

OLUWASEYI BALOGUN

Department of Civil and Environmental Engineering
Department of Mechanical Engineering
Theoretical and Applied Mechanics Program
Northwestern University
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A. EDUCATION

05/2006. Ph.D., Mechanical Engineering, Boston University, Boston, MA.
05/2003, M.S., Mechanical Engineering, Boston University, Boston, MA.
03/1998, B.Sc., Mechanical Engineering, University of Lagos, Lagos, Nigeria.

B. PROFESSIONAL EXPERIENCE

09/2015 - Present Associate Professor, Department of Mechanical Engineering, Department of Civil and Environmental Engineering, Northwestern University, Evanston, Illinois, USA

09/2008 - 09/2015 Assistant Professor, Department of Mechanical Engineering, Department of Civil and Environmental Engineering, Northwestern University, Evanston, Illinois, USA

07/2007 - 09/2008 Post-doctoral Fellow, Department of Mechanical Engineering, Northwestern University, Evanston, Illinois, USA

05/2006 - 06/2007 Post-doctoral Fellow, Department of Materials Science and Engineering, The Johns Hopkins University, Baltimore, MD, USA, Lawrence Livermore National Laboratory, Livermore, CA, USA.

05/2005 - 08/2005 Visiting Student Researcher, Engineering Directorate, Lawrence Livermore National Laboratory, Livermore, CA, USA.

09/1999 – 12/2000 Technical Management Trainee, Nestle Foods Nigeria, Plc., Lagos, Nigeria.

06/1998 – 03/1999 Database Management/National Youth Serve Corp Member, Mobil Producing Nigeria, Plc., Lagos Nigeria.

C. HONORS & AWARDS

- IEEE Nanotechnology Distinguished Lecturer (2020 and 2021)
- Finalist for Best Student Paper Competition at 2019 IEEE UFFC Symposium

- American Society of Nondestructive Testing (ASNT) Fellowship Award (2015)
- Northwestern University Search Teaching Fellow (2009)
- Boston University Technology Commercialization Institute Award for Outstanding Research (2004)

D. PUBLICATIONS

(Total citations: 851, h-index:15, Google Scholar i10-index: 23. Underline authors = graduate students or postdoctoral trainee)

44. D. Lee, S. Jiang, **O. Balogun**, and W. Chen, Dynamic Control of Plasmonic Localization by Inverse Optimization of Spatial Phase Modulation. ACS Photonics, Accepted, (2022)
43. Z. Wang, **O. Balogun**, and Y.Y. Kim, Nanomechanical property evaluation of tungsten thin film via frequency domain photoacoustic microscopy. Thin Solid Films, 742(31), 139050, (2022)
42. H.C. Liou, F. Sabba, Z. Wang, G. Wells, and **O. Balogun**, Layered viscoelastic properties of granular biofilms. Water Research 202, 117394, (2021)
41. J.F. Gish, D. Lebedev, T.K. Stanev, S. Jiang, L. Georgopoulos, T.W. Song, G. Lim, E.S. Garvey, L. Valdman, **O. Balogun**, Z. Sofer, V.K. Sangwan, N.P. Stern, and M.C. Hersam. Ambient-Stable Two-Dimensional CrI₃ via Organic-Inorganic Encapsulation. ACS Nano, 15(6), 10659-10667, (2021)
40. C. Wang, **O. Balogun**, and J.D. Achenbach, “Application of the reciprocity theorem to scattering of surface waves by an inclined subsurface crack.” *International Journal of Solids and Structures*, 207, 82-88, (2020).
39. B. Lu, B. Wang, Y. Chen, A. Facchetti, T.J. Marks, and **O. Balogun**, “Cross-plane thermal conductance of phosphonic acid-based self-assembled monolayers and self-assembled nanodielectrics.” *ACS Applied Materials & Interfaces* <http://dx.doi.org/10.1021/acsami.0c08117>, (2020).
38. C. Wang, **O. Balogun**, J.D. Achenbach, “Scattering of a Rayleigh wave by a near surface crack which is normal to the free surface.” *International Journal of Engineering Science* 145: 103162:1-10, (2019).
37. H.C. Liou, F. Sabba, A.I. Packman, A. Rosenthal, G.F. Wells, and **O. Balogun**, “Towards mechanical property characterization of granular biofilms by optical coherence elastography measurements of circumferential elastic waves.” *Soft Matter* 15: 5562-5573, (2019).
36. H.C. Liou, F. Sabba, A.I. Packman, G.F. Wells, and **O. Balogun**, “Nondestructive characterization of soft materials and biofilms by measurement of guided elastic wave propagating using optical coherence elastography.” *Soft Matter* 15: 575-586, (2019).
35. B. Lu, L. Zhang, and **O. Balogun**, “Cross-plane thermal transport measurements across CVD grown few layer graphene films on a silicon substrate”, AIP Advances, 19, 045126:1-5, (2019)

