Keat Ghee Ong, Ph.D.

Curriculum Vitae

Education

Ph.D. Electrical Engineering at University of Kentucky	2000
MS Electrical Engineering at University of Kentucky	1998
BS Electrical Engineering at University of Kentucky	1997

Professional Experience

University of Oregon
Phil and Penny Knight Campus for Accelerating Scientific Impact

Professor	August 2019 – Present

Michigan Technological University
Department of Biomedical Engineering

Associate Chair	December 2017 – August 2019
Professor	August 2017 – August 2019
Portage Health Foundation Endowed Professor of Technological Innovations in Health	July 2016 – August 2019
Associate Professor	August 2011 – August 2017
Graduate Program Director	August 2011 – August 2015
Assistant Professor	July 2006 – August 2011

Life Science and Technology Institute

Director	April 2015 – December 2015

Biotechnology Research Center

Director	September 2013 – March 2015

Georgia Institute of Technology
Institute for Bioengineering and Bioscience

Visiting Associate Professor	January 2016 – July 2016

KMG2 Sensors Corporation / SentechBiomed Corporation

Chief Scientist	May 2002 – July 2006

Pennsylvania State University
Department of Electrical Engineering & Materials Research Institute

Postdoctoral Researcher	July 2001 – April 2002

University of Kentucky
Department of Electrical Engineering, Lexington, KY 40506

Postdoctoral Researcher	August 2000 – July 2001

Funding at Michigan Tech

2018 PI, "Implementation of a wireless sensor system for monitoring mechanical loadings at the internal fixation plates of rats with segmental bone defects," University of Oregon (Subcontract

from a NIH project, PI = R. Guldberg)
Total: $60,000, 2018-2021.

2017 Affiliated Investigator, "An engineering research center for Cell Manufacturing Technologies (CMaT)," National Science Foundation
Total: ~$19.75 million (Funds to my lab: $390,006), 2017 – 2022.

2017 PI, "Mechanically active magnetoelastic system for controlled loading environment to promote vascularized bone regeneration," NIH/NIBIB
Total: $479,881, 2017-2020.

2017 PI, "Implementation of a wireless sensor system for monitoring mechanical loadings at the internal fixation plates of rats with segmental bone defects," Georgia Institute of Technology (Subcontract from a NIH project, PI = R. Guldberg)
Total: $20,000, 2017-2018.

2016 co-I (PI = B. Lee), "Biomimetic tissue adhesive with mechanically tough hydrogel support," NIH
Total: $412,562, 2016-2018.

2016 PI, "A wireless sensor system for monitoring load at external bone fixation plate," Mayo Clinic (Subcontract from a DoD project, PI = C. Evans).
Total: $28,520, 2016-2017.

2016 co-I (PI = J. Carter), "Michigan Tech and PHFoundation: A partnership to improve health education research infrastructure and local economic growth," Portage Health Foundation
Total: $2,500,000, 2015 – 2020. (Note: This is a research/educational enhancement grant that includes funds for student support, program development, etc. for the whole university)

2015 PI, "Implantable magnetoelastic force sensor for real-time monitoring of tissue healing," Michigan Space Grant Consortium.
Total: $2,500, 2015-2016.

2012 PI, "Sub-cellular mechanical loads for modulating neuron behaviors," Michigan Space Grant Consortium.
Total: $2,500, 2012-2013.

2012 co-I (PI = R. Rajachar), "Mechanically active nano-rod composite materials for real-time controlled therapeutic drug delivery," NIH/NIBIB
Total: $184,334, 2012-2014.

2012 PI, "A self-diagnosed, adaptive structure," Michigan Space Grant Consortium.
Total: $2,500, 2012-2013.

2011 PI, "A disposable wireless sensor for wound healing monitoring III," 3M Non-tenured Faculty Award.
Total: $15,000, 2011.

2011 co-I (PI = R. Rajachar), "Vibrational coating for improvement of long-term stability of transcutaneous implants," Michigan Universities Commercialization Initiative.
Total: $19,785, 2011.

2010 PI, "Remotely activated, submicron vibrating surfaces for controlling infections and uncontrolled fibrosis at the osseointegrated limb interfaces," US Department of Defense, Army, CDMRP.
Total: $146,764, 2010-2012.

2010 PI, "Real time, in vivo mapping of tibiofemoral contact pressures in knee arthroplasty implants," NIH/NIBIB.
Total: $148,196, 2010-2012.

2010 PI, “A disposable wireless sensor for wound healing monitoring II,” 3M Non-tenured Faculty Award.
Total: $15,000, 2010.

2010 co-I (PI = J. Goldman), “The regulation of interstitial flow in experimental lymphedema by compression,” NIH/NHLBI.
Total: $442,204, 2010-2012.

2010 PI, “A Disposable Wireless Sensor for Wound Healing Monitoring,” Michigan Space Grant Consortium.
Total: $2,500, 2010-2011.

2009 PI, “A disposable wireless sensor for wound healing monitoring,” 3M Non-tenured Faculty Award.
Total: $15,000, 2009.

2009 PI, “A wireless sensor system for real-time measurement of pressure profiles at lower limb prostheses to ensure proper fitting,” US Department of Defense, Army, CDMRP.
Total: $212,727, 2009-2011.

2009 PI, “A wireless, passive dosimeter for tracking mercury vapor exposure,” Centers for Disease Control, National Institute for Occupational Safety and Health.
Total: $149,286, 2009-2011.

2008 PI, “An in-situ biliary manometer for sphincter of Oddi dysfunction diagnosis,” NIH/NIBIB R15.
Total: $234,000, 2008-2011.

2008 PI, “An ultra-sensitive titania nanotube hydrogen sensor,” Michigan Space Grant Consortium.
Total: $10,000, 2008-2009.

2008 PI, “Rapid pathogen and toxins detection using array of magnetoelastic sensors,” NATO Science for Peace Planning Grant.
Total: $10,338, 2008.

2008 PI, “Wireless sensor system for rapid pathogen detection,” Michigan Universities Commercialization Initiative.
Total: $21,000, 2008.

2007 PI, “In vivo tracking of human body fluid pH with a wireless, passive sensor implant,” Michigan Technological University Seed Grant.
Total: $42,785, 2008.

Senior Design Support

2017 Advisor, “Multi coil passive recharging,” Medtronic Inc.
Total: $17,500, 2017-2018.

2016 Advisor, “Patient activity sensor to assess chronic pain,” Medtronic Inc.
Total: $17,500, 2016-2017.

2015 Advisor, “Bluetooth low energy as an implantable interface,” Medtronic Inc.
Total: $17,500, 2015-2016.

2014 Advisor, “User interface design guidelines and enhancements for medical device applications,” Medtronic Inc.
Total: $17,500, 2014-2015.

2011 Advisor, "Development of an in vivo sensor system to monitor environmental conditions of implantable medical devices," Boston Scientific Corporation.
Total: $21,000, 2011-2013.

2009 Advisor, "Respiratory and pulse rates tracking system," 3M Corporation.
Total: $15,000, 2009.

2008 Advisor, "Operation room data collection system," William Beaumont Hospital.
Total: $15,000, 2008.

Research Funding Received Prior to Michigan Tech

2005 PI, "A single-use, widely dispersible wireless sensor system," Phase I, NSF SBIR.
Total: $100,000, 2005.

2004 PI, "A transcutaneous nanotube hydrogen sensor," Phase I, NIH SBIR.
Total: $400,000, 2004-2006.

2003 PI, "Wireless, embedded sensors for long-term monitoring in concrete structures," Phase I, NSF SBIR.
Total: $100,000, 2003.

