

Kristen M. Donnell

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EDUCATION

Missouri University of Science and Technology (Missouri S&T) GPA 3.89/4.0
PhD Electrical Engineering December 2010
Dissertation: Development of Embedded Modulated Scatterer Technique: Single- and Dual-Loaded Scatterers

University of Missouri – Rolla (UMR) GPA 3.87/4.0
MS Electrical Engineering August 2003
Thesis: Microwave Reflection Properties of Mortar Exposed to Chloride Solutions: Measurements and Modeling

Colorado State University (CSU) GPA 3.16/4.0
BS Electrical Engineering May 2001

PROFESSIONAL AFFILIATIONS

Senior Member, IEEE; Member, HKN, ASNT; Certificate in Effective Instruction, Association of College and University Educators (2021); Amateur Radio License – KC0BLY

PROFESSIONAL SERVICE

Member of the Administrative Committee (AdCom), IEEE Instrumentation and Measurement Society

- 2013-14 Vice President of the Membership Development Committee, 2018-19 Vice President of the Education Committee, 2019-2022 Vice-President of the Finance Committee
- Appointed member from 2007-11, elected to AdCom for 2012-15 and 2016-19 terms
- Proposed and implemented annual Graduate Student and Women in Instrumentation and Measurement Panel Discussions at I²MTC
- Distinguished Lecturer Program Chair 2012-present, Chapter Chair Liaison for 2010-2012, Chapter Outreach Chair 2015-present
- Developed guidelines for Chapter Funding and Chapter Outreach programs and Graduate Student Fellowship, Faculty Course Development, and Outstanding Chapter Awards

Associate Editor for the IEEE Transactions on Instrumentation and Measurement and Research in Nondestructive Evaluation (microwave topics); Reviewer for the IEEE Transactions on Instrumentation and Measurement, Antennas and Propagation, Microwave Theory and Techniques, and Electromagnetic Compatibility, Sensors Letters, Journal of Imaging, Applied Computational Electromagnetics Society Journal, Cement and Concrete Composites

I²MTC Session Chair 2010-19; member of the 2013-20 Technical Program Committee and Co-Chair 2021-23

QNDE 2013 Session Co-Chair; ASNT 2014, 2017-19, 2022 Session Chair

Guest Editor for 2013 special issue entitled “Microwave and Millimeter-Wave Sensors, Systems and Techniques for Electromagnetic Imaging and Materials Characterization” of the International Journal of Microwave Science and Technology

EXPERIENCE

Associate Professor (tenured 2019), Electrical and Computer Engr. 08/12-Present
Missouri University of Science and Technology Rolla, MO

- Circuits I, Electronics 1, Electromagnetics, High Frequency Sensors, High Frequency Amplifiers, Senior Design I/II, Microwave/Millimeter Wave Engr., Antennas and Propagation, Nondestructive Testing
- Senior Design Project Advisor, Faculty Advisor for Mars Rover Design Team, OURE Dept. Coordinator, Member of 9 Search Committees (2016-2022)

Kristen M. Donnell

- Co-Chair (founding) of the ECE Distinguished Speaker Series Committee (2019-2020)

Assistant Teaching Professor, Electrical and Computer Engineering 01/11-08/12
Missouri University of Science and Technology Rolla, MO

- Circuits II, Electromagnetics, Senior Design I/II, Nondestructive Testing.
- Senior Design Project and Student Design Team Faculty Advisor, Electronics II Lab

Post-Doctoral Researcher, Missouri S&T 08/11-08/12
Applied Microwave Nondestructive Testing Laboratory (*amntl*) Rolla, MO

- Investigated new applications of Microwave NDT for materials characterization.
- Mentored undergraduate and graduate students.
- Taught measurement and modeling techniques to undergraduate students.
- Contributed to proposal development for potential new research funding.

Graduate Research Assistant and Student Instructor, Missouri S&T 01/06-12/10
Rolla, MO

- Taught undergraduate circuits and electromagnetics courses.
- Extensive high frequency measurements of embedded linear scatterers.
- Designed and implemented data processing procedure for embedded sensor testing.
- Developed electromagnetic scattering models for linear scatterers/probes.

Electrical Engineer II, Systems Engineer II 08/03-12/05
Raytheon Company Tewksbury, MA

- Tested numerous components per component specifications.
- Responsible for System and Subsystem Specification Design and Requirements Management/Traceability.

**HONORS &
AWARDS**

2020 IEEE St. Louis Section Outstanding Educator, Missouri University of Science and Technology 2017 Faculty Service and 2014 Faculty Teaching Awards, Nominated for a 2017 Missouri University of Science and Technology Inspirational Woman Award, IEEE Instrumentation and Measurement Society 2012 Outstanding Young Engineer, Teaching Commendation for 2012-2013 academic year, Outstanding Teaching Award for 2011-2012 and 2019-2020 Academic Years, ASNT Fellowship Award for the 2002-2003 and 2006-2007 academic years, 2006-2009 Missouri S&T Chancellors Fellowship, and the 2006 Missouri S&T University Transportation Center Graduate Fellowship.

Sponsored Research:

1. 10/01/2021-09/30/2022, *BAE Systems*, Co-Principal Investigator (20%), “Waveform Agile Radiofrequency (RF) Directed Energy (WARDEN)”, \$368,883.
2. 08/15/2021-07/31/2023, *Texas Research Institute at Austin*, Principal Investigator (100%), “SBIR-Phase II: Nondestructive Evaluation of Composite Substrate Below Thick Top Coat Materials”, \$192,000.
3. 09/01/21-08/31/2022, *IEEE Instrumentation and Measurement Society Graduate Fellowship Award*, Principal Investigator (100%, Graduate Support only), “Progress in Instrumentation: Antenna Pattern Independence in Active Microwave Thermography”, \$15,000.
4. 09/01/20-08/30/21, *Center for Intelligent Infrastructure, Missouri University of Science and Technology*, Principal Investigator (60%, Co-PI M. ElGawady 40%, Graduate Support only), “Wireless Sensing for Structural health Monitoring of Civil Infrastructure”, \$20,714.
5. 08/01/2020-07/31/2023, *National Science Foundation*, Co-Principal Investigator (20%), “MRI: Development of a Broadband Spectrometer with Multiple Antenna”, \$1,500,000.00.