34. **O. Balogun**, “Optically detecting acoustic oscillations at the nanoscale: Exploring techniques suitable for studying elastic wave propagation”, IEEE Nanotechnology Magazine, 13(2), 39-54, (2019) (*Invited review article*)
33. C. Wang, **O. Balogun**, and J.D. Achenbach, “Scattering of a Rayleigh wave by a near surface crack which is normal to the free surface”. International Journal of Engineering Science, 145, 103162, (2019)
32. J. Zhu, H. Chen, B. Wu, W. Chen, and **O. Balogun**, “Tunable band gaps and transmission behavior of SH waves with oblique incident angle in periodic dielectric elastomer laminates. International Journal of Mechanical Sciences, 146-147, 81-90, (2018)
31. A.F. Rosenthal, J.S. Griffin, **O. Balogun**, A.I. Packman, G.F. Wells, “Morphological analysis of pore size and connectivity in a thick nitrifying biofilm”, Biotechnology and Bioengineering, 115, 2268-2279, (2018)
30. Matthew Ford, P. Peng, and **O. Balogun**, “Acoustic Modal Testing of Bicycle Rims”, Journal of Nondestructive Evaluation, 37, 16, 2018
29. Z. Meng, J. Han, X. Qin, Y. Zhang, **O. Balogun**, and S. Keten, “Spalling-like failure by cylindrical projectiles deteriorates the ballistic performance of multi-layer graphene plates”, Carbon, 126, 611, (2018)
28. G.S. Shekhawat, A.K. Srivastava, V.P. Dravid, and **O. Balogun**, “Thickness resonance acoustic microscopy for nanomechanical sub-surface imaging” ACS Nano. 11(6), 6139, (2017)
27. X. Chen, B. Dong, and **O. Balogun**, “Near-field photothermal heating with a plasmonic nanofocusing probe”, International Journal of Thermophysics, 37(3), 26, (2016).
26. A.F. Roesenthal, **O. Balogun**, and G.F. Wells, “Morphological examination of nitrifying biofilms in a moving bed biofilm reactor using optical coherence tomography and fluorescence in situ hybridization”, Proceedings of the water Environment Federation, 9, 4546, (2016).
25. B. Sherman, H.C. Liou, and **O. Balogun**, “Thin Film Interface Stresses Generated by High Amplitude Laser Generated Surface Acoustic Waves” Journal of Applied Physics, 118, 135303, 1-10, (2015)
24. P. Ahn, X. Chen, Z. Zhang, M. Ford, D. Rosenmann, I.W. Jung, C. Sun, and **O. Balogun**, “Dynamic near-field optical interaction between oscillating nanomechanical structures”. (Scientific Reports (*Nature Publishing Group*), 5, 10058, (2015)
23. A. Roesenthal, J. Yi, H.F. Zhang, **O. Balogun**, and G. Wells, “Quantitative image analysis of mesoscale biofilm structure with optical coherence tomography”, Proceeding of the Water Environment Federation, 14, 4736, (2015).