2002 PI, "Magnetoelastic sensors for biomedical monitoring," Phase II, NIH SBIR.
Total: $775,000, 2002-2004.

2001 Co-I, "Magnetoelastic sensors for biomedical monitoring," Phase I, NIH SBIR.
Total: $100,000, 2001.

Scholarly Activities

Sensors (ISSN 1424-8220) http://www.mdpi.net/sensors/

Editorial Board	2018 - Present
Guest Editor (*Special Issue*: Implantable Sensors)	2018
Editorial Board	2003 - 2008
Guest Editor (*Special Issue*: Networked Sensors and Wireless Sensor Platforms)	2002
North American Editor	2001 - 2003

Science Letters Journal

Editorial Board	2015 - 2017

Chemical Sensors Journal – Biomedical Applications

Editorial Board	2011 - 2015

Sensor Letters

Associate Editor	2015 – 2016
American Editor	2008 – 2015
Editorial Board	2005 - 2008
American Editor	2003 – 2005

Since 2008, I have performed over 35 in-person or virtual grant proposal reviews for NIH, NSF, as well as private funding foundations such as Ohio Cancer Research Associates and foreign governmental agencies such as the Italian Ministry of Health.

Each year, I performed 10 - 20 (sometimes more) reviews for sensors, materials, and biomedical research journals such as *IEEE Sensors*, *IEEE Transactions on Biomedical Engineering*, *Sensors Journal*, etc.

Awards

Young Investigator, Frontiers in Bioengineering, Georgia Tech University, 2013.

3M Non-tenured Faculty Award, 2009-2011.

Archival Refereed Journal Publications

Manuscript Under Review

1. Zhongtian Zhang, Rattapol Pinnaratip, **Keat G. Ong**, Bruce P. Lee, "Correlating the mass and mechanical property changes during the degradation of PEG-based adhesive," submitted to *Journal of Applied Polymer Science,* May 2019.
2. Brett S. Klosterhoff, Jarred Kaiser, Bradley D. Nelson, Salil S. Karipott, Marissa A. Ruehle, Jeffrey A. Weiss, **Keat Ghee Ong**, Nick J. Willett, Robert E. Guldberg, "Real-time monitoring of mechanical cues in the regenerative niche reveal dynamic strain magnitudes that enhance bone repair," *Science Advances*, May 2019.

Published

H-Index = 34 (July 2018)

1. Hal R. Holmes, Eli Vlaisavljevich, Ee Lim Tan, Katherine L. Snyder, **Keat Ghee Ong**, Rupak M. Rajachar, "Control of cellular adhesion and myofibroblastic character with sub-micrometer magnetoelastic vibrations," *Journal of Biomechanics*, vol. 71, pp. 199–207, 2018.
2. Salil. S. Karipott, Bradley D. Nelson, Robet E. Guldberg, **Keat Ghee Ong**, "Clinical potential of implantable wireless sensors for orthopedic treatments," *Expert Review of Medical Devices*, pp. 1745-2422, 2018. DOI: 10.1080/17434440.2018.1454310
3. Andrew DeRouin, Roger Guillory, Weilue He, Megan Frost, Jeremy Goldman, **Keat Ghee Ong**, "Magnetoelastic galfenol as a stent material for wirelessly controlled degradation rates," *Journal: Journal of Biomedical Materials Research Part B: Applied Biomaterials*, accepted, 2018.
4. Andrew J. DeRouin, Allysa Meinberg, Erin Murphy, Alexa Thompson, Timothy Neuschwander, **Keat Ghee Ong**, "Force-sensing suture anchor for real time monitoring of tensile loads," *Science Advances Today*, 25278, 2018.
5. Salil. S. Karipott, Praharsh. M. Veetil, Bradley. D. Nelson, Robert E. Guldberg, **Keat Ghee Ong**, "An embedded wireless temperature sensor for orthopedic implants," *IEEE Sensors Journal*, vol. 18(3), pp. 1265-1272, 2018. doi: 10.1109/JSEN.2017.2780226
6. Brett S. Klosterhoff, **Keat Ghee Ong**, Laxminarayanan Krishnan, Kevin Hetzendorfer, Young-Hui Chang, Mark G. Allen, Robert E. Guldberg, Nick J. Willett, "Wireless implantable sensor for noninvasive, longitudinal quantification of axial strain across rodent long bone defects," *Journal of Biomechanical Engineering*, vol. 139(11), 2017. doi: 10.1115/1.4037937.
7. Brett S. Klosterhoff, Melissa Tsang, Didi She, **Keat Ghee Ong**, Mark G. Allen, Nick J. Willett, Robert E. Guldberg, "Implantable Sensors for Regenerative Medicine," *Journal of Biomechanical Engineering*, vol. 139, 0201009, 2017.

8. **Keat Ghee Ong**, Sterling Prince, Andrew J. DeRouin, "Implantable sensors for medical applications," *Science Advances Today*, vol. 2, 25253, 2016.
9. Andrew DeRouin, Nina Pacella, Chunfeng Zhao, Kai-Nan An, **Keat Ghee Ong**, "A wireless sensor for real-time monitoring of tensile force on sutured wound sites," *IEEE Trans. Biomedical Engineering,* vol. 63(8), pp. 1665-1171, 2016.
10. Govindan Suresh, Andrew DeRouin, Ri Chen, **Keat Ghee Ong**, "A battery-less wireless embedded sensor for wide area monitoring," *Sensor Letters*, vol. 14, pp. 1054-1060, 2016.
11. Yisong Tan, Andrew DeRouin, **Keat Ghee Ong**, "Design and optimization of a magnetoelastic tensile force sensor," *Sensor Letters*, vol. 14, pp. 1049-1053, 2016.
12. Andrew DeRouin, **Keat Ghee Ong**, "Multi-parameter sensing with a single magnetoelastic sensor by applying loads on the null locations of multiple resonant mode," *Smart Materials and Structures*, vol. 25(3), 030544, 2016.
13. Joseph Smith, Andrew DeRouin, Ri Chen, Rupak Rajachar, **Keat Ghee Ong**, "An ultrasound application device and cell morphological analysis software to analyze ultrasonic vibrational effects on fibroblasts," *Science Letters Journal*, vol. 5, pp. 222, 2016.
14. Meng-Hsien Lin, Jonathan Anderson, Rattapol Pinnaratip, Hao Meng, Shari Konst, Andrew J. DeRouin, Rupak Rajachar, **Keat Ghee Ong**, Bruce P. Lee, "Monitoring the long-term degradation behavior of biomimetic bioadhesive using wireless magnetoelastic sensor," *IEEE Trans. Biomedical Engineering*, vol. 62(7), pp. 1838-1842, 2015
15. Nina Pacella, Andrew DeRouin, Brandon Pereles and **Keat Ghee Ong**, "Geometrical modification of magnetoelastic sensors to enhance sensitivity," *Smart Materials and Structures*, 24, 025018, 2015.
16. Zhaohui Wang, Houbing Song, David W. Watkins, **Keat Ghee Ong**, Pengfei Xue, Qing Yang, and Xianming Shi, "Cyber-physical systems for water sustainability: challenges and opportunities," *IEEE Communications Magazine*, pp. 216-222, May 2015.
17. Jonathan Anderson, Meng-Hsien Lin, Caitlyn Privette, Marissa Flowers, Meridith Murley, Bruce P. Lee, **Keat Ghee Ong**, "Wireless magnetoelastic sensors for tracking degradation profiles of nitrodopamine-modified poly(ethylene glycol)," *Science Letters Journal*, vol. 4, Article ID 80, 2015.
18. Andrew J. DeRouin, Andrew Lund, **Keat Ghee Ong**, "Wireless, passive printable sensors with multi-parameter sensing capability," *Science Letters Journal*, vol. 4, Article ID 78, 2015.
19. Brandon Pereles, Andrew DeRouin, **Keat Ghee Ong**, "Partially loaded magnetoelastic sensors with customizable sensitivities for large force measurements," *IEEE Sensors*, vol. 15(1), pp. 591-597, 2015.
20. Hal R. Holmes, Andrew DeRouin, Samantha Wright, Thomas A. Lograsso, Trevor M. Riedemann, Rupak M. Rajachar, **Keat Ghee Ong**, "Biodegradation and biocompatibility of mechanically active magnetoelastic materials," *Smart Materials and Structures*, vol. 23, 095036, 2014.
21. Will R. Paces, Hal R. Holmes, Eli Vlaisavljevich, Katherine L. Snyder, Ee Lim Tan, Rupak M. Rajachar, and **Keat Ghee Ong**, "Application of sub-micrometer vibrations to mitigate bacterial adhesion," *Journal of Functional Biomaterials*, vol. 5, 15-26, 2014.
22. Brandon D. Pereles, Andrew J. DeRouin and **Keat Ghee Ong**, "A wireless, passive magnetoelastic force–mapping system for biomedical applications," *J Biomech Eng*, vol. 136(1), 011010, 2013.
23. **Keat Ghee Ong**, "Wireless implantable sensors," *JSM Biotechnology & Biomedical Engineering*, vol. 1(1), pp. 1007, 2013.

