition Prize* (Student: Maria Cordoba, 2015)

11. *USF College of Engineering Research Day Poster Competition Prize – Runner Up* (Student: Derar Hawatmeh, 2015)
12. *Best Student Poster Award, 2015 International Microelectronics and Packaging Society Symposium* (Student: Eduardo Rojas)
13. *Best of Track and Best of Session Paper Award, 2015 International Microelectronics and Packaging Society Symposium* (Student: Juan Castro)
14. *IEEE Microwave Theory and Techniques Society Graduate Student Fellowship* (Student: Maria Cordoba, 2015)
15. *2014 ARFTG Roger Pollard Memorial Student Fellowship in Microwave Measurement* (Student: Maria Cordoba, 2014)
16. *USF College of Engineering Research Day Poster Competition Prize* (Student: Maria Cordoba, 2014)
17. *USF College of Engineering Research Day Poster Competition Prize* (Student: Michael Grady, 2014)
18. *Outstanding Student Poster Award, 2014 International Microelectronics and Packaging Society Symposium* (Student: Maria Cordoba, 2014)
19. *Outstanding Student Poster Award, 2014 International Microelectronics and Packaging Society Symposium* (Student: Jon O'Brien, 2014)
20. *IEEE Microwave Theory and Techniques Society Graduate Student Fellowship* (Student: Michael Grady, 2014)
21. *2014 IEEE AP-S RFID Design Contest* – Semi-Finalist (Eduardo Rojas, Ramiro Ramirez, Sean Murphy and William Mitchell, 2013)
22. *Wireless and Microwave Technology Conference*, Student Paper Competition – First Prize (Student: I. Nassar, 2013)
23. *Wireless and Microwave Technology Conference*, Student Research Presentation – First Prize (Student: M. Cordoba, 2013)
24. *IEEE MTT-S Graduate Fellowship* (Student: Ibrahim Nassar, Spring 2013)
25. *IEEE MTT-S Undergraduate/Pre-graduate Scholarship* (Student: Bryce Hotalen, Spring 2013)
26. *USF Electrical Engineering Department Capstone Poster Competition – First Place* (Students: Federico Diamante, Robert Donatto, Elisha Stevenson, Fall 2012)
27. *Louis Stokes Alliance for Minority Participation (LSAMP) Conference, 1st Place in Engineering Poster Competition* (Students: Federico Diamante and Robert Donatto, 2012)
28. *USF College of Engineering Research Day Poster Competition Prize* (Student: David Cure, 2012)
29. *USF College of Engineering Research Day Poster Competition Prize – Honorable Mention* (Student: Timothy Palomo, 2012)
30. *USF College of Engineering Summer REU Poster Competition* – Second Place (Students: Robert Donatto and Federico Diamante)
31. *Wireless and Microwave Technology Conference*, Student Paper Competition – First Prize (Student: T. Price, 2012)
32. *International Antennas and Propagation Symposium Student Paper Competition – Honorable Mention* (Student: David Cure, 2012)
33. *IMAPS Advanced Technology Workshop on 3D and Conformable Printed Electronic Packaging Materials, Manufacturing and Applications – Best Paper Award* (Student: Ibrahim Nassar, 2012)
34. *USF Electrical Engineering Department Capstone Poster Competition – Third Place* (Student: Yohannes Samuel, Spring 2012)
35. Automatic Radio Frequency Techniques Group Student Fellowship Award – Silver (Student: Evelyn Benabe, 2011)
36. *USF College of Engineering Research Day Poster Competition Prize* (Student: Maria Cordoba, 2011)
37. *HENAAC Conference*, Student Poster Competition – Second Prize (Student: David Cure, 2011)

38. *International Antennas and Propagation Symposium Student Paper Competition – Honorable Mention* (Student: David Cure, 2011)
39. *USF College of Engineering Research Day Poster Competition Prize* (Student: David Cure, 2010)
40. *IEEE Microwave Theory and Techniques Society Graduate Student Fellowship* (Student: Evelyn Benabe, 2010)
41. *IEEE Microwave Theory and Techniques Society Graduate Student Fellowship* (Student: Quenton Bonds, 2009)
42. *NASA GSRP Fellowship* (Student: David Cure, 2010 and 2011)
43. *NASA GSRP Fellowship* (Student: Quenton Bonds, 2009)
44. *HENAAC Conference*, Student Poster Competition – Third Prize (Student: David Cure, 2010)
45. *Wireless and Microwave Technology Conference*, Student Poster Competition – First Prize (Student: Q. Bonds, 2010)
46. *Wireless and Microwave Technology Conference*, Student Poster Competition – First Prize (Student: T. Price, 2009)
47. *Wireless and Microwave Technology Conference*, Paper Competition – First Prize (Student: S. Melais, 2009)
48. *USF College of Engineering Research Day Poster Competition Prize* (Student: Quenton Bonds, 2008)
49. *Wireless and Microwave Technology Conference*, Student Poster Competition – First Prize (Student: S. Balachandran, 2006)
50. *Wireless and Microwave Technology Conference*, Student Paper Competition – First Prize (Student: S. Natarajan, 2006)
51. *Commercialization of Micro-Systems (COMS) 2006 Conference*, Student Poster Competition- Third Prize (Student: S. Natarajan, 2006)
52. 2006 University of South Florida Undergraduate Research Symposium, First Place in Engineering Research (Student: Suzette Presas)
53. 2006 IEEE Sarnoff Symposium Student Paper Competition – First Place (Student: Erick Maxwell, 2006)
54. Skin Cancer Award, National Skin Cancer Foundation (Student: Tom Ricard, 2006)
55. University of South Florida Graduate School Outstanding Dissertation Award (Student: Balaji Lakshminarayanan, 2005)
56. *Emerge Conference*, Graduate Technology Category – First Prize (Student: Q. Bonds, 2005)
57. *5th International Workshop of Biosignal Interpretation*, Student Paper Competition – Finalist Nominee (Student: T. Ricard, 2005)
58. *MTT-S International Microwave Symposium*, Student Paper Competition Award – Semi-Finalist (Student: B. Lakshminanarayanan, 2005)
59. *Wireless and Microwave Technology Conference*, Student Poster Competition – First Prize (Student: S. Natarajan, 2005)
60. University of South Florida Master's Thesis Prize (Student: Steve Eason, 2001)

Patents and Applications (Total of 37 issued U.S. patents)

1. Notch Filter Circuit Apparatus; application filed by Raytheon Corporation; U.S. Patent No.: 6,657,518. Patent awarded January 2004.
2. System and Method for Planar Transmission Line Transition; application filed by Raytheon Corporation; U.S. Patent No.: 6,750,736. Patent awarded July 2004.
3. Global Equivalent Circuit Modeling System for Substrate Mounted Circuit Components Incorporating Substrate Dependent Characteristics; U.S. Patent No.: 7,003,744 (awarded February 21, 2006) and U.S. Patent No.: 7,269,810 (awarded September 2007).
4. Rectifying Antenna and Method of Manufacture, U.S. Patent No.: 7,091,918. Patent awarded August 2006.

5. High Frequency Feed Structure Antenna Apparatus and Method of Use," U.S. Patent No.: 7,486,236. Patent awarded February 2009.
6. Dual-Polarized Feed Antenna Apparatus and Method of Use; U.S. Patent No.: 7,362,273 awarded March 2008, and U.S. Patent No.: 7,619,570 awarded December 2009.
7. Microelectromechanical Slow-Wave Phase Shifter Device and Method, U.S. Patent No.: 7,259,641 awarded August 2007 and U.S. Patent No.: 7,676,903 awarded March 2010.
8. A Tunable Micro Electromechanical Inductor, U.S. Patent No.: 7,274,278 and 7,741,936. Patent awarded September 2007.
9. Microwireless Integrated Environmental Sensor and Transmitter System; U.S. Patent No.: 7,386,289. Patent awarded June 2008.
10. Nanometer electromechanical switch and fabrication process; U.S. Patent No.: 7,463,123 and 7,718,461. Patent awarded December 2008.
11. Total Fluid Conductivity Sensor System and Method; U.S. Patent No.: 7,479,864. Patent awarded January 2009.
12. High-frequency feed structure antenna apparatus and method of use; U.S. Patent No.: 7,486,236. Patent awarded February 2009.
13. Wireless Micro-Electro-Opto-Fluidic-Mechanical Foldable Flex System, U.S. Patent No.: 7,656,673. Patent awarded January 2010.
14. A Smart Zero-Order Energy Antenna and Repeater, U.S. Patent No.: 7,720,437. Patent awarded April 2010.
15. System and Method for a Single Stage Tunable Ultra-Wideband Pulse Generator, U.S. Patent No.: 7,869,526. Patent awarded January 11, 2011.
16. Dual-Feed Series Microstrip Patch Array, U.S. Patent No.: 8,063,832. Patent awarded November 22, 2011.
17. RF Microwave Circuit and Pulse Shaping Method, U.S. Patent Nos.: 8,134,394 and 8,248,125. Patent awarded March 13, 2012 and August 21, 2012.
18. Dual-band Microwave Radiometer for Remote Underground Thermal Sensing, U.S. Patent No. 8,485,722. Patent awarded July 16, 2013.
19. Electronically-Tunable Flexible Low Profile Microwave Antenna, U.S. Patent No. 8,872,725. Patent awarded October 28, 2014.
20. Periodic Spiral Antennas, U.S. Patent No. 8,922,452. Patent awarded December 30, 2014.
21. Compact Repeaters for Wireless Sensing, Patent Application, U.S. Patent No. 9,093,741. Patent awarded July 10, 2015.
22. Non-Dispersive Microwave Phase Shifters, U.S. Patent No. 9,130,533. Patent awarded September 30, 2015.
23. Mechanically-Reconfigurable Antennas, U.S. Patent No. 9,263,803. Patent awarded February 16, 2016.
24. Magneto-Dielectric Polymer Nanocomposites and Method of Making, U.S. Patent No. 9,384,877. Patent awarded July 5, 2016.
25. Compact Dual-Channel Transceivers, U.S. Patent Nos. 9,485,037 and 9,923,650. Patent awarded November 1, 2016 and March 20, 2018.
26. Flexible Antenna and Method of Manufacture, U.S. Patent No. 9,531,077. Patent awarded December 27, 2016.
27. Flexible Antenna and Method of Manufacture, U.S. Patent No. 9,780,434. Patent awarded October 3, 2017.
28. Magneto-Dielectric Polymer Nanocomposites and Method of Making, U.S. Patent No. 9,666,342. Patent awarded May 30, 2017.
29. RFID Tags for On- and Off-Metal Applications, U.S. Patent No. 9,836,685. Patent awarded December 5, 2017.
30. Three Dimensional RFID Tags, U.S. Patent No. 10,038,248. Patent awarded July 31, 2018.

31. Mechanically-Reconfigurable Dual-Band Slot Antennas, U.S. Patent No. 10,090,597. Patent awarded October 2, 2018

Courses Developed and Taught

1. Electromagnetics (undergraduate)
2. Senior Capstone Design (undergraduate)
3. Wireless Circuits and Systems Design Laboratory (undergraduate/graduate)
4. Wireless Sensor System Design (undergraduate)
5. Professional Issues and Engineering Design (undergraduate)
6. RF/MW Circuits I – Passive Circuits (undergraduate/graduate)
7. RF/MW Circuits II – Active Circuits (undergraduate/graduate)
8. Numerical Methods in Electromagnetism (graduate)
9. Antenna Theory and Advanced Antenna Theory (graduate)
10. Antennas and Wireless System Applications (graduate)
11. Materials and Sensors Characterization Laboratory (graduate)
12. Analog Radio Frequency Integrated Circuits (graduate)
13. Advanced Analog Radio Frequency Integrated Circuits (graduate)
14. Wireless Sensor Networks (undergraduate)

Graduate Students Advised

Ph.D. Students

1. Denise Lugo, Ph.D. 2018, Multilayer Dielectric Rod Waveguide and Dielectric Rod Antenna with Enhanced Performance. Currently at Qorvo (2018).
2. Ramiro Ramirez, Ph.D. 2018, Additively Manufactured On-Package Multipolar Antenna Systems for Harsh Communication Channels. Currently at Qorvo (2018).
3. Derar Hawatmeh, Ph.D. 2018, Three Dimensional Direct Print Additively Manufactured High-Q Microwave Filters and Embedded Antennas. Currently at Qorvo (2018).
4. Michael Grady, Ph.D. 2017, A High Accuracy Microwave Radiometric Thermometer to Measure Internal Body Temperature. Currently at Georgia Tech Research Institute (2017).
5. David Zaiden, Ph.D. 2017, Compact and Wideband MMIC Phase Shifters Using Tunable Active Inductor Loaded All-Pass Networks. Currently at Harris Corporation (2017).
6. Jonathon O'Brien, Ph.D. 2017, Design and Modeling of a High-Power Periodic Spiral Antenna with an Integrated Rejection Band Filter. Currently at Draper Laboratory (2017).
7. Eduardo Rojas, Ph.D. 2017, *High Performance Digitally Manufactured Microwave and Millimeter-Wave Circuits and Antennas*. Currently at Embry-Riddle Aeronautical University (2017).
8. Maria Cordoba, Ph.D. 2015, *Near-field Microwave Microscopy for Surface and Subsurface Characterization of Materials*. Currently at Qorvo (2015).
9. Ibrahim Nassir, Ph.D. 2013, *Long-Range, Passive Wireless Monitoring Using Energy-Efficient, Electrically-Small Sensor Nodes & Harmonic Radar Interrogator*. Currently at Kymeta (2017).
10. David Cure, Ph.D. 2012, *Reconfigurable Low Profile Antennas Using Tunable High Impedance Surfaces*. Currently at Harris (2015).
11. Bojana Zivanovic, Ph.D. 2012, Dissertation: *Series-Fed Aperture-Coupled Antennas and Arrays*. Currently at Keyssa (2013).
12. Tony Price, Ph.D. 2012, Dissertation: *Nonlinear Properties of Nanoscale Barium Strontium Titanate Microwave Varactors*. Currently at Qorvo (2015).
13. Quenton Bonds, Ph.D. 2010, Dissertation: *A Microwave Radiometer for Close Proximity Core Body Temperature Monitoring: Design, Development, and Experimentation*. Currently at NASA Goddard Space Flight Center (2010).
14. Sergio Melais, Ph.D. 2009, Dissertation: *A Quasi Yagi Antenna with End Fire Radiation over a Metal Ground*. Currently at Ansys (2016).

15. Srinath Balachandran, Ph.D. 2009, Dissertation: *Nanocrystalline Diamond for RF MEMS Applications.* Currently at IMT MEMS (2010).
16. Thomas Ricard, Ph.D. 2008, Dissertation: *Active and Passive Radiometry for Transcutaneous Measurements of Temperature and Oxygen Saturation*.
17. Erick Maxwell, Ph.D. 2007, Dissertation: *Ultra-Wideband Electronics, Design Methods, Algorithms, and Systems for Dielectric Spectroscopy of Isolated B16 Tumor Cells in Liquid Medium.* Currently at Georgia Tech Research Institute (2009).
18. Saravana Natarajan, Ph.D. 2007, Dissertation: *Three Dimensional Micro Coaxial Transmission Line based Circuits and Applications.* Currently at Broadcom (2019).
19. Thomas Ketterl, Ph.D. 2006, Dissertation: *Micro- and Nano-Scale Switches and Tuning Elements for Microwave Applications.* Currently at USF (Research Professor, 2013).
20. James Culver, Ph.D. 2005, Dissertation: *Electromagnetic Modeling of Lossy, Multi-Layer Coplanar Waveguides Using Generalized Transverse Resonance*. Currently at Raytheon (2019).
21. Balaji Lakshminarayanan, Ph.D. 2005, Dissertation: *RF MEMS Phase Shifters*. Currently at Skyworks (2009). Currently at Skyworks (2012).
22. Mark Weatherspoon (co-major Professor), Ph.D. 2002, Dissertation: *Microwave Characterization of One-Port Noise Sources*. Currently at Florida State University/FAMU (2009).

Master's Students

1. Seth York, MSEE 2018. Thesis: *Microwave Characterization of Printable Dielectric Inks Using Additive Manufacturing Methods.*
2. Anthony Ross, MSEE 2017. Thesis: *Laser Machining and Near Field Microwave Microscopy of Silver Inks for 3D Printable RF Devices*.
3. Joshua Stephenson, MSEE 2017. Thesis: *A study of rf/microwave components using fused deposition modeling and micro-dispensing*. Currently at Harris (2017).
4. Yaniel Vega, MSEE 2015. Thesis: *A Study of 4-Bit RF Digital Phase Shifters Fabricated With Additive Manufacturing.* Currently at Lockheed Martin (2015).
5. John Stratton, MSEE 2015. Thesis: *A Study of Direct Digital Manufactured RF/Microwave Packaging*.
6. Nicholas Arnal, MSEE 2015, Thesis: *A Study on 2.45 GHz Bandpass Filters Fabricated With Additive Manufacturing*. Currently at Lockheed Martin (2015).
7. Jonathon O'Brien, MSEE 2013, Thesis: *Medium Power, Compact Periodic Spiral Antenna*.
8. Scott Skidmore, MSEE 2012, Thesis: *Analysis and Optimization of Broadband Measurement Cells for the Characterization of Functional Magnetic Nanocomposite Polymer Films for Tunable RF Device Applications*.
9. Rebeka Davidova, MSEE 2011, Thesis: *Ultra-Low Power Electronics for Autonomous Micro-Sensor Applications*.
10. Luis Ledezma, MSEE 2011, Thesis: *A Study on the Miniaturization of Microstrip Square Open Loop Resonators*.
11. Ibrahim Nassar, MSEE 2010, Thesis: *Small Antenna Design for 2.4 GHz Applications*.
12. Jagan Rajagopalan, MSEE 2010, Project: *System Analysis and Design of RF Hardware for a Wireless Sensor Network using Passive Nodes*.
13. James Cooper, MSEE 2010, Thesis: *A Multi-Wilkinson Power Divider Based Complex Reflection Coefficient Detector*.
14. Rakesh Shirodkar, MSEE 2010, Thesis: *An Investigation on Radiometric Measurements of Subterranean Heat Sources*.
15. James McKnight, MSEE 2009, Thesis: *A Cavity-backed Coplanar Waveguide Slot Antenna Array*. Currently at Northrop Grumman (2009).
16. Suzette Presas, MSEE 2008, Thesis: *Microwave Frequency Doubler Integrated with Miniaturized Planar Antennas*. Currently a Ph.D. student at the University of Wisconsin (2008-).
17. Aswin Jayaraman, MSEE 2007, Project: *Design of a Voltage Controlled Lumped Element Tunable Bandpass Filter*

18. Venkat Gurumurthy, MSEE 2007, Thesis: *Barium Strontium Titanate Films for Tunable Microwave and Acoustic Wave Applications*.
19. Sam Baylis, MSEE 2007, Thesis: *Tunable Patch Antenna Using Semiconductor and Nano-Scale Barium Strontium Titanate Varactors*. Currently at Trak Microwave (2009).
20. Diana Aristizabal, MSEE 2006, Electromagnetic Characterization of Miniature Antennas for Portable Devices. Currently at Trak Microwave (2009).
21. Leonard Guerra, MSEE 2006, Thesis: *IEEE 802.11b Wireless LAN Sensor System and Antenna Design*.
22. Quenton Bonds, MSEE 2006, Project: Ultra-Wideband Antenna Characterization for Wireless Sensor Networks.
23. David Zaiden, MSEE 2005, Project: Design of a 2.4 GHz Silicon-Germanium Fully-Differential Class AB Mixer.
24. Sergio Melais, MSEE 2005, Thesis: *Low Profile Baluns and Broadband Dipole Antennas*.
25. Marianna Raimondo, MSEE 2004, Project: *A Phase Locked Loop Synthesizer*
26. John Giannone, MSEE 2004, Project: *The Application of Genetic Algorithms to Microwave Model Extraction*.
27. Caroline Sequiera, MSEE 2004, Project: *Establishing the Accuracy of Impedance Measurements*.
28. Brian Trabert, MSEE 2004, Project: *Body Borne Mobile Personal Wireless Communication System for UHF Band*.
29. Srinath Balachandran, MSEE 2004, Thesis: *MEMS Tunable Planar Inductors for Millimeter Wave and Microwave Applications.*
30. Eid Alsabbagh, MSEE 2004, Thesis: *Thin Film Micro-bolometers for Microwave Power Detection*.
31. John Capwell, MSEE 2003, Thesis: *Planar Spiral Inductor Modeling and Stack Parasitic Modeling.*
32. Hari Kannan, MSEE 2003, Thesis: *Design and Fabrication of Multi-Dimensional RF MEMS Variable Capacitors*
33. Lester Lopez, MSEE 2003, Thesis: *Low Loss, Cross-Coupled Microwave Filters on Low Resistivity Silicon Substrates*.
34. Jason Naylor, MSEE 2003, Thesis: *Microwave and Millimeter-Wave Planar Circuit Transitions*.
35. Catherine Boosales, MSEE 2003, Thesis: *Millimeter Wave Antipodal Tapered Slot Antenna Design and Miniaturization.*
36. Khaled Obeidat, MSEE 2003, Thesis: *Design and Characterization of Multi-Layer Coplanar Waveguide Baluns and Inductors*.
37. Saravana Natarajan, MSEE 2002, Thesis: *Microwave Characterization of Pyroelectric Capacitors and Toroidal Inductors*.
38. Lavanya Emmadi, MSEE 2002, Thesis: *Microwave Equivalent Circuit Models for Surface Mount Varactor Diodes Including Substrate and Temperature Effects*.
39. Yisub Ahn, MSEE 2002, Project: *Microwave Capacitor Modeling for Antenna Applications*.
40. Steve Eason, MSEE 2001, Thesis: *Fractal Dipole Antennas for Use in Global Positioning System Applications.*
41. Kevin Thompson, MSEE 2001, Thesis: *Live Via Modeling*.
42. Thomas Ketterl, MSEE 2000, Thesis: *Fabrication and Characterization of Micromachined Microfluidic Channels and Tunable Microwave Inductors*.
43. Rajesh Baliram Singh, MSEE 2000, Thesis: *Coplanar Waveguide Components Using Capacitive Loading*.
44. Evelyn Benabe, MSEE 2000: Thesis: *Microwave Characterization and Modeling of Air Coil Inductors and Ceramic Capacitors*.
45. Balaji Lakshminarayanan, MSEE 1999, Thesis: *Development of Equivalent Circuit Models for Multi-Layer Surface Mount Capacitors*.
46. Michael Imparato, MSEE 1999, Thesis: *On the Accuracy of Calibration for On-Wafer Mm-Wave Measurement*.
47. Maximillian Scardelletti, MSEE 1999: Thesis: *Power Dividers and Printed Antennas Using Coplanar Transmission Lines*.