6. 12/09/2019-03/31/2020, Texas Research Institute at Austin, Principal Investigator (100%), “Non-Destructive Evaluation (NDE) Techniques for Carbon-Carbon Structures Applicable to Hypersonic Structural Materials Production”, \$20,000.
7. 09/02/2019-06/30/2021, Missouri University of Science and Technology, Principal Investigator (60%, Co-PI Khilkevich 40%), “3D Printed Frequency Selective Surface for Radomes”, \$20,000.
8. 09/02/2019-06/30/2021, The Boeing Company, Principal Investigator (60%, Co-PI Khilkevich 40%), “3D Printed Frequency Selective Surface for Radomes”, \$20,000.
9. 07/08/2019-09/30/2021, Texas Research Institute at Austin, Principal Investigator (100%), “Frequency Selective Surface-Based Sensing for Wireless Structural Health Monitoring (T12.01 Advanced Structural Health Monitoring STTR Phase II)”, \$331,999.
10. 03/07/2019 – 12/12/2019, Texas Research Institute at Austin, Principal Investigator (50%, Co-PI Ghasr 50%), “Nondestructive Evaluation of Composite Substrate Below Thick Top Coat Materials”, \$42,000.
11. 01/01/18 – 08/31/19, Center for Infrastructure Engineering Studies Advanced Materials for Sustainable Infrastructure (AMSI) Signature Area, Missouri University of Science and Technology, “A Multi-Physics Approach to Characterize Freeze-Thaw Damage of Concrete”, PI (50%, Co-PI H. Ma, graduate support only), \$15,676.00
12. 10/01/17 – 05/05/19, NASA EPSCoR Missouri, Principal Investigator (100%), “Materials Characterization: An Active Microwave Thermography Approach”, \$10,000.
13. 07/01/17 – 06/30/21, National Science Foundation, Principal Investigator (100%), REU Supplement for “Collaborative Research: A Multi-Physics Approach to Advance Sustainable Materials”, \$5,200.
14. 07/01/17 – 06/30/21, National Science Foundation, Principal Investigator (100%), “Collaborative Research: A Multi-Physics Approach to Advance Sustainable Materials” \$186,739.
15. 06/12/2017 – 06/08/2018, Texas Research Institute at Austin, Principal Investigator (100%), “Frequency Selective Surface-Based Sensing for Wireless Structural Health Monitoring”, \$55,000.
16. 01/01/17 – 02/28/17, Pure Technologies, Principal Investigator (100%), “Active Microwave Thermography for Inspection of Concrete Water Pipes Rehabilitated with Carbon Fiber Reinforced Polymer Composite”, \$16,698.
17. 08/01/16 – 08/31/20, NIST, Principal Investigator (100%), “Assessment of Alkali-Silica Reaction Using Microwave Reflectometry”, \$7812 (sub-award through Georgia Tech).
18. 07/15/2016 – 06/30/2021, National Science Foundation, Principal Investigator (35%, Co-PI Ghasr 27.5%, Co-PI Sneed 27.5%, Co-PI Grubbs 10%), “A Multi-Physics-Based Approach to Active Microwave Thermography”, \$362,513.
19. 07/15/2016 – 06/30/2021, National Science Foundation, Principal Investigator (35%, Co-PI Ghasr 27.5%, Co-PI Sneed 27.5%, Co-PI Grubbs 10%), REU Supplement for “A Multi-Physics-Based Approach to Active Microwave Thermography”, \$14,720.
20. 07/15/2016 – 06/30/2021, National Science Foundation, Principal Investigator (35%, Co-PI Ghasr 27.5%, Co-PI Sneed 27.5%, Co-PI Grubbs 10%), REU Supplement for “A Multi-Physics-Based Approach to Active Microwave Thermography”, \$8,000.
21. 01/28/2016 – 02/01/2018, Texas Research Institute at Austin, Co-Principal Investigator (25%, PI M.T.Ghasr 45%, Co-PI R.Y. Zheng 30%), “Design and Prototyping of a Real-Time Millimeter Wave Compressive Sensing Imager”, \$461,499.
22. 09/01/2015 – 08/31/2016, IEEE Instrumentation and Measurement Society Graduate Fellowship Award, Principal Investigator (100%, Graduate Support only), “Active Microwave Thermography for Nondestructive Evaluation of Surface of Cracks in Metal Structures”, \$15,000.
23. 09/01/2015 – 08/31/2016, American Society of Nondestructive Testing (ASNT) Fellowship Award, Principal Investigator (50%, Co-PI L. Sneed 50%, Graduate Support only), “Active Microwave Thermography for Nondestructive Evaluation of FRP-Rehabilitated Concrete Structures”, \$20,000.
24. 10/14-04/15, Texas Research Institute at Austin, Principal Investigator (42%, Co-PI’s R.Y. Zheng 33% and R. Zoughi 25%), “Implementation of Robust Data Reduction Techniques to Rapid Millimeter Wave Imaging”, \$77,000.