22. P. Ahn and **O. Balogun**, “Elastic characterization of nanoporous gold foams using laser based ultrasonics”, *Ultrasonics*, 54(3), 795, (2014)
21. Z. Zhang, P. Ahn, B. Dong, **O. Balogun**, and C. Sun “Quantitative Imaging of Rapidly Decaying Evanescent Fields using Plasmonic Near-Field Scanning Optical Microscopy” *Scientific Reports (Nature Publishing Group)*, 3, 2808, DOI:10.1038/srep02803, (2013)
20. P. Ahn, Z. Zhang, C. Sun, and **O. Balogun**, “Ultrasonic Near Field Optical Microscopy Using a Plasmonic Nanofocusing Probe”, *Journal of Applied Physics* , 113, 234903, (2013)
19. **O. Balogun** and J.D. Achenbach, “Surface Wave Generated by a Line-Load on Halfspace with Depth-Dependent Properties”. *Special Issue of Wave Motion*, 50, 1063, (2013) (Invited paper)
18. **O. Balogun** and J.D. Achenbach “Surface Waves on a halfspace with depth-dependent properties”, *Journal of the Acoustical Society of America*, 132(3), pp. 1336-1345, (2012)
17. **O. Balogun**, G.D. Cole, R. Huber, D. Chinn, T.W. Murray, and J.B. Spicer “High Spatial Resolution Sub-Surface Acoustic Microscopy Using a Laser Based Ultrasonic Technique”, *IEEE Transactions on UFFC*, 58(1), pp.226-233, (2011)
16. **O. Balogun**, B. Regez, H.F. Zhang, and S. Krishnaswamy, “Real-time full-field photoacoustic imaging using an ultrasonic camera“, *Journal of Biomedical Optics*, 15(2), pp. 021318-1 – 021318-5, (2010)
15. J. H. Kim, **O. Balogun**, and S.P. Shah, “Atomic force acoustic microscopy to measure nano-mechanical properties of cement pastes”, *Transportation Research Record, Journal of The transportation research board*, 2141, pp. 102 -108, (2010)
14. G.R. Kirikera, **O. Balogun**, and S. Krishnaswamy, “Adaptive Fiber Bragg Grating Sensor Network for Structural Health Monitoring: Applications to Impact Monitoring”, *Structural Health Monitoring*, Vol. 0(0), pp. 1-12, (2010)
13. J.D. Achenbach and **O. Balogun**, “Generation and propagation of anti-plane surface waves on a body with depth-dependent properties”, *IUTAM Symposium on Recent Advances of Acoustic Waves in Solids*, 33-43,, (2010)
12. J.D. Achenbach and **O. Balogun**, “Anti-plane Surface Waves on a Halfspace with Depth Dependent Elastic Properties”, *Wave Motion*, 47(1), pp. 59-65, (2009)
11. S. S. Chou, Y. Y. Kim, A. Srivastava, B. Murphy, **O. Balogun**, S.H. Tarik, G.S. Shekawat, and D. Vinayak, “Microcantilever array with embedded metal oxide semiconductor field effect transistor actuators for deflection control, deflection sensing, and high frequency oscillation”, *Applied Physics Letters*, 94, 224103, (2009)
10. **O. Balogun**, R. Huber, D. Chinn, and J.B. Spicer “Laser Ultrasonic Inspection of the Microstructural State of Thin Metal Foils”, *Journal of the Acoustical Society of America*, 125(3), pp. 1437-1443, (2009)

Publications below were accepted prior to joining the faculty at Northwestern University (09/2008)

9. **O. Balogun**, Claire Prada, and T.W. Murray, "Simulation and Measurement of Optically Excited S_1 Zero Group Velocity Lamb Wave Resonance in Plates", *J. Appl. Phys.* 102, 064914-1 - 064914-10, (2007)
8. **O. Balogun**, and T.W. Murray, "A Frequency Domain Laser Based Ultrasonic System for Time Resolved Measurement of Broadband Acoustic Transients", *J. Appl. Phys.* 100, 034902-1 - 034902-6, (2006)
7. Hui. Yu, **O. Balogun**, Biao. Li, T.W. Murray, and Xin Zhang, Fabrication of Three-Dimensional Microstructures Based on Single-layered SU-8 for Lab-on-chip Applications. *Sensors and Actuators A: Physical*, 127(2), 228-234, (2006)
6. C. Prada, **O. Balogun** and T.W. Murray, "Laser Based Ultrasonic Generation and Detection of Zero Group Velocity Lamb Waves in Thin Plates", *Appl. Phys. Lett.* 87, pp. 194109-1 - 194109-3, (2005)
5. T.W. Murray, **O. Balogun**, T.L. Steen, S. N. Basu and V. K. Sarin, "Inspection of Compositionally Graded Mullite Coatings Using Laser Based Ultrasonics", *International Journal of Refractory Metals and Hard Materials*, 23, pp. 322-329, (2005)
4. H. Yu, **O. Balogun**, B. Li, T.W. Murray and X. Zhang, "Building Embedded Microchannels Using a Single Layer Su-8, and Determining Young's modulus using Laser Acoustic Technique", *Journal of Micromechanics and Microengineering*, 14(11), pp. 1574-1584, (2004)
3. H. Yu, **O. Balogun**, B. Li, T.W. Murray and X. Zhang, "Building Embedded Microchannels Using a Single Layer Su-8, and Determining Young's modulus using Laser Acoustic Technique", Special Publication- Royal Society of Chemistry, 297, 73-75, (2004)
2. T.W. Murray and **O. Balogun**, "High Sensitivity Laser Based Acoustic Microscopy using a Modulated CW Excitation Source", *Appl. Phys. Lett.*, 85(14), pp. 2974-2976, (2004)
1. T.W. Murray and **O. Balogun**, "Laser Ultrasonic Inspection of Environmental Barrier Coatings," *Journal of the Korean Society of Nondestructive Testing*, 22(6), pp. 599-608, 2002. (Invited paper).