48. Nadia Babik, MSEE 1998, Thesis: *A Microwave Oscillator and Frequency Doubler Design Using Nonlinear CAD Techniques*.
49. Michael Yore, MSEE 1998, Thesis: *GaAs Chip Area Reduction Through the Implementation of Stacked Capacitors*.
50. Michael Oldenburg, MSEE 1997, Thesis: *Planar Multi-Level Transitions and Antennas Applied to Microwave Position Sensing*.

Current Graduate Students

Arya Menon (Ph.D.), Mohamed Abdin (Ph.D.), Gabriel Saffold (Ph.D.), Ismail Uluer (Ph.D.), Carlos Molina (Ph.D.), Omer Firat (Ph.D.).

Graduate Student Committee Service

Roger Tipton (Ph.D. 2020), Timothy Palomo (Ph.D. 2016), Abhishek Dey (Ph.D. 2016), Mohsen Ziaee (Ph.D. 2017), Ivan Rivera (Ph.D. 2014), Mian Wei (Ph.D. 2014), Amar Amouri (Ph.D. 2015), Ahmad Gheethan (Ph.D. 2014), Olawale Ajayi (Ph.D. 2014), Ahmad AlQasimi (Ph.D. 2012), Justin Boone (Ph.D. 2013), Cesar Morales (Ph.D. 2011), Ahmad Almutawa (MSEE 2011), Julio Dewdney (Ph.D. 2012), Mingke Xiong (MSEE 2009), Julio Costa (MSEE 2008), Hasari Celebi (Ph.D., 2008), Ranko Heindl (Ph.D., 2006), Shyam Aravamudhan (Ph.D. 2007), Abdur Rahman (Ph.D. 2007), Tevfik Yucek (Ph.D. 2007), Stefan Cular (Ph.D. 2006), Rahul Agarwal (Ph.D. 2006), Geralyn Burke (MSEE 2006), Mustafa Sahin (MSEE 2006), Krishnan Srinivasan (MSEE 2005), Sriram Akella (MSEE 2005), Nicholas Sapankevych (Ph.D. 2007), Sriraj Manavalan (MSEE 2005), Nigel Brown (MSEE 2005), Joshua Nicodemus (MSEE 2005), Sonoko Akamatsu (MSEE, 2005), Ismail Guvenc (Ph.D., 2006), Ravi Sankar (MSEE, 2004), Amol Chaudhari (MSCE, 2004), Charles Baylis (Ph.D., 2007); Dinesh Divakaran (Ph.D., 2005); Charles Baylis (MSEE, 2004), William Clausen (MSEE, 2003), Sriram Srinivasan (MSEE, 2003), Peter Kirby (MSEE, 2001), James Black (MSEE, 2001), Dan Benny Lassessen (MSEE/Project, 200), Shay Gross (MSEE, 2000), Charles Wells (MSEE, 2000), John D'Amico (Ph.D., 2000), John Obara (Ph.D.), Jose Carlavilla (MSEE, 1999), Alberto Rodriguez (MSEE, 1999), Oliver Grinbergs (MSEE, 1999), Anbuselvan Kuppusamy (MSEE, 1998), Alen Fejzuli (MSEE, 1997), Steven Lardizabal (Ph.D., 1997), Lee Kidd (MS Project, 1997), Eric Wolfe (MSEE, 1997), William Shuts (MSEE, 1996), Gregory Bonaguide (MSEE, 1996).

Undergraduate Senior Design Projects Advised

Edward Grimes, 1996, *A Packaged 6 GHz Amplifier/mixer with High Testability*; David Homol, 1996, *Microstrip 2.4 GHz Patch Antennas*; Pedro Torres, 1996, *Microstrip Coupled-line Bandpass Filters*; Michael Imparato, 1996, *Micromachined Inductively Coupled Bandpass Filter*; Max Scardelletti, 1997, *Coplanar Waveguide Phase Detector*; Tim Gittemeir, 1997, *A Tunable Microstrip Patch Antenna*; James Neumann, 1997, *A 5 GHz Cross-polarized Transceiver using Patch Antennas*; Andrew Smith, 1997, *A 2x2 Microstrip Patch Antenna Array at 6 GHz*; Michael Salazar, 1997, *A 2 GHz Digital Step Attenuator*; Nicholas Cafaro, 1998, *A 2.4 GHz Receiver Board*; Oliver Grinbergs, 1998, *A 1-2 GHz Frequency Multiplier*; Joseph Ollei, 1998, *A 2.45 GHz Transceiver Board*; Kris Skowronski, 1998, *Boonton Line Automation*; Wayne Bomstad, 1999, *Contrawound Toroidal Helical Antenna* (Honor's Thesis); Kevin Thompson, 1999, *Contrawound Toroidal Helical Antenna*; Peter Kirby, 1999, *Contrawound Toroidal Helical Antenna*; Robert Bennett, 1999, *1 GHz Mixer*; David Arft, 1999, *I/Q Modulator/Demodulator*; John Capwell, 1999, *2.45 GHz Microstrip Couplers*; Jason Lenoir, 1999, *2.45 GHz Oscillator*; Alexander Shepherd, 1999, *Microwave Modulator*; Kyle Wills, 1999, *2.45 GHz Transceiver Board* (Honor's Thesis); Robert Myer, 2000, *2.45 GHz Balanced Mixer* (Honor's Thesis); Kanix Bukkavesa, 2000, *2.45 GHz Low Noise Amplifier*; William Clausen, 2000, 2.*45 GHz High Power Amplifier*; Kendra James-Bickford, 2000, *2.45 GHz Antenna Matching Networks*; Charles Novak, 2000, *2.45 GHz High Directivity Microstrip Couplers*; Steven Tasi, 2000, *2.45 GHz Stripline Bandpass Filter*; John Wilson, 2000, *2.45 GHz Transmit/Receive Switch Network*; Catherine Boosales, 2001; Andrea Bruno, 2001; Patric Lockhart, 2001; Joshua Marlin, 2001; Ravi Varanasi, 2001; Perry Vincent, 2001; Ken O'Connor, 2001; Eid Alsabbagh, 2001; Clemente Toro, 2001; Leonard Guerra, 2002; Anand Mehta, 2002; Hugo Morales, 2002; Glen Heipp,

2002; Rob Harris, 2002; Chad Philips, 2004; Diana Aristizabal, 2004; Stephen Bates, 2004; Matthew Wilbanks, 2004; Michael Jourdain, 2004; Deron Hayslip, 2004; David Steiner, 2004; Jean Paul Ariaga, 2004; Sam Baylis, 2004; Richard Skrzyniarz, 2005; Stan Ivanov, 2005; Kevin Stichnot, 2005; Suzette Presas, 2006; Richard Daigler, 2006; Fritz Larco, 2006; Pierre Bontemps, 2006; G. Tu, 2006; Nestor Diaz, 2006; Dan Hunter, 2007; Edward Levy, 2007; Louis Torres, 2007; James Cooper, 2008; Joshua Robinson, 2008; Federico Diamante, 2012; Robert Donatto, 2012; Elisha Stevenson, 2012; Yohannes Samuel, 2012; Bryce Hotalen, 2013; Stephanie Kiley, 2013; Kyle Chapman, 2013; Anthony Ross, 2015; Joshua Stephenson, 2015; Kiran Shila, 2015; Nicole Nicholson, 2016; Charles Curtiss, 2017; Alejandro Robles, 2017; Vianeybert Toussaint, 2017; Diego Serrano Reinel, 2017; Mohammed Chehab, 2017; Frederick Ngoiya, 2017.

Research Experience for Undergraduates Projects Advised

Sam Baylis, 2004-2005; Richard Skrzyniarz, 2005; Albert Ng, 2005; David Klinowski, 2005-2006; Suzette Presas, 2005-2006; Ebenezer Odu, 2006-2007; James Cooper, 2006-2007; Melanie Sutherland, 2008; Wayne Melton, 2008-2009; Daniel Cruz, 2008-2011; Yohannes Samuel, 2009-2012; Bryce Hotalen, 2010 -; Robert Donatto, 2010 2012; Scott Muir, 2010; Stephanie Kiley, 2010-2013; Federico Diamante, 2012 -2013; Elisha Stevenson, 2012 – 2013; Sean Murphy, 2013; Jesse Moody, 2013; William Mitchell, 2013; Anthony Ross, 2014; Kiran Shilah, 2015; Carlos Molina, 2015; Timothy Proto, 2016; Alejandro Robles, 2016, Seth York, 2017.

Professional Activities and Service

- IEEE:
  - Fellow Evaluating Committee, Microwave Theory and Techniques Society (MTT) (2018-2021)
  - Awards Chair, Wireless and Microwave Technology Conference (2010 – present)
  - Organizing Committee – IMS Project Connect, International Microwave Symposium (2015 – present)
  - Microwave Theory and Techniques Society (MTT), Antennas and Propagation Society (AP)
  - Member, MTT Meetings and Symposia Committee (2015 - 2017)
  - Vice-Chair, 2014 International Microwave Symposium (Tampa, FL)
  - Co-chair 1999, General Chair 2000, 2001, 2002. Registration Chair 2003-2010, 2014-2017: Wireless and Microwave Technology Conference (WAMICON).
  - IEEE MTT Society Technical Program Committee on RF-MEMS (1999 – 2010); Vice Chair Committee on RF MEMS (2005); Chair 2006/2007/ Vice Chair (2012).
  - IEEE MTT Society Technical Coordinating Committee on RF-MEMS (2001 – 2012); Chair (2006/07/08)
  - Vice President of Technical Operations, IEEE Sensors Council (2002-2006)
  - Member of IEEE MWCL Reviewers Board (2004 – 2010)
  - Technical Program Committee Member, Radio and Wireless Symposium (2007-2017)
  - Reviewer for IEEE MTT Graduate Fellowship Awards (2006, 2007, 2008)
  - Technical Guest Editor, IEEE Microwave Magazine, June 2007 issue (Special Issue on RF-MEMS)
  - IEEE MTT Society Distinguished Lecturers Selection Committee (2004 – 2008)
  - IEEE Educational Activities Board Representative, IEEE Sensors Council (2001-2006)
  - Member of the IEEE Sensors Administrative Committee (now Sensors Council) (1998-2006)
  - IEEE Sensors Council Distinguished Lecturer Program, Chair (2005-2007)
  - Local Arrangements Chair, IEEE Sensors Conference 2002, Orlando FL
  - Co-Chair of the focused session on Microwave Sensors and Product Applications, 2000 IEEE International Microwave Symposium
  - Co-Organizer of the Educational Forum at the 2000 IEEE International Microwave Symposium
  - Chairman of the IEEE MTT/AP/ED Florida West Coast Chapter (1997-98)
  - Vice-chairman of the IEEE MTT/AP/ED Florida West Coast Chapter (1996, 1999)

- Steering Committee member for 1999 IEEE Antennas and Propagation Symposium (Workshop and Short Course Organizer)
- Session Chair at the 1999 and 2000 AP/URSI Symposium
- Session Co-Chair at the 1999, 2001, 2003, 2004 and 2006 International Microwave Symposium (IMS)
- Session Chair at the 1996 SoutheastCon

- Southeast Electrical and Computer Engineering Department Heads Association (SECEDHA) (Secretary – 2017, Vice President – 2018)
- University of South Florida:
  - Textbook Affordability Task Force (2017-2018)
  - USF World Workgroup (2012-2014)
  - USF Office of Research Conflict of Interest Review Committee (2012-2016)
  - USF Office of Research Patent Royalty Distribution Policy Evaluation Committee (2010)
  - USF Proposal Development Taskforce (2010)
  - USF Academy of Inventors, Executive Committee Member (2009/2010)
  - Task Force of Faculty Roles, Responsibilities and Rewards, University of South Florida (2008/2009)
  - Research Coordinator for the USF Summer Institute of the McNair's Scholars Program (1997)
  - Judge at 1997 Science Bowl Competition (USF St. Petersburg Campus)
- Oregon State University, College of Engineering
  - School Head, Electrical Engineering and Computer Science, 2018 - present
- University of South Florida, College of Engineering:
  - Associate Dean for Research, 2007 – 2011
- University of South Florida, Department of Electrical Engineering:
  - Department Chair, 2011 – 2018
  - Co-director/Director of the Center for Wireless and Microwave Information Systems, 2001 – 2018
  - Member of Tenure and Promotion Committee (2007 - 2008)
  - Chair of the Nanomaterials and Nanomanufacturing Research Center Steering Committee (2007 - 2009)
  - Chair of the Curriculum Committee, 2006 - 2008.
  - Chair of the Wireless/Electromagnetics Curriculum Sub-Committee, 2006 - 2008.
  - Member of the Scholarship Committee, 2005
  - Member of Faculty Search Committee (EE Dept.), 2004, 2005, 2006
  - Co-director of the NSF IGERT SKINS Program, 2003 – 2008
  - Member of Faculty Search Committee (multiple years)
  - Member of VLSI Design Committee, 2000.
  - Chairman, Design Committee, Electrical Engineering Department, 1999-2001
  - Electrical Engineering Department Library Liaison, 1999 – 2005.
  - Member of Undergraduate Recruiting Committee, 1997 – 2004.
  - Comprehensive Qualifying Examination for Microwave Circuits, each spring beginning in 1999.
  - Comprehensive Qualifying Examination for Antenna Design and Analysis, Fall 1996.
  - Member: Advisory Committee on Undergraduate Students, 1995-96.
  - Member: Committee on Undergraduate EE Curriculum, Electromagnetics, 1995 – 2008.
- Reviewer for IEEE Microwave Theory and Techniques Society, IEEE Antennas and Propagation Society, IEEE Components, Packaging and Manufacturing Technology Society, the Institute of Electrical Engineers (IEE), the American Geophysical Union, IEEE Press, International Journal of Microwave and Millimeter-Wave Computer-Aided Engineering, Journal of MEMS, Wiley Interscience and Oxford Press
- Invited panelist, National Science Foundation JAM 2012 – Institute For Broadening Participation – Corporate Partnerships to Broaden Participation

- Proposal Reviewer for the National Science Foundation and National Research Council
- Lecturer at 1997, 2005-2010 Great American Teach-In (local elementary, middle and high schools)

Seminars Attended on Teaching Enhancement

- Issues of Diversity in the Interactive Classroom
- Preparing Effective Overhead Transparencies
- Creating a Teaching Portfolio
- Teaching and Mentoring Graduate Students
- Active Learning: Creating Excitement in the Classroom
- Successful Beginnings: Handling the First Day of Class
- Teaching Excellence: The Views of Faculty and Students
- Style and Substance: Improving Your Lectures
- Improving Student's Study Skills: How Instructors Can Help
- Motivating Students to Learn
- Cooperative Learning: Students Working Together

Curriculum Development Efforts

- *Wireless Circuits and Systems Design Laboratory* (with L. Dunleavy, P. Flikkema, H. Gordon and R. Henning). The objective of this project was to develop an exciting, hands-on undergraduate laboratory course focusing on combined circuits and systems aspects of modern wireless applications. This goal has been accomplished with great success, with the realization of a state of the art teaching laboratory and a course centered on industry-standard design and simulation. The funding for the project was received from the National Science Foundation, the Hewlett Packard Educational Grants Foundation, and Honeywell. This funding enabled the development of the Wireless and Microwave Instructional (WAMI) laboratory, which is equipped with an array of CAD/CAE software packages and several pieces of microwave instrumentation. Presently there are seven student workstations, each equipped with a vector network analyzer, a spectrum analyzer, a digitizing oscilloscope, a PC, and related microwave components. The software provides capabilities for circuit and system level simulation, numerical electromagnetic modeling, and antenna design. The developed course, *Wireless Circuits and Systems Design Laboratory*, is now a required course for all electrical engineering students. The innovative approach adopted for the WAMI educational program has been enthusiastically received by industry and the academic community. A measure of proof has been the establishment of the WAMI Advisory Board, a 14-member group comprised of industry representatives and faculty from two other universities. This board meets annually at USF to provide guidance and feedback on both academic and research pursuits.
- *Wireless Sensor Systems Design Course* (with J. Frolik, University of Vermont). The goal of this course is to provide undergraduate students with application-oriented design experience in a multi-disciplinary setting. Each semester a case study is performed on a selected wireless sensor system, e.g., sensors used for traffic monitoring or environmental remote sensing. A partially- or fully-operating system comprised of commercial-off-the-shelf (COTS) parts is used as a test-bed, and students are required to design and implement subsystems to enhance the existing system or replace COTS components. The effort typically entails student teams focusing of multiple engineering facets (microwave, communications, signal processing, digital logic) and coordinating the overall system configuration. The course was partially sponsored by the National Science Foundation (Weller, 1999 NSF CAREER Award).
- *RF/MW Circuits I.* This course focuses on passive wireless/microwave circuit design and is simultaneously taught at the undergraduate and graduate levels, using a stratified assignment and grading scheme. The objective is to provide students with a firm grasp of distributed transmission line theory and high frequency design. In order to gain experience with modern CAE tools, several

(typically 6-7) software-based laboratory experiments are performed using the Agilent Advanced Design System circuit simulation tool and the *Momentum* numerical electromagnetic simulator.

- *RF/MW Circuits II.* This course focuses on active wireless/microwave circuit design (amplifiers and oscillators) and is simultaneously taught at the undergraduate and graduate levels, using a stratified assignment and grading scheme. Several (typically 6-7) software-based laboratory experiments are performed using the Agilent Advanced Design System circuit simulation tool. A key component of the course is the low-noise amplifier design project, requiring students to develop a complete hybrid design meeting a full-set of specifications (gain, match, noise figure, and bandwidth) along with a board layout.
- *Antenna Theory.* This graduate course covers the fundamentals of electromagnetics that are relevant to antennas and radiation, antenna design, and microwave communications system analysis. Students are required to complete a literature study and project report on an emerging technology, e.g. fractal antennas, frequency selective surfaces, or reconfigurable antennas.
- *Numerical Techniques in Electromagnetism*. This graduate course was designed to provide students with a thorough understanding of numerical electromagnetic techniques, particularly as applied to microwave and mm-wave circuit and antenna simulation. One goal is to make the students well-educated users of modern, commercially available CAE software. Students are also required to develop their own algorithms as preparation for advanced study in this field. The course topics cover a broad span of differential and integral techniques, such as finite difference, finite element and the method of moments.
- *Sensors and Materials Characterization Laboratory* (with S. Hariharan, Physics Department, USF). This graduate course is oriented toward bio-medical applications of electromagnetic and magnetic sensors. It also covers topics that include nano-technology, advanced semiconductor metrology (AFM, SEM, TEM), and chem/bio sensors.
- *Wireless Sensor Networks* (with P. Flikkema (Northern Arizona University), J. Frolik (University of Vermont) and W. Shiroma (University of Hawaii). This senior-level undergraduate course was developed as part of a National Science Foundation sponsored Course, Curriculum and Laboratory Improvement Phase II project. The goal of this project is to develop portable, on-line curriculum addressing systems-centric thinking in the context of eco-system monitoring using wireless sensor networks.

Major Areas of Research

Microwave Circuit and Sensor Design

The combination of advanced materials, 3-D integration techniques and numerical electromagnetic simulation enables the development of miniaturized, high performance and reconfigurable microwave sensor systems. Among the materials/devices investigated at USF are (nanoscale) ferroelectric varactors for frequency tuning, and nanocomposite polymers which can be used to realize magneto-dielectric substrates. These technologies are being combined with 3-D micro-coaxial transmission lines and 3-D package-integrated antennas to realize small sensor systems for applications such as remote monitoring and non-contact impedance spectroscopy. Another application of strong interest is biomedical radiometry, particularly for core body temperature measurement.

Microwave Antenna Design

As the increase in miniaturization and functionality of microelectronics continues, the significance of advanced antenna technologies likewise grows. In many modern communications and sensing systems, the physical size and operational bandwidth of the antenna(s) are frequently limiting factors. Similarly, adaptive antenna design techniques are important so that system performance can be maintained as the local operating environment changes. Recent research at USF focuses on low profile planar and conformal antennas using techniques that include frequency selective surfaces, flexible polymeric materials and integrated tuning with semiconductor and ferroelectric devices. There has also been a concentrated effort to

develop very efficient, 3-D electrically-small antennas for zero-power sensing applications and using direct digital manufacturing approaches.

Microwave and Mm-Wave Applications of Micromachining and Micro Electromechanical Systems
The utilization of micromachining techniques in the design of microwave/mm-wave circuits and antennas has greatly advanced the levels of performance and versatility that can be achieved. At mm- to sub-mm wave frequencies, micromachined transmission line architectures have demonstrated propagation and efficiency characteristics that cannot be matched by conventional monolithic implementations. The use of MEMS also enables low cost, miniaturized wireless/microwave components that provide unique tuning capabilities for functions such as signal distribution and resonant networks. One significant outcome of developing viable microwave MEMS-related technologies is monolithic integration of wireless telemetry capabilities with chip-level sensor systems. The research conducted at the University of South Florida is concentrated on passive component design in the 5-100 GHz range and the development of tunable MEMS components for applications such as electronically-scanned antenna arrays, voltage-controlled oscillators and variable impedance transmission lines. Slow-wave, impedance-matched true-time-delay (TTD) RF MEMS phase shifters developed at USF have set world records for performance. High-power handling capability has been addressed using nanocrystalline diamond MEMS switches that operate at RF signal levels up to 45 W at 2 GHz. High-speed switching devices have also been investigated using nanofabrication methods, achieving switching times below 300 ns.

Mm-Wave Circuit Design
Advances in mm-wave semiconductor device technology coupled with widely-used consumer applications such as gigabit/second data communications and intelligent vehicle sensors heightens the need for research in mm-wave passive component design. Along side the potential uses of micromachining in this field, there are important areas to address such as measurement calibration, model development, and high performance packaging. Furthermore, the small size of mm-wave circuits and antennas can be used to great advantage in applications such as compact, high-resolution sensors. Notable work performed at USF includes the development of a 60 GHz proximity sensor for anti-lock brake and fuel-injector use, and the development of signal distribution networks for a 94 GHz, stacked-wafer phased array element. USF has also demonstrated new approaches to on-wafer calibration that greatly reduce the required wafer real-estate in comparison to the standard (thru-reflect-line, or TRL) techniques, including RF MEMS calibration standards that integrate a complete TRL calibration in a single line.