24. Andrew J. DeRouin, Zhanping You, Morgan Hansen, Aboelkasim Diab, and **Keat Ghee Ong**, "Development and application of the single-spiral inductive-capacitive resonant circuit sensor for wireless, real-time characterization of moisture in sand," *Journal of Sensors*, vol. 2013, Article ID 894512, 7 pages, 2013.

25. Andrew J. DeRouin, Brandon D. Pereles, Thadeus M. Sansom, Peng Zang, **Keat Ghee Ong**, "A wireless inductive-capacitive resonant circuit sensor array for force monitoring" *Journal of Sensor Technologies*, vol. 3, pp. 63-69, 2013.

26. Andrew J. DeRouin, Steven J. Trierweiler, Brandon D. Pereles, Benjamin Lippi, **Keat Ghee Ong**, "A low cost, wireless embedded sensor for moisture monitoring in hard-to-access places," *Sensor Letters*, vol. 11, no. 9, pp. 1573-1578, 2013.

27. Steven Trierweiler, Hallie Holmes, Brandon Pereles, Rupak Rajachar, **Keat Ghee Ong**, "Remotely activated, vibrational magnetoelastic array system for controlling cell adhesion," *Journal of Biomedical Science and Engineering*, vol. 6, no. 5, 2013.

28. Brandon D. Pereles, Andrew J. DeRouin, **Keat Ghee Ong**, "An inductor-capacitor resonant circuit chemical sensor array for remote monitoring of multiple atmospheric contents," *Chemical Sensors*, vol. 3, Article number 14, 2013.

29. E. Vlaisavljevich H. R. Holmes, E. L. Tan, Z. Qian, S. Trierweiler, **K. G. Ong**, R. M. Rajachar, "Magnetoelastic vibrational biomaterials for real-time monitoring and modulation of the host response," *Journal of Materials Science: Materials in Medicine*, vol. 24, no. 4, pp. 1093-1104, 2013.

30. Brandon D. Pereles, Thomas Dienhart, Thadeus Sansom, Kyle Johnston, **Keat Ghee Ong**, "A wireless, passive load cell based on magnetoelastic resonance," *Smart Materials and Structures*, vol. 21, 075018, 2012.

31. Brandon D. Pereles, Andrew J. DeRouin, Thomas A. Dienhart, Ee Lim Tan, **Keat Ghee Ong**, "A wireless, magnetoelastic-based sensor array for force monitoring on a hard surface," *Sensor Letters*, vol. 10, pp. 806-813, 2012.

32. Ee Lim Tan, Andrew J. DeRouin and **Keat Ghee Ong**, "Magnetoelastic-harmonic stress sensors with tunable sensitivity," *IEEE Sensors Journal*, vol. 12, no. 6, pp. 1878-1883, 2012.

33. Hal R. Holmes, Ee Lim Tan, **Keat Ghee Ong**, Rupak M. Rajachar, "Fabrication of biocompatible, vibrational magnetoelastic materials for controlling cellular adhesion," *Biosensors*, vol. 2(1), pp. 57-69, 2012.

34. Ee Lim Tan, Andrew J. DeRouin, Brandon D. Pereles, **Keat Ghee Ong**, "Design, fabrication, and implementation of a wireless, passive implantable pressure sensor based on magnetic higher-order harmonic fields," *Biosensors*, vol. 1, pp. 134-152, 2011.

35. Christina E. Thorp, Brandon D. Pereles, Andrew DeRouin, **Keat Ghee Ong**, "A wireless, passive chemo-mechanical glucose sensor," *IEEE Sensors*, vol. 11(9), pp. 2027-2031, 2011.

36. Eli Vlaisavljevich, Logan P. Janka, **Keat G. Ong**, Rupak M. Rajachar, "Magnetoelastic materials as novel bioactive coatings for control of cell adhesion," *IEEE Transactions on Biomedical Engineering*, vol. 58(3), pp. 698-704, 2011.

37. Brock E. Horton, Stephen Schweitzer, Andrew DeRouin, **Keat Ghee Ong**, "A varactor-based, inductively coupled wireless pH sensor", *IEEE Sensors Journal*, vol. 11(4), pp. 1061-1066. 2011.

38. Ee Lim Tan, Brandon D. Pereles, **Keat Ghee Ong**, "A wireless embedded sensor based on magnetic higher-order harmonic fields: application to liquid pressure monitoring," *IEEE Sensors Journal*, vol. 10(6), pp. 1085-1090, 2010.

39. Brock E. Horton, Brandon D. Pereles, Ee Lim Tan, **Keat Ghee Ong**, "A wireless, passive pH sensor based on magnetic higher-order harmonic fields," *Sensor Letters*, vol. 7, pp. 599–604, 2009.

40. Brandon D. Pereles, Ranyuan Shao, Ee Lim Tan, Keat Ghee Ong, "A wireless flow sensor based on magnetic higher-order harmonic fields," *Smart Materials and Structures*, vol. 18, 095002, 2009.

41. Ee Lim Tan, Brandon D. Pereles, **Keat Ghee Ong**, "A wireless and passive implantable sensor," *Sensor Letters*, vol. 7, pp. 57-63, 2009.

42. Ee Lim Tan, Brandon D. Pereles, Brock Horton, Ranyuan Shao, Mohammed Zourob, **Keat Ghee Ong**, "Implantable biosensors for real-time strain and pressure monitoring," *Sensors Journal*, vol. 8(10), pp. 6396-6406, 2008.

43. Justin B. Ong, Zhanping You, Julian Mills-Beale, Ee Lim Tan, Brandon D. Pereles, **Keat Ghee Ong**, "A wireless, passive embedded sensor for real-time monitoring of water content in civil engineering materials," *IEEE Sensors Journal*, vol. 8(12), pp. 2053-2058, 2008.

44. Brandon D. Pereles, Ee Lim Tan, **Keat Ghee Ong**, "A remote query pressure sensor based on magnetic higher-order harmonic fields," *IEEE Sensors Journal*, vol. 8(11), pp. 1824-1829, 2008.