25. 08/14-05/15, Center for Infrastructure Engineering Studies, Missouri University of Science and Technology, Principal Investigator (40%, Co-PI's L. Sneed 30% and M.T. Ghasr 30%, Graduate Support only), "Application of Active Microwave Thermography for Inspection of Rehabilitated Cement-Based Structures", \$9000.
26. 08/14-07/15, American Society of Nondestructive Testing (ASNT) Fellowship Award, Principal Investigator (50%, Co-PI E.C. Kinzel 50%, Graduate Support only), "Evaluation of Glass-Fiber Reinforced Polymer Composites Using Frequency Selective Surfaces", \$20,000.
27. 07/13-05/14, Dept. of Transportation, Co-Principal Investigator (40%, PI E.C. Kinzel 60%), "NUTC/Structural Health Monitoring and Remote Sensing of Transportation Infrastructure Using Embedded Frequency Selective Surfaces", \$22,858.
28. 07/13-06/14, University of Missouri Research Board, Principal Investigator (100%), "Doppler System for Monitoring Sand Production", \$37,500.00.
29. 07/13-06/14, Dept. of Transportation, Principal Investigator (50%, Co-PI E.C. Kinzel 50%), "NUTC/Integrated Embedded Frequency Selective Surface Sensors for Structural Health Monitoring", \$25,924.00.
30. 06/13-05/14, Dept. of Transportation, Principal Investigator (40%, Co-PI's E.C. Kinzel and M.T. Ghasr), "NUTC/Novel Integrated Nondestructive Testing Methodology for Detection and Evaluation of Corrosion in Cement-Based Materials", \$26,052.00.
31. 01/13-06/13, Texas Research Institute at Austin, Co-Principal Investigator (40%, PI R. Zoughi 60%), "RF Material Property Characterization of Non-Conductive Composites", \$28,000.
32. 9/12-8/15, National Science Foundation, Co-Principal Investigator (40%, PI R. Zoughi 60%), "Collaborative Research: Understanding Fundamental Aspects of the Alkali Silica Reaction through Microwave and Acoustic Measurements." Collaboration with Georgia Institute of Technology (Professors K.E. Kurtis and L. Jacobs), \$199,999.

Graduate Students:

1. Jared Sinkey, August 2021 – Present, Accelerated MS/BS program, "One-port Measurement Approach for Microwave Materials Characterization"
2. Marquan Chaney, August 2021 – January 2022 (left program), Accelerated MS/BS program, program advising/mentorship only.
3. Mahsa Valipour, August 2021 – Present, PhD EE, "A Microwave Materials Characterization Study on Fundamental Reactions of Geopolymer-Based Construction Materials"
4. Logan Wilcox, May 2021 – Present, PhD EE, "Application of AMT to Biomedical NDT"
5. Madison Childress, June 2020 – May 2021 (left program), PhD EE, "Frequency Selective Surface-Based Sensing"
6. Behzad Boroomandisorkhabi, May 2019-Aug 2020, PhD EE (switched advisors), "A Microwave Materials Characterization Study on Fundamental Reactions of Geopolymer-Based Construction Materials"
7. Swathi Muthyala Ramesh, August 2019-Present, PhD EE, "Frequency Selective Surface-Based Sensing for Wireless Structural Health Monitoring"
8. S. Ali Mirala, Jan. 2017-August 2020, PhD EE, "Active Microwave Thermography for Evaluation of Rehabilitated Cement-Based Structures"
9. Mahboobeh Mahmoodi, Aug. 2015-Jan. 2020, PhD EE, "Frequency Selective Surface-Based Sensing for Wireless Structural Health Monitoring"
10. Zahra Manzoor (co-advised, 50%), Jan. 2016-May 2019, PhD EE, "Design of a Rapid Millimeter Wave Imaging System"
11. Cody Edwards, PhD EE Aug. 2017-July 2018, MSEE (non-thesis) July 2018-Dec. 2018, "Microwave Materials Characterization of Geopolymer Materials"
12. Ali Foudazi, Aug. 2013-Aug. 2017, PhD EE, "Development of Active Microwave Thermography for Structural Health Monitoring"
13. Naga Jaswanth Vutukury, Jan. 2014-Jan. 2016, MSEE (switched to non-thesis), "Novel Microwave Technique for Detection of Sand Production in Petroleum Wells"

14. Dustin Pieper, July 2013-Feb. 2016, MSEE, “Integrated Embedded Frequency Selective Surface Sensors for Structural Health Monitoring”.
15. Ashkan Hashemi (co-advised, 50%), Jan. 2013-Nov. 2015, PhD EE, “Microwave Characterization and Evaluation of Alkali-Silica Reaction (ASR) Gel in Cement-Based Materials”.
16. Sanjay Tadepally, Jan. 2013-July 2013, MSEE (switched advisors and subsequently selected non-thesis), “Novel Microwave Technique for Detection of Sand Production in Petroleum Wells”.
17. Dylan Crocker, Aug. 2012-May 2014, MSEE, “Application of Electrically Invisible Antennas to the Modulated Scatterer Technique”.

Senior Design Projects Advised:

1. “PLC-Controlled Mass Driver”, Advisor, Team of 4 Students, Aug. 2014-May 2015
2. “Science Center Demo - Interactive Route 66 Map”, Advisor, Team of 4 Students, Jan.-Dec. 2013.
3. “Plasma Speaker”, Advisor, Team of 4 students, Aug. 2012-May 2013.
4. “Science Center Demo – Puzzle of Electrical Engineering”, Co-advisor (50%), Team of 4 students, Aug. 2012-May 2013.
5. “Musical Tesla Coil Demo”, Advisor, Team of 4 Students, Jan.-Dec. 2012.
6. “One Dimensional Microwave Array”, Co-advisor (50%), Team of 4 students, Jan.-Dec. 2012.