Microwave Equivalent Circuit Modeling Techniques
Intense competition in the commercial wireless/microwave market drives a constant need for reduced design-cycle time and a corresponding reliance on accurate simulation capabilities. Furthermore, the industry as a whole retains a large investment in capital equipment for hybrid board manufacturing, and component vendors continue to develop ever-smaller parts that enable operating frequencies to increase. From this follows a strong need for reliable, microwave component models. The research performed at the University of South Florida focuses on the development of model extraction techniques for passive surface mount components in the DC-30 GHz range. Significant accomplishments include the development of capacitor, inductor and resistor models that accurately predict parasitic effects induced by the PC board substrate; although substrate effects can radically influence the observed performance of these parts, no similar models are known that pre-date the USF work. This modeling technology formed the basis for a university spin-out company, Modelithics, Inc., in 2001.

Book Contributions

L. Katehi, G. Rebeiz, T. Weller, R. Drayton, S. Robertson and C. Chi, The Industrial Electronics Handbook, ed. David Irwin, CRC Press, Inc., Section X, Si Micromachining in High-Frequency Applications, pp. 1547-1572, 1996.

S. Balachandran, T. Weller, A. Kumar, S. Jeedigunta, H. Gomez, J. Kusterer and E. Kohn, Emerging Nanotechnologies for Manufacturing, ed. Jeremy Ramsden, William Andrew Applied Science Publishers, Nanocrystalline Diamond for RF-MEMS Applications, pp. 277-300, 2010.

G. Mumcu and T. Weller, Antenna Engineering Handbook, Ch. 10 Small Antennas and Miniaturization Techniques, ed. John Volakis, McGraw-Hill Global Education Holdings, 2018.

Journal Publications

1. C. Neff, E. Rojas, T. Weller and N. Crane, “Thermal and Vapor Smoothing of Thermoplastic for Reduced Surface Roughness of Additive Manufactured RF Electronics,” IEEE Trans. Components, Packaging and Manufacturing Technology, accepted for publication March 16, 2019.

2. D. Lugo, R. A. Ramirez, J. Wang and T. Weller, "Multilayer Dielectric End-Fire Antenna with Enhanced Gain," IEEE Antennas and Wireless Propagation Letters, Vol. 17, Issue 12, pp. 2213-2217, December 2018.

3. R. Ramirez, E. Rojas and T. Weller, “Laser Assisted Additive Manufacturing of mm-Wave Lumped Passive Elements,” IEEE Trans. Microwave Theory & Techniques, Vol. 6, Issue 12, pp. 5462-5471, December 2018.

4. J. Frolik, J. E. Lens, M. M. Dewoolkar and T. M. Weller, "Effects of Soil Characteristics on Passive Wireless Sensor Interrogation," in IEEE Sensors Journal, vol. 18, no. 8, pp. 3454-3460, April15, 15 2018.

5. D. M. Zaiden, J. E. Grandfield, T. M. Weller and G. Mumcu, "Compact and Wideband MMIC Phase Shifters Using Tunable Active Inductor-Loaded All-Pass Networks," in IEEE Transactions on Microwave Theory and Techniques, vol. 66, no. 2, pp. 1047-1057, Feb. 2018.

6. E. A. Rojas-Nastrucci; H. Tsang; P. I. Deffenbaugh; R. A. Ramirez; D. Hawatmeh; A. Ross; K. Church; T. M. Weller, "Characterization and Modeling of K-Band Coplanar Waveguides Digitally Manufactured Using Pulsed Picosecond Laser Machining of Thick-Film Conductive Paste," in IEEE Transactions on Microwave Theory and Techniques, vol. 65, no. 9, pp. 3180-3187, Sept. 2017.

7. J. Castro, E. A. Rojas-Nastrucci, A. Ross, T. M. Weller and J. Wang, "Fabrication, Modeling, and Application of Ceramic-Thermoplastic Composites for Fused Deposition Modeling of Microwave Components," in IEEE Transactions on Microwave Theory and Techniques, vol. 65, no. 6, pp. 2073-2084, June 2017.

8. E. A. Rojas-Nastrucci, J. T. Nussbaum, N. B. Crane and T. M. Weller, "Ka-Band Characterization of Binder Jetting for 3-D Printing of Metallic Rectangular Waveguide Circuits and Antennas," in IEEE Transactions on Microwave Theory and Techniques, vol. 65, no. 9, pp. 3099-3108, Sept. 2017.

9. R. Ramirez, E. Rojas-Nastrucci, and T. M. Weller, “UHF RFID Tags for On/Off-Metal Applications Fabricated using Additive Manufacturing,” IEEE Antennas and Wireless and Propagation Letters, Vol. 16, Issue 1, pp. 1-4, 2017.

10. Kenneth H. Church, Nathan Crane, Paul I. Deffenbaugh, Thomas P. Ketterl, Clayton Neff, Patrick Nesbitt, Justin Nussbaum, Casey Perkowski, Harvey Tsang, Jing Wang, and Thomas M. Weller, “Multi-Material and Multi-Layer Direct Digital Manufacturing of 3D Structural Microwave Electronics,” Proceedings of the IEEE, Vol. 105, Issue 4, 2017.

11. E. A. Rojas-Nastrucci, A. D. Snider and T. M. Weller, "Propagation Characteristics and Modeling of Meshed Ground Coplanar Waveguide," in IEEE Transactions on Microwave Theory and Techniques, vol. 64, no. 11, pp. 3460-3468, Nov. 2016.

12. J. Castro, E. A. Rojas, M. F. Córdoba, A. Perez, T. Weller, and J. Wang, "High-Permittivity and Low-Loss Electromagnetic Composites Based on Co-Fired Ba0.55Sr0.45TiO3 or MgCaTiO2 Micro-Fillers for Additive Manufacturing and Their Application to 3D-Printed K-Band Antennas," Journal of Microelectronics and Electronic Packaging, Vol. 13, No. 3, pp.102-112, July 2016.

13. D. F. Hawatmeh, S. LeBlanc, P. I. Deffenbaugh and T. Weller, "Embedded 6-GHz 3-D Printed Half-Wave Dipole Antenna," in IEEE Antennas and Wireless Propagation Letters, vol. 16, no. , pp. 145-148, 2017.

14. Ketterl, T.P.; Vega, Y.; Arnal, N.C.; Stratton, J.W.I.; Rojas-Nastrucci, E.A.; Cordoba-Erazo, M.F.; Abdin, M.M.; Perkowski, C.W.; Deffenbaugh, P.I.; Church, K.H.; Weller, T.M., "A 2.45 GHz Phased Array Antenna Unit Cell Fabricated Using 3-D Multi-Layer Direct Digital Manufacturing," in Microwave Theory and Techniques, IEEE Transactions on , vol.63, no.12, pp.4382-4394, Dec. 2015.

15. Deffenbaugh, P.I.; Weller, T.M.; Church, K.H., "Fabrication and Microwave Characterization of 3-D Printed Transmission Lines," in Microwave and Wireless Components Letters, IEEE , vol.25, no.12, pp.823-825, Dec. 2015.

16. Nassar, I.T.; Wang, J.; Frolik, J.L.; Weller, T.M., "A High-Efficiency, Miniaturized Sensor Node With 3-D Machined-Substrate Antennas for Embedded Wireless Monitoring," Sensors Journal, IEEE , vol.15, no.9, pp.5036,5044, Sept. 2015.

17. I. T. Nassar and T. M. Weller, "A Novel Method for Improving Antipodal Vivaldi Antenna Performance," in IEEE Transactions on Antennas and Propagation, vol. 63, no. 7, pp. 3321-3324, July 2015.

18. I. Nassar, H. Tsang, D. Bardroff, C. Lusk and T. Weller, "Mechanically Reconfigurable, Dual-Band Slot Dipole Antennas," Antennas and Propagation, IEEE Transactions on, vol. 63, no. 7, July 2015.

19. M. F. Córdoba-Erazo and T. M. Weller, "Noncontact Electrical Characterization of Printed Resistors Using Microwave Microscopy," in IEEE Transactions on Instrumentation and Measurement, vol. 64, no. 2, pp. 509-515, Feb. 2015.

20. Nassar, I.T.; Weller, T.M., "A Compact Dual-Channel Transceiver for Long-Range Passive Embedded Monitoring," Microwave Theory and Techniques, IEEE Transactions on , vol.63, no.1, pp.287,294, Jan. 2015.

21. O'Brien, J.M.; Grandfield, J.E.; Mumcu, G.; Weller, T.M., "Miniaturization of a Spiral Antenna Using Periodic Z-Plane Meandering," Antennas and Propagation, IEEE Transactions on , vol.63, no.4, pp.1843,1848, April 2015.

22. Nassar, I.; Tsang, H.; Weller, T., "3D printed wideband harmonic transceiver for embedded passive wireless monitoring," Electronics Letters, vol.50, no.22, pp.1609,1611, 10 23 2014.

23. D. Cure, T. Weller, T. Price, F. Miranda and F. Van Keuls, "Low Profile Tunable Dipole Antenna Using Barium Strontium Titanate Varactors," IEEE Trans. Antennas and Propagation, Vol. 62, Issue 3, 2014.

24. R. Davidova and T. Weller, “High-Sensitivity, AM-modulated harmonic transceiver for wireless sensing,” Electronics Letters, 11th April 2013, Vol. 49, No. 8.

25. Palomo, T.; Herzig, P.; Weller, T.M.; Mumcu, G., "Wideband Band-Stop X-Band Filter Using Electrically Small Tightly Coupled Resonators," Microwave and Wireless Components Letters, IEEE , vol.23, no.7, pp.356,358, July 2013.

26. S. Melais, D. Cure and T. Weller, "A Quasi-Yagi Antenna Backed by a Jerusalem Cross Frequency Selective Surface," International Journal of Microwave Science and Technology, vol. 2013, Article ID 354789, 8 pages, 2013. doi:10.1155/2013/354789.

27. Cure, D.; Weller, T. M.; Miranda, F. A.; , "Study of a Low-Profile 2.4-GHz Planar Dipole Antenna Using a High-Impedance Surface With 1-D Varactor Tuning," Antennas and Propagation, IEEE Transactions on , vol.61, no.2, pp.506-515, Feb. 2013.

28. Nassar, I.T.; Weller, T.M.; Lusk, C.P., "Radiating Shape-Shifting Surface Based on a Planar Hoberman Mechanism," Antennas and Propagation, IEEE Transactions on , vol.61, no.5, pp.2861,2864, May 2013.

29. J. Frolik, P. Flikkema, W. Shiroma, T. Weller, C. Haden and R. Drayton, “Leveraging multi-university collaboration to develop portable and adaptable course materials that improve student learning of systems thinking,” ASEE Advances in Engineering Education, Vol. 03, Issue 03, Winter 2013.

30. Ibrahim T. Nassar, Thomas M. Weller, and Jeffrey L. Frolik, “A Compact 3-D Harmonic Repeater for Passive Wireless Sensing," Microwave Theory and Techniques, IEEE Transactions on , vol.60, no.10, pp.3309-3316, Oct. 2012.

31. E. Benabe, M. Crites, J. Whitaker and T. Weller, “In-Situ Characterization of PIN Diode Waveforms Using Electro-Optic Sampling,” Microwave and Optical Technology Letters, Volume 54, Issue 11, pp. 2653-2656, November 2012.

32. B. Zivanovic, T. Weller and C. Costas, “Series-Fed Microstrip Antenna Arrays and Their Application to Omni-Directional Antennas," Antennas and Propagation, IEEE Transactions on , vol.60, no.10, pp.4954-4959, Oct. 2012.

33. I. Nassar and T. Weller, “Development of Novel 3-D cube Antennas for Compact Wireless Sensor Nodes,” IEEE Trans. Antennas and Propagation, Vol. 60, pp. 1059-1065, Feb. 2012.

34. K. Stojak, S. Pal, H. Srikanth, C. Morales, J. Dewdney, T. Weller and J. Wang, “Polymer nanocomposites exhibiting magnetically tunable microwave properties,” Nanotechnology, vol. 23, no. 13, 135602 (6 pp), February 2011.

35. Bonds, Q.; Weller, T.; Herzig, P.; , "Towards Core Body Temperature Measurement via Close Proximity Radiometric Sensing," Sensors Journal, IEEE , vol. PP, no.99, February 2011.

36. Morales, C.; Dewdney, J.; Pal, S.; Skidmore, S.; Stojak, K.; Srikanth, H.; Weller, T.; Jing Wang; , "Tunable Magneto-Dielectric Polymer Nanocomposites for Microwave Applications," Microwave Theory and Techniques, IEEE Transactions on , vol.59, no.2, pp.302-310, Feb. 2011.

37. Natarajan, S. P., Hoff, A. M. and Weller, T. M. (2010), Polyimide core 3D rectangular micro coaxial transmission lines. Microwave and Optical Technology Letters, 52: 1291-1293.

38. S. Baylis, S. Presas, and T. Weller, “Wide Bandwidth Varactor-Tuned Patch Antenna,” IEE Electronics Letters, Vol. 45, Issue 16, pp. 816-818, July 2009.

39. Frolik, J.; Weller, T.M.; DiStasi, S.; Cooper, J., "A Compact Reverberation Chamber for Hyper-Rayleigh Channel Emulation," Antennas and Propagation, IEEE Transactions on , vol.57, no.12, pp.3962-3968, Dec. 2009.

40. S. Melais and T. Weller, “A Quasi Yagi Antenna Backed by a Metal Reflector," Antennas and Propagation, IEEE Transactions on , vol.56, no.12, pp.3868-3872, Dec. 2008.

41. Venkataramanan Gurumurthy, Sathyaharish Jeedigunta, Sam Baylis, Ashok Kumar, and Thomas Weller, “Structural and Electrical Properties of Nanocrystalline Diamond based Barium Strontium Titanate Varactors” International Journal of Ferroelectrics, 15 December (2008).

42. E. Maxwell, T. Weller and E. Odu, “Design and Analysis of a Multi-Port Circuit for Shaping Sub-nanosecond Pulses,” IEEE Trans. MTT, Vol. 56, No. 12, December 2008.

43. A. Kumar, S. Manavalan, V. Gurumurthy, S. Jeedigunta and T. Weller, "*Dielectric and structural properties of Pulsed Laser Deposited and sputtered Barium Strontium Titanate thin films* ", Materials Science and Engineering: B, Volume 139, Issues 2-3, 15 May 2007, Pages 177-185.

44. S. Natarajan, T. Weller and D. Hoff, “3-D Micro Coaxial Transmission Lines with Integrated MEM Capacitors,” Microwave and Wireless Components Letters, IEEE, Volume 17, Issue 12, Dec. 2007 Page(s):858 - 860.

45. Saravana Natarajan, Thomas M. Weller and David P. Fries, "Sensitivity Tunable Inductive Fluid Conductivity Sensor based on RF Phase Detection", Sensors Journal, IEEE, Volume 7, Issue 9, Sept. 2007 Page(s):1300 - 1301.

46. R. Heindl, H. Srikanth, S. Witanachchi, P. Mukherjee, A. Heim, G. Matthews, S. Balachandran, S. Natarajan and T. Weller, “Multi-functional Ferrimagnetic-Ferroelectric Thin Films for Microwave Applications,” Applied Physics Letters, 252507, 2007.

47. R. Heindl, et al., “Structure, magnetism and tunable microwave properties of PLD-grown Barium Ferrite/Barium Strontium Titanate bi-layer films,” J. Appl. Phys. 101, 09M503 (2007).

48. T. Ketterl and T. Weller, “Reflectenna: A Quasi Passive On-Off Keyed Microwave Telemetry System for Remote Sensor Applications,” IEE Proc. Microwaves, Antennas & Propagation, Vol. 1, Issue 4, August 2007, pp. 843-846.

49. E. Maxwell, T. Weller and J. Harrow, “Mathematical Reformulation of the Ideal Gaussian for Ultra-Wideband Radar Systems,” FEF Journal of Interdisciplinary Research, July 2007.

50. B. Lakshminarayanan and T. M. Weller, "Optimization and Implementation of Impedance-Matched True-Time-Delay Phase Shifters on Quartz Substrate," in IEEE Transactions on Microwave Theory and Techniques, vol. 55, no. 2, pp. 335-342, Feb. 2007.

51. N. Dib, T. Weller and B. Lakshminarayanan, “Finite Difference Time Domain Modeling of Ceramic Multi-Layer Capacitors Using Lumped Equivalent Models,” J. of Active and Passive Electronic Devices, vol. 1, p. 345-353, 2006.

52. B. Lakshminarayanan and T. Weller, “Design and Modeling of 4-Bit Slow-Wave MEMS Phase Shifters,” *Microwave Theory and Techniques, IEEE Transactions on,* Volume 54, Issue 1, Jan. 2006 Page(s): 120 - 127.

53. B. Lakshminarayanan and T. Weller, “Electronically Tunable Multi-line TRL Using an Impedance Matched Multi-Bit MEMS Phase Shifter, *Microwave and Wireless Components Letters*, IEEE [see also IEEE Microwave and Guided Wave Letters] Volume 15, Issue 2, Feb. 2005 Page(s):137 - 139.

54. J. Naylor, T. Weller, et al., “Slow Wave CPW for Phase Matching and Slot-Line Transition Design,” *IEE Proc. Microwaves*, *Antennas and Propagation*, October 2005, 297-300.

55. M. Scardelletti, T. Weller, N. Dib, J. Culver and B. King, “Coplanar Waveguide-Fed Slot Antennas on Cylindrical Substrates,” *International J. of Electronics and Communications*, January 2005.

56. Lopez, L.S.; Weller, T.M.; , "A low-loss quartz-based cross-coupled filter integrated onto low-resistivity silicon," Microwave Theory and Techniques, IEEE Transactions on , vol.52, no.8, pp. 1809- 1812, Aug. 2004.

57. M. Oldenburg and T. Weller, “High Efficiency CPW-to-Slotline Transitions on Low Er Substrates,” *Microwave and Optical Technology Letters,* Volume 41, Issue 2, Pages 91 – 93, March 2004.

58. R. Singh and T. Weller, “Capacitively Loaded CPW Shunt Stub Filters,” *Microwave and Optical Technology Letters*, *Volume: 36, Issue: 4, Date: 20 February 2003, Pages: 292-295*.

59. C. Trent and T. Weller, “S-Band Reflection Type Variable Attenuator,” *IEEE Microwave and Wireless Components Letters* [see also IEEE Microwave and Guided Wave Letters], Volume: 12 Issue: 7, Jul 2002, Page(s): 243 -245.

60. J. Frolik and T. Weller, “Wireless Sensor System Design: An Approach for a Multi-University Design Course Offering,” *IEEE Trans. Education, Vol. 45, No. 2, May 2002*.

61. M. Scardelletti, G. Ponchak, and T. Weller, “Miniaturized Wilkinson Power Dividers Utilizing Capacitive Loading,” *Microwave and Wireless Components Letters*, pp. 6-8, January 2002.

62. R. Singh and T. Weller, “Miniaturized 20 GHz CPW Quadrature Coupler Using Capacitive Loading,” *Microwave and Optical Technology Letters*, *Volume: 30, Issue: 1, Date: 5 July 2001, Pages: 3-5.*

63. S. Gross and T. Weller, “Determining the RF Resistance and Q Factor of Air Core Inductors,” *Microwave and Optical Technology Letters*, April 2001.

64. T. Weller, “Edge-Coupled Coplanar Waveguide Bandpass Filter Design,” *IEEE Trans. MTT*, pp. 2453-2458, December 2000.

65. N. Dib and T. Weller, “Two-Dimensional Finite Difference Time Domain Method Analysis of Cylindrical Transmission Lines,” *Intl. Journal of Electronics*, volume 87, number 9, pp. 1065-1081, September 2000.

66. N. Dib and T. Weller, “Finite Difference Time Domain (FDTD) Analysis of Cylindrical Coplanar Waveguide (CCPW) Circuits,” *Intl. Journal of Electronics,* volume 87, number 9, pp. 1083-1094, September 2000.

67. B. Lakshminarayanan, H. Gordon and T. Weller, "A Substrate-Dependent CAD Model for Ceramic Multi-Layer Capacitors," *IEEE Trans. MTT,* pp. 1687-1693, October 2000.

68. T. Weller, R. Henderson, K. Herrick, S. Robertson, T. Kihm and L. Katehi, "Three-Dimensional High Frequency Distribution Networks Part I: Optimization of CPW Discontinuities," *IEEE Trans. MTT*, Vol. 48, No. 10, October 2000, pp. 1635-1642.

69. R. Henderson, T. Weller, K. Herrick, S. Robertson, T. Kihm and L. Katehi, "Three-Dimensional High Frequency Distribution Networks Part II: Packaging and Integration," *IEEE Trans. MTT*, Vol. 48, No. 10, October 2000, pp. 1643-1651.

70. Dib, N.; Weller, T.; Scardelletti, M.; Imparato, Analysis of cylindrical transmission lines with the finite-difference time-domain method, M.; Microwave Theory and Techniques, IEEE Transactions on Volume 47, Issue 4, April 1999 Page(s):509 - 512.

71. T. M. Weller, K. J. Herrick, and L. P. B. Katehi, "Band-Stop Series Stubs for Coplanar Waveguide on GaAs," *IEE Electronics Letters*, vol. 33, no. 8, pp. 684-685, April 1997.

72. T. M. Weller, K. J. Herrick, and L. P. B. Katehi, "Quasi-Static Design Technique for Mm-Wave Micromachined Filters with Lumped Elements and Series Stubs," *IEEE Trans. MTT*, vol. 45, no. 6, pp. 931-938, June 1997.

73. G. M. Rebeiz, L. P. B. Katehi, T. M. Weller, C-Y Chi, and S. V. Robertson, "Micromachined Membrane Filters for Microwave and Millimeter-Wave Applications," *Int. J. Microwave and Millimeter-Wave Computer Aided Engineering*, Vol. 7, pp. 149-166, 1997.

74. T. M. Weller, L. P. B. Katehi, M. I. Herman, P. D. Wamhof, K. Lee, and B. H. Tai, "New Results Using Membrane-Supported Circuits: A Ka-Band Power Amplifier and Survivability Testing," *IEEE Trans. MTT*, vol. 44, no. 9, pp. 1603-1606, Sept. 1996.