MANUSCRIPTS SUBMITTED AND IN REVIEW

S. Jiang, D. Ledbedev, M. Hersam, and **O. Balogun**, Thermal characterization of supported and encapsulaed MoS₂ thin films based on the frequency domain thermoreflectance and optothermal Raman spectroscopy techniques. *Journal of Applied Physics*

B. Lu, X. Chen, Z. Wang, J. Han, D. Wang, Y. Ankun, T. Odom, and **O. Balogun**, Near-field optical detection of plasmonic fields and nanoacoustic oscillations. *Applied Physics Letters*

S. Zhou, Xiang Chen, Kenan Li, D. Rosenmann, I.W. Jung, M. Tomoda, and **O. Balogun**, Coherent nanoacoustic modulation of gap plasmons in pillar plasmonic nanoantennas. Applied Physics Letters.

Li Zhang and **O. Balogun**, “Pulsed laser transfer of micro-droplets through patterned apertures in thin copper films, Journal of Applied Physics

E. INVENTION DISCLOSURES AND PATENTS

2. Y. Yao, K. Park, G. Wells, and **O. Balogun**, Bio-inspired, adhesion-tunable, and actuatable micro/nanotextured surfaces for anti-biofouling and anti-icing applications, Provisional Patent Application filed, 11/16/2018
1. C. Prada, **O. Balogun** and T.W. Murray, Non-Destructive Imaging, Characterization or Measurement of Thin Items Using Laser Generated Lamb Waves, US Patent # 7798000 B1, Awarded, 09/10/2010.

F. FUNDING

Towards Engineering Metamaterials for Sustainable Energy Solutions: Local Thermal Properties of Grain Boundaries in Polycrystalline Materials

	12/1/2021 – 05/31/2023
NU Center for Engineering Sustainability and Resilience	\$60,000
Role: PI	

AI-Driven Robust Geometric Optimization under Real-World Uncertainty

	10/1/2021 – 09/30/2022
NU McCormick Catalyst Award	\$100,000
Role: Co-PI	

MRI: Acquisition of a NanoRaman Atomic Force Microscopy (AFM) System for Multi-Property Measurements in Electronic and Other Materials

	09/1/2021 – 08/31/2022
NSF DMR 2117727	\$650,000
Role: PI	

Linking Matrix Composition with Spatially Resolved Mechanical Properties in Polymicrobial Biofilms

	08/15/2021 – 07/31/2024
NSF CMMI 2100447	\$450,000
Role: PI	

Structural Health Monitoring of Biofilms for Sustainable Reactive Nitrogen Management

NSF CBET 1937290 05/15/2020 – 04/30/2023
Role: Co-PI \$329,135

REU SITE: Research Experience for Undergraduates in Nanoscale Science and Engineering

NSF EEC-1757618 02/01/2019 – 01/31/2023
Role: Senior Personnel \$48,000

MRSEC: Center for Multifunctional Materials,

NSF DMR-1720139 07/01/2017 – 08/31/2023
Role: Sub-Project PI \$193,897

COMPLETED FUNDING

EAGER: Optical Coherence Elastography (OCE): A novel tool for rapid, non-destructive, spatially resolved quantification of mesoscale biofilm mechanical properties

NSF CBET 1701105 03/15/2017 – 02/28/2018
Role: Co-PI \$60,000

Exploring local confinement of ultrafast light to enable nondestructive acoustic metrology at the nanoscale

NSF CBET 1611356 08/15/2016 – 07/31/2020
Role: PI \$329,000

In situ biofilm mechanical properties characterization in membrane filtration systems using optical coherence elastography

Zuckerberg Institute for Water Research at 01/01/2020 – 12/31/2020
Ben-Gurion University of Negev \$5,000
NU Center for Water Research
Role: Co-PI

Integrating computation and experiments for modal analysis of vibrating structures

The Murphy Society 01/01/2020 – 12/31/2020
Role: PI \$27,000

Nanoscale nondestructive metrology of nanoelectronics using picosecond ultrasonic near-field optical microscopy

07/01/2015 – 03/31/2017

American Society of Nondestructive Testing, Inc.