45. **Keat Ghee Ong**, Ee Lim Tan, Craig A. Grimes, Ranyuan Shao, "Removal of temperature and earth's field effects of a magnetoelastic pH sensor," *IEEE Sensors Journal*, vol. 8(4), pp. 341-346, 2008.

46. Ee Lim Tan, Brandon D. Pereles, Justin Ong, **Keat Ghee Ong**, "A wireless, passive strain sensor based on the harmonic response of magnetically-soft materials," *Smart Materials and Structures*, vol. 17 (2), 025015, 2008.

47. Casey S. Mungle, Ranyuan Shao, Somnath C. Roy, **Keat Ghee Ong**, and Craig A. Grimes, "An analysis on the effect of sensor configuration and geometry of magnetoelastic resonance sensors operating in air," *Sensor Letters*, vol. 6, pp. 1-12, 2008

48. Ee Lim Tan, Ranyuan Shao, Craig A. Grimes, **Keat Ghee Ong**, "Application of magnetoelastic sensors for quantifying deposition rate and size of homogeneous particles in liquid," *Journal of Environmental Monitoring*, vol. 9, pp. 1276-1281, 2007.

49. Ee Lim Tan, Wen Ni Ng, Ranyuan Shao, Brandon Pereles, and **Keat Ghee Ong**, "A wireless, passive sensor for quantifying packaged food quality," *Sensors*, vol. 7, pp.1747-1756, 2007.

50. Ranyuan Shao, Ee Lim Tan, Craig A Grimes, **Keat Ghee Ong**, "A wireless, passive dosimeter for tracking mercury vapor exposure," *Sensor Letters*, vol. 5, pp. 615-620, 2007.

51. Somnath C. Roy, **Keat G. Ong**, Kefeng Zeng, Craig A. Grimes, "Quantification of blood clotting kenetics II: Thromboelastograph analysis and measurement of erythrocyte sedimentation rate using magnetoelastic sensors," *Sensor Letters*, vol. 5, pp. 432 – 440, 2007.

52. M. Zourob, **Keat G. Ong**, Kefeng Zeng, Fouzi Mouffouk, Craig A. Grimes, "A wireless biosensor for the direct detection of organophosphorous pesticides," *The Analyst*, vol. 132, pp. 338-343, 2007.

53. **Keat G. Ong**, Oomman K. Varghese, Gopal K. Mor, Karthik Shankar, Craig A. Grimes, "Application of finite difference time domain to dye-sensitized solar cells: the effect of nanotube-array negative electrode dimensions on light absorption," *Solar Energy Materials & Solar Cells*, vol. 91, pp. 250-257, 2007.

54. Kefeng Zeng, **Keat G. Ong**, Xiping Yang, Craig A. Grimes, "Board level integrated microsystern design and associated technique for impedance analysis of resonator sensors," *Sensor Letters*, vol. 4(4), pp. 388-397, 2006.

55. Oomman K. Varghese, Xiping Yang, James Kendig, Maggie Paulose, Kefeng Zeng, Charles Palmer, **Keat Ghee Ong**, Craig A. Grimes, "A transcutaneous hydrogen sensor: from design to application," *Sensor Letters*, vol. 4, pp. 120–128, 2006.

56. **Keat G. Ong**, Kefeng Zeng, Xiping Yang, Karthik Shankar, Chuanmin Ruan, Craig A. Grimes, "Quantification of multiple bioagents with wireless, remote-query magnetoelastic micro-sensors," *IEEE Sensors Journal*, vol. 6, no. 3, pp. 514-523, 2006.

57. Maggie Paulose, Oomman K. Varghese, Gopal K. Mor, Craig A. Grimes, **Keat G. Ong**, "Unprecedented ultra-high hydrogen gas sensitivity in undoped titania nanotubes," *Nanotechnology*, vol. 17, pp. 398–402, 2006.

58. **Keat G. Ong,** Joshua M. Leland, Kefeng Zeng, Gary Barrett, Mohammed Zourob, Craig A. Grimes, "A rapid highly-sensitive endotoxin detection system," *Biosensors and Bioelectronics*, vol. 21, 2270-2274, 2006.

59. Gopal K. Mor. Oomman K. Varghese, Maggie Paulose, **Keat G. Ong**, Craig A. Grimes, "Fabrication of hydrogen sensors with transparent titanium oxide nanotube-array thin films as sensing elements," *Thin Solid Films*, vol. 496, pp. 42-48, 2006.

60. **Keat Ghee Ong**, Oomman K. Varghese, Gopal K. Mor, Craig A. Grimes, "Numerical Simulation of Light Propagation Through Highly-Ordered Titania Nanotube Arrays: Dimension Optimization for Improved Photoabsorption," *Journal of Nanoscience and Nanotechnology*, vol. 5, no. 11, pp. 1801-1808, 2005.

61. **Keat Ghee Ong**, Xiping Yang, Kefeng Zeng, Craig A. Grimes, "Magnetoelastic sensors for biomedical monitoring," *Sensor Letters*, vol. 3, no. 2, pp. 108-116, 2005.

62. Kefeng Zeng, Maggie Paulose, **Keat G. Ong**, Craig A. Grimes, "Frequency-domain characterization of magnetoelastic sensors: a microcontroller-based instrument for spectrum analysis using a threshold-crossing counting technique," *Sensors and Actuators A*, vol. 121, pp. 66-71, 2005.

63. Sriram N. Kizhakkemadam, **Keat G. Ong**, Maggie Paulose, Craig A. Grimes, "An active circuit for wireless broadcast of sensor information: Application to humidity monitoring," *Sensor Letters*, vol. 3-4, pp. 175-178, 2004.

64. Chuanmin Ruan, Oomman K. Varghese, Craig A. Grimes, Kefeng Zeng, Xipng Yang, Niloy Mukherjee, **Keat G. Ong**, "A magnetoelastic ricin immunosensor," *Sensor Letters*, vol. 2, pp. 134-142, 2004.

65. **K. G. Ong**, X. Yang, N. Mukherjee, H. Wang, S. Surender, C. A. Grimes, "A Wireless sensor network for long-term monitoring of aquatic environments: Design and implementation," *Sensor Letters*, vol. 2, no. 1, pp. 48-57, 2004.

66. C. Ruan, **K. G. Ong**, C. S. Mungle, M. Paulose, N. J. Nickl, C. A. Grimes, "A wireless pH sensor based on the use of salt-independent micro-scale polymer spheres," *Sensors and Actuators B*, vol. 96, pp. 61-69, 2003.

67. Oomman K. Varghese, Dawei Gong, Maggie Paulose, **Keat G. Ong**, Craig A. Grimes, "Hydrogen sensing using titania nanotubes," *Sensors and Actuators B*, vol. 93, pp. 338-344, 2003.

68. **Keat G. Ong,** Craig A. Grimes, "Magnetically-soft higher-order harmonic stress and temperature sensors," *IEEE Transactions on Magnetics*, vol. 39, no. 5, pp. 3319-3321, 2003.

69. **Keat G. Ong**, Casey S. Mungle, Craig A. Grimes, "Control of a magnetoelastic sensor temperature response by magnetic field tuning," *IEEE Transactions on Magnetics*, vol. 39, no. 5, pp. 3414-3416, 2003.

70. Craig A. Grimes, **Keat G. Ong**, Oomman K. Varghese, Xiping Yang, G. Mor, Maggie Paulose, Elizabeth C. Dickey, Chuanmin Ruan, Michael V. Pishko, James W. Kendig and Andrew J. Mason, "A sentinel sensor network for hydrogen sensing," *Sensors*, vol. 3, pp. 69-82, 2003.