Undergraduate Research (OURE) Projects Advised

1. “Bond Test Assessment of Concrete-Composite Joints Using Active Microwave Thermography”, W. Ong, Aug. 2017-April 2018.
2. “Microwave Materials Characterization of Geopolymer Constituent Materials”, C. Edwards, Aug. 2016-April 2017.
3. “Microwave Materials Characterization of Geopolymer Materials”, M. Steineman, Aug. 2015-April 2016.
4. “Ferroelectric Material Characterization at Microwave Frequencies”. T. Roth, Aug. 2014-April 2015.

Undergraduate Honors and Research Projects Advised

1. Cody Edwards, Undergraduate Research (1 credit), Fall 2016, “Frequency Selective Surfaces”.
2. Thomas Roth, Fall 2013, Undergraduate Electromagnetics Honors Project

Graduate Committee Membership

1. Matt Kempin, MSEE, August 2013
2. Mojtaba Fallahpour, PhD EE, December 2013
3. Yuan Gao, PhD EE, May 2019
4. Xiahuan Yang, PhD EE, August 2018
5. Frank Marshall, PhD Chemistry, July 2019
6. Katelyn Brinker, MSEE, May 2019
7. XingXing Zou, PhD Civil Engineering, March 2020
8. Chen Zhu, PhD EE, Dec 2020
9. Abu Naser Rashid Reza, PhD Civil Engineering, South Dakota School of Mines and Technology, ongoing
10. Jing Guo, PhD EE, ongoing
11. Aaron Harmon, PhD EE, ongoing
12. James Hunter, PhD EE, ongoing
13. Peter Holtmann, MS EE, ongoing
14. Emily Johnson, PhD Explosives Engr, ongoing
15. Matthew Juszczak, PhD EE, ongoing

Undergraduate Researchers

1. Sarah Hatfield, Aug. 2012-March 2013
2. Cody Edwards, Aug. 2016-May 2017
3. Nicholas Maye, Aug. 2017-Dec. 2018
4. Daniel Bischof, Aug. 2018-Dec. 2019
5. Logan Wilson, June. 2018-Aug. 2018 (high school student)
6. Lia VanVant, Aug. 2018-May 2020
7. Anna Case, Aug.-Dec. 2019
8. Logan Wilcox, July-May. 2020
9. Marshall Vaccaro, Aug. 2019-May 2020
10. Michael Spohr, Oct. 2019-March 2020
11. Timothy Gaines, Oct. 2019-March 2020
12. Thomas Montano, Jan. 2020-Jan. 2021
13. Madison Childress, Jan 2020-May 2020
14. Marquan Chaney, Aug. 2020-March 2021, August 2021-Dec. 2021.
15. Jared Sinkey, March 2021-Dec. 2021
16. Luke Allen, June 2021-Aug. 2021

17. Ryan May, Sept. 2021-Dec. 2021

18. McKennan Starkey, Jan. 2022 – Present

Refereed Journal Publications:

1. Marshall F., A. Duerden, N. Moon, **K. Donnell**, and G.S. Grubbs II, “Increases in Sensitivity in Chirped Pulse Fourier Transform Microwave Spectroscopy using Multi-Antenna Detection” *in preparation*.
2. Mirala, A., M. T. Al Qaseer, and **K.M. Donnell**, “An Antenna Array Approach for Adjusting Microwave Heating Pattern”, *in preparation for submission to IEEE Transactions on Instrumentation and Measurement*.
3. Thinley, L.T., C.A. Edwards, A.N. Rashid Reza, **K.M. Donnell**, and C.R. Shearer, “Microwave Materials Characterization of Geopolymer Precursor Powders”, *in preparation*.
4. Mahmoodi, M. and **K.M. Donnell**, “Localized FSS-Based Strain Sensing”, *in preparation for publication in the IEEE Sensors Journal*.
5. Zou, X., A. Mirala, M.T. Al Qaseer, K.M. Donnell, and L. Sneed, “Debonding Detection of Defected CFRP-Concrete Interface Using Active Microwave Thermography”, *under review for publication in NDT&E International*.
6. Urrahman, M., M. AbouKhoua, and **K.M. Donnell**, “In-Situ Permittivity Measurement of Liquids Using Immersible Planar Resonator”, *under review for publication in Measurement Science and Technology*.
7. Zou, X., A. Mirala, L. H. Sneed, M. T. Al Qaseer, and **K.M. Donnell**, “Detection Of CFRP-Concrete Interfacial Debonding Using Active Microwave Thermography,” *under review for publication in Composites Part B: Engineering*.
8. Manzoor, Z., M.T. Ghasr, and **K.M. Donnell**, “Asymmetric Ka-band Antipodal Vivaldi Antenna with Improved Radiation Pattern for SAR Imaging”, *under review for publication in the IEEE Transactions on Instrumentation and Measurement*.
9. Mahmoodi, M. and **K.M. Donnell**, “Patch- and Loop-Based Frequency Selective Surface Model Based on the Quality Factor Approach”, *under revision for publication in the IEEE Transactions on Antennas and Propagation*.
10. Manzoor, Z., M.T. Ghasr, and **K.M. Donnell**, “A Sparse Millimeter Wave 1D Imaging Array using an Asymmetric Antipodal Vivaldi Antenna”, *under revision for publication in the IEEE Transactions on Antennas and Propagation*.
11. Mahmoodi, M., M.T. Al Qaseer, and **K.M. Donnell**, “Adjustable Resolution for Localized FSS-Based Sensing by Synthetic Beamforming”, *IEEE Transactions on Instrumentation and Measurement*, DOI: 10.1109/TIM.2022.3151151, 2022.
12. Manzoor, Z., M.T. Ghasr, and **K.M. Donnell**, “A Comprehensive Bi-Static Amplitude Compensated Range Migration Algorithm (AC-RMA)”, *IEEE Transactions on Image Processing*, DOI: 10.1109/TIP.2021.3100679, 2021.
13. Mirala, A., M. T. Al Qaseer, and **K.M. Donnell**, “Efficient Health Monitoring of RAM-Coated Structures by Active Microwave Thermography”, *IEEE Transactions on Instrumentation and Measurement*, 10.1109/TIM.2021.3060596, 2021.
14. Manzoor, Z., M.T. Ghasr, and **K.M. Donnell**, “Improved GCPW-to-Multilayer SIW Transition for Efficient Feeding of an Antipodal Vivaldi Antenna”, *Microwave and Optical Technology Letters*, DOI: 10.1002/mop.32801, 2021.
15. Duerden, A., F. Marshall, N. Moon, C. Swanson, **K. Donnell**, and G. Grubbs II, “A Chirped Pulse Fourier Transform Microwave Spectrometer with Multi-Antenna Detection”, *Journal of Molecular Spectroscopy*, <https://doi.org/10.1016/j.jms.2020.111396>, 2021.
16. Grubbs, G. A. Mirala, D. Bischof, M.T. Ghasr, and **K.M. Donnell**, “Measurement of the Molecular Dipole Moment Using Active Microwave Thermography (AMT)”, *Journal of Chemical Thermodynamics*, <https://doi.org/10.1016/j.jct.2020.106245>, 2020.
17. Mirala, A., A. Foudazi, D. Bischoff, M.T. Al Qaseer, and **K.M. Donnell**, “Active Microwave Thermography to Detect and Locate Water Ingress”, *IEEE Transactions on Instrumentation and Measurement*, 10.1109/TIM.2020.3003394, 2020.
18. Mahmoodi, M., L. VanZant, and **K.M. Donnell**, “An Aperture Efficiency Approach for Optimization of FSS-Based Sensor Resolution”, *IEEE Transactions on Instrumentation and Measurement*, 10.1109/TIM.2020.2986108, 2020.