75. A. Biswas, T. Weller, and L. P. B. Katehi, "Stress determination of micromembranes using laser vibrometry," *Rev. Sci. Instrum*., pp. 1965-1969, May 1996.

76. T. M. Weller, L. P. Katehi, and G. M. Rebeiz, "Single and Double Folded-Slot Antennas on Semi-Infinite Substrates," *IEEE Trans. AP*, vol. 43, no. 12, December 1995, pp. 1423-1428.

77. T. M. Weller, L. P. Katehi, and W. R. McGrath, "Analysis and Design of a Novel Non-Contacting Waveguide Backshort," *IEEE Trans. MTT*., vol. 43, no. 5, pp. 1023-1030, May 1995.

78. T. M. Weller, L. P. Katehi, and G. M. Rebeiz, "A 250 GHz Microshield Bandpass Filter," *IEEE Microwave and Guided Wave Letters*, vol. 5, no. 5, pp. 153-155, May 1995.

79. T. M. Weller, L. P. Katehi, and G. M. Rebeiz, "High Performance Microshield Line Components," *IEEE Trans. MTT*., vol. 43, no. 3, pp. 534-543, March 1995.

80. R. F. Drayton, T. M. Weller, and L. P. Katehi, "Development of Miniaturized Circuits for High-Frequency Applications using Micromachining Techniques," Invited paper to the third issue of *International Journal of Microcircuits and Electronic Packaging*, March 1995.

81. W. R. McGrath, T. M. Weller, and L. P. Katehi, "A Novel Non-Contacting Waveguide Backshort for Submillimeter-Wave Frequencies," *Int. J. IR and Millimeter Waves*, vol. 16, no. 1, pp. 237-256, Jan. 1995.

82. H. Cheng, J. F. Whitaker, T. M. Weller, and L. P. Katehi, "Terahertz-Bandwidth Characteristics of Coplanar Transmission Lines on Low Permittivity Substrates," *IEEE Trans. MTT*, vol. 42, no. 12, pp. 2399-2406, Dec. 1994.

83. H. Cheng, J. F. Whitaker, T. M. Weller, and L. P. Katehi, "Terahertz-Bandwidth Pulse Propagation on a Coplanar Stripline Fabricated on a Thin Membrane," *IEEE Microwave and Guided Wave Letters*, vol. 4, pp. 89-91, March 1994.

84. G. Suits, W. Malila, and T. Weller, "Procedures for using signals from one sensor as substitutes for signals of another," Remote Sensing of Environment, Vol. 25, Issue 3, 1988, pp. 395-408.

85. G. Suits, W. Malila, and T. Weller, "The prospects for detecting spectral shift due to sensor aging," Remote Sensing of Environment, Vol. 26, Issue 1, 1988, pp. 17-29.

Conference Papers

1. M. Kacar, C. Perkowski, K. Church, B-I Wu, J. Wang, T. Weller and G. Mumcu, "Phased Array Antenna Element with Embedded Cavity and MMIC using Direct Digital Manufacturing," accepted to 2019 IEEE AP-S, March 2019.

2. D. Lugo, R. Ramirez, J. Wang and T. Weller, "Ku Band Metal Strip-Loaded Dielectric Rod Waveguide Filter," accepted to the 2019 Wireless and Microwave Technology Conference, March 16, 2019.

3. O. Firat, M. Abdin, J. Wang and T. Weller, "Low-Loss Suspended Crossover Interconnects using Laser Enhanced Direct Print Additive Manufacturing," accepted to the 2019 Wireless and Microwave Technology Conference, March 16, 2019.

4. G. Saffold and T. Weller, "Design of Cladded Dielectric Rod Antennas," accepted to the 2019 Wireless and Microwave Technology Conference, March 16, 2019.

5. A. Menon, M. Grady and T. Weller, "A Generalized Radiometer System Equation That Includes Temperature-Dependent System Losses," accepted to the 2019 Wireless and Microwave Technology Conference, March 16, 2019.

6. M. Abdin, W. Johnson, J. Wang and T. Weller, "W-band Finite Ground Coplanar Waveguide (FG-CPW) using Laser Enhanced Direct-Print Additive Manufacturing (LE-DPAM)," accepted to the 2019 International Microwave Symposium, June 2019.

7. M. Kacar, et al., "Multilayer Wideband Patch Antenna Arrays Packaged with MMICs using Direct Digital Manufacturing," GOMACTECH 2019.

8. A. Menon, A. Snider, G. Mumcu and T. Weller, "An 18–26 GHz range calibrated linear synthetic aperture radar prototype suitable for security applications," 2018 IEEE 19th Wireless and Microwave Technology Conference (WAMICON), Sand Key, FL, 2018, pp. 1-4.

9. Arya Menon, Gokhan Mumcu, Thomas M. Weller, "Implementation and enhancement of Hilbert transform-based calibration in a K band FMCW radar for high-resolution security applications", Proc. SPIE 10633, Radar Sensor Technology XXII, 106330N (4 May 2018).

10. E. A. Rojas-Nastrucci, R. A. Ramirez and T. M. Weller, "Direct digital manufacturing of mm-wave vertical interconnects," 2018 IEEE 19th Wireless and Microwave Technology Conference (WAMICON), Sand Key, FL, 2018, pp. 1-3. doi: 10.1109/WAMICON.2018.8363917.

11. Denise C. Lugo, Ramiro A. Ramirez, Jing Wang, and Thomas M. Weller, “Ku band Metal-Strip-Loaded Dielectric Rod Antenna with Narrowband Gain Enhancement,” 2018 Antennas and Propagation Symposium, July 2018.

12. R. A. Ramirez and T. M. Weller, "Additively Manufactured Vertically Interconnected On-Package Microstrip Patch Antenna," 2018 IEEE International Symposium on Antennas and Propagation & USNC/URSI National Radio Science Meeting, Boston, MA, USA, 2018, pp. 927-928.

13. D. Hawatmeh and T. Weller, "2.4 GHz Band Pass Filter Architecture for Direct Print Additive Manufacturing," 2018 IEEE/MTT-S International Microwave Symposium - IMS, Philadelphia, PA, 2018, pp. 67-70.

14. R. A. Ramirez, D. Lan, E. A. Rojas-Nastrucci and T. M. Weller, "Laser Assisted Additive Manufacturing of CPW mm-Wave Interdigital Capacitors," 2018 IEEE/MTT-S International Microwave Symposium - IMS, Philadelphia, PA, 2018, pp. 1553-1556.

15. M. Kacar, C. Perkowski, P. Deffenbaugh, K. Church, T. Weller and G. Mumcu, “Direct Digital Manufacturing of an X/Ku-Band Conformal Phased Array Antenna,” GOMACTech-18, Miami, FL, 2018.

16. Eduardo Rojas-Nastrucci, Ramiro Ramirez, Derar Hawatmeh, Di Lan, Jing Wang and Thomas Weller, “Laser Enhanced Direct Print Additive Manufacturing for Mm-Wave Components and Packaging,” ICEAA 2017, Verona, Italy, September 2017.

17. Clayton Neff, Darrell Griffin, Eduardo Rojas, Justin Nussbaum, Thomas Weller, Nathan Crane, “Characterization of Thermal and Vapor Smoothing on Surface Roughness of Extruded Components for Printed Electronics,” submitted to the 2017 Annual International Solid Freeform Fabrication Symposium (SFF Symp 2017), April 2017.

18. M. Kacar, C. Perkowski, P. Deffenbaugh, J. Booth, G. Mumcu, and T. Weller, “Wideband Ku-Band Antennas using Multi-Layer Direct Digital Manufacturing,” 2017 International Antennas and Propagation Symposium, July 2017.

19. Q. Bonds and T. Weller, “Multi-Layer RF Tissue Phantoms for Mimicking a Human Core,” submitted to IMBIOC 2017, January 2017.

20. M. Grady and T. M. Weller, "Comparison of coherent and non-coherent scattering models for stratified media," 2017 IEEE 18th Wireless and Microwave Technology Conference (WAMICON), Cocoa Beach, FL, 2017, pp. 1-5.

21. D. Hawatmeh and T. Weller, "Embedded 6 GHz 3D-printed half-wave dipole antenna array," 2017 IEEE 18th Wireless and Microwave Technology Conference (WAMICON), Cocoa Beach, FL, 2017, pp. 1-3.

22. D. C. Lugo, R. A. Ramirez, J. Castro, J. Wang and T. M. Weller, "Ku-band additive manufactured multilayer dielectric rod waveguide," 2017 IEEE 18th Wireless and Microwave Technology Conference (WAMICON), Cocoa Beach, FL, 2017, pp. 1-3.

23. D. Hawatmeh and T. Waller, "A S/C-band high Q resonator architecture for direct print additive manufacturing," 2017 IEEE 18th Wireless and Microwave Technology Conference (WAMICON), Cocoa Beach, FL, 2017, pp. 1-4.

24. J. Castro, E. Rojas, T. Weller and J. Wang, "High-k and Low-loss Electromagnetic Composites for Direct Digital Manufacturing of mmWave Devices," 2017 Antennas and Propagation Symposium, January 2017

25. D. C. Lugo, R. A. Ramirez, J. Castro, J. Wang and T. M. Weller, "3D printed multilayer mm-wave dielectric rod antenna with enhanced gain," 2017 IEEE International Symposium on Antennas and Propagation & USNC/URSI National Radio Science Meeting, San Diego, CA, 2017, pp. 1247-1248.

26. R. A. Ramirez, D. Lugo, T. M. Weller, M. Golmohamadi and J. Frolik, "Additive manufactured tripolar antenna system for link improvement in high multipath environments," 2017 IEEE International Symposium on Antennas and Propagation & USNC/URSI National Radio Science Meeting, San Diego, CA, 2017, pp. 2539-2540.

27. R. A. Ramirez, D. Lan, J. Wang and T. M. Weller, "MMIC packaging and on-chip low-loss lateral interconnection using additive manufacturing and laser machining," 2017 IEEE MTT-S International Microwave Symposium (IMS), Honololu, HI, 2017, pp. 38-40.

28. M. Golmohamadi, R. Ramirez, B. Hewgill, J. Jamison, J. Frolik and T. Weller, "Characterization of a geometrically constrained tripolar antenna under M2M channel conditions," 2017 11th European Conference on Antennas and Propagation (EUCAP), Paris, 2017, pp. 2998-3002.

29. J. Castro, E. Rojas-Nastrucci, T. Weller and J. Wang, "High-k and Low-Loss Electromagnetic Composites Based on Sintered Titanates for Fused Deposition Modeling of Ku-Band Antennas and Filters," 2016 SHPE Engineering Science Symposium, Seattle, WA, Nov. 4, 2016.

30. E. A. Rojas-Nastrucci, J. Nussbaum, T. M. Weller and N. B. Crane, "Metallic 3D printed Ka-band pyramidal horn using binder jetting," 2016 IEEE MTT-S Latin America Microwave Conference (LAMC), Puerto Vallarta, 2016, pp. 1-3.

31. R. A. Ramirez, M. Golmohamadi, J. Frolik and T. M. Weller, "3D printed on-package tripolar antennas for mitigating harsh channel conditions," 2017 IEEE Radio and Wireless Symposium (RWS), Phoenix, AZ, 2017, pp. 62-64.

32. J. Nussbaum, E. Rojas, T. Weller and N. Crane, "Binder Jetting Functional Metal Electronics," submitted to IMECE 2016, March 2016.

33. P. Nesbitt, H. Tsang, K. Church and T. Weller, "4 GHz 3D Printed Balun-fed Bowtie Antenna with Finite Ground Plane for Gain and Impedance Matching Enhancement," 2016 Wireless and Microwave Technology Conference, April 2016.

34. D. C. Lugo, R. A. Ramirez, Jing Wang and T. M. Weller, "Low permittivity cladding to improve the performance of dielectric rod waveguides and dielectric end-fire antennas," 2016 IEEE MTT-S International Microwave Symposium (IMS), San Francisco, CA, USA, 2016, pp. 1-3.

35. E. A. Rojas-Nastrucci, J. Nussbaum, T. M. Weller and N. B. Crane, "Meshed rectangular waveguide for high power, low loss and reduced weight applications," 2016 IEEE MTT-S International Microwave Symposium (IMS), San Francisco, CA, USA, 2016, pp. 1-4.

36. J. Castro, E. Rojas, A. Ross, T. Weller and J. Wang, "High-k and low-loss thermoplastic composites for Fused Deposition Modeling and their application to 3D-printed Ku-band antennas," 2016 IEEE MTT-S International Microwave Symposium (IMS), San Francisco, CA, USA, 2016, pp. 1-4.

37. Patrick Nesbitt, Harvey Tsang, Thomas Ketterl, Justin Nussbaum, Clayton Neff, Paul Deffenbaugh, Nathan Crane, Craig Lusk, Kenneth Church, and Thomas Weller, "3D Printing a 2-18 GHz Current Sheet Antenna: Electrical and Mechanical Characterization," IWAT 2016 – invited paper, Orlando, FL, February 2016.

38. R. A. Ramirez and T. M. Weller, "Dielectric-loaded end-fire slot antenna with low back-lobe radiation for UHF RFID applications," 2016 International Workshop on Antenna Technology (iWAT), Cocoa Beach, FL, 2016, pp. 186-188.

39. D. Hawatmeh, E. Rojas-Nastrucci, and T. Weller, "A Multi-Material 3D Printing Approach for Conformal Microwave Antennas," IWAT 2016.

40. Thomas Ketterl, Casey Perkowski, Paul Deffenbaugh, John Stratton, Joshua Stephenson, Kenneth Church, and Thomas Weller, "Direct Digital Manufacturing of a 2.45 GHz Phased Array," 2016 URSI Conference – invited paper, Boulder, Colorado, January 2016.

41. Eduardo A. Rojas-Nastrucci, Ramiro A. Ramirez, Sean T. Murphy, Mike Newton, and Thomas M. Weller, "A Direct Digital Manufactured RFID System Applied to Teaching Antenna Theory to Pre-College Students," 2015 IMAPS, October 2015.

42. J. Castro, E .Rojas, T. Weller and J. Wang, "Advanced Functional Materials for Additive Manufacturing of 3D Microwave Electronics," 2015 HENAAC, August 2015.

43. Juan Castro, Eduardo Rojas, Thomas Weller and Jing Wang, "Engineered Nanocomposites for Additive Manufacturing of Microwave Electronics," 2015 IMAPS, October 2015.

44. Abdin, Mohamed M.; Castro, Juan; Wang, Jing; Weller, Thomas, "Miniaturized 3D printed balun using high-k composites," Wireless and Microwave Technology Conference (WAMICON), 2015 IEEE 16th Annual , vol., no., pp.1,3, 13-15 April 2015.

45. O'Brien, Jonathan M.; Weller, Thomas M.; Grandfield, John E., "Periodic spherical loop antenna," Wireless and Microwave Technology Conference (WAMICON), 2015 IEEE 16th Annual , vol., no., pp.1,4, 13-15 April 2015.

46. Ketterl, Thomas P.; Ramirez, Ramiro A.; Weller, Thomas M., "Reduced-size circular polarized antenna for 434MHz RFID systems using meandered bowtie elements with a novel quadrifilar feed," Wireless and Microwave Technology Conference (WAMICON), 2015 IEEE 16th Annual , vol., no., pp.1,3, 13-15 April 2015.

47. Castro, Juan; Rojas, Eduardo; Weller, Thomas; Wang, Jing, "High-k and low-loss polymer composites with co-fired Nd and Mg-Ca titanates for 3D RF and microwave printed devices: Fabrication and characterization," Wireless and Microwave Technology Conference (WAMICON), 2015 IEEE 16th Annual , vol., no., pp.1,5, 13-15 April 2015.

48. Ramirez, Ramiro A.; Rojas-Nastrucci, Eduardo A.; Weller, Thomas M., "3D tag with improved read range for UHF RFID applications using Additive Manufacturing," Wireless and Microwave Technology Conference (WAMICON), 2015 IEEE 16th Annual , vol., no., pp.1,4, 13-15 April 2015.

49. Ramirez, Ramiro A.; Ketterl, Thomas P.; Weller, Thomas M., "Broadband circular polarized antenna for 915MHz RFID systems using miniaturized bow-tie loop elements," Wireless and Microwave Technology Conference (WAMICON), 2015 IEEE 16th Annual , vol., no., pp.1,3, 13-15 April 2015.

50. Cordoba-Erazo, Maria F.; Rojas-Nastrucci, Eduardo A.; Weller, Thomas, "Simultaneous RF electrical conductivity and topography mapping of smooth and rough conductive traces using microwave microscopy to identify localized variations," Wireless and Microwave Technology Conference (WAMICON), 2015 IEEE 16th Annual , vol., no., pp.1,4, 13-15 April 2015.

51. P. Flikkema, R. Franklin, J. Frolik, C. Haden, A. Ohta, W. Shiroma, S. Thomas and T. Weller, "ENFUSE: Engaging Fundamentals and Systems Engineering in Introductory Circuits," 2015 ASEE Annual Conference, July, 2015.

52. N. Arnal, T. Ketterl, Y. Vega, J. Stratton, C. Perkowski, P. Deffenbaugh, K. Church and T. Weller, "3D Multi-Layer Additive Manufacturing of a 2.45 GHz RF Front End," Microwave Symposium Digest (IMS), 2015 IEEE MTT-S International , vol., no., pp., 17-22 May 2015.

53. Arnal, N.; Ketterl, T.; Weller, T.; Wable, G.; Hue Thai; Garon, W.; Gamota, D., "3D digital manufacturing and characterization of antennas integrated in mobile handset covers," Wireless and Microwave Technology Conference (WAMICON), 2015 IEEE 16th Annual , vol., no., pp.1,5, 13-15 April 2015.

54. Castro, J.; Weller, T.; Jing Wang, "An improved fabrication method of high-k and low-loss polymer composites with sintered ceramic fillers for microwave applications," in Microwave Symposium (IMS), 2015 IEEE MTT-S International , vol., no., pp.1-4, 17-22 May 2015.

55. Vera-Lopez, A.L.; Rojas-Nastrucci, E.A.; Cordoba-Erazo, M.; Weller, T.; Papapolymerou, J., "Ka-band characterization and RF design of Acrynolitrile Butadiene Styrene (ABS)," in Microwave Symposium (IMS), 2015 IEEE MTT-S International , vol., no., pp.1-4, 17-22 May 2015.

56. O'Brien, Jon; Cordoba Erazo, Maria F.; Rojas, Eduardo; Juan Castro; Abdin, Mohamed; Wang, Jing; Mumcu, Gokhan; Kenneth Church; Paul Deffenabugh; Weller, Tom, "Miniaturization of Microwave Components and Antennas Using 3D Manufacturing," invited paper, EuCAP 2015, Lisbon, Portugal, April 2015.

57. Castro, J.; Cure, D.;Wang,J.; Weller, T., "Development and Characterization of High-Permittivity and Low-Loss Polymer-Ceramic Composite Substrates for RF and Microwave Applications", Hispanic Engineer National Achievement Awards Corporation Conference (HENAAC), 2014 HENAAC 26th Annual, Great Minds in STEM, New Orleans, Louisiana, October 3, 2014.

58. M. Córdoba-Erazo, E. Rojas-Nastrucci and T. Weller, "Measurement of Electrical Conductivity of Direct Digital Printed Conductive Traces Using Near-Field Microwave Microscopy," 2014 IMAPS Symposium, San Diego, Ca, October 2014, pp. 898-904.

59. Dunleavy, Lawrence; Weller, Thomas, "Presentation of the 2014 IEEE WAMICON Rudolf E. Henning Distinguished Mentoring Award," Microwave Symposium (IMS), 2014 IEEE MTT-S International , vol., no., pp.1,1, 1-6 June 2014.

60. Kenneth Church, Xudong Chen, Paul Deffenbaugh, Casey Perkowski, Sam LeBlanc, Eduardo Rojas, Thomas Weller, “Turning Printed Circuit Boards into Printed Circuit Structures using 3D Printing,” 2014 SMTA Conference, August 2014.

61. P. Flikkema, R. Franklin, J. Frolik, C. Haden, A. Ohta, W. Shiroma, S. Thomas and T. Weller, “A systems-centric, foundational experience in Circuits,” 2014 ASEE Annual Conference, Indianapolis IN, June 15-18.

62. Grady, M.; Weller, T.M., "Using resistive loading to control the radiation efficiency of a spiral antenna," Wireless and Microwave Technology Conference (WAMICON), 2014 IEEE 15th Annual , vol., no., pp.1,4, 6-6 June 2014.

63. Cordoba-Erazo, M.F.; Weller, T.M., "A 1.4 GHz MMIC active isolator for integrated wireless systems applications," Wireless and Microwave Technology Conference (WAMICON), 2014 IEEE 15th Annual , vol., no., pp.1,3, 6-6 June 2014.

64. Rojas-Nastrucci, E.A.; Weller, T.; Lopez Aida, V.; Fan Cai; Papapolymerou, J., "A study on 3D-printed coplanar waveguide with meshed and finite ground planes," Wireless and Microwave Technology Conference (WAMICON), 2014 IEEE 15th Annual , vol., no., pp.1,3, 6-6 June 2014.

65. Castro, J.; Morales, C.; Weller, T.; Wang, J.; Srikanth, H., "Synthesis and characterization of low-loss Fe3O4-PDMS magneto-dielectric polymer nanocomposites for RF applications," Wireless and Microwave Technology Conference (WAMICON), 2014 IEEE 15th Annual , vol., no., pp.1,5, 6-6 June 2014.

66. Morales, H.; Connick, R.; Weller, T.; Dunleavy, L., "Temperature and bias dependent ferrite bead inductor modeling," Wireless and Microwave Technology Conference (WAMICON), 2014 IEEE 15th Annual , vol., no., pp.1,4, 6-6 June 2014.

67. Skidmore, S.; Patel, H.; Delgado, I.; Dunleavy, L.; Weller, T.; Heil, T., "LTCC filter modeling using EM and equivalent circuit techniques," Wireless and Microwave Technology Conference (WAMICON), 2014 IEEE 15th Annual , vol., no., pp.1,3, 6-6 June 2014.

68. Nassar, I.T.; Weller, T.M.; Tsang, H., "3-D printed antenna arrays for harmonic radar applications," Wireless and Microwave Technology Conference (WAMICON), 2014 IEEE 15th Annual , vol., no., pp.1,4, 6-6 June 2014.