\$20,000

Role: PI

MRI: Instrument Development: Additive Rapid Prototyping Instrument (ARPI)

07/01/2014 – 06/30/2017

NSF CMMI

Role: Senior Personnel

Rapid quantification & Certification (RQC) using calorimetric, optical, mechanical, microstructural validation

10/01/2013 – 06/30/2016

NIST G2A62519 PO143327//70NANB13H194

\$204,000

Northern Illinois University G2A62519 PO143327//70NANB13H194

Role: Sub-Project PI

Towards nondestructive structural health monitoring of biofilms: Investigating the relationship between biofilm mechanical properties and mesoscale physical architecture.

06/01/2014 – 09/01/2015

NU CEE Dept. Seed Grant

\$100,000

Role: Co-PI

MRSEC Multifunctional Nanoscale Material Structures: SEED Grant

12/01/2013 – 09/01/2016

NSF-DMR-1121262

\$109,163

Role: Sub-Project PI

MRSEC Equipment Award: Acquisition of Agilent AT-N9010A-503 Spectrum Analyzer

10/07/2013

NSF-DMR-1121262

\$16,1212

Role: Sub-Project PI

A novel non-contact technique for dynamic loading of thin film materials using finite amplitude mechanical stress waves

09/01/2011 – 08/31/2015

NSF CMMI 1130924

\$300,000

Role: PI

Surface plasmon photoacoustic microscopy with sub-wavelength resolution

09/01/2010 – 08/31/2014

NSF CMMI 1301574

\$279,000

Role: PI

Multiscale diagnostics of stiffened structures using a dense array of fiber Bragg grating sensors

ONR N00014-1—1-0691
Role: Co-PI
Intelligent Structural Health Monitoring of Vehicular Bridges

03/25/2010 – 09/30/2012
\$220,000

NU CCITT Grant
Role: Co-PI

04/01/2009- 03/31/2010
\$62,000

G. TRAINEES DOCTORAL STUDENTS

2018 - present	Shizhou Jiang, Mechanical Engineering
2017 - present	Ziwei Wang, Mechanical Engineering
2015 - present	Baojie Lu, Mechanical Engineering
2013 - 2019	Hong-Cin Lou, Mechanical Engineering
2013 - 2018	Matthew Ford, Mechanical Engineering
2015 - 2018	Jialun Han, Civil and Environmental Engineering
2014 - 2018	Li Zhang, Civil and Environmental Engineering
2012 - 2017	Xiang Chen, Mechanical Engineering
2010 - 2016	Bradley Sherman, Civil and Environmental Engineering
2010 - 2014	Shraddha Avasthy, Materials Science and Engineering; co-advised with Prof. Vinayak Dravid
2009 - 2013	Phillip Ahn, Mechanical Engineering

POSTDOCTORAL FELLOWS

2014 -2016	Alex Rosenthal, Civil and Environmental Engineering (co-advised with Prof. Wells)
2009 - 2010	Jae Hong Kim, Civil and Environmental Engineering (co-advised with Prof. Shah)

MASTERS STUDENTS

2021 - present	Lingding Yue, Mechanical Engineering
2019 - 2021	Longhan Zhang, Mechanical Engineering
2018 - 2019	Manon Voisin Leprice, Civil and Environmental Engineering
2014 - 2015	Shuqing Zhang, Materials Science and Engineering
2011 - 2015	Matthew Richeson, Mechanical Engineering
2013 - 2018	Nirmal Muralidharan, Mechanical Engineering

UNDERGRADUATE STUDENTS

2021	Loren Andrews, MRSEC Summer REU, University of Bates
2020	Kendra Kordack, MRSEC Summer REU, University of Central Florida
2019	Andrea Ramirez, MRSEC Summer REU, UCLA
2018	Longhan Zhang, Summer Research, Tsinghua University
2013	Melissa Writz, MRSEC Summer REU, Colorado State University
2011	Benjamin Kolodner, Mechanical Engineering Dept. Northwestern University
2010	Tyler Lorenzi, Mechanical Engineering Dept. Northwestern University
2009 - 2010	Rafa Taha, Mechanical Engineering Dept. Northwestern University
2009	Kevin Koch, Mechanical Engineering Dept. Northwestern University

H. PRESENTATIONS

INVITED SEMINAR LECTURES

19. “Thermal conductivity of encapsulated semiconducting crystals with intrinsic magnetism”
Keynote presentation at IEEE NMDC Conference. December 15th, 2021
18. “Nanoscale thermal transport measurements in electronic thin films” at IEEE
Nanotechnology Council Young Professionals World Marathon, Virtual Lecture. November
24th, 2021
17. “Nanoscale thermal transport measurements in electronic thin films” at University of
Houston Center for Integrated Biology and Nano Systems Speaker Series, Houston, Tx.
USA. November 19th, 2021
16. “Viscoelