

Tuba Yilmaz Abdolsaheb

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Istanbul Technical University,
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- Ph.D., Electrical Engineering. October 2009 – October 2013.
Queen Mary, University of London London, U.K.
Advisor: Yang Hao.
- M.S., Electrical Engineering. August 2007-August 2009.
Mississippi State University Mississippi State, Mississippi, U.S.A.
Advisor: Erdem Topsakal.
Minor: Industrial Engineering
- B.S., Electrical Engineering. September 2003-July 2007.
Istanbul Technical University Istanbul, Turkey.

- Bio-electromagnetics
- Antennas, analysis and design
- Dielectric spectroscopy

- Microwave Imaging
- Wireless power transfer

Professional Experience

- Istanbul Technical University Istanbul, Turkey.
Assistant Professor November 2015-Present.
- Mitos Medical Technologies Istanbul, Turkey.
Senior Research Associate December 2014-November 2015.
 - Design of antennas for microwave breast cancer and stroke imaging.
 - Publications: J2.
- Utah State University Logan, Utah, U.S.A.
Post-Doctoral Research Fellow October 2013-November 2014.
 - Designed deployable transmitter antennas for mid-power range RF wireless power transfer systems operating at 2.45 and 5.8 GHz Industrial, Scientific, Medical (ISM) Bands.
 - Implemented Particle Swarm Optimization (PSO) to optimize the performance of circular wireless power transfer systems for electric vehicles.
 - Advising a graduate student on Optimization of Circular Couplers for Wireless Power Transfer.
 - Publications: J1, J7, C1, C11.
- Queen Mary, University of London London, U.K.
Graduate Research Assistant October 2009-October 2013.
 - Characterized realistic glucose-dependent dielectric properties of blood mimicking materials.
 - Designed resonators for non-invasive sensing of the dielectric changes resulting from the glucose fluctuations in the blood.
 - Developed and experimentally validated a numerical method to retrieve the dielectric properties of the high loss materials at narrow band.
 - Characterized broad band tissue mimicking materials for testing of RF medical equipment.
 - Managed small scale human tests for non-invasive monitoring of blood glucose levels.
 - Publications: J3-J5, C2-C9, C11-C14.
- Mississippi State University Mississippi State, Mississippi, U.S.A.
Graduate Teaching Assistant August 2007-August 2009.

- Performed in-vitro testing of implantable antennas at medical, implant, communication (401-406 MHz) (MedRadio) and ISM (2.40-2.50 GHz) bands.
- Developed narrow band tissue mimicking materials for testing of implantable and on-body antennas and resonator.
- Designed and experimentally validated the performance of on-body antennas for wireless cardiac monitoring.
- Teaching Assistant for Electromagnetics I and Electromagnetics II courses.
- Publications: J6, C10, C15-C19.

Publications

Book Chapters.

- Robert Foster, **Tuba Yilmaz**, Max Munoz and Yang Hao, "Wearable Sensors", in "Autonomous Sensor Networks: Collective Sensing Strategies for Analytical Purposes", Chapter 5, Daniel Filippini, Springer, 2013, ISBN-13 978-3642346477.

Peer-reviewed full journal papers.

- J1. **Tuba Yilmaz**, Nazmul Hasan, Regan Zane, Zeljko Pantic, "Multi-Objective Optimization of Circular Magnetic Couplers for Wireless Power Transfer Applications," *IEEE Transactions on Magnetics*, vol. 53, no. 8, pp 1-12, Aug. 2017.
- J2. **Tuba Yilmaz**, Mahmut Alp Kilic, Melike Erdogan, Mehmet Cayoren et al. "Machine Learning Aided Diagnosis of Hepatic Malignancies Through In-vivo Dielectric Measurements with Microwaves," *Physics in Medicine and Biology*, vol. 61, no. 13, pp. 5089 - 5102, July 2016.
- J3. **Tuba Yilmaz**, Robert Foster, Yang Hao, "Towards Accurate Dielectric Property Retrieval of Biological Tissues for Blood Glucose Monitoring," *IEEE Transactions on Microwave Theory and Techniques*, vol.62, no.12, pp.3193-3204, Dec. 2014.
- J4. **Tuba Yilmaz**, Robert Foster, Yang Hao, "Broadband Tissue Mimicking Phantoms and a Patch Resonator for Evaluating Noninvasive Monitoring of Blood Glucose Levels," *IEEE Transactions on Antennas and Propagation*, vol.62, no.6, pp.3064-3075, June 2014.
- J5. **Tuba Yilmaz**, Robert Foster, Yang Hao, "Detecting Vital Signs with Wearable Wireless Sensors," *Sensors 2010*, no. 12, pp. 10837-10862, 2010.

- J6. **Tuba Yilmaz**, Tutku Karacolak, Erdem Topsakal, "Characterization and Testing of a Skin Mimicking Material for Implantable Antennas Operating at ISM Band (2.4 GHz - 2.48 GHz)," *IEEE Antennas and Wireless Propagation Letters*, IEEE, Vol. 7, pp. 418-420, 2008.

Papers currently awaiting submission.

- J7. **Tuba Yilmaz**, Reyhan Baktur, Regan Zane, "Deployable Antennas for Charging of Low-power Devices," *IEEE Antennas and Wireless Propagation Letters*. (To be submitted)
- J8. **Tuba Yilmaz**, Max Munoz, Robert Foster, Yang Hao, "Effect of Arm Tissue Compression on Patch Resonator response," *IEEE Transactions on Antennas and Propagation*. (To be submitted)

Peer-reviewed conference proceedings.

- C1. **Tuba Yilmaz**, Tugce Ozturk, Saul Joof, " A Comparative Study for Development of Microwave Glucose Sensors, " *32nd URSI GASS, Montreal, 19-26 August 2017*.
- C2. **Tuba Yilmaz**, Hulya Sahinturk, Metin Acar and Ibrahim Akduman, "Matching medium characterization for microwave brain stroke imaging," *2016 IEEE International Symposium on Antennas and Propagation (APSURSI)*, Fajardo, 2016, pp. 1485-1486.
- C3. Kubra Cakmak, Tugce Ozturk, **Tuba Yilmaz** and Ibrahim Akduman, "Dielectric property measurements of dextrose solutions for RF sensor design," *2016 IEEE/ACES International Conference on Wireless Information Technology and Systems (ICWITS) and Applied Computational Electromagnetics (ACES)*, Honolulu, HI, 2016, pp. 1-2.
- C4. Nazmul Hasan, **Tuba Yilmaz**, Regan Zane, Zeljko Pantic, "Multi-objective particle swarm optimization applied to the design of Wireless Power Transfer systems," *IEEE Wireless Power Transfer Conference (WPTC)*, pp.1-4, 13-15 May 2015.
- C5. **Tuba Yilmaz**, Alessio Brizzi, Robert Foster, Max Munoz, Yang Hao, "A Patch Resonator for Sensing Blood Glucose Changes," *XXXI URSI General Assembly and Scientific Symposium (URSI GASS)*, Beijing, China, August 2014.
- C6. **Tuba Yilmaz**, Max Munoz, Robert Foster, Yang Hao, "Wearable Wireless Sensors," *International Workshop on Antenna Technology (IWAT)*, Karlsruhe, Germany, March 2013. (Invited Paper)

- C7. **Tuba Yilmaz**, Robert Foster, Yang Hao, "Patch Resonator for Non-Invasive Detection of Dielectric Property Changes in Biological Tissues," *IEEE International Symposium on Antennas and Propagation and USNC-URSI National Radio Science Meeting*, Chicago, IL, July 2012.
- C8. Yang Hao, Alessio Brizzi, Robert Foster, et al., "Antennas and propagation for body-centric wireless communications: Current status, applications and future trend," *Electromagnetics; Application and Student Innovation (iWEM), 2012 IEEE International Workshop on*, vol., no., pp.1-2, 6-9 Aug. 2012.
- C9. **Tuba Yilmaz** and Yang Hao, "Sensing of dielectric property alterations in biological tissues at microwave frequencies," *Antennas and Propagation Conference (LAPC), 2011 Loughborough*, vol., no., pp.1,4, 14-15 Nov. 2011, Loughborough, UK.
- C10. **Tuba Yilmaz** and Yang Hao, "Compact Resonators for Permittivity Reconstruction of Biological Tissues," *The XXX General Assembly of the International Union of Radio Science (URSI)*, 2011, Istanbul, Turkey.
- C11. **Tuba Yilmaz** and Yang Hao, "Electrical property characterization of blood glucose for on-body sensors," *Antennas and Propagation (EUCAP), Proceedings of the 5th European Conference on*, vol., no., pp.3659, 3662, Rome, Italy.
- C12. Farshad Keshmiri, **Tuba Yilmaz**, Yang Hao, and Christophe Craeye, "MOM Analysis of Antenna Devoted to BAN," *Antennas and Propagation (EUCAP), Proceedings of the 5th European Conference on*, vol., no., pp.441,444, Rome, Italy.
- C13. **Tuba Yilmaz**, Tutku Karacolak, Erdem Topsakal, "Characterization of Muscle and Fat Mimicking Gels at MICS and ISM Bands (402 MHz – 405 MHz) and (2.4 GHz – 2.48 GHz)," *The XXIX General Assembly of the International Union of Radio Science (URSI)*, August 07-17, 2008, Chicago, IL.

Conference presentations.