69. Nassar, I.T.; Weller, T.M.; Tsang, H., "A 3-D printed miniaturized log-periodic dipole antenna," Antennas and Propagation Society International Symposium (APSURSI), 2014 IEEE , vol., no., pp.11,12, 6-11 July 2014.

70. Cure, D.; Weller, T.; Miranda, F.A., "Study of a flexible low profile tunable dipole antenna using barium strontium titanate varactors," Antennas and Propagation (EuCAP), 2014 8th European Conference on , vol., no., pp.31,35, 6-11 April 2014.

71. Nassar, I.T.; Tsang, H.; Church, K.; Weller, T.M., "A high efficiency, electrically-small, 3-D machined-substrate antenna fabricated with fused deposition modeling and 3-D printing," Radio and Wireless Symposium (RWS), 2014 IEEE , vol., no., pp.67,69, 19-23 Jan. 2014.

72. T. Weller, P. Deffenbaugh, I. Nassar, J. O'Brien, K. Church, J. Grandfield, G. Mumcu and M. Newton, "Achieving Higher Performing RF Devices using 3D Digital Manufacturing," DMC 2013, December 2013.

73. M. Cordoba and T. Weller, "Non-contact microwave characterization of inkjet-printed resistors," 2013 IMAPS Symposium, September 2013, pp. 932-936..

74. X. Chen, K. Church, K. Jones, T. Weller and M. Newton, "3D Direct Print Processing of LTCC for High Frequency MMIC Switch Modules," 2013 IMAPS Symposium, September 2013.

75. J. O'Brien, E. Rojas, T. Weller, M. Newton and D. Silva, "A Switched-Line Microwave Phase Shifter Fabricated with Additive Manufacturing," 2013 IMAPS Symposium, March 2013.

76. Nassar, I.T.; Weller, T.M., "An efficient, electrically-small, 3-D machined-substrate antenna," Antennas and Propagation Society International Symposium (APSURSI), 2013 IEEE , vol., no., pp.778,779, 7-13 July 2013.

77. Nassar, I.T.; Weller, T.M., "Design and characterization of a passive harmonic sensor embedded in sand," Wireless and Microwave Technology Conference (WAMICON), 2013 IEEE 14th Annual , vol., no., pp.1,3, 7-9 April 2013.

78. Nassar, I.T.; Weller, T.M.; Wang, J., "A high-efficiency, miniaturized sensor node with machined-substrate antennas for embedded wireless monitoring," Microwave Symposium Digest (IMS), 2013 IEEE MTT-S International , vol., no., pp.1,4, 2-7 June 2013.

79. Nassar, I.T.; Weller, T.M., "An electrically-small, 3-D cube antenna fabricated with additive manufacturing," Power Amplifiers for Wireless and Radio Applications (PAWR), 2013 IEEE Topical Conference on , vol., no., pp.91,93, 20-20 Jan. 2013.

80. F. Diamante, R. Donatto, V. Carias, M. Grady, and T. Weller, "Development and Design of Printed Electronics with Focus on RFID Systems for Transmission of Data and Impedance Variance Sensors," presented at the SMTA 2012, Orlando, FL, 2012.

81. T. Weller, "Electrically-Thin and Electrically-Small Antennas for Electromagnetic Sensing Applications," workshop presented at 2012 Military Antennas Conference, Washington, D.C., September 2012, invited.

82. S. Ketkar, M. Ram, A. Kumar, T. Weller, and A. Hoff, "Comparative Study of Electrode Stabilization Technique for Graphene-Polyaniline Nanocomposite Electrodes Using Dielectrics for Supercapacitor Applications," presented at PRiME 2012 in Honolulu, Hawaii (October 7-12, 2012).

83. Grady, M.; Wentworth, S.; Weller, T., "Improvements in cross ratio invariance techniques for coaxial probe dielectric measurements," Microwave Measurement Conference (ARFTG), 2012 79th ARFTG , vol., no., pp.1,7, 22-22 June 2012.

84. Cordoba-Erazo, M.F.; Weller, T.M., "Liquids characterization using a dielectric resonator-based microwave probe," Microwave Conference (EuMC), 2012 42nd European , vol., no., pp.655,658, Oct. 29 2012-Nov. 1 2012.

85. B. Zivanovic, T. Weller and C. Costa, “Broadside 6-element series-fed slot-coupled microstrip antenna array," Antennas and Propagation Society International Symposium (APSURSI), 2012 IEEE , vol., no., pp.1-2, 8-14 July 2012.

86. Price, T.; Weller, T.; Ya Shen; Xun Gong, "Temperature and voltage impact on intermodulation distortion of planar barium strontium titanate varactors," Wireless and Microwave Technology Conference (WAMICON), 2012 IEEE 13th Annual , vol., no., pp.1,5, 15-17 April 2012.

87. Cure, D.; Weller, T.M.; Miranda, F.A., "Non-uniform bias enhancement of a varactor-tuned FSS used with a low profile 2.4 GHz dipole antenna," Antennas and Propagation Society International Symposium (APSURSI), 2012 IEEE , vol., no., pp.1,2, 8-14 July 2012.

88. Nassar, I.T.; Gheethan, A.A.; Weller, T.M.; Mumcu, G.; , "A miniature, broadband, non-dispersive phase shifter based on CRLH TL unit cells," Antennas and Propagation Society International Symposium (APSURSI), 2012 IEEE , vol., no., pp.1-2, 8-14 July 2012.

89. Dunleavy, L.; Weller, Thomas; Jiang Liu; Morales, H.; Skidmore, S., "Advances in linear and non-linear modeling for improved microwave design," Wireless and Microwave Technology Conference (WAMICON), 2012 IEEE 13th Annual , vol., no., pp.1,5, 15-17 April 2012.

90. Cordoba-Erazo, M.F.; Weller, T.M., "Low-cost non-contact microwave probe design for insulating materials characterization," Microwave Measurement Symposium (ARFTG), 2011 78th ARFTG , vol., no., pp.1,5, 1-2 Dec. 2011.

91. David Cure, Thomas Weller and Felix Miranda, “Low Profile Tunable Antenna for Biomedical Radiometry Applications,” 2011 HENAAC Conference, August 2011.

92. Supriya Ketkar, Manoj Ram, Ashok Kumar, Thomas Weller and Andrew Hoff, “Stabilization of Graphene-Polyaniline based nanocomposite Electrodes using Barium Strontium Titanate for Supercapacitor Application,” 2012 TMS Annual Meeting & Exhibition, July 2011.

93. Cure, D.; Weller, T.; Miranda, F., "A comparison between Jerusalem Cross and Square Patch Frequency Selective Surfaces for low profile antenna applications," Electromagnetics in Advanced Applications (ICEAA), 2011 International Conference on , vol., no., pp.1019,1022, 12-16 Sept. 2011.

94. Price, T.; Weller, Thomas; Ya Shen; Xun Gong, "Comparison of barium strontium titanate varactors on magnesium oxide and alumina substrates," Wireless and Microwave Technology Conference (WAMICON), 2011 IEEE 12th Annual , vol., no., pp.1,5, 18-19 April 2011.

95. T. Weller, et al., “A Wireless Interrogator - Passive Sensor Approach for Deeply Embedded Sensing Applications,” 2011 International Antennas and Propagation Symposium, Spokane, Washington, July 2011.

96. Cure, D.; Weller, Thomas; Miranda, F.; Herzig, P., "One dimensional capacitive loading in a frequency selective surface for low profile antenna applications," Antennas and Propagation (APSURSI), 2011 IEEE International Symposium on , vol., no., pp.2258,2261, 3-8 July 2011.

97. Ledezma, L.; Weller, T.; , "Miniaturization of microstrip square open loop resonators using surface mount capacitors," Wireless and Microwave Technology Conference (WAMICON), 2011 IEEE 12th Annual , vol., no., pp.1-5, 18-19 April 2011.

98. Nassar, I.T.; Weller, T.M., "The ground plane effect of a small meandered line antenna," Wireless and Microwave Technology Conference (WAMICON), 2011 IEEE 12th Annual , vol., no., pp.1,5, 18-19 April 2011.

99. T. Weller, J. Frolik, P. Flikkema, W. Shiroma, C. Haden, and R. Franklin, "The Portability of Systems-Centric Content to Existing Sub-Discipline Courses," 2011 ASEE Conference, June 2011.

100. P. Flikkema, et al., "Wireless-Integrated Embedded Real-Time Control: A Case Study in Adopting Resources for Development of a Low-Cost Interdisciplinary Laboratory Project," 2011 ASEE Conference, June 2011.

101. T. Weller, J. Wang, S. Hariharan, S. Pal, C. Morales, J. Dewdney and V. Carias, "Characterization of Dielectric and Magnetic Properties of Functionalized Polymer Nanocomposites for Microwave Device Applications", Proceedings of 2011 NSF Engineering Research and Innovation Conference, Atlanta, Georgia, January 2011.

102. Nassar, I.T.; Weller, T.M.; , "An electrically small meandered line antenna with truncated ground plane," Radio and Wireless Symposium (RWS), 2011 IEEE , vol., no., pp.94-97, 16-19 Jan. 2011.

103. Supriya Ketkar, Manoj Kumar, Ashok Kumar, Thomas Weller and Andrew Hoff, "Electrical and Structural Diagnostics of Barium Strontium Titanate (BST) Thin Films," 2010 MRS Fall Meeting proceedings.

104. K. Stojak, S. Pal, C. Morales, J. Dewdney, T. Weller, J. Wang, H. Srikanth, "Magnetically Tunable Polymer Nanocomposites for RF and Microwave Device Applications," 2011 American Vacuum Society Conference, November 2010.

105. Jeff Frolik, Tom Weller, Paul Flikkema, Carol Haden, "Implementing an Inverted Classroom using Tablet PCs for Content Development," 2010 WIPTE Conference, October 2010.

106. C. Morales, et al., "Magnetic Responsive Polymer Nanocomposites Thin Films: Synthesis, Characterization and Implementation in RF/Microwave Applications," AVS 57th International Symposium & Exhibition, June 2010.

107. J. Dewdney, C. Morales, S. Skidmore, T. Weller, and Jing Wang, "Field Dependence of Complex Permeability and Permittivity of Composite Materials Extracted by Nicholson-Ross-Weir Method with Improved Algorithm," 43rd International Symposium on Microelectronics, Oct. 31-Nov. 4, 2010.

108. C. Morales, J. Dewdney, S. Skidmore, S. Pal, K. Stojak, H. Srikanth, T. Weller, Jing Wang, "Functionalized Magneto-Dielectric Polymer Nanocomposites for High Performance RF and Microwave Device Applications," 43rd International Symposium on Microelectronics, Oct. 31-Nov. 4, 2010.

109. Paul Flikkema, Rhonda Franklin, Jeff Frolik, Carol Haden, Wayne Shiroma, and Tom Weller, "MUSE – Multi-University Systems Education Mini-Workshop," 2010 Frontiers in Education Conference, October 2010.

110. "Magnetic polymer composites with tunable microwave properties" –K. Stojak, S.Pal, H. Srikanth, S. Skidmore, C. Morales, J. Dewdney, J. Wang and T. Weller, APS March meeting, Portland OR (March 15 – 19, 2010)

111. T. Price, E. Benabe, T. Weller, Y. Emirov and A. Kumar, “Sub-Micron Gap Capacitors using Ferroelectric Thin-Films,” ISIF2010 Symposium, San Juan, June 2010.

112. P. Flikkema, J. Frolik, W. Shiroma, T. Weller and C. Haden, “Experiential Learning of Complex Engineered Systems in the Context of Wireless Sensor Networks,” 2010 ASEE Conference, Louisville, KY, June 2010.

113. D. Cure, S. Melais, T. Weller, P. Herzig and R. Roeder, “2.45 GHz End-Loaded Dipole Backed by a High Impedance Surface,” 2010 IEEE AP-S, Toronto, July 2010.

114. C. Morales, et al., “Magnetically Tunable Nanocomposites for Microwave Applications,” IEEE International Microwave Symposium, Anaheim, June 2010.

115. J. McKnight, B. Zivanovic, T. Weller and C. Costas, “A Series-Fed Coplanar Waveguide Slot Antenna Array,” IEEE WAMICON, April 2010.

116. Q. Bonds, T. Weller, B Roeder and P. Herzig, “A Tunable Cavity Backed Slot Antenna (CBSA) for Close Proximity Biomedical Sensing Applications,” 2009 COMCAS, July 2009.

117. Scott Skidmore, Tom Weller, Hariharan Srikanth, Susmita Pal, Kristen Stojak, and Antonije R. Djordjevic, “Characterization of Functional Magnetic Polymer Nanocomposite Films for Tunable RF Device Applications,” Virginia Tech's Annual Symposium Wireless Communications, Blacksburg, VA, June 2009.

118. T. Weller, H. Srikanth, J. Wang, C. Morales, J. Dewdney, S. Skidmore, S. Pal, S. Chandra, K. Stojak, “Microwave Characterization of Magnetic Polymer Nanocomposites using Transmission-line and Microwave Resonator Based Test Structures,” 2009 CMMI Grantees Conference, Honolulu, HA, June 2009.

119. K. Stojak, S. Pal, S. Chandra, M.J. Miner, H. Srikanth, S. Skidmore, T. Weller, C. Morales, J. Wang and A. Horn, “Functional Nanocomposite Polymer Films with Uniform Magnetic Nanoparticle Dispersion,” American Physical Society March Meeting, Pittsburgh, PA, March 2009.

120. B. Zivanovic, T. Weller and C. Costas, “Omni-Directional Array Using a Cylindrical Configuration of Slot-Coupled Microstrip Antennas,” European Microwave Conference, September 2009.

121. Aguilar, S.M.; Weller, T.M.; , "Tunable harmonic re-radiator for sensing applications," Microwave Symposium Digest, 2009. MTT '09. IEEE MTT-S International, vol., no., pp.1565-1568, 7-12 June 2009.

122. S. Balachandran, D. Hoff, A. Kumar and T. Weller, “Nanocrystalline diamond RF MEMS capacitive switch," Microwave Symposium Digest, 2009. MTT '09. IEEE MTT-S International, vol., no., pp.1657-1660, 7-12 June 2009.

123. Q. Bonds, T. Weller, E. Maxwell, T. Ricard, and E. Odu, “A Total Power Radiometer (TPR) and Measurement Test Bed for Non-Contact Biomedical Sensing Applications,” 2009 Wireless and Microwave Technology Conference, October 2009.

124. S. Melais and T. Weller, “A Multilayer Jerusalem Cross Frequency Selective Surface with Adequate Angular Stability at the 2.4GHz ISM Band,” 2009 Wireless and Microwave Technology Conference, October 2009.

125. J. Cooper, B. Zivanovic, S. Melais, T. Weller, S. DiStasi, R. Ketcham and J. Frolik, “An Electrically Reconfigurable Reverberation Chamber for the Emulation of Severe Multipath Channels,” 2009 Wireless and Microwave Technology Conference, October 2009.

126. C. Haden, P. Flikkema, T. Weller, J. Frolik, W. Verrei-Berenback and W. Shiroma, “Assessment of a Hybrid, On-line/In-class Course Developed at Multiple Universities, ” 2009 ASEE Conference.

127. M. J. Miner, S. Skidmore, T. Weller and H. Srikanth, “Superparamagnetic polymer nanocomposites for microwave applications” – 53rd Magnetism and Magnetic Materials (MMM) Conference, Austin, TX (Nov. 2008).

128. T. Weller, M. Miner, M. Morales, S. Skidmore, J. Gaas, H. Srikanth and J. Wang, “Functional Magnetic Polymer Nanocomposite Films for Tunable RF Device Applications,” 2008 CMMI Grantees Conference, Knoxville, TN, January 2008.

129. S. Balachandran, J. Kusterer, D. Maier, M. Dipalo, A. Kumar, T.M. Weller, E. Kohn, “High Power Nanocrystalline Diamond RF MEMS- A Combined Look at Mechanical and Microwave Properties”, COMCAS 2008, Israel, May 2008. Invited paper.

130. B. Zivanovic, J. McKnight, T. Weller and C. Costas, “A Dual-Feed Series Microstrip Patch Array,” 2008 IEEE International Antennas and Propagation Symposium, January 2008.

131. DiStasi, S.; Melais, S.; Ketcham, R.; Zivanovic, B.; Cooper, J.; Frolik, J.; Weller, T.; , "A compact, reconfigurable chamber for emulating severe multipath fading," Antennas and Propagation Society International Symposium, 2008. AP-S 2008. IEEE , vol., no., pp.1-4, 5-11 July 2008.

132. J. Frolik, P. Flikkema, W. Shiroma and T. Weller, “Work in Progress: MUSE – Multi-University Systems Education,” 2008 Frontiers in Education Conference, January 2008.

133. M. Miner, M. B. Morales, S. Skidmore, T. Weller and H. Srikanth, “Synthesis of surface functionalized nanoparticles and polymer nanocomposites” –APS March meeting, New Orleans LA (March 10 – 14, 2008).

134. Natarajan, S.P.; Hoff, A.M.; Weller, T.M.; , "Micro coaxial-fed millimeter-wave slot antenna," Radio and Wireless Symposium, 2008 IEEE , vol., no., pp.675-678, 22-24 Jan. 2008.

135. M. Miner, S. Pal, K. Stojak, H. Srikanth, S. Skidmore, J. Wang, T. Weller, “Synthesis of Surface Functionalized Magnetic Nanoparticles and their Polymer Nanocomposites,” 53rd Magnetism and Magnetic Materials Conference, Austin, TX (2008).

136. S. Melais, et al., “Origami Packaging – Novel Printed Antenna Technology for Ad-hoc Sensor Applications,” 40th International Symposium on Microelectronics, October 2007.

137. V. Gurumurthy, et al., “Effect of nanocrystalline diamond interlayer for BST varactors,” 2007 MRS Conference, December 2007, Boston, MA.

138. A. Kumar, et al., “NANOCRYSTALLINE DIAMOND FILMS FOR MEMS APPLICATIONS,” invited talk, I-MRS Conference, India (Bangalore, Oct. 07).

139. S. Balanchandran, et al, “Thermal, mechanical and microwave characteristics of nanocrystalline diamond bridges,” 2007 MRS Conference.

140. J. Kusterer, S. Balachandran, T. M. Weller, E. Kohn, “Nanodiamond microbridges for RF applications”, 2nd International industrial diamond conference, Rome, April 2007.

141. Y. Emirov, S. Baylis and T. Weller, “The Use of End-Point Current Monitor for FIB Milling Depth Control in Multilayer Nano-Devices,” Florida Chapter of the American Vacuum Society Meeting, March 2007.

142. S. Presas and T. Weller, “High Efficiency Diode Doubler with Conjugate Matched Antennas,” Microwave Conference, 2007. European 9-12 Oct. 2007 Page(s):250 – 253.

143. B. Zivanovic, et al., “The Effect of Alignment Tolerance on Multilayer Air Cavity Microstrip Patches,” 2007 IEEE International AP-S, July 2007.

144. Q. Bonds, et al., “An Ultra-Wideband (UWB) Pulse Dispersion Study for Antennas in Sensor Network Applications,” 2007 IEEE International AP-S, July 2007.

145. Balachandran, S.; Kusterer, J.; Connick, R.; Weller, T.M.; Maier, D.; Dipalo, M.; Kohn, E., "Thermally Actuated Nanocrystalline Diamond Micro-Bridges for Microwave and High Power RF Applications," Microwave Symposium, 2007. IEEE/MTT-S International , vol., no., pp.367,370, 3-8 June 2007.

146. R. Ketcham, J. Frolik, B. Zivanovic, S. Melais, and T. Weller, “Compact and simple diversity methods for mitigating severe fading,” IEEE Wireless and Microwave Technology Conference 2006, Tampa, FL, December 2006.

147. T. Ketterl and T. Weller, X-Band MEMS Capacitive Shunt Switches with Metal-Insulator-Metal Contacts for Improved Isolation, IEEE Wireless and Microwave Technology Conference 2006, Tampa, FL, December 2006.

148. M. Sarehraz, K. Buckle, E. Stefanakos and T. Weller, “A Novel Anti-Phase Dual Port Patch Antenna,” IEEE International Workshop on Antenna Technology, 2006 IEEE International Workshop on Antenna Technology, White Plains, New York, during. March 6-8, 2006.

149. M. Sarehraz, K. Buckle, E. Stefanakos and T. Weller, “An Aperture Coupled NRD Feed Structure for Dielectric Rod Antennas,” 2006 IEEE International Workshop on Antenna Technology, White Plains, New York, during. March 6-8, 2006.

150. M. Sarehraz, K. Buckle, E. Stefanakos and T. Weller, “A Novel Dual Polarized Dielectric Rod Antenna,” IEEE International Workshop on Antenna Technology, 2006 IEEE International Workshop on Antenna Technology, White Plains, New York, during. March 6-8, 2006.

151. S. Balachandran, J. Kusterer, T. M. Weller, E. Kohn, “Thermally actuated diamond based RF-MEMS devices”, 8th IEEE Wireless and Microwave technology Conference, Florida, December 2006.

152. Natarajan, S.P.; Weller, T.M.; , "MEMS Based 3-D Micro Coaxial Transmission Lines," Wireless and Microwave Technology Conference, 2006. WAMICON '06. IEEE Annual, vol., no., pp.1-3, 4-5 Dec. 2006.

153. R. Heindl, H. Srikanth, S. Witanachchi, P. Mukherjee, T. Weller, A. Tatarenko and G. Srinivasan, “Structure, magnetism and microwave properties of PLD-grown Barium Ferrite/Barium Strontium Titanate bilayer thin films,” Intermag/MMM, August 2006.

154. E. Maxwell, T. Weller and J. Harrow, “A Tunable Ultra-Wideband Pulse Generator using a Variable Edge Rate Signal,” presented at 2006 IEEE Asia Pacific Conference on Circuits and Systems (APCCAS 2006), December 2006.

155. Maxwell, E.; Weller, T.; Harrow, J.; , "Enhanced Tunable Ultra-Wideband Pulse Generation Based on Variable Edge-Rate Compression," Radar Conference, 2006. EuRAD 2006. 3rd European , vol., no., pp.198-201, 13-15 Sept. 2006.

156. E. Maxwell, T. Weller and J. Harrow, “A Variable Edge-Rate Compression Approach to Tunable Ultra-Wideband Pulse Generation,” accepted to Sarnoff Symposium, January 2006.