71. Oomman K. Varghese, Dawei Gong, Maggie Paulose, **Keat G. Ong**, Elizabeth C. Dickey, Craig A. Grimes, "Extreme changes in the electrical resistance of titania nanotubes with hydrogen exposure," *Advanced Materials*, vol. 15, no 7-8, pp. 624-627, 2003.

72. Oomman K. Varghese, Dawei Gong, William R. Dreschel, **Keat G. Ong**, and Craig A. Grimes, "Ammonia detection using nanoporous alumina resistive and surface acoustic wave sensors," *Sensors and Actuators B*, vol. 94, pp. 27-35, 2003.

73. **Keat G. Ong**, William R. Dreschel, Craig A. Grimes, "Detection of human respiration using square-wave modulated electromagnetic impulses," *Microwave and Optical Technology Letters*, vol. 36, no. 5, pp. 339-343, 2003.

74. **Keat G. Ong**, Maggie Paulose, Craig A. Grimes, "A wireless, passive, magnetically-soft harmonic sensor for monitoring sodium hypochlorite concentrations in water," *Sensors*, vol. 3, pp. 11-18, 2003.

75. Xiping Yang, **Keat G. Ong**, William R. Dreschel, Kefeng Zeng, Casey S. Mungle, Craig A. Grimes, "Design of a wireless sensor network for long term, in situ monitoring in an aqueous environment," *Sensors*, vol. 2, pp. 455-472, 2002.

76. K. Zeng**, K. G. Ong**, C. S. Mungle, C. A. Grimes, "Time domain characterization of oscillating sensors: application of frequency counting to resonance frequency determination," *Review of Scientific Instruments*, vol. 73, no. 12, pp. 4375-4380, 2002.

77. **K. G. Ong**, J. S. Bitler, C. A. Grimes, L. G. Puckett, L. G. Bachas, "Remote query resonant-circuit sensors for monitoring of bacteria growth: application to food quality control," *Sensors*, vol. 2, pp. 219-232, 2002.

78. C. A. Grimes, C. S. Mungle, K. Zeng, M. K. Jain, W. R. Dreschel, M. Paulose, **K. G. Ong**, "(Invited paper) Wireless magnetoelastic resonance sensors: a critical review," *Sensors*, vol. 2, pp. 294-313, 2002.

79. **K. G. Ong**, C. A. Grimes, "Tracking the harmonic response of magnetically-soft sensors for wireless temperature, stress, and corrosive monitoring," *Sensors and Actuators A*, vol. 101, pp.49-61, 2002.

80. O. K. Varghese, D. Gong, M. Paulose, **K. G. Ong**, C. A. Grimes, E. C. Dickey, "Highly ordered nanoporous alumina films: Effect of pore size and uniformity on sensing performance." *Journal of Materials Research*, vol. 17, no. 5, pp. 1162-1171, 2002.

81. E. C. Dickey, O. K. Varghese, **K. G. Ong**, D. Gong, M. Paulose, C. A. Grimes, "Room temperature ammonia and humidity sensing using highly ordered nanoporous alumina films," *Sensors*, vol. 2, pp. 91-111, 2002.

82. **K. G. Ong**, K. Zeng, C. A. Grimes, "A wireless, passive carbon nanotube-based gas sensor," *IEEE Sensors Journal*, vol. 2, no. 2, pp. 82-88, 2002.

83. **K. G. Ong**, D. M. Grimes, C. A. Grimes, "Higher-order harmonics of a magnetically-soft sensor: Application to remote query temperature measurement," *Applied Physic Letters*, vol. 80, no. 20, pp. 3856-3858, 2002.

84. **K. G. Ong** and C. A. Grimes, "A carbon nanotube-based sensor for CO_2 monitoring," *Sensors*, vol. 1, pp. 193-205, 2001.

85. **K. G. Ong**, M. Paulose, M. K. Jain, D. Gong, O. K. Varghese, C. Mungle, and C. A. Grimes, "Magnetism-based remote query glucose sensors," *Sensors*, vol. 1, pp. 138-147, 2001.

86. O. K. Varghese, P. D. Kichambare, D. Gong, **K. G. Ong**, E. C. Dickey, C. A. Grimes, "Gas sensing characteristic of multi-wall carbon nanotubes," *Sensors and Actuators B*, vol. 81, pp. 32-41, 2001.

87. E. C. Dickey, C. A. Grimes, M. K. Jain, **K. G. Ong**, D. Qian, P. D. Kichambare, R. Andrews, D. Jacques, "Visible photoluminescence from ruthenium-containing multiwall carbon nanotubes," *Applied Physics Letters*, vol. 79, no. 24, pp. 4022-4024, 2001.

88. C. A. Grimes, E. C. Dickey, C. Mungle, **K. G. Ong**, D. Qian. "Effect of purification of the electrical conductivity and complex permittivity of multiwall carbon nanotubes," *Journal of Applied Physics*, vol. 90, no. 8, pp. 4134-4137, 2001.

89. **K. G. Ong**, C. A. Grimes, C. L. Robbins, R. S. Singh, "Design and application of wireless, passive, resonant-circuit environmental monitoring sensor," *Sensors and Actuators A*, vol. 93, pp. 33-43, 2001.

90. **K. G. Ong**, R. S. Singh, J. Wang, L. G. Bachas, C. A. Grimes, "Monitoring of bacteria growth using a wireless, remote query resonant-circuit sensor: application to environmental sensing," *Biosensors and Bioelectronics*, vol. 16, pp. 305-312, 2001.

91. M. K. Jain, S. Schmidt, **K. G. Ong**, Casey Mungle, C. A. Grimes, "Magnetoacoustic remote query temperature and humidity sensors," *Smart Materials and Structures*, vol. 9, pp. 502-510, 2000.

92. C. A. Grimes, G. Liu, D. M. Grimes, **K. G. Ong**, "Characterization of a wide-band low Q, electrically-small antenna," *Microwave and Optical Technology Letters*, vol. 27, pp. 53-58, 2000.

93. **K. G. Ong**, C. A. Grimes, "A resonant printed-circuit sensor for remote query monitoring of environmental parameters," *Smart Materials and Structures*, vol. 9, pp. 421-428, 2000.

94. **Keat Ghee Ong**, Craig A. Grimes, "A method for quantifying the higher-order modes radiated by an arbitrarily shaped antenna," *Microwave and Optical Technology Letters*, vol. 24, no. 1, pp. 20-24, 2000.

95. Craig A. Grimes, **Keat Ghee Ong**, "High frequency, small signal MH loops of ferromagnetic thin films," *Journal of Applied Physics*, vol. 87, no. 9, pp. 5977-5979, 2000.

96. C. A. Grimes, D. Kouzoudis, **K. G. Ong**, R. Crump, "Thin-film magnetoelastic microsensors for remote query biomedical monitoring," *Journal of Biomedical Microdevices*, vol. 2, pp. 51-60, 2000.

97. C. A. Grimes, P. G. Stoyanov, D. Kouzoudis and **K. G. Ong**, "Remote query pressure measurement using magnetoelastic sensors," *Review of Scientific Instruments*, vol. 70, no. 12, pp. 4711-4714, 1999.

98. C. A. Grimes, P. G. Stoyanov, Y. Liu, C. Tong, **K. G. Ong**, K. Loiselle, M. Shaw, S. Doherty and W. R. Seitz, "A magnetostatic-coupling based remote query sensor for environmental monitoring," *Journal of Physics D: Applied Physics*, vol. 32, pp. 1329-1335, 1999.