- C14. **Tuba Yilmaz**, Reyhan Baktur, Regan Zane, "Design and Testing of Deployable Antennas for Wireless Charging of Low Power Sensors," *IEEE International Symposium on Antennas and Propagation and USNC-URSI National Radio Science Meeting*, Vancouver, BC, July 2015.
- C15. **Tuba Yilmaz***, Max Munoz, Robert Foster, Yang Hao, "Towards Non-invasive and Continuous Monitoring of Vital Signs," *2nd Technical Enterprise Workshop on Today's RF Tomorrow's Medicine*, London, February 2013. **2nd Runner up Prize**

- C16. **Tuba Yilmaz*** and Yang Hao, “RF Devices for Chronic Disease Management,” *Queen Mary, University of London Research Open Day 2012*, London, UK. **Best Antenna Poster Award**
- C17. **Tuba Yilmaz** and Yang Hao, “Non-invasive Sensing of Blood Glucose Using Wearable Microwave Sensors,” *European Microwave Week 2011*, Manchester, UK.
- C18. **Tuba Yilmaz*** and Yang Hao, “Enabling Microwave Devices for Chronic Disease Management,” 24th. *London Hopper Colloquium*, 2011, London, UK. **IBM Best Poster Award**
- C19. **Tuba Yilmaz**, Tutku Karacolak, Erdem Topsakal, “A Three Layer Skin-Fat-Muscle Mimicking Gel Model for Testing of Implantable Antennas Operating at MICS (402 MHz- 405 MHz) and ISM (2.40 GHz – 2.48GHz) Bands,” *Women in Electromagnetics (WiEM) Workshop*, 2009, Salt Lake City, UT.
- C20. **Tuba Yilmaz**, Tutku Karacolak, Erdem Topsakal, “Body-Centric Antennas for Wireless Cardiac Monitoring,” *National Radio Science Meeting, URSI*, January 5-8, 2009, Boulder.
- C21. **Tuba Yilmaz**, Tutku Karacolak, Erdem Topsakal, “Characterization of Skin Mimicking Gels for Implantable Antennas Operating at ISM Band (2.4 GHz – 2.48 GHz),” *National Radio Science Meeting, URSI*, January 3-6, 2008, Boulder, CO.
- C22. **Tuba Yilmaz**, Tutku Karacolak, Erdem Topsakal, “Characterization of Skin Mimicking Gels for MICS (402 MHz – 405 MHz) and ISM Band (2.4 GHz – 2.48 GHz),” *Mississippi Academy of Science Meeting*, February 20-22, 2008, Olive Branch, MS.

Invited Talks.

- Utah State University 18 March 2014.
Logan, Utah, U.S.A. “RF
Resonators for Non-invasive Monitoring of Blood Glucose Levels.”

Qualifications

- Design and In-vivo/In-vitro testing of implantable/on-body antennas for bio-telemetry applications.
- Dielectric spectroscopy.
- Dielectric property re-construction through resonator measurements.
- Application of heuristic optimization techniques to electromagnetics: Particle Swarm Optimization (PSO).
- HFSS-Matlab and Maxwell-Matlab scripting.

- Managing MSc and PhD students.

Skills

- **Equipment:** Network analyzer, Agilent dielectric probe kit, Circuit board Milling Machine.
- **Simulation Software:** ANSYS High Frequency Structure Simulator (HFSS), MSC Patran, Computer Simulation Technology (CST), Agilent's Advanced Design System (ADS), COMSOL Multiphysics, ANSYS Maxwell.
- **Programming:** Matlab, C, Python.
- **Other:** Latex

Professional Activities

Reviewer

- IEEE Transactions on Microwave Theory and Techniques (MTT).
- IEEE Transactions on Antennas and Propagation (TAP).
- IEEE Transactions on Biomedical Engineering (TBME).
- IEEE Transactions on Power Electronics (TPEL).
- IEEE Antennas and Wireless Propagation Letters (AWPL).

Honor Societies

- Eta Kappa Nu Electrical and Computer Engineering Honor Society.

Awards

- URSI Young Scientist Award, 2017.
- Marie Curie Individual Fellowship – Reintegration Grant, 2016.
- IET Today's RF Tomorrow's Medicine Workshop 2nd runner up prize, February, 2013.
- QMUL Postgraduate Fund Travel Grant, June, 2012.
- QMUL Research Open Day Best Antenna Poster Award, April, 2012.
- IBM Best Poster Award at London Hopper Colloquium, April, 2011.
- National Science Foundation Travel grant January 2008 and January 2009.
- Dean's honor list, Istanbul Technical University.

Trainings

- Teaching Skills Workshop in Queen Mary University of London, 2009.
- Teaching Assistant Workshop in Mississippi State University, 2007.

Civic Involvement

- Ph.D. Representative for Antennas Group (2011-2012)
 - Contributed to organization of Queen Mary University of London

Research Open Day.

- Volunteering to translate TED talks to Turkish for STEM outreach.

Personal

- Born May 1986 in Solhan, Turkey.
- Gender female.
- Citizenship Turkey.
- Married to Ahmad Abdolsaheb in July 2013.
- Health excellent.
- Languages
 - Full professional proficiency in English.
 - Native Turkish speaker.