157. T. Ricard, T. Weller and J. Harrow, “Microwave Spectroscopy in Skin Cancer Detection and Diagnosis,” IEEE Antennas and Propagation Society International Symposium 2006, IEEE 9-14 July 2006 Page(s):287 - 290.

158. S. Natarajan, T. Weller and D. Hoff, “Integrated Micro Coaxial Air-Lines with Perforations,” 2006 IEEE International Microwave Symposium, June 2006.

159. T. Ketterl, T. Weller and B. Rossie, “MEMS Series Switch with Nanometer Wide Gaps in Suspended Coplanar Waveguide Transmission Lines”, 2006 IEEE International Microwave Symposium, June 2006.

160. S. Balachandran, T. Weller, et al., “Multi-Bit Distributed MEMS Inductors,” 2006 IEEE International Microwave Symposium, December 2005.

161. S. Balachandran, T.M. Weller, A. Kumar, “Ultrananocrystalline diamond for microwave applications”, 7th IEEE Wireless and Microwave technology Conference, Florida, December 2005.

162. T. Ricard and T. Weller, "Microwave Spectroscopy in Skin Cancer Detection and Diagnosis - A Preliminary View," BSI2005, September 2005, Tokyo, Japan.

163. R. Heindl, et al., “Microwave impedance and tunability of multilayered ferroelectric – ferrite films,” 50th Magnetism and Magnetic Materials (MMM) Conference, May 2005.

164. Fries, D.; Broadbent, H.; Steimle, G.; Ivanov, S.; Cardenas-Valencia, A.; Fu, J.; Weller, T.; Natarajan, S.; Guerra, L.; , "PCB MEMS for environmental sensing systems," Industrial Electronics Society, 2005. IECON 2005. 31st Annual Conference of IEEE , vol., no., pp. 5 pp., 6-10 Nov. 2005.

165. S. Natarajan, C. Trent, T. Weller and M. Smith, “A 3 × 3, K-Band CPW-fed, Aperture-Coupled Antenna Array for Radiometer Applications”, 2005 European Microwave Conference, October 2005.

166. T. Ketterl, D.Fries and T. Weller, “SPDT MEMS Switch Using a Single Bias Voltage and Based on Dual Series and Shunt Capacitive MEMS Switches”, 2005 European Microwave Conference, Volume 3, 4-6 Oct. 2005 Page(s):4 pp.

167. B. Lakshiminarayanan and T. Weller, “Slow-Wave Phase Shifter Design and Applications,” Wireless and Microwave Technology Conference 2005, Tampa, FL, April 2005.

168. S. Natarajan, T. Weller and D. Fries, “3-D PCB Toroidal Inductors for RF Applications”, accepted for publication at the 38th International Symposium on Microelectronics, Philadelphia, PA, Sept. 2005.

169. E. Maxwell, T. Weller and J. Harrow, “UWB Radar for Enhanced Non-Invasive Cancer Diagnostics,” Proceedings of the 2005 BioFlorida Annual Conference, October 2005.

170. S. Melais, T. Weller, and M. Wilhelm, “A low-profile broadband strip-line balun," Antennas and Propagation Society International Symposium, 2005 IEEE , vol.3B, no., pp. 369- 372 vol. 3B, 3-8 July 2005.

171. T. Ketterl, T. Weller and B. Rossie, “Focused ion beam milled sub-micron capacitive gaps in coplanar transmission lines," Antennas and Propagation Society International Symposium, 2005 IEEE , vol.1A, no., pp. 292- 295 Vol. 1A, 3-8 July 2005.

172. P. B. Zantye, A. Kumar, S. Natarajan and T. Weller, Use of Chemical Mechanical Polishing in the Fabrication of Radio Frequency (RF) Micro Coaxial Transmission Lines (MCTL), 207 th Meeting of the Electrochemical Society, Quebec City, Canada, May 15-20, 2005.

173. B. Lakshminarayanan and T. Weller, “Reconfigurable MEMS transmission lines with independent Zo- and β-tuning," Microwave Symposium Digest, 2005 IEEE MTT-S International , vol., no., pp. 4 pp., 12-17 June 2005.

174. Sarehraz, M.; Buckle, K.; Weller, T.; Stefanakos, E.; Bhansali, S.; Goswami, Y.; Subramanian Krishnan**; “**Rectenna developments for solar energy collection”, Photovoltaic Specialists Conference, 2005. Conference Record of the Thirty-first IEEE 3-7 Jan. 2005 Page(s):78 - 81.

175. S. Balachandran, T. Weller and M. Smith, “MEMS Tunable Inductors,” 2004 All-Raytheon Symposium, Boston, MA, April 2004.

176. R.Heindl, S.Hariharan, S.Balachandran, T.Weller, “Growth and Characterization of BSTO/Barium Hexaferrite Multilayers”, International Conference on Ferrites, San Francisco, CA, October 2004.

177. H. Kannan and T. Weller, “Multi-Finger RF MEMS Variable Capacitors for RF Applications,” Microwave Conference, 2004. 34th European Volume 2, 13 Oct. 2004 Page(s):717 - 720.

178. S. Balachandran, T. Weller, et al., “MEMS Tunable Planar Inductors Using DC-Contact Switches,” Microwave Conference, 2004. 34th European Volume 2, 13 Oct. 2004 Page(s):713 - 716.

179. B. Lakshminarayanan and T. Weller, “MEMS Phase Shifters Using Cascaded Slow-Wave Structures for Improved Impedance Matching and/or Phase Shift,” Microwave Symposium Digest, 2004 IEEE MTT-S International, Volume 2, 6-11 June 2004 Page(s):725 - 728 Vol.2.

180. S. Natarajan, T. Weller, and D. Fries, “Fluid Conductivity Sensor Based on RF Phase Detection,” 2004 IEEE Sensors Conference, April 2004.

181. W. Clausen, et al., “Black-Box Modeling of RFIC Amplifiers for Linear and Non-Linear Simulations,” *2004 Motorola Simulation Symposium*, Chicago, IL, July 2004.

182. J. Culver and T. Weller, “The Analysis of Metal-Thick-Insulator-Semiconductor CPW Lines using Generalized Transverse Resonance,” *Wireless and Microwave Technology Conference 2004*, Tampa, FL, April 2004.

183. T. Weller, et al., "Industry Teaming for Graduate Course Development: A New RFIC Course Sequence at the University of South Florida," *presented at the 2004 ASEE SE Conference*, December 2003.

184. Sriraj G Manavalan, A. K. Sikder, Ashok Kumar, T.Weller., "Structural and Electrical Properties of Ba0.5Sr0.5TiO3 Thin Films for Tunable Microwave Applications," *2004 Spring MRS Meeting*, November 2003.

185. B. Lakshminarayanan and T. Weller, "Tunable Bandpass Filter Using Distributed MEMS Transmission Lines," *Microwave Symposium Digest, 2003 IEEE MTT-S International , Volume: 3 , 8-13 June 2003*, Page(s): 1789 -1792 vol.3.

186. B. Lakshminarayanan and T. Weller, "CPW Line-to-Line Coupling on Glass and Low Resistivity Silicon," ARFTG Microwave Measurements Conference, 2003. Fall 2003. 62nd 4-5 Dec. 2003 Page(s):239 - 242.

187. T. Weller and D. Kwan, "How Accurate are the RCL Complex Substrate Scalable Models," *2003 Motorola Simulation Symposium*, Chicago, IL, July 2003.

188. W. Clausen, T. Weller and L. Dunleavy, "Characterization and Modeling of Non-Linear Effects in Crystal Filters," *2003 Motorola Simulation Symposium*, Chicago, IL, July 2003.

189. W. Clausen, L. Dunleavy and T. Weller, "Use of Pulsed I-V Data Facilitates FET Model Scaling with Gate Width and Bias," *2003 Motorola Simulation Symposium*, Chicago, IL, July 2003.

190. D. Fries, G. Steimle, S. Natarajan, S. Ivanov, H. Broadbent, T. Weller, "Maskless Lithographic PCB/Laminate MEMS for a Salinity Sensing System," IMAPS 35th Annual Symposium on Microelectronics, Denver, CO, September 2002.

191. C. Trent and T. Weller, "Design and Statistical Analysis of a 21 GHz CPW-fed, Slot-Coupled, Microstrip Antenna on Etched Silicon," Antennas and Propagation Society International Symposium, 2002. IEEE Volume 1, 16-21 June 2002 Page(s):402 - 405 vol.1.

192. B. Lakshminarayanan and T. Weller, "MEMS Phase Shifters Using Tapered Impedance Unit Cells," Microwave Symposium Digest, 2002 IEEE MTT-S International, Volume: 2, 2002, Page(s): 1237 - 1240.

193. J. Naylor, T. Weller, J. Culver and M. Smith, "Miniaturized Slow-Wave Coplanar Waveguide Circuits on High-Resistivity Silicon," Microwave Symposium Digest, 2002 IEEE MTT-S International, Volume: 2, 2002, Page(s): 669 -672.

194. M. Smith, T. Weller, C. Trent, and J. Culver, "Integrated K-Band Si-Micromachined Conformal CPW-Fed Patch Array Antenna with Si Micromachined MMIC Radiometer," 2002 All-Raytheon Symposium, Tucson, AZ, April 2002.

195. T. Weller, C. Trent, J. Naylor, M. Smith and J. Culver, "High-Resistivity Silicon-Based Components for K/Ka-Band Applications," 2002 All-Raytheon Symposium, Tucson, AZ, April 2002.

196. V. Cojocaru, D. Markell, J. Capwell, T. Weller and L. Dunleavy, "Enhancing the Simulation Accuracy of RF Designs With Consistent Characterization and Modeling Techniques," ARFTG Conference Digest, Spring 2002. 59th June 7, 2002 Page(s):147 - 153.

197. L. Emmadi, T. Weller and S. Viteri, "Equivalent Circuit Models for Microwave Varactor Diodes Including Substrate Effects," *2002 Motorola Simulation Symposium*, Chicago, IL, May 2002.

198. B. Lakshminarayanan and T. Weller, "60 GHz Coplanar Waveguide – Slotline Transition and Couplers on Polished Beryllium Oxide," Microwave Symposium Digest, 2001 IEEE MTT-S International, Volume 2, 2001, Page(s): 1305 -1308 vol.2.

199. T. Weller, et al, "Microwave Design for Miniaturization, Tunability and Wafer-Scale Packaging," *NSF Wireless Grants Workshop*, Washington, DC, February 2001.

200. M. Smith, T. Weller, et al., "K-Band Direct Detect MMIC Si Micromachined Radiometer," Microwave Symposium Digest, 2001 IEEE MTT-S International, Volume: 3, 2001, Page(s): 2255 -2258 vol.3.

201. T. Ketterl, T. Weller, and D. Fries, "A Micromachined Tunable CPW Resonator," Microwave Symposium Digest, 2001 IEEE MTT-S International, Volume: 1, 2001, Page(s): 345 -348 vol.1.

202. J. Frolik and T. Weller, "An Internet-Based Approach for Multi-University Course Offerings," *2001 Annual Meeting of the Southeastern Section of the American Society for Engineer*s, April 2001.

203. J. Culver, B. King and T. Weller, "A 1.6 GHz Slot Antenna on a Cylindrical Alumina Substrate," *Proceedings of the 2000 ISAP Symposium*, August 2000.

204. C. Trent, T. Weller, S. Gedney, P. Petre, and T. Hussain, "CPW-Stripline Transitions on Silicon Over the 0-20 GHz Range," Antennas and Propagation Society International Symposium, 2000. IEEE, Volume: 4 , 2000, Page(s): 2004 -2007 vol.4.

205. T. Weller, "Edge-Coupled Coplanar Waveguide Bandpass Filter Design," *Proceedings of the 2000 International Microwave Symposium*, pp. 335-338, Vol. 1.

206. P. Kirby, L. Dunleavy and T. Weller, "Limitations of Network Analyzer Load Models for On-Wafer SOLT Calibrations," *56th Conference on Automatic Radio Frequency Techniques (ARFTG)*, Boulder, CO, December 2000.

207. B. Lakshminarayanan and T. Weller, "Experimental Results for Parasitic Coupling and Attenuation of Coplanar Waveguides on High Resistivity Silicon," *56th Conference on Automatic Radio Frequency Techniques (ARFTG)*, Boulder, CO, December 2000.

208. J. Jargon, P. Kirby, K. C. Gupta, L. Dunleavy, and T. Weller, "Modeling Load Variations With Artificial Neural Networks to Improve On-Wafer OSLT Calibrations," *56th Conference on Automatic Radio Frequency Techniques (ARFTG)*, Boulder, CO, December 2000.

209. T. Weller, H. Gordon, et. al, "The Development of Substrate-Dependent Equivalent Circuit Models for Surface Mount Capacitors and Air-Core Inductors," *Motorola Simulation Symposium 2000*, Phoenix AZ, July 2000.

210. P. Kirby, L. Dunleavy and T. Weller, "The effect of load variations on on-wafer lumped element based calibrations," *54th Conference on Automatic Radio Frequency Techniques (ARFTG)*, December 1999.

211. T. Weller and L. Dunleavy, "Wireless and Microwave Education: From Circuits to Systems," *Proceedings of the 1999 European Microwave Conference - Invited Paper,* pp. 93-97.

212. M. Imparato, T. Weller and L. Dunleavy, "On-Wafer Calibration Using Space Conservative (SOLT) Standards," Microwave Symposium Digest, 1999 IEEE MTT-S International Volume 4, 13-19 June 1999 Page(s):1643 - 1646 vol.4.

213. R. Henderson, T. Weller and L. Katehi, "Three-Dimensional W-Band Circuits Using Si Micromachining," Microwave Symposium Digest, 1999 IEEE MTT-S International Volume 2, 13-19 June 1999 Page(s):441 - 444 vol.2.

214. T. Weller, N. Dib, and B. Lakshminarayanan, "FDTD Modeling of Ceramic Multi-layer Capacitors Using Lumped Equivalent Models," Antennas and Propagation Society International Symposium, 1999. IEEE Volume 2, 11-16 July 1999 Page(s):1086 - 1089 vol.2.

215. S. Gross, L. Dunleavy, T. Weller, and B. Schmitz, "PC Board Characterization Using Accurate Hybrid Probing Techniques," *54th Conference on Automatic Radio Frequency Techniques (ARFTG)*, December 1999

216. E. Benabe, H. Gordon and T. Weller, "Substrate-Dependent Air Wound Inductor Model in the DC-4 GHz Range," *54th Conference on Automatic Radio Frequency Techniques (ARFTG)*, December 1999.

217. T. Weller, "Micromachining for Microwave Filters and Signal Distribution," 1999 Florida IMAPS (International Microelectronics and Packaging Society) Technical Symposium, September, invited presentation.

218. E. Benabe, A. Kuppusamy, T. Weller, P. Flikkema, and L. Dunleavy, "Simulation of a 915 MHz Receiver Using the HP Advanced Design System," *Proceedings of the 52nd Conference on Automatic Radio Frequency Techniques (ARFTG)*, December 1998.

219. E. Benabe, K. Skowronski, H. Gordon and T. Weller, "Automated Measurement of Ceramic Multilayer Capacitors," ARFTG Conference Digest, 1998. Computer-Aided Design and Test for High-Speed Electronics. 52nd 3-4 Dec. 1998 Page(s):88 - 94.

220. Rodriguez, L. Dunleavy and T. Weller, "Close-In Phase Noise Measurements of Injection Locked Voltage Controlled Oscillators," *Proceedings of the 51st Conference on Automatic Radio Frequency Techniques (ARFTG)*, June 1998.

221. Kuppusamy, P. Flikkema, and T. Weller, "Frequency-Domain Measurement of Multipath Effects in Wideband 2.4~Ghz Wireless Channels," *Proceedings of the 51st Conference on Automatic Radio Frequency Techniques (ARFTG)*, June 1998.

222. T. Weller, "High Impedance Micromachined Lines for Filter Design on Silicon," *Proceedings of the 1st Topical Meeting on Silicon Monolithic Integrated Circuits in RF Systems*, August 1998.

223. T. Weller, R. Henderson, S. Robertson, and L. Katehi, "Optimization of Mm-Wave Distribution Networks using Silicon-Based CPW," *Proceedings of the 1998 IEEE MTT-S Symposium*, June 1998.

224. T. Weller, P. Flikkema, L. Dunleavy, H. Gordon and R. Henning, "Educating Tomorrow's RF/Microwave Engineer: A New Undergraduate Laboratory Uniting Circuit and System Concepts," *Proceedings of the 1998 IEEE MTT-S Symposium*, June 1998.

225. N. Dib, T. Weller, and M. Scardelletti, "Analysis of 3-D Cylindrical Structures Using the Finite Difference Time Domain Method," *Proceedings of the 1998 IEEE MTT-S Symposium*, June 1998.

226. P. Flikkema, L. Dunleavy, H. Gordon, R. Henning and T. Weller, "Wireless Circuit and System Design: A New Undergraduate Laboratory," *Proceedings of the 1997 Frontiers in Education Conference*.

227. E. Grimes, T. Weller, L. Dunleavy and J. Culver, "Designing a C-Band Downconverter for High Testability," *Proceedings of the 50th Conference on Automatic Radio Frequency Techniques (ARFTG)*, Dec. 1997.

228. M. Imparato, T. Weller, L. Dunleavy, R. Henderson, S. Robertson, and L. Katehi, "The Effects of Line Width and Slot Etching on Silicon-Based CPW at Mm-Wave Frequencies," *Proceedings of the 50th Conference on Automatic Radio Frequency Techniques (ARFTG)*, Dec. 1997.

229. L. Dunleavy, T. Weller, E. Grimes and J. Culver, "Mixer Measurements Using Network and Spectrum Analysis," *Proceedings of the 48th Conference on Automatic Radio Frequency Techniques (ARFTG)*, November 1996.

230. T. M. Weller and L. P. Katehi, "A Compact Micromachined Lowpass Filter Using Lumped Elements," *Proceedings of the 1996 IEEE MTT-S Symposium*, vol. 2, pp. 631-634.

231. T. M. Weller and L. P. B. Katehi, "Compact Stubs for Micromachined Coplanar Waveguide," *Proceedings of the 25th European Microwave Conference*, September 1995.

232. S. Raman, T. Weller, L. Katehi, and G. Rebeiz, "A Double Folded-Slot Antenna at 94 GHz," *Proceedings of the 1995 IEEE AP Symposium*.

233. T. M. Weller and L. P. Katehi, "Miniature Stub and Filter Designs Using the Microshield Transmission Line," *Proceedings of the 1995 IEEE MTT-S Symposium*, pp. 675-678.

234. R. F. Drayton, T. M. Weller, and L. P. Katehi, "Development and Characterization of Miniaturized Circuits for High-Frequency Applications using Micromachining Techniques," *Proceedings of the 1994 International Society for Hybrid Microelectronics Symposium*.

235. T. M. Weller, L. P. Katehi, M. I. Herman, and P. D. Wamhof, "Membrane Technology (MIST-T) Applied to Microstrip: A 33 GHz Wilkinson Power Divider," *Proceedings of the 1994 IEEE MTT-S Symposium*, pp. 911-913.

236. H. Cheng, J. F. Whitaker, T. M. Weller, and L. P. Katehi, "Terahertz-Bandwidth Characterization of Coplanar Waveguide on Dielectric Membranes via Time-Domain Electro-Optic Sampling," *Proceedings of the 1994 IEEE MTT-S Symposium*, pp. 477-480.

237. T. M. Weller, S. V. Robertson, L. P. Katehi, and G. M. Rebeiz, "Millimeter and Submillimeter Wave Microshield Line Components," *Proceedings of the 5th International Symposium on Space Terahertz Technology*, University of Michigan, 1994.

238. T. M. Weller, L. P. Katehi, and G. M. Rebeiz, "Fabrication and Characterization of Microshield Circuits," *Proceedings of the 4th International Symposium on Space Terahertz Technology*, University of California at Los Angeles, 1993, pp. 223-237.

239. T. M. Weller, G. M. Rebeiz, and L. P. Katehi, "Experimental Results on Microshield Line Circuits," *Proceedings of the 1993 IEEE MTT-S Symposium*, pp. 827-830.

240. H. Cheng, J. F. Whitaker, T. M. Weller and L. P. Katehi, "Transmission of Ultra-High-bandwidth Pulses on a Low-distortion Stripline," LEOS 1993 Summer Topical Meeting Digest, pp. 55-56.

241. T. M. Weller and L. P. Katehi, "Analysis of Microshield Transmission Line Circuits with Dual-Plane Discontinuities," *Proceedings of the 9th Annual Review of Progress in Applied Computational Electromagnetics*, March 22-26, 1993, pp. 273-280.

242. T. M. Weller, L. P. Katehi, and W. R. McGrath, "A Non-Contacting Waveguide Backshort for Submillimeter-Wave Applications," *Proceedings of the 22nd European Microwave Conference*, Helsinki, Finland, August 1992, pp. 993-998.

Magazine Articles

1. L. Ledezma and T. Weller, "Performing EM/Circuit Co-Simulation With Modified Standard Models," High Frequency Electronics, November 2010.

2. H. Patel, Thomas Weller, Rick Connick and Lawrence Dunleavy, "Non-Linear Simulation of RFIC Reference Design Boards," High Frequency Electronics, July 2008.

3. L. Emmadi, J. Capwell, L. Dunleavy and T. Weller, et al., "Non-Linear Diode Models for Enhanced Simulation Accuracy," Microwave Journal – Product Feature, March 2005.

4. W. Clausen, L. Dunleavy and T. Weller, et al., "Black-Box Modeling of RFIC Amplifiers for Linear and Non-Linear Simulations," Microwave Product Digest, pp. 34-35, October 2004.

5. J. Capwell, W. Clausen, L. Dunleavy and T. Weller, et al., "Automation and Real-Time Verification of Passive Component S-parameter Measurements Using Loss Factor Calculations," *Microwave Journal*, March 2004.

6. L. Dunleavy, W. Clausen and T. Weller, "Pulsed IV for Non-Linear Modeling," *Microwave Journal*, March, 2003.

7. T. Weller, et al., "Considerations in Capacitor-Pairing to Obtain Non-Standard Part Values," *Microwave Journal*, November 2002.

8. T. Weller, L. Dunleavy and W. Clausen, "Frequency Extrapolation Errors During Broadband Design Simulation," *Microwaves & RF*, October 2002.