99. Gang Liu, Craig A. Grimes, **Keat Ghee Ong**, "A method for FDTD computation of field values at spherical coordinate singularity points applied to antennas," *Microwave and Optical Technology Letters*, vol. 20, no. 6, pp. 367-369, 1999.

100. C. A. Grimes, **Keat Ghee Ong**, K. Loiselle, P. G. Stoyanov, D. Kouzoudis, Y. Liu, C. Tong, F. Tefiku, "Magnetoelastic sensors for remote query environmental monitoring," *Smart Materials and Structures*, vol. 70, no. 12, pp. 639-646, 1999.

101. Gang Liu, **Keat Ghee Ong**, Craig A. Grimes, Dale M. Grimes, "Comparison of time and frequency domain numerical modeling of outbound and local power from two perpendicularly oriented, electrically small tm dipoles," *International Journal of Numerical Modeling*, vol. 12, pp. 229-241, 1999.

Book Chapters

1. Bradley D. Nelson, Salil Sidharthan Karipott, Samerender Nagam Hanumantharao, Smitha Rao and **Keat Ghee Ong**, "Battery-free Wireless Sensors for Healthcare and Food Quality Monitoring," *Smart Biosensor Technologies*, George Knopf (Eds.), CRC Press, in press.
2. Yousef Haik, Reyad Sawafta, Irina Ciubotaru, Ahmad Qablan, Ee Lim Tan, **Keat Ghee Ong**, "Magnetic techniques for rapid detection of pathogens," *Principles of Bacterial Detection: Biosensors, Recognition Receptors and Microsystems*, M. Zourob, S. Elwary, A. Turner (Eds.), Springer, 2008, Chapter 17, pp. 415-454.
3. **Keat G. Ong**, Craig A. Grimes, "Nano-structural magnetoelastic materials for sensor applications," *Advanced Magnetic Materials. Vol 1: Nanostructural Effects*, Y. Liu, D. J. Sellmyer, D. Shindo (Eds.), Springer, 2006, vol. 4, Chapter 11, pp. 339-379.
4. **K. G. Ong**, C. A. Grimes, "Magnetostrictive nanomaterials for sensors," *Encyclopedia of Nanoscience and Nanotechology*, H. S. Nalwa (Eds.), American Scientific Publishers, 2005, vol. 5, pp. 1 - 27.

Patents

1. **Keat Ghee Ong**, Andrew DeRouin, Chunfeng Zhao, Kai-nan An, System and Method for Monitoring a Mechanical Force, U.S. Patent, filed February 2016.
2. Kefeng Zeng, **Keat G. Ong**, Xiping Yang, Craig A. Grimes, "Impedance analysis technique for frequency domain characterization of magnetoelastic sensor element by measuring steady-state vibration of element while undergoing constant sine-wave excitation" U.S. Patent 7,912,661, March 22, 2011.
3. Kefeng Zeng, **Keat G. Ong**, Craig A. Grimes, "Technique and electronic circuitry for quantifying a transient signal using threshold-crossing counting to track signal amplitude," U.S. Patent 7113876-B2, Sept. 26, 2006.
4. **Keat Ghee Ong**, Craig A. Grimes, "Network of sensor nodes assemblies and method of remote sensing within liquid environments," U.S. Patent Pending, Pub. No. US2004/0066313A1, 2004.
5. C.A. Grimes, **K. G. Ong**. Temperature, stress, and corrosive sensing apparatus utilizing harmonic response of magnetically soft sensor element(s). U.S. Patent 6639402-B2, Oct. 28, 2003.

Papers in Conference Proceedings

1. Ee Lim Tan, Andrew Curriston, Andrew DeRouin, Rupak M. Rajachar and **Keat Ghee Ong**, "Magnetoelastic sensor array for tracking personal exposure to atmospheric environmental and industrial pollutants," in *International Proceedings of Chemical, Biological & Environmental Engineering, Environment and Industrial Innovation*, eds. Li Xuan, vol. 35, pp. 1- 5, 2012.
2. Hallie Holmes, Ee Lim Tan, **Keat Ghee Ong**, and Rupak M. Rajachar, "Real-time, in vivo investigation of mechanical stimulus on cells with remotely activated, vibrational magnetoelastic layers," *33rd Annual International Conference of the IEEE EMBS Boston*, Massachusetts USA, August 30 - September 3, 2011, pp. 3979-3982.

3. Ee Lim Tan and **Keat Ghee Ong**, "Magneto-harmonic pressure sensor for biomedical applications," *33rd Annual International Conference of the IEEE EMBS*, Boston, Massachusetts USA, August 30 - September 3, 2011, pp. 5594-5597.

4. **Keat Ghee Ong,** Ee Lim Tan, Brandon Pereles, Brock Horton, "Wireless, Magnetic-based Sensors for Biomedical Applications," 31st *Annual International Conference of the IEEE EMBS*, Minneapolis, Minnesota, USA, September 2-6, 2009, pp. 5436-5439.

5. **Keat G. Ong,** Kefeng Zeng, Chuanmin Ruan, Craig A. Grimes, "A wireless remote-query micro-sensor for simultaneous quantification of multiple bioagents," *IEEE Conference on Sensors*, Vienna, Austria, pp. 999-1002, 2004.

6. **Keat G. Ong** and Craig A. Grimes, "Magnetically soft higher order harmonic stress and temperature sensors," *IEEE Transactions on Magnetics*, vol. 39, no. 5, pp. 3414-3416, September 2003.

7. **Keat Ghee Ong**, Xiping Yang, Niloy Mukherjee, Haidong Wang, Craig A. Grimes, "Measurement of pond temperature and pH using an aqueous sensor network," *Proceedings SPIE, Unattended Ground Sensor Technologies and Applications*, vol. 5090, pp. 225-236, 2003.

8. **K. G. Ong** and C. A. Grimes, "Monitoring of stress, temperature, and chlorine in concrete structures with passive, wireless harmonic sensors," *Structural Materials Technology V: An NDT Conference*, pp. 321-328, 2002.

9. **K. G. Ong**, L. G. Puckett, B. V. Sharma, M. Loiselle, C. A. Grimes, L. G. Bachas, "Wireless, passive, resonant-circuit sensors for monitoring food quality," *Photonics Boston, Proceedings of SPIE*, vol. 4575, pp. 150-159, 2002.

10. **K. G. Ong**, C. A. Grimes, M. K. Jain, C. S. Mungle, "Wireless remote-query environmental monitoring using magnetoelastic sensors*," Photonics Boston, Proceedings of SPIE*, vol. 4576, pp. 169-180, 2002.

11. **Keat G. Ong**, Mahaveer K. Jain, Casey Mungle, Stefan Schmidt, Craig A. Grimes, Invited Paper, "Magnetism-based sensors," *Complex Mediums II, Proceedings of SPIE*, vol. 4467, pp. 158-172, 2001.

12. H. Liu, W. R. Seitz, C. A. Grimes, **K. G. Ong**, P. G. Stoyanov, "Remote queried magnetoacoustic sensors for monitoring starch concentrations, pH, and polymer curing," *SPIE International Symposium on Advanced Environmental And Chemical Sensing Technology*, vol. 4205, pp. 143-151, 2000.

13. C.A. Grimes, Q. Cai, **K.G. Ong**, K. Loiselle, Invited Paper, "Environmental monitoring using magnetoelastic sensors," *SPIE International Symposium on Optical Science and Technology, Complex Mediums*, vol. 4097, pp. 123-133, 2000.