19. Manzoor, Z., M.T. Ghasr, and **K.M. Donnell**, "Image Distortion Characterization due to Equivalent Monostatic Approximation in Near Field Bistatic SAR Imaging", *IEEE Transactions on Instrumentation and Measurement*, vol. 69, no. 7, pp. 4898-4907, 10.1109/TIM.2019.2957868, 2020.
20. Foudazi, A, C. Edwards, M.T. Ghasr, L. Sneed, and **K.M. Donnell**, "Active Microwave Thermography for Nondestructive Evaluation of FRP-Rehabilitated Cement-Based Structures", *Materials Evaluation*, vol. 77, no. 6, 2019, pp. 810-821.
21. Foudazi, A., A. Mirala, M.T. Ghasr, and **K.M. Donnell**, "Active Microwave Thermography for Nondestructive Evaluation of Surface Cracks in Metal Structures", *IEEE Transactions on Instrumentation and Measurement*, vol. 68, no. 2, February 2019, pp. 576-585, DOI: 10.1109/TIM.2018.2843601.
22. Mirala, A., A. Foudazi, M.T. Ghasr, and **K.M. Donnell**, "Detection of Flat-Bottom Holes in Conductive Composites Using Active Microwave Thermography", *Journal of Nondestructive Evaluation, Diagnostics and Prognostics of Engineering Systems*, vol. 1, no. 4, 2018, 041005 DOI:10.1115/1.4040673.
23. Mahmoodi, M. and **K.M. Donnell**, "Performance Metrics for Frequency Selective Surface-Based Sensors", *IEEE Sensors Letters*, 2017, DOI 10.1109/LSENS.2017.2774830.
24. Yang, X. Y.R. Zheng, M.T. Ghasr, and **K.M. Donnell**, "Microwave Imaging from Sparse Measurements for Near Field Synthetic Aperture Radar (SAR)", *IEEE Transactions on Instrumentation and Measurement*, vol. 66, no. 10, October 2017, pp. 2680-2692.
25. Hashemi, A., K.E. Kurtis, **K.M. Donnell**, and R. Zoughi, "Empirical Multiphase Dielectric Mixing Model for Cement-Based Materials Containing Alkali-Silica Reaction (ASR) Gel", *IEEE Transactions on Instrumentation and Measurement*, vol. 66, no. 9, September 2017, pp. 2428-2436.
26. Foudazi, A., C. Edwards, M.T. Ghasr, and **K.M. Donnell** "Active Microwave Thermography for Structural Health Monitoring of CFRP-Strengthened Cement Based Materials", *IEEE Transactions on Instrumentation and Measurement*, vol. 65, no. 11, November 2016, pp. 2612-2620.
27. Pieper, D. and **K.M. Donnell**, "Multi-layer Frequency Selective Surface-based Sensing for Structural Health Monitoring of Layered Structures", *Materials Evaluation*, vol. 74, no. 10, October 2016, pp. 1457-1466.
28. Rashidi; M., M.C. Knapp; A. Hashemi, J. Kim, **K.M. Donnell**, R. Zoughi, L.J. Jacobs, and K.E. Kurtis, "Detecting Alkali-Silica Reaction: A Multi-Physics Approach", *Cement and Concrete Composites*, vol. 73, pp. 123-135, 2016, doi:10.1016/j.cemconcomp.2016.07.001.
29. Foudazi, A., and **K.M. Donnell**, "Effect of Sample Preparation on Microwave Materials Characterization by Loaded Waveguide Technique", *IEEE Transactions on Instrumentation and Measurement*, vol. 65, no. 7, pp. 1669-1677, July 2016, DOI: 10.1109/TIM.2016.2540840.
30. Foudazi, A., I. Mehdipour, **K.M. Donnell**, and K.H. Khayat, "Evaluation of Steel Fiber Distribution in Cement-Based Mortars Using Active Microwave Thermography", *Materials and Structures Journal*, vol. 49, no. 12, pp. 5051-5065, Dec 2016, DOI: 10.1617/s11527-016-0843-3.
31. A. Hashemi, M. Rashidi; K.E. Kurtis; **K.M. Donnell**, and R. Zoughi "Microwave Dielectric Properties Measurements of Sodium and Potassium Water Glasses", *Materials Letters*, vol. 169, pp. 10-12, doi:10.1016/j.matlet.2015.11.036, April 2016
32. Crocker, D.A. and **K.M. Donnell**, "Application of Electrically Invisible Antennas to the Modulated Scatterer Technique", *IEEE Transactions on Instrumentation and Measurement*, vol. 64, no. 12, Dec. 2015. DOI: 10.1109/TIM.2015.2454671
33. Foudazi, A., M.T. Ghasr, and **K.M. Donnell**, "Characterization of Corroded Reinforced Steel Bars by Active Microwave Thermography", *IEEE Transactions on Instrumentation and Measurement*, vol. 64, no. 9, pp. 2583-2585, July 2015.
34. Hashemi, A., M. Horst, **K.M. Donnell**, K.E. Kurtis and R. Zoughi, "Comparison of Alkali-Silica Reaction (ASR) Gel Behavior in Mortar at Microwave Frequencies," *IEEE Transactions on Instrumentation and Measurement*, vol. 64, no. 7, pp. 1907-1915, July 2015.
35. **Donnell, K.M.**, A. McClanahan, and R. Zoughi, "On the Crack Characteristic Signal from an Open-Ended Coaxial Probe", *IEEE Transactions on Instrumentation and Measurement*, vol. 63, no. 7, pp. 1877-1879, July 2014.
36. **Donnell, K.M.**, S. Hatfield, R. Zoughi and K.E. Kurtis, "Wideband Microwave Characterization of Alkali-Silica Reaction (ASR) Gel in Cement-Based Materials", *Materials Letters*, vol. 90, pp. 159-161, Jan 2013.