9. V. Cojocaru, D. Markell, J. Capwell, T. Weller and L. Dunleavy, "Enhancing the Simulation Accuracy of RF Designs with Consistent Characterization and Modeling Techniques," *High Frequency Electronics*, September 2002.

10. Max Scardelletti, Thomas Weller, Nihad Dib, James Culver and Brett King, "Coupled Slot-Fed Slot Antennas on Cylindrical Substrates," *Applied Microwave & Wireless*, June 2001.

11. S. Gross, L. Dunleavy and T. Weller, "SOLR Calibration for Grounded Coplanar Waveguide Lines," *Microwave Journal*, October 2000.

12. L. Dunleavy, P. Flikkema, T. Weller, A. Kuppusamy, and E. Benabe, "Characterization and Simulation of a 915 MHz Receiver, " *Applied Microwave and Wireless*, pp. 84-100, July 1999.

13. L. Dunleavy, T. Weller, E. Grimes and J. Culver, "Use Network and Spectrum Analysis for Mixer Measurements," *Microwaves and RF*, Part I: May 1997, pp. 143-152, Part II: June 1997, pp. 71-80.

14. L. Dunleavy, T. Weller, P. Flikkema, H. Gordon, and R. Henning, "A Versatile Test Bench for Characterization of Wireless RF/Microwave Components," *Microwave Journal*, May 1998.

15. L. P. Katehi, G. M. Rebeiz, T. M. Weller, and R. F. Drayton, "Micromachined Circuits for Millimeter- and Submillimeter-Wave Applications," *IEEE Antennas and Propagation Magazine*, Vol. 35, No. 5, October 1993, pp. 9-17.

Grants (over $11M as Principal Investigator and $8M as Co-Principal Investigator)

1. 3-D Antenna Technology using Additive Manufacturing; PI T. Weller; Granting Agency: Air Force (Phase 2 SBIR subcontract through Sciperio, Inc.); Amount: $249,000; Period 8/18 – 8/20; Person-Months Per Year Committed to Project: 0.4; Purpose: demonstrate a 3-D antenna technology using additive manufacturing. Submitted February 2018.

2. MRI: Acquisition of a Multi-Material Additive Manufacturing Platform for Multi-Disciplinary Research and Education; Granting Agency: National Science Foundation; Amount: $601,400; PI J. Wang, co-PI T. Weller; Period: 9/1/17 – 8/31/20; Person-Months Per Year Committed to Project: 0; Purpose: Acquisition of an advanced multi-material additive manufacturing tool. Submitted January 2017.

3. GOALI: Mm-Wave Reconfigurable Additive Manufactured Packaging Systems (RAMPS) using Pulsed Picosecond Laser Processing; Granting Agency: National Science Foundation; Amount: $360,000; PI T. Weller, co-PI J. Wang; Period: 8/1/17 – 8/1/20; Person-Months Per Year Committed to Project: 0.5; Purpose: Develop mm-wave packaging systems that incorporate reconfigurable devices using 3D printing techniques. Submitted November 2016.

4. 3-D Antenna Technology using Additive Manufacturing; PI T. Weller; Granting Agency: Air Force (subcontract through Sciperio, Inc.); Amount: $49,500 with $49,500 HTC Match; Period 6/17 – 2/18; Person-Months Per Year Committed to Project: 0.2; Purpose: to demonstrate a 3-D antenna technology using additive manufacturing. Submitted February 2017.

5. Bridge to the Doctorate 2016-2018 Cohort, PI T. Weller; Granting Agency: National Science Foundation; Amount: $1,056,000; Period: 5/16 – 5/18; Person-Months Per Year Committed to Project: 0; Purpose: fellowships related to the Florida Georgia Louis Stokes Alliance for Minority Participation. Submitted November 2015.

6. America Makes: Multimaterial 3D Printing of Electronics and Structures; Granting Agency: America Makes (subcontractor to Raytheon); Amount: $80,000 with $80,000 High Tech Corridor Match; PI T. Weller; Period: 9/16 – 2/18; Person-Months Per Year Committed to Project: 0.5; Purpose: characterization of 3D printed material systems. Submitted May 2016.

7. Printable Materials with Embedded Electronics and Radio Frequency Components; PI T. Weller; Granting Agency: Army (subcontract through Sciperio, Inc.); Amount: $49,500; Period 6/16 – 2/17;

Person-Months Per Year Committed to Project: 0.2; Purpose: to demonstrate 3D printed microwave components using additive manufacturing techniques. Submitted February 2016.

8. 80-100 GHz Communications System; Granting Agency: Harris Corporation; Amount: $191,589; PI T. Weller; Period: 8/15 – 8/18; Person-Months Per Year Committed to Project: 0.5; Purpose: design and demonstration of a 80-100 GHz wideband communications system. Submitted August 2015.

9. GOALI: Collaborative Research: Integrated Antenna System Design for High Clutter and High Bandwidth Channels Using Advanced Propagation Models; Granting Agency: National Science Foundation; Amount: $302,834; PI T. Weller, Co-PI C. Ferekides; Period: 8/15 – 8/18; Person-Months Per Year Committed to Project: 1; Purpose: investigate adaptive antenna systems for modeling for high clutter environments in machine-to-machine applications. Submitted November 2014.

10. Task Order 3, PI. T. Weller, Granting Agency: Telecommunications Systems, Amount: $20,000, Period: 9/2014 – 12/2014. Purpose: direction finding antenna design. Submitted 8/2014.

11. Affordable 3D Printed Phased Arrays; PI T. Weller; Granting Agency: Office of Naval Research (subcontract through Sciperio, Inc.); Amount: $75,000; Period 6/14 – 5/15; Person-Months Per Year Committed to Project: 0.25; Purpose: develop technology for active 3D digitally printed phased array modules. Submitted April 2014.

12. Rapid Design of Optimal Digitally-Manufactured 3D Electrically-Small Antennas; PI T. Weller; Granting Agency: Central Intelligence Agency; Amount: $360,000; Period 6/14 – 5/17; Person-Months Per Year Committed to Project: 0.25; Purpose: investigate design and optimization tools for digitally manufactured small antennas. Submitted February 2014.

13. Bridge to the Doctorate 2014-2016 Cohort, PI T. Weller; Granting Agency: National Science Foundation; Amount: $978,911; Period: 5/14 – 5/16; Person-Months Per Year Committed to Project: 0; Purpose: fellowships related to the Florida Georgia Louis Stokes Alliance for Minority Participation. Submitted October 2013.

14. 2014 IEEE International Microwave Symposium Project Connect Support, PI T. Weller, Granting Agency: National Science Foundation; Amount: $8,000; Period: 5/15/14 – 12/31/14; Person-Months Per Year Committed to Project: 0; Purpose: participant support for students from underrepresented groups to attend the 2014 International Microwave Symposium. Submitted January 2014.

15. 3D Fabricated Low Cost Phased Array Technology, PI T. Weller, Co-PIs N. Crane and C. Lusk; Granting Agency: Sciperio, Inc. (subcontract on ONR grant); Amount: $200,000 (plus $200,000 Florida High Tech Corridor match); Period: 1/1/14 – 6/30/15; Person-Months Per Year Committed to Project: Summer 0.5; Purpose: develop a 2-18 GHz current sheet array unit cell using 3D direct digital manufacturing. Submitted July 2013.

16. Additive Manufacturing Technologies – Phase 1, PI. T. Weller, Granting Agency: Jabil, Amount: $150,000 (plus $150,000 Florida High Tech Corridor match), Period: 1/1/14 – 12/31/14. Purpose: Investigate the application of direct digital manufacturing for high frequency consumer electronics fabrication. Submitted December 2013.

17. Three-Dimensional (3D) Structural Radio Frequency (RF) Electronics, Granting Agency: Sciperio (Air Force SBIR Phase 2 subcontract), Amount: $315,273; Period: 8/13 – 8/15; Person-Months Per Year Committed to Project: Summer: 1.0; Purpose: investigate a 2.45 GHz phased array module using direct print additive manufacturing techniques; Submitted 2/2013.

18. Task Order 1, PI. T. Weller, Granting Agency: Telecommunications Systems, Amount: $8,087, Period: 9/2013 – 12/2013. Purpose: broadband antenna design. Submitted 8/2013.

19. REU Supplement - GOALI Collaborative Research: 3D RF Microsystems using Direct Digital Manufacturing Technology, PI. T. Weller, Granting Agency: The National Science Foundation, Amount: $12,500, Period: 5/1/13 – 12/31/13. Purpose: support for undergraduate students. Submitted 2/2013.

20. GOALI – Flexible Ferroelectric-Based Antenna for Conformal Radiometric Imaging – REU Supplemental Funding Request, Granting Agency: National Science Foundation, Amount: $16,000, Person-Months Per Year Committed to Project: 0; Period: 5/13-8/13; submitted 2/2013.

21. Design and Demonstration of Antennas for Selected RFID Applications, PI. T. Weller, Granting Agency: Silent Partners Technologies, Amount: $23,258 (with $23,258 match from Florida High Tech Corridor), Period: 4/2013 – 8/2014, Person-Months Per Year Committed to Project: 0.0. Purpose: The specific goal for the new tag antenna designs is to improve the achievable performance when the tags are mounted on either metallic objects or objects with high water content.

22. 3D Formable RF Materials, PI. T. Weller, Granting Agency: University of Texas – El Paso (Army sub-contract), Amount: $71,497, Period: 5/2013 – 5/2016, Person-Months Per Year Committed to Project: Acad: 0.5. Purpose: Microwave characterization of materials used in 3D printed RF electronics. Submitted 7/2012.

23. Collaborative Research: A Systems-Centric Foundation for Electrical and Computer Engineering Education, PI. S. Thomas, co-PI. T. Weller, Granting Agency: The National Science Foundation, Amount: $50,000 (USF portion), Period: 1/1/11 – 12/31/12, Person-Months Per Year Committed to Project: Sumr: 0.25. Purpose: develop new curriculum for introductory electrical systems course. Submitted 5/2011

24. GOALI Collaborative Research: 3D RF Microsystems using Direct Digital Manufacturing Technology, PI. T. Weller, co-PI. C. Lusk, Granting Agency: The National Science Foundation, Amount: $224,722 (USF portion), Period: 8/1/12 – 8/1/15, Person-Months Per Year Committed to Project: Sumr: 0.5. Purpose: investigate new 3D microwave systems using digital manufacturing techniques. Submitted 2/2012.

25. Miniaturized Low Frequency Resonant Antennas, PI Gokhan Mumcu, co-PI T. Weller, Granting Agency: Lockheed Martin, Amount: $20,000 (plus $10,000 match from the Florida High Tech Corridor), Period: 7/12 – 6/13, Person-Months Per Year Committed to Project: Sumr: 0.1. Purpose: investigate design of low frequency antennas for MRI applications. Submitted 4/2012.

26. Conformal Antennas for Autonomous Supply Tracking, PI T. Weller, Granting Agency: Draper Laboratory, Amount: $201,954 (plus $201,954 match from the Florida High Tech Corridor), Period: 1/13 – 12/14, Person-Months Per Year Committed to Project: Sumr: 0.0. Purpose: investigate design of antennas conformal antennas for networked supply tracking applications. Submitted 6/2012.

27. Miniature Low-Loss Ka-Band Phase-Shifter Using Broad-Band CRLH Unit Cells Integrated With High Reliability RF MEMS Switches, PI T. Weller, co-PIs G. Mumcu and J. Wang, Granting Agency: TECOMSYS, Amount: $40,000 (plus $40,000 match from the Florida High Tech Corridor), Period: 5/1/12 – 11/1/12, Person-Months Per Year Committed to Project: Sumr: 0.25. Purpose: investigate broad-band metamaterial based Ka-band phase shifters using RF MEMS devices. Submitted 9/2011.

28. Design and Characterization of 6 GHz True-Time-Delay Phase Shifter Fabricated Using Additive Manufacturing Techniques, PI T. Weller, Granting Agency: Sciperio (subcontract on Air Force SBIR Phase 1), Amount: $20,239 (plus $20,239 match from the Florida High Tech Corridor), Period: 5/12 – 12/12, Person-Month Per Year Committed to Project: Sumr: 0.05. Purpose: investigate direct-write phase shifter designs for C-band. Submitted 1/12.

29. Miniature X-band Filters with Coupled Metamaterial Resonators, P.I.: Gokhan Mumcu, co-P.I.: Thomas M. Weller, Granting Agency: **Raytheon**, Amount: $40,000 (plus $20,000 match from the Florida High Tech Corridor), Period: 3/29/11 - 12/20/11. Purpose: investigate designs for miniaturized X-band band-stop and band-pass filters. Submitted 2/2011.

30. GOALI – Flexible Ferroelectric-Based Antenna for Conformal Radiometric Imaging – GRDS Supplemental Funding Request, Granting Agency: National Science Foundation, Amount: $30,731, Person-Months Per Year Committed to Project: 0; Period: 8/11-8/12; submitted 1/2011.

31. GOALI – Flexible Ferroelectric-Based Antenna for Conformal Radiometric Imaging – REU Supplemental Funding Request, Granting Agency: National Science Foundation, Amount: $12,000, Person-Months Per Year Committed to Project: 0; Period: 1/11-12/11; submitted 12/2010.

32. Non-Linear Device Applications of Nano-Patterned Barium Strontium Titanate Thin Films – Supplement Request, P.I. T. Weller (50%), Co-P.I. A. Kumar and M. Smith (Raytheon), Granting Agency: The National Science Foundation (ECS 0601536), Amount: $18,221, Period: 9/1/10 – 4/1/11. Submitted 4/10. Purpose: development of miniaturized non-linear BST microwave devices.

33. Injection-Moldable Thermal-Expansion-Matched Nanocomposites with Minimal Cure Shrinkage; PI: J. Wang, co-PI: H. Srikanth, R. Toomey and T. Weller; Granting Agency: Draper Laboratory, Amount: $130,000, Period: 6/30/2010-6/29/2011. Submitted 3/2010. Purpose: Through strategic selection or synthesis of polymer medium, low-CTE composites with monodispersed particles and minimal cure shrinkage will be pursued to result in a new class of injection-moldable nanocomposites for MCM assembly.

34. GOALI – Flexible Ferroelectric-Based Antenna for Conformal Radiometric Imaging – GRS Supplemental Funding Request, Granting Agency: National Science Foundation, Amount: $30,000, Person-Months Per Year Committed to Project: 0; Period: 8/10-8/11; submitted 5/2010.

35. Flexible Ferroelectric-Based Antenna Arrays for Conformal Radiometric Imaging, PI T. Weller, Granting Agency: NASA GSRP Fellowship Program, Amount: $90,000, Period: 7/1/10 – 7/1/13.

36. A Microwave Radiometer for Close Proximity Biomedical Sensing, PI T. Weller, Granting Agency: NASA GSRP Fellowship Program, Amount: $90,000, Period: 9/1/09 – 8/31/12.

37. Ultra Low Power Electronics for Autonomous Micro-Sensor Applications, PI T. Weller, Granting Agency: Sciperio, Inc. (subcontract on US AFRL SBIR Phase 1), Amount: $26,000 (plus $26,000 match from the State of Florida), Period: 1/1/10 – 9/1/10. Acad: 0.25. Purpose: development of low power wireless sensing methods.

38. Ferroelectric Antennas, P.I. T. Weller, Granting Agency: Raytheon, Amount: $50,000 (plus $25,000 cash match from the State of Florida), Period: 1/1/10 – 12/31/10, Person-Months Per Year Committed to Project: Acad: 0.25. Purpose: Continued design and demonstration of a low profile antenna using a tunable electromagnetic band-gap surface approach.

39. Uncooled Nanoscale Infrared High-Speed Sensors for Missile Seeker Applications, Funding Source: NanoCVD, Inc. and Florida High Tech Corridor; Amount: $152,310, Person-Months Per Year Committed to Project: 1; Period: 2/2009 – 2/2010. Purpose: investigate detection technologies for infrared radiation.

40. GOALI – Flexible Ferroelectric-Based Antenna for Conformal Radiometric Imaging, Granting Agency: National Science Foundation, Amount: $407,247, Person-Months Per Year Committed to Project: 1.; Period: 5/09-4/12; submitted 10/2008. Purpose: development of frequency tunable, flexible antenna arrays.

41. GOALI: Integrated Microwave Microneedle-Electrode System for Fine Scale Material and Device Characterization, PI S. Bhansali, co-PI. T. Weller, Granting Agency: The National Science Foundation, Amount: $370,000, Period: 8/1/09 – 8/30/12. Purpose: investigation of MEMS-based microwave microscopy for embedded materials characterization.

42. GOALI: COLLABORATIVE RESEARCH: Passive, Diamagnetic Inertial Sensing Integrated with High-Sensitivity Telemetry, PI J. Wang, co-PI. T. Weller, Granting Agency: The National Science Foundation, Amount: $370,000, Period: 8/1/09 – 8/30/12. Submitted 2/09. Purpose: development of low power wireless sensing methods for structural health monitoring.

43. Ferroelectric Antennas, P.I. T. Weller, Granting Agency: Raytheon, Amount: $30,000 (plus $20,000 match from the State of Florida), Period: 5/1/09 – 8/31/10, Person-Months Per Year Committed to Project: Acad: 0.5. Purpose: Design and demonstration of a low profile antenna using a tunable electromagnetic band-gap surface approach.

44. GOALI: Functional Magnetic Polymer Nanocomposites for Tunable RF Device Applications, Granting Agency: National Science Foundation, Amount: $6,000, Person-Months Per Year Committed to Project. Sumr: 0. Period: 3/08 – 3/09. Submitted 11/07. Purpose: Supplemental support for REU projects.

45. Compact Reconfigurable Channel Emulator, P.I.: Thomas Weller, Granting Agency: Goodrich, Amount: $107,439, Submitted 11/2007, Period: 11/1/07 – 8/31/08. Purpose: Development a laboratory-scale instrument for characterization of wireless sensor networks.

46. Low Cost Omni Antenna, P.I. T. Weller, Granting Agency: Raytheon, Amount: $107,755, Period: 8/1/07 – 8/31/2010. Submitted 7/07. Purpose: Design of a 4-6 GHz low cost steerable omni-directional antenna.

47. Collaborative Project: MUSE – An Undergraduate Learning Model for Complex-Engineered Systems, P.I. T Weller (along with J. Frolik (U. Vermont), P. Flikkema (N. Arizona U.) and W. Shiroma (U. Hawaii), Granting Agency: The National Science Foundation, Amount: $141,600 (USF share only; total is $500,000), Period: 6/1/07 – 5/30/11. Submitted 1/07. Purpose: development of a new undergraduate EE curriculum focused on complex engineering systems.

48. GOALI: Functional Magnetic Polymer Nanocomposites for Tunable RF Device Applications, Granting Agency: National Science Foundation, Amount: $360,000, Person-Months Per Year Committed to Project. Sumr: 1. Period: 8/07 – 7/11. Submitted 2/07. Purpose: development of advanced nanocomposite polymer substrates for microwave applications.

49. FUNCTIONAL MAGNETIC POLYMER NANOCOMPOSITE FILMS FOR TUNABLE RF DEVICE APPLICATIONS, P.I. T. Weller, Co-P.I. H. Srikanth, Granting Agency: University of South Florida, Amount: $40,000, Person-Months Per Year Committed to Project. Sumr: 0.1. Period: 4/07 – 4/08. Submitted 3/07. Purpose: development of advanced nanocomposite polymer substrates for microwave applications.

50. Wireless Communication Systems Lab - A Laboratory Course, P.I. H. Arslan, Co-PIs T. Weller and L. Dunleavy, Granting Agency: The National Science Foundation, Amount: $139,669, Period: 9/1/06 – 8/30/07. Submitted 6/06. Purpose: development of a new wireless communications systems laboratory course.

51. NIRT: Nanocrystalline Thin Film Diamond for MEMS and Biomedical Applications --- Supplemental Funding Request, P.I. Ashok Kumar, Co-PI: T. Weller (50%), Granting Agency: **The National Science Foundation**, Amount: $10,600 Period: 2/1/06-8/1/06. Purpose: Participant support funding for collaborative research with University of Ulm (Germany).

52. WIRELESS SIGNAL ROUTING ALTERNATIVES IN DENSE-CLUTTER ENVIRONMENTS, P.I.: Thomas Weller, Granting Agency: **Goodrich Hella Aerospace** ($23,175), Submitted 2/2006, Period: 8/1/06 – 8/1/07. Purpose: The objective of this work is to investigate solutions for routing signals in wireless environments where signal blockage and background clutter is potentially extreme.

53. Radiometric Sensors as Non-invasive Approach to Health Monitoring, P.I. T. Weller, Granting Agency: Raytheon, Amount: $51,849, Period: 8/1/06 – 8/31/08. Submitted 6/06. Purpose: Support the analysis and modeling of the dielectric properties of human tissue.

54. Non-Linear Device Applications of Nano-Patterned Barium Strontium Titanate Thin Films, P.I. T. Weller (50%), Co-P.I. A. Kumar and M. Smith (Raytheon), Granting Agency: The National Science Foundation (ECS 0601536), Amount: $299, 810, Period: 5/1/06 – 4/1/11. Submitted 10/05. Purpose: development of miniaturized non-linear BST microwave devices.

55. Planar Antennas for 2.4 GHz Wireless Sensors Nodes, P.I.: Thomas Weller, Granting Agency: **Goodrich Hella Aerospace** ($44,994) and State of Florida High Tech Corridor Program ($44,994), Submitted 12/2005, Period: 1/1/06 – 12/31/06. Purpose: Research relating to low-profile antennas for Zigbee applications.

56. Microwave Spectroscopy in Skin Cancer Detection and Diagnosis, P.I. T. Weller, Granting Agency: The Skin Cancer Foundation, Amount: $10,000, Period: 4/1/06 – 12/31/06. Submitted 10/05. Purpose: Study skin cancer detection using microwave spectroscopy techniques.

57. Cold Noise Path, P.I.: T. Weller, Granting Agency: Raytheon, Amount: $10,000, Submitted 10/2005, Period: 11/05 – 5/06. Purpose: Perform analysis of cold noise propagation experimental setup and data.

58. MEMS Acoustic Re-radiator System, P.I.: T. Weller, Granting Agency: Raytheon, Amount: $50,000, Submitted 10/2005, Period: 11/05 – 12/06. Purpose: Design and characterize RF sub-system for a miniature acoustical sensor.