14. Craig A. Grimes, Gang Liu, **Keat Ghee Ong**, James E. Lumpp, Dale M. Grimes, "Time and frequency domain modeling of outbound and standing power from perpendicularly oriented, electrically small TM dipoles," *Proceedings IEEE Aerospace Conference*, vol. 3, pp. 264-272, 1998.

15. Gang Liu, Craig A. Grimes, **Keat Ghee Ong**, D. M. Grimes, "Time and frequency domain numerical modeling of outbound and standing power from perpendicularly oriented, electrically small TM dipoles," *14th Annual Review of Progress in Applied Computational Electromagnetics, Conference Proceedings*, pp. 194-203, 1998.

16. Gang Liu, Craig A. Grimes, **Keat Ghee Ong**, "FDTD and MoM modeling of power from perpendicularly oriented, electrically small TM dipoles," *Proceedings IEEE AP-S International Symposium*, pp. 542-545, 1998.

Conference Abstracts

1. Govindan Suresh, Andrew DeRouin, **Keat Ghee Ong**, "Wireless, passive magnetoelastic sensor for monitoring stress at orthopedic implants," *Biomedical Engineering Society Conference*, Minneapolis, October 5-6, 2016.
2. E. Vlaisavljevich, L. P. Janka, **K. G. Ong**, R. M. Rajachar, "Magnetoelastic materials as novel bioactive coatings for bone anchored prostheses", *ASME-Biomedical Engineering Division Conference* 2009, Lake Tahoe, CA, June 2009, pp. 889.
3. B. D. Pereles, E. L. Tan, **K. G. Ong**, "Real-time, in vivo measurement of contact pressures at a knee arthroplasty," Design of Medical Devices Conference, ASME, *Journal of Medical Devices*, 2009.
4. E. L. Tan, B. D. Pereles, **K. G. Ong**, "Application of magnetoelastic thick film for wireless, in vivo monitoring of pressure," Design of Medical Devices Conference, ASME, *Journal of Medical Devices*, 2009.
5. B. E. Horton, E. L. Tan, B. D. Pereles, **K. G. Ong**, "A Wireless, passive pH sensor based on magnetic higher-order harmonic fields," Design of Medical Devices Conference, ASME, *Journal of Medical Devices*, 2009.
6. E. Vlaisavljevich, L. P. Janka, **K. G. Ong**, R. M. Rajachar, "Bioactive magnetoelastic materials as coatings for implantable biomaterials", *DMD Conference on Medical Device Design* 2009, Minneapolis MN, April, 2009.
7. Ee Lim Tan, **Keat Ghee Ong**, "A wireless, passive strain sensor: Application to in vivo monitoring of compressive forces at knee implants," Design of Medical Devices Conference, ASME, *Journal of Medical Devices*, vol. 2, 27551-1, 2008.
8. Brandon D. Pereles, **Keat Ghee Ong**, "A wireless, passive sensor for monitoring the pressure of an abdominal aortic aneurysm sac," Design of Medical Devices Conference, ASME, *Journal of Medical Devices*, vol. 2, 27557-1, 2008.
9. L. P. Janka, S. Jang-Stewart, A. Hembolt, **K. G. Ong**, R. M. Rajachar, "Characterization of chitosan coated magnetoelastic materials for use in percutaneous implants," Design of Medical Devices Conference, ASME, *Journal of Medical Devices*, vol. 2, 027505-1, 2008.
10. **K. G. Ong**, M. Paulose, and C. A. Grimes, "A wireless, passive sensor for chlorine monitoring based on the higher-order harmonics of a magnetically soft ribbon," *Proceedings on the 9th International Meeting on Chemical Sensors*, pp. 498, 2002.
11. P. G. Stoyanov, C. A. Grimes, **K. G. Ong**, "A magnetoelastic viscosity sensor," 1999 IEEE International Magnetics Conference, *Digest of INTERMAG 99*, pp. EF07 -EF07, 1999.
12. C. A. Grimes, **K. G. Ong**, D. M. Grimes, "A method for determining the high frequency, small signal BH loop," 1999 IEEE International Magnetics Conference, *Digest of INTERMAG 99*, pp. HE09 - HE09, 1999.
13. C. A. Grimes, D. M. Grimes, L. Chun, **O. K. Ghee**, "Bias susceptibility studies on patterned thin Permalloy films with switchable magnetic properties," 7th Joint MMM-Intermag Conference. Abstracts (Cat. No.98CH36275), San Francisco, CA, USA, pp. 360-360, 1998.

Ph.D. Dissertation

Keat Ghee Ong University of Kentucky August 2000
Design and Application of Planar Inductor-Capacitor Resonant Circuit Remote Query Sensors.

Masters Thesis

Keat Ghee Ong University of Kentucky December 1998
An Investigation into Higher Order Modes Supported by an Electrically Small TE Dipole Source.

Seminar Talks and Conference Presentations

1. Salil Sidharthan Karipott, Brett Klosterhoff, Andrés J. García, Robert E. Guldberg, **Keat Ghee Ong**, "Wireless Implantable Sensors for Regenerative Medicine," Regenerative Medicine Workshop, Hilton Head, SC, March 1-4, 2017.
2. **Keat Ghee Ong**, Andrew DeRouin, Robert Guldberg, Chunfeng Zhao, Chris Evans, "Realization of smart orthopaedic implants with wireless sensor-actuator systems," Regenerative Medicine Workshop, Hilton Head, SC, March 15-17, 2016.
3. **Keat Ghee Ong**, "Resonant circuit based chipless RFID sensors," CCE Seminar Series: Prominent External Speaker (Invited)," GE Global Research Center, Niskayuna, NY, November 22, 2013.
4. **Keat Ghee Ong**, "An RFID sensor based on a single-layer spiral inductor (Invited)," IEEE RFID Conference/Workshop, Orlando FL, April 30 - May 2, 2013.
5. **Keat Ghee Ong**, "Magnetoelastic sensor array for tracking personal exposure to atmospheric environmental and industrial pollutants," 2012 2nd International Conference on Environment and Industrial Innovation (ICEII 2012), Hong Kong, June 2-3, 2012.
6. **Keat Ghee Ong**, "Real-time, continuous tracking of performance and adverse effect of biomedical implants" 2010 Workshop on Adverse Response Monitoring, Ottawa, December 16, 2010.
7. **Keat Ghee Ong**, "Wireless, magnetic-based sensors for biomedical applications," 31st Annual International IEEE EMBS Conference (EMBC09), Magnetic Sensors, Minneapolis, Sept 5, 2009.
8. **Keat Ghee Ong**, "Wireless, passive magnetic sensors for biomedical applications (Invited)", PittCon 2009, Chicago, March 12, 2009.
9. **Keat Ghee Ong**, "Passive, wireless sensors for biomedical applications (Invited)," Grain Processing Lecture, Michigan Technological University, March 23, 2007.
10. **Keat Ghee Ong**, "Monitoring and protection of aquatic environments using and automated, wireless sensor network," The 19th Annual National Environmental Monitoring Conference, Arlington, VA, July 21-24, 2003.
11. **Keat G. Ong**, Casey S. Mungle, Craig A. Grimes, "Control of a magnetoelastic sensor temperature response by magnetic field tuning," The 2003 IEEE International Magnetics Conference, Boston, Massachusetts, March 30 - April 3, 2003.
12. **Keat G. Ong,** Craig A. Grimes, "Magnetically-soft higher-order harmonic stress and temperature sensors," The 2003 IEEE International Magnetics Conference, Boston, Massachusetts, March 30 - April 3, 2003.
13. **Keat G. Ong**, "A Wireless sensor network for long-term monitoring of aquatic environments: design and implementation," EE 590 Colloquium, Pennsylvania State University, September 25, 2003.
14. **K. G. Ong** and C. A. Grimes, "Monitoring of stress, temperature, and chlorine structures with passive, wireless harmonic sensors," Structural Materials Technology: NDE/NDT for Highways and Bridges Topical Conference, September 10-13, 2002.

15. **K. G. Ong**, M. Paulose, and C. A. Grimes, "A wireless, passive sensor for chlorine monitoring based on the higher-order harmonics of a magnetically soft ribbon," 9th International Meeting on Chemical Sensors, Boston, July 7-9, 2002.
16. **K. G. Ong**, C. A. Grimes, "Tracking the harmonic response of magnetically-soft sensors for wireless temperature, stress, and corrosive monitoring," 5th Conference on Magnetic Materials Measurements and Modeling**:** Magnetic Materials for Sensors and Devices, May 16-17, Iowa State University, 2002.
17. **K. G. Ong**, C. A. Grimes, Wireless, Passive, "Resonant-circuit sensor for monitoring food quality," SPIE International Symposium on Environmental and Industrial Sensing. Boston, MA. October 28-November 2, 2001.
18. **K. G. Ong**, C. M. Mungle, C. A. Grimes, "Wireless remote-query environmental monitoring using magnetoelastic sensors," SPIE International Symposium on Environmental and Industrial Sensing. Boston, MA. October 28-November 2, 2001.
19. **Keat Ghee Ong**, "A review on resonant circuit sensors and magnetoelastic sensors," invited by Prof. Janet Lumpp, University of Kentucky, 14 February 2001.
20. **Keat Ghee Ong**, "Resonant circuit sensors for remote query environmental monitoring," ECE Seminar Series, University of Kentucky, 29 November 2000.
21. C.A. Grimes, L. Gang, and **K. G. Ong**, "FDTD and MoM modeling of power from perpendicularly oriented, electrically small TM dipoles," IEEE AP-S International Symposium, Atlanta, GA, 1998.

Graduated PhD Students with Dissertations

2019 Salil Sidharthan Karipott, PhD in Biomedical Engineering, Michigan Technological University, "Magnetoelastic bone fixation device for controlling local mechanical stimuli to bone fracture sites" * Graduate in August 2019.

2019 Bradley Nelson, PhD in Biomedical Engineering, Michigan Technological University, "A Smart Implantable Bone Fixation Plate Providing Strain Actuation and Monitoring for Orthopedic Fracture Healing." * Graduate in August 2019.

2016 Andrew DeRouin, PhD in Biomedical Engineering, Michigan Technological University, "Wireless implantable magnetoelastic sensors and actuators for biomedical applications."

2014 Brandon Pereles, PhD in Biomedical Engineering, Michigan Technological University, "Design and application of wireless passive magnetoelastic resonance and magnetoharmonic force sensors"

2011 Ee Lim Tan, PhD in Biomedical Engineering, Michigan Technological University, "A wireless and passive pressure sensor system based on the magnetic higher-order harmonic field."

Graduated MS Students with Theses

2017 Bradley D. Nelson, MS in Biomedical Engineering, Michigan Technological University, "A Bluetooth low-energy wireless sensor platform for continuous monitoring of a bioreactor environment during cell manufacturing."

2017 Salil S. Karipott, MS in Biomedical Engineering, Michigan Technological University, "A wireless, passive sensor for measuring temperature at orthopedic implant sites for early diagnosis of infections."

2017 Praharsh M. Veetil, MS in Biomedical Engineering, Michigan Technological University, "Implantable wireless sensor networks: application to measuring temperature for in vivo detection of infections."

2016 Govindan Suresh, MS in Biomedical Engineering, Michigan Technological University, "A wireless sensor system with digitally controlled signal conditioning circuit for force monitoring at bone fixation plates"

2016 Sterling Prince, MS in Biomedical Engineering, Michigan Technological University, "Wireless sensor system for monitoring strains and forces on an external bone fixation plate."

2015 Joseph Smith, MS in Biomedical Engineering, Michigan Technological University, "Development of a cell morphological analysis tool to evaluate the ultrasound vibrational effects on cell adhesion."

2014 Andrew DeRouin, MS in Electrical Engineering, Michigan Technological University, "Inductive-capacitive resonant circuit sensors for structural health and environmental monitoring"

University and Departmental Committees

- Chair, Promotion and Tenure Committee, Biomedical Engineering, 2018.
- Chair, Promotion and Tenure Committee, Biomedical Engineering, 2017
- Associate chair, College of Engineering Dean Search Committee, 2017-2018
- Committee member, Faculty Search, PHF endowed professors, 2016-2017
- Committee member, Faculty Search, Biomedical Engineering, 2016-2017.
- Committee member, Promotion and Tenure Committee, Biomedical Engineering, 2015.
- Committee member, Faculty Search, Biomedical Engineering, 2014-2015.
- Committee member, Promotion and Tenure Committee, Biomedical Engineering, 2014.
- Committee member, Faculty Search, Biomedical Engineering, 2012-2013.
- Committee member, College of Engineering Dean Search Committee, 2014.
- Committee member, Promotion and Tenure Committee, Biomedical Engineering, 2013.
- Committee member, Faculty Search, Biomedical Engineering, 2011-2012.
- Chair, Promotion and Tenure Committee, Biomedical Engineering, 2012.
- University Senator, Biomedical Engineering, 2012.
- Committee member, Promotion and Tenure Committee, Biomedical Engineering, 2011.
- Committee member, Engineering Computer Network, 2010.
- Committee member, Department Safety Committee, Biomedical Engineering, 2010.
- Committee member, Faculty Search, Biomedical Engineering, 2010.
- Committee member, Faculty Search, Biomedical Engineering, 2009.
- Committee member, Strategic Faculty Hiring Initiative, 2008.
- Committee member, Animal Facility Committee, 2008.
- Committee member, Faculty search, Biomedical Engineering, 2008.

Teaching Summary

BE4700/5700 Biosensors (once every two years since 2007)
This is an upper level undergraduate and graduate class focusing on sensor technologies for medical applications. Topics include major sensor platforms, applications, designs and fabrications techniques.

BE4770/5770 Biomedical Microcontrollers (once every two years since 2009)

This lab-based class (upper undergraduate and graduate levels) introduces digital logic, programming, electronics, and microcontroller implementation in medical devices.

BE4900 Senior Design Fundamentals (once every year since 2007)
This class introduces biomedical engineering juniors and seniors on major design tools used in biomedical industry, as well as medical regulatory issues and medical ethics.

BE4901-4910 Biomedical Senior Design Projects (a two-semester class every year since 2007)
In the capstone biomedical senior design projects, student teams of 3-6 (project dependent) work with industry and clinical sponsors in solving medical problems using their engineering training. Working with other faculty advisors from the biomedical engineering department, I coordinate the whole class and help securing external sponsorships and finalizing the scope of each project.

Student Advising

Research Students
Currently or previously advised over 10 graduate students and over 30 undergraduate students. All graduate students have contributions in technical journal publications, and about half of my undergraduate research assistants have journal publications.

Team-based Design Challenges
2017 Led a 4-student team to the Stryker Engineering Challenge Competition 2017. Michigan Tech team won the 2nd place.
2015 Led a 6-student team to the BMES Coulter College Design Competition 2015. Michigan Tech team won the Best Design in external ventricular drain group.