37. **Donnell, K.M.**, K. E Kurtis, and R. Zoughi, "Demonstration of Microwave Method for Detection of Alkali-Silica Reaction (ASR) Gel in Cement-Based Materials", *Cement and Concrete Research*, vol. 44, pp. 1-7, Feb. 2013, DOI: 10.1016/j.cemconres.2012.10.005.
38. **Donnell, K.M.** and R. Zoughi, "Application of Embedded Dual-Loaded Modulated Scatterer Technique (MST) to Multilayer Structures," *IEEE Transactions on Instrumentation and Measurement*, vol. 61, no. 10, pp. 2809-2816, October 2012.
39. **Donnell, K. M.** and R. Zoughi, "Detection of Corrosion in Reinforcing Steel Bars Using Microwave Dual-Loaded Differential Modulated Scatterer Technique", *IEEE Transactions on Instrumentation and Measurement*, vol. 61, no. 8, pp. 2320 - 2322, August 2012.
40. **Donnell, K. M.**, M. A. Abou-Khousa, M. Belayneh, and R. Zoughi, "Dual-Loaded Modulated Dipole Scatterer as an Embedded Sensor," *IEEE Transactions on Instrumentation and Measurement*, vol. 60, no. 5, pp. 1884-1892, 2011.
41. **Donnell (Muñoz), K.**, and R. Zoughi, "Improvement of Probe Response Extraction Using Time Domain Gating for Embedded Modulated Scatterer Technique", *Materials Evaluation*, vol. 66, no. 10, pp. 1084-1090, October 2008
42. **Donnell (Muñoz), K.**, B. Akuthota, E. Gallaher, and R. Zoughi, "Microwave Reflection Properties of Mortar Possessing a Cyclically Ingressed Sodium Chloride Profile", *Materials Evaluation*, vol. 62, no. 10, pp 1049-1056, October 2004. Winner of 2005 American Society for Nondestructive Testing (ASNT) Outstanding Paper Award.
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3. Mirala, A., X. Zou, M.T. Ghasr, Sneed, and **K.M. Donnell**, "Active Microwave Thermography: A Real-Time Monitoring Tool for CFRP-Concrete Bond Testing", *Proceedings of the IEEE International Instrumentation and Measurement Technology Conference*, Auckland, NZ, May 2019.
4. Manzoor, Z., M.T. Ghasr, and **K.M. Donnell**, "Microwave Characterization of 3D Printed Conductive Composite Materials", *Proceedings of the IEEE International Instrumentation and Measurement Technology Conference*, Houston, TX, May 2018.
5. Mahmoodi, M., M.T. Ghasr, and **K.M. Donnell**, "Synthetic Beamforming for Localized FSS-Based Sensing", *Proceedings of the IEEE International Instrumentation and Measurement Technology Conference*, Houston, TX, May 2018.
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7. Mahmoodi, M. and **K.M. Donnell**, "Effect of Illumination Pattern on FSS-Based Sensor Resolution", *Proceedings of the IEEE International Instrumentation and Measurement Technology Conference*, Houston, TX, May 2018.
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2. Muthyala Ramesh, S., and **K.M. Donnell**, "Frequency Selective Surface-Based Strain Sensor For Large- And Small-Scale Strain", *Presented at the Spring Research Symposium of the American Society for Nondestructive Testing (ASNT)*, virtual, April 2021.
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4. Mirala, A., B. Boroomandisorkhabi, and **K.M. Donnell**, "Optimization of the Radiating Subsystem in Active Microwave Thermography" *Presented at the Fall Conference of the American Society for Nondestructive Testing (ASNT)*, virtual, November 2020.
5. Zou, X., L. VanZant, D. Bischof, M.T. Ghasr, **K.M. Donnell** and L.H. Sneed, "Interfacial Damage Detection of CFRP-Concrete Joints Using Active Microwave Thermography", *Presented at the International Mechanical Engineering Congress & Exposition*, Salt Lake City, UT, Nov. 11-14, 2019.