59. WAMI – Connection One Research Site Planning Grant Proposal, P.I. H. Arslan, Co-PIs: T. Weller (20%), L. Dunleavy, M. Labrador and K. Christensen, Granting Agency: **The National Science Foundation**, Amount: $10,000, Submitted 4/2005, Period: 6/2005-12/2005. Purpose: Prepare full proposal to join Connection One Industry-University Cooperative Research Center.

60. Planar Antennas for 2.4 GHz Wireless Sensors Nodes, P.I.: Thomas Weller, Granting Agency: **Goodrich Halle Aerospace** ($14,559), Submitted 5/2005, Period: 6/1/05 – 12/31/05. Purpose: Research relating to low-profile antennas for Zigbee applications.

61. Ku-Band MHEMT MMIC Characterization and MEMS-Based Electronically Steered Array, P.I.: Thomas Weller, Granting Agency: **Raytheon** ($25,000 cash, $25,000 in-kind) and State of Florida High Tech Corridor Program ($25,000), Period: 12/1/04 – 12/30/05. Purpose: Design and characterization of GaAs MMIC microwave transceiver chip and RF-MEMS reconfigurable antenna array.

62. NIRT: Nanocrystalline Thin Film Diamond for MEMS and Biomedical Applications, P.I. Ashok Kumar, Co-PIs: T. Weller (25%), S. Bhansali, and I. Oleynik, Granting Agency: **The National Science Foundation** (ECS-0404137), Amount: $1,300,000, Period: 9/1/04-9/1/08. Purpose: Diamond thin films will be developed for use in high-power, high-reliability RF MEMS phase shifters.

63. RF MEMs Phase Shifters for Low Cost Electronically Steered Arrays, P.I.: Thomas Weller, Granting Agency: **Harris Corporation** ($100,000) and State of Florida High Tech Corridor Program ($50,000), Period: 7/1/04 – 6/30/05. Purpose: This project concerns 3-D, monolithic interconnects for microwave/mm-wave applications. These networks are intended for use in systems-on-chip designs incorporating analog and digital electronics.

64. Visible Light Rectenna Project, PI Elias Stefanakos, co-PI Shekhar Bhansali, Ken Buckle, Burt Krakow and Tom Weller (20%); Granting Agency: NASA, June 2002-September 2004, $50,000. This project concerns research on methods for optical rectification of visible light using rectenna techniques.

65. HIGH-EFFICIENCY MINIATURIZED ANTENNAS ON LOSSY SILICON SUBSTRATES, P.I.: Thomas Weller, Granting Agency: **Northrop Grumman / Xetron** ($30,000), Anritsu ($52,560), and State of Florida High Tech Corridor Program ($20,000), Period: 7/1/04 – 12/30/05. Purpose: Small-scale antennas will be developed that are intended for microwave/mm-wave chip-to-chip communications.

66. Wideband MHEMT-Based Receiver Architectures using Nano-scale Switches, P.I.: Thomas Weller (50%) and Lawrence Dunleavy, Granting Agency: **Raytheon** and I-4 Corridor High Technology Development Program, Amount: $105,000 Raytheon, $52,500 I4, Period: 8/1/03 – 7/30/04. Purpose: Advanced architectures for microwave receivers operating from 20-90 GHz will be studied. The designs will be tailored to meet emerging military communications applications that require signal identification over extremely wide frequency ranges.

67. HTC: Baluns & transformers for wireless applications using an advanced direct-write mesotool capability, P.I.: Thomas Weller, Granting Agency: **Sciperio, Inc., Harris Corporation**, and I-4 Corridor High Technology Development Program, Amount: $75,000 Sciperio, $25,000 Harris, $50,000 I4, Period: 8/1/03 – 7/30/04. Purpose: New design methodologies will be developed for miniaturized RF/microwave components that can be deposited directly onto conformal surfaces, e.g. the exterior of unmanned autonomous vehicles (AUV's), protective headgear (helmets) and personal wireless devices.

68. Microwave Variable Impedance Transmission Lines, P.I.: Thomas M. Weller, Granting Agency: **National Science Foundation** (1998 CAREER Program – Matching Funds, 2002), Amount: $25,000. Purpose: research related to 1998 NSF CAREER Award (supplemental funding to match contributions from Raytheon Systems).

69. Sensory Knowledge-Based Interface Science (SKINS), P.I.: S. Bhansali, co-P.Is.: S. Hariharan, D. Hilbelink, N. Ranganathan, T. Weller (20%), Granting Agency: **National Science Foundation –**

IGERT Program, Amount: $3,018,000, Period: 7/1/02-6/30/08. Supplements of $137K in 2004, 2005 and 2006. Purpose: integrated education and research in MEMS skin sensors development.

70. Advanced microwave technology for space applications – MEMS switch architectures, P.I.: Thomas Weller, Granting Agency: **Raytheon Systems (St. Petersburg) and I-4 Corridor High Technology Development Program**, Amount: $20,000 Raytheon, $30,000 Raytheon (in-kind), $25,000 I4, Period: 8/20/02 – 8/19/03. Purpose: The proposed work targets the development of advanced architectures for RF micro electromechanical switch design.

71. Microwave Variable Impedance Transmission Lines, P.I.: Thomas M. Weller, Granting Agency: **National Science Foundation** (1998 CAREER Program – Matching Funds, 2001), Amount: $25,000. Purpose: research related to 1998 NSF CAREER Award (supplemental funding to match contributions from HRL Laboratories and Raytheon Systems).

72. Low Cost 60 GHz Proximity Sensor for Automotive Applications, P.I.: Thomas Weller, Granting Agency: **Wolff Controls and I-4 Corridor High Technology Development Program**, Amount: $40,000 Wolff ($8,650 additional funding for 2003), $20,400 Wolff (in-kind), $26,720 I4, Period: 7/1/01 – 6/30/03. Purpose: The goal of this work is to demonstrate a low-cost, mm-wave (60 GHz) proximity sensor that is intended for a variety of automotive applications.

73. Baluns & transformers for wireless applications using an advanced direct-write mesotool capability, P.I.: Thomas Weller, Granting Agency: **Raytheon Systems (St. Petersburg), CMS Technetronics and I-4 Corridor High Technology Development Program**, Amount: $25,320 CMS, $16,000 CMS (in-kind), $18,000 Raytheon (in-kind), $26,684 I4, Period: 8/1/01 – 7/30/02. Purpose: The goal of the project is to develop design and modeling solutions for baluns and transformers aimed at 1-4 GHz wireless applications.

74. Miniaturized Ka-Band Redundant Low Noise Amplifier Module for Space Applications, P.I.: Thomas Weller, Granting Agency: **Raytheon Systems (St. Petersburg) and I-4 Corridor High Technology Development Program**, Amount: $20,00 Raytheon, $30,000 Raytheon (in-kind), $20,000 I4, Period: 8/1/01 – 7/30/02. Purpose: The proposed work targets the development of miniaturized receiver modules for space applications in the 27.5-30 GHz band.

75. Precision Characterization for Wireless and mm-Wave Design, P.I.: Lawrence P. Dunleavy, co-P.I.: Thomas M. Weller (50%), Granting Agency: **USF I-4 Corridor Initiative Program**, Amount: $100,000 (I4), $190,000 from industry sources, $209,000 in-kind from industry sources, Period: 1/1/02 12/20/02. Purpose: develop techniques for W-band on-wafer characterization (including noise figure measurement) and novel techniques for amplitude control in the 75-110 GHz frequency range.

76. Micromachined Microwave Transmitter for an Integrated Sensor Assembly (Increment), P.I.: Thomas M. Weller, Granting Agency: **USF Center for Ocean Technology**, Amount: $21,750, Period: 4/1/01 - 12/20/01. Supplement: $26,250, 1/1/02 – 12/30/04. Purpose: investigate the design and fabrication of temperature and conductivity sensors with integrated RF-telemetry capability.

77. REU Supplement to CAREER Award, P.I.: Thomas M. Weller, Granting Agency: National Science Foundation, Amount: $5,000, Period: 4/01 – 8/01. Purpose: The REU (Research for Engineering Undergraduates) provides support for undergraduate students pursuing directed research projects.

78. Travel Grant to Attend International Symposium on Antennas and Propagation in Japan, Thomas Weller, Granting Agency: **USF Division of Sponsored Research**, Amount: $1,500, October 2000.

79. Microwave Variable Impedance Transmission Lines, P.I.: Thomas M. Weller, Granting Agency: **National Science Foundation** (1998 CAREER Program – Matching Funds, 2000), Amount: $25,000. Purpose: research related to 1998 NSF CAREER Award (supplemental funding to match contributions from HRL Laboratories and Raytheon Systems)

80. Active Device (BJT) and Varactor Diode Modeling, P.I.: Thomas Weller, Granting Agency: **USF I-4 Corridor Initiative Program, Motorola**, Period: 8/20/00-8/19/01, Amount: $56,000 (USF), $96,000 cash and $16,000 in-kind (Motorola). Purpose: investigate characterization and modeling techniques for transistors and varactor diodes.

81. Micromachined Components and Packaging for a K-Band Receiver: Broadband Antenna and Multi-Layer Integration, P.I.: Thomas Weller, Granting Agency: **USF I-4 Corridor Initiative Program, Raytheon E-Systems**, Period: 8/20/00-8/19/01, Amount: $20,000 (USF), $20,000 cash and $20,000 in-kind (Raytheon). Purpose: investigate novel microwave/mm-wave circuit and antenna architectures for receiver/radiometer applications.

82. On-Wafer Metrology for 100 GHz Microelectronics, P.I.: Lawrence P. Dunleavy, co-P.I.: Thomas M. Weller (25%), Granting Agency: **USF I-4 Corridor Initiative Program**, Amount: $156,500 (USF), $156,500 from industry sources, $301,000 in-kind from industry sources, Period: 1/1/01 12/20/01. Purpose: develop techniques for W-band on-wafer characterization (including noise figure measurement) and novel techniques for amplitude control in the 75-110 GHz frequency range.

83. Micro-Monitoring Instrument, P.I.: Larry Langebrake, co-P.I.'s.: D. Fries, R. Short, S. Samson, T. Weller (15%), and P. Betzer, Granting Agency: **U.S. Army Space and Missile Command**, Amount: $15,756,619, Period: 2/2000 - 2/2006. Purpose: the primary objective is the development of a world-class design and fabrication facility for micro electromechanical systems (MEMS) and related technologies, directed at micro sensor development; T. Weller will direct basic research in RF MEMS communications sub-systems. Option 3 and Option 4 extensions in review as of 3/1/2003.

84. RF/Microwave Passive Circuit Integration on Semi-conducting Silicon Substrates, P.I.: Thomas M. Weller, Granting Agency: **IBM**, Amount: $40,000, Period: 8/1/00-8/1/01. Purpose: investigate innovative techniques for integrating microwave (MEMS) components on CMOS grade silicon substrates. Provided as an IBM Faculty Partnership Award. Renewed for additional $40,000 for 8/1/01-8/1/02.

85. Design and Characterization of Direct Write Circuits/Subsystems, P.I.: Thomas Weller, Granting Agency: **CMS Technetronics**, Period: 4/1/00-4/1/01, Amount: $7,000. Purpose: evaluate design techniques and performance of selected RF/microwave components that are produced using laser chemical vapor deposition.

86. Microwave Variable Impedance Transmission Lines, P.I.: Thomas M. Weller, Granting Agency: **National Science Foundation** (1998 CAREER Program – Matching Funds, 1999), Amount: $25,000. Purpose: research related to 1998 NSF CAREER Award (supplemental funding to match contributions from HRL Laboratories and Raytheon Systems).

87. Micromachined Components and Packaging for a K-Band Receiver, P.I.: Thomas Weller, Granting Agency: **USF I-4 Corridor Initiative Program, Raytheon E-Systems**, Period: 1/1/00-12/20/00, Amount: $25,000 (USF), $25,000 cash and $25,000 in-kind (Raytheon). Purpose: research relating to the design, fabrication and testing of planar, micromachined components for a K-Band receiver/radiometer.

88. Travel Grant to Attend European Microwave Conference in Germany, Thomas Weller, Granting Agency: **USF Division of Sponsored Research**, 12/6/99, Amount: $1,500.

89. On-Wafer Metrology for 100 GHz Microelectronics, P.I.: Lawrence P. Dunleavy, co-P.I.: Thomas M. Weller, Granting Agency: **USF I-4 Corridor Initiative Program**, Amount: $145,000 (USF), $145,000 from industry sources, Period: 1/1/00 12/20/00. Purpose: develop techniques for W-band on-wafer characterization (including noise figure measurement) and novel techniques for amplitude control in the 75-110 GHz frequency range.

90. Micromachined Coplanar Waveguide to Microstrip Transitions, P.I.: Thomas M. Weller, Granting Agency: **HRL Laboratories**, Period: 8/99-8/02, Amount: $40,000. Purpose: investigate designs for micromachined filter banks comprised of coplanar waveguide, microstrip and stripline and the requisite transitions; design low-loss, miniaturized stripline resonators.

91. Microwave Variable Impedance Transmission Lines, P.I.: Thomas M. Weller, Granting Agency: **National Science Foundation** (1998 CAREER Program), Period: 8/99-8/03, Amount: $210,000. Purpose: investigate novel techniques for realizing voltage-controlled, tunable MEMS-based transmission lines; curriculum development in the area of wireless sensor systems.

92. Microwave Multi-Media Module Based on USF's WAMI Lab, P.I. Lawrence Dunleavy, co-P.I.: Thomas Weller, Granting Agency: **IEEE MTT Society**, Period: 5/1/99-4/30/01, Amount: $30,000. Purpose: develop multi-media modules based on USF's Wireless Circuits and Systems Laboratory (part of the Wireless and Microwave---WAMI---program initiative).

93. Board Level Parasitic Modeling, P.I. Thomas Weller, Granting Agency: **Motorola**, Period: 5/11/99-6/30/00, Amount: $80,524. Purpose: investigate modeling techniques for discontinuities such as plated, multi-layer vias, planar spiral inductors and component pad-stack geometries in the DC-10 GHz frequency range.

94. Development of a Capacitor Model Library, P.I. Thomas Weller, Granting Agency: **Motorola**, Period: 1/1/99-9/30/00, Amount: $230,079. Purpose: develop an extensive CAD/CAE model library for surface mount capacitors, inductors and resistors.

95. Modeling of Active and Passive Microwave Devices, P.I.: Lawrence Dunleavy, co-PI: Thomas Weller, Granting Agency: **ITT GaAsTEK**, Period: 1/1/99-12/20/99, Amount: $61,011. Purpose: investigate modeling techniques for a power amplifier demonstration board, including passive components and a packaged, 3-stage FET amplifier.

96. A Mm-Wave Proximity Sensor, P.I.: Thomas Weller, Granting Agency: **USF I-4 Corridor Initiative Program**, **Wolff Controls**, Period: 1/1/99-8/20/00, Amount: $30,000 (USF), $30,000 cash and $30,000 in-kind (Wolff). Purpose: design and demonstrate a 60 GHz proximity sensor for automotive (fuel injector) applications.

97. A MEMS-Based Microwave Voltage Controlled Oscillator, P.I.: Thomas Weller, Granting Agency: **USF I-4 Corridor Initiative Program, Raytheon E-Systems**, Period: 1/1/99-8/20/00, Amount: $20,000 (USF), $25,000 cash and $123,000 in-kind (Raytheon). Purpose: investigate a 20 GHz voltage-controlled oscillator design utilizing MEMS varactors.

98. On-Wafer Metrology for 100 GHz Microelectronics, P.I.: Lawrence P. Dunleavy, co-P.I.: Thomas M. Weller, Granting Agency: **USF I-4 Corridor Initiative Program**, Amount: $100,000, Period: 1/1/99

12/20/99. Purpose: develop techniques for W-band on-wafer characterization (including noise figure measurement) and novel techniques for amplitude control in the 75-110 GHz frequency range.

99. Micromachined Microwave Transmitter for an Integrated Sensor Assembly, P.I.: Thomas M. Weller, Granting Agency: **USF Center for Ocean Technology**, Amount: $30,000, Period: 9/1/98 - 12/20/99. Supplemental award $12,325, Period: 1/10/00 – 6/10/00. Purpose: investigate the design and fabrication of microfluidic channels for electrophoresis sensors with integrated RF-interrogation capability.

100. Wireless Receiver Design Using ADS, P.I.: Thomas M. Weller, co-P.I.: Lawrence Dunleavy, Paul Flikkema, Granting Agency: **Hewlett Packard EESof** (276-LO), Amount: $8,000, Period: 5/1/98-10/15/98. Purpose: demonstrate the simulation of a wireless receiver using Agilent's Advanced Design System.

101. MEMS Fabrication, P.I.: Thomas M. Weller, Granting Agency: **Raytheon Systems, St. Petersburg Division** (274-LO), Amount: $20,000, Period: 4/20/98-12/20/98. Purpose: investigate the design, modeling and fabrication of MEMS varactors and switches.

102. Micromachined Mm-Wave Planar Distribution Network, P.I.: Thomas M. Weller, Granting Agency: **University of Michigan** (275-LO), Amount: $26,223, Period: 4/1/98-12/20/98. Purpose: investigate the design and modeling of W-band, coplanar waveguide power distribution networks.

103. Phase Noise Characterization, P.I.: Lawrence P. Dunleavy, co-P.I.: Thomas M. Weller, Granting Agency: **Honeywell** (222-LO), Amount: $15,000, Period: 2/1/98 - 12/20/98. Purpose: investigate various phase noise measurement techniques and develop a custom phase-noise measurement instrument.

104. Development of Simulation, Modeling and Extraction Techniques for Passive (RLC) Components, P.I.: Thomas M. Weller, Granting Agency: **Motorola LMPS** (257-LO), Amount: $43,908 (Phase 1), $48,276 (Phase 2), $44,443 (Phase 3), Period: 10/10/97-6/30/00. Purpose: develop modeling and extraction techniques for surface mount components in the DC-10 GHz frequency range.

105. Development of Accurate Transfer Standards for On-Wafer MM-Wave Measurements, P.I.: Thomas M. Weller, co-P.I.: Lawrence P. Dunleavy, Granting Agency: **Wiltron Company** (255-LO), Amount: $40,119, Period: 8/20/97-8/20/98. Purpose: investigate approaches for on-wafer calibration and verification in the DC-110 GHz frequency range.

106. Advancements in Microwave/Mm-Wave Coplanar Waveguide Circuit Design, P.I.: Thomas M. Weller, Granting Agency: **SCEEE Development Fund** (254-LO), Amount: $10,000 (with a $10,000 match from USF), Period: 7/97 - 6/98. Purpose: investigate the design and full-wave modeling of cylindrical coplanar waveguide structures.

107. Millimeter-wave Proximity Sensor: Phase II, P.I.: Thomas M. Weller, Granting Agency: **Wolff Controls Corporation** (248-LO), Amount: $42,000, Period: 6/1/97 - 1/31/98. Purpose: investigate approaches for cost-effective mm-wave proximity sensing and demonstrate a prototype sensor at X-band.

108. W-Band Wilkinson Power Divider, P.I.: Thomas M. Weller, Granting Agency: **University of Michigan** (247-LO), Amount: $25,000, Period: 5/1/97 - 12/20/97. Purpose: design and demonstrate coplanar waveguide power dividers at W-band.

109. Miniature RF Circuits, P.I.: Thomas M. Weller, Granting Agency: **Honeywell** (246-LO), Amount: $2,000, Period: 4/15/97 - 7/15/97.

110. Uniplanar Micromachined Bandpass Filter, P.I.: Thomas M. Weller, Granting Agency: **Hughes Aircraft Company** (241-LO), Amount: $15,000, Period: 10/15/96 - 9/30/97. Purpose: investigate design approaches for X-band narrow-band micromachined filters.

111. Wireless Circuit and System Design: A New Introductory Laboratory, P.I.: R. E. Henning, co-P.I.s: L. P. Dunleavy, P. G. Flikkema, H. C. Gordon, T. M. Weller, Granting Agency: **National Science Foundation**, Amount: $208,712, Period: 6/96-7/97. Purpose: development of a modern instructional laboratory and a new laboratory course in wireless circuits and systems.

112. Design of Wireless Systems: A New Introductory Laboratory, co-P.I.s: L. P. Dunleavy, P. G. Flikkema, H. C. Gordon, R. E. Henning, T. M. Weller, Granting Agency: **Hewlett-Packard University Grants Program**, Amount: $106,740, 5/96. Purpose: development of a modern instructional laboratory and a new laboratory course in wireless circuits and systems.

113. Computer-Aided Design and Analysis of Microwave Circuits, P.I.: Thomas M. Weller, Granting Agency: **Wolff Controls Corporation** (235-LO), Amount: $21,633, Period: 5/15/96 - 8/15/96. Purpose: develop full-wave simulation techniques using commercial software packages for complex, multi-dimensional microwave circuits.

114. Millimeter-wave Proximity Sensor, P.I. Thomas M. Weller, co-P.I.: Lawrence P. Dunleavy, Granting Agency: **Wolff Controls Corporation** (through Technology Reinvestment Program) (2118-044), Amount: $178,607, Period: 4/29/96 - 6/1/97. Purpose: investigate approaches for cost-effective mm-wave proximity sensing and demonstrate a prototype sensor at X-band.

115. Design and Fabrication of a Micromachined Bandpass Filter, P.I. Thomas M. Weller, Granting Agency: **USF Division of Sponsored Research** (940-RO), Amount: $7,500, Period: 4/4/96 - 4/3/97. Purpose: investigate design and fabrication techniques for micromachined microwave filters.

116. Multi-Chip Hybrid/MMIC Packaging with High Testability, P.I.: Lawrence P. Dunleavy, co-P.I.: Thomas M. Weller, Granting Agency: **E-Systems, ECI Division** (234-LO), Amount: $25,000, Period: 3/29/96 - 12/20/96. Purpose: investigate package design strategies that provide microwave test capability at all stages of integration.

117. Miniature RF Circuits, P.I.: Lawrence P. Dunleavy, co-P.I.: Thomas M. Weller, Granting Agency: **Honeywell** (222-LO), Amount: $41,000, Period: 8/5/95 - 12/31/97. Purpose: investigate modeling techniques for miniature RFIC passives.

118. MMIC Active/Passive Device Modeling, P.I.: Lawrence P. Dunleavy, co-P.I.: Thomas M. Weller, Granting Agency: **Raytheon E-Systems, ECI Division** (205-LO), Amount: $122,519, Period: 2/24/94-12/20/97. Purpose: investigate modeling techniques for FETs and passive MMIC components.