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44. Pieper, D., M. ElGawady, and **K.M. Donnell**, "Application of Frequency Selective Surfaces for Detection of Buckling in Structural Columns", *presented at the 24th ASNT Research Symposium*, March 16-19, 2015, Anaheim, California.
45. Hashemi, A., **K.M. Donnell**, K.E. Kurtis, and R. Zoughi, "Effect of Relative Humidity on Microwave Dielectric Properties of Mortar Samples with Alkali-Silica Reaction (ASR) Gel", *presented at the 24th ASNT Research Symposium*, March 16-19, 2015, Anaheim, California.
46. Rashidi, M., M.C. L. Knapp, Á. Paul, A. Hashemi, **K.M. Donnell**, Reza Zoughi, J.Y. Kim, L.J. Jacobs, K.E. Kurtis, "Relationship between Damage, Nonlinearity, and Dielectric Properties: A Study of Alkali-Silica Reaction in Concrete," *Presented at the 5th ACerS/ACBM Cements Division Meeting, Advances in Cement-based Materials: Characterization, Processing, Modeling and Sensing*, Cookeville, TN, July 9-11, 2014.
47. Hilgedick, S., J.N. Vutukury, and **K.M. Donnell**, "Comparison of Microwave Sensing Methods for Monitoring Sand Production in Petroleum Wells", *Presented at the ASNT 23rd Research Symposium*, March 24-27, 2014, Minneapolis, MN.
48. Foudazi, A., M. Fallahpour, and **K.M. Donnell**, "Effect of Material Properties on Active Microwave Thermography", *Presented at the ASNT 23rd Research Symposium*, March 24-27, 2014, Minneapolis, MN.
49. Foudazi, A., M. Fallahpour, and **K.M. Donnell**, "Green's Function for Evaluation of Microwave Power used for Active Microwave Thermography", *Presented at the ASNT 23rd Research Symposium*, March 24-27, 2014, Minneapolis, MN.
50. M.T. Ghasr, **K.M. Donnell**, and S. Maddela, "Materials Characterization of Corrosion-Resistant Thin Film Coatings", *40th Annual Review of Progress in Quantitative Nondestructive Evaluation Conference*, Baltimore, MD, July 21-26, 2013.
51. Hashemi, A., **K.M. Donnell**, K.E. Kurtis and R. Zoughi, "Comparison of Temporal Characteristics of Microwave Dielectric Properties of Mortar with and without Alkali-Silica (ASR) Gel at R-, S- and X-bands," *40th Annual Review of Progress in Quantitative Nondestructive Evaluation Conference*, Baltimore, MD, July 21-26, 2013.
52. Hashemi, A., **K.M. Donnell**, K.E. Kurtis and R. Zoughi, "Evaluation of Hydration Activity in Mortar with and without ASR Gel Using Microwave Dielectric Property Characterization," *40th Annual Review of Progress in Quantitative Nondestructive Evaluation Conference*, Baltimore, MD, July 21-26, 2013.
53. Knapp, M., A. Paul, S. Hatfield, **K.M. Donnell**, R. Zoughi, J.Y. Kim, L. Jacobs, and K.E. Kurtis, "Understanding the Fundamental Aspects of ASR-Induced Expansion: A Multidisciplinary Approach", *4th ACerS/ACBM Cements Division Meeting, Advances in Cement-based Materials: Characterization, Processing, Modeling and Sensing*, University of Illinois, Urbana-Champaign, July 8-10, 2013.
54. Tadepally, S., S.A. Hilgedick, and **K.M. Donnell**, "Novel Microwave Sensing Technique for Monitoring Sand Production in Petroleum Wells", *Presented at the 23rd Research Symposium of the American Society for Nondestructive Testing (ASNT)*, Memphis, TN, March 2013.
55. Bouchard, M, and **K.M. Donnell**, "A New Approach to Student Design (Mars Rover Team)", *ASEE Midwest Section 2012 Annual Conference*, August 2012. Second place, Student Poster Competition.
56. Hatfield, S., D. Schultz, **K.M. Donnell** and M.T. Ghasr, "Design of an Antipodal Vivaldi Antenna for use in a Bi-Static Linear Array", *ASEE Midwest Section 2012 Annual Conference*, August 2012.

Technical Reports:

1. Manzoor, Z., X. Yang, M. Dvorsky, N. Maye, **K.M. Donnell**, Y.R. Zheng, and M.T. Ghasr “Design and Prototyping of a Real-Time Millimeter Wave Compressive Sensing Imager (AF151-129)”, Final report, Texas Research Institute at Austin (TRI/Austin), 37 p., June 2018.
2. **Donnell, K.M.** and M. Mahmoodi, “Frequency Selective Surface-Based Sensing for Wireless Structural Health Monitoring”, Final Report, Texas Research Institute at Austin (TRI/Austin), 93 p., May 2018.
3. Foudazi, A., Ghasr, M., **Donnell, K.M.**, Sneed, L., “Application of Active Microwave Thermography for Inspection of Rehabilitated Cement-Based Structures – Final Report,” Publication No. 15-01, Center for Infrastructure Engineering Studies, July 2015, 17 p.
http://cies.mst.edu/media/research/cies/documents/CIES_AMT_final.pdf
4. **Donnell, K.M.**, Y. R. Zheng, M.T. Ghasr, T. Roth, X. Yang, and R. Zoughi, “Implementation of Robust Data Reduction Techniques to Rapid Millimeter Wave Imaging”, Final Report, Texas Research Institute at Austin (TRI/Austin), p. 36, April 2015.
5. **Donnell, K.M.**, M.T. Ghasr, and E.C. Kinzel, “NUTC/Novel Integrated Nondestructive Testing Methodology for Detection and Evaluation of Corrosion in Cement-Based Materials”, Final Report, Center for Transportation Infrastructure and Safety, A National University Transportation Center (NUTC), Missouri University of Science and Technology, p. 19, June 2014.
6. **Donnell, K.M.** and E.C. Kinzel, “NUTC/Integrated Embedded Frequency Selective Surface Sensors for Structural Health Monitoring”, Final Report, Center for Transportation Infrastructure and Safety, A National University Transportation Center (NUTC), Missouri University of Science and Technology, p. 21, August 2014.
7. E.C. Kinzel and **K.M. Donnell**, “NUTC/Structural Health Monitoring and Remote Sensing of Transportation Infrastructure Using Embedded Frequency Selective Surfaces”, Final Report, Center for Transportation Infrastructure and Safety, A National University Transportation Center (NUTC), Missouri University of Science and Technology, p. 20, August 2014.
8. **Donnell, K.M.**, S. Hatfield, J. Bacon and R. Zoughi, “RF Material Property Characterization of Non-Conductive Composites,” Final Report, Texas Research Institute at Austin (TRI/Austin), p. 28, May 2013.
9. **Donnell, K. M.**, “Development of Embedded Modulated Scatterer Technique: Single- and Dual- Loaded Scatterers”, A Dissertation, Missouri University of Science and Technology, Rolla, MO, December 2010.
10. **Donnell (Muñoz), K.**, “Microwave Reflection Properties of Mortar Exposed to Chloride Solutions: Measurements and Modeling”, A Thesis, University of Missouri-Rolla, Rolla, MO, August 2003.
11. Wang, N., **K. Donnell**, M. Castle and R. Zoughi, "Microwave Detection of Cracks in Painted Metallic Substrates," Final Report, Naval Surface Warfare Center, Carderock Division, Bethesda, MD, p. 82, October 2000.
12. **Donnell, K.**, D. Hughes, T. Case and R. Zoughi, "Near-Field Microwave Nondestructive Evaluation of Refractory Bricks," Final Report, Johns Manville, Littleton, CO, p. 51, September 2000.
13. Wang, N., D. Hughes, T. Case, **K. Donnell** and R. Zoughi, “Feasibility Study of Corrosion Detection Under Paint in Aluminum Panels,” Final Report, Texas Research Institute at Austin (TRI-Austin), p. 78, July 2000.
14. Qaddoumi, N., T. Bigelow, E. Ranu, M.D. Frank, **K. Donnell**, R. Smiley and R. Zoughi, "Feasibility Study of Near-Field Microwave NDT Methodology for Rubber Hose Inspection," Navy SBIR (N98-007) Phase I Subcontract Final Report, Texas Research Institute at Austin (TRI/Austin), p. 362, October 1998.

Magazine Articles

1. Muzarik, M., R. Austin, and K.M. Donnell, “Strain Measurement as a Means of Predictive Lifecycle Analysis”, *Defense Systems Information Analysis Center (DSIAC) Journal*, 2017.
2. Donnell, K.M. “Active Microwave Thermography - A New Twist on Microwave NDT [In Microwave Women in Research]”, *IEEE Instrumentation & Measurement Magazine*, vol. 19, no. 3, pp. 24-26, 2016.

Invited Talks

1. Donnell, K.M., Invited Presentation, Air Force Institute of Technology, *High Frequency Sensing*, March 2020.

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2. Donnell, K.M., Invited Presentation in conjunction with Met5510/EE5670 - Nondestructive Testing Methods and Applications, Missouri University of Science and Technology, *Active Microwave Thermography - Principles and Applications*, March 2019.
3. Donnell, K.M., Invited Presentation, Georgia Institute of Technology, *Microwave NDT for Cement-Based Materials*, Atlanta, GA, Feb. 2016
4. Donnell, K.M., Invited Presentation, National Institute of Astrophysics, Optics, and Electronics, “*Microwave Nondestructive Testing – Overview and Recent Advances*”, Tonantzintla, Puebla, Mexico, Jan. 2015.
5. Donnell, K.M., Invited Research Seminar, Center for Infrastructure Engineering Studies, Missouri University of Science and Technology, “*Active Microwave Thermography for Structural Health Monitoring*”, Missouri University of Science and Technology, Jan. 2014.
6. Donnell, K.M., Invited Tutorial, 2014 IEEE Instrumentation and Measurement Society International Instrumentation and Measurement Technology Conference (I2MTC), “*Advances in Microwave Materials Characterization for NDT of Complex Structures: Theory, Methods, and Applications*”, Montevideo, Uruguay, May 2014.
7. Donnell, K.M., Invited Presentation, Missouri Department of Transportation (MoDOT), “*Active Microwave Thermography (AMT) for Inspection of Cement-Based Structures*”, Jan. 2014, Jefferson City, MO.
8. Donnell, K.M., Invited Speaker, “*Advances in Microwave Materials Characterization for NDT of Complex Structures*”, Center for Nondestructive Evaluation, Iowa State University, Sept. 2013.
9. Donnell, K.M., Invited Speaker, “*Applications of Microwave Nondestructive Testing to Materials Characterization*”, School of Civil and Environmental Engineering, Georgia Institute of Technology, Feb. 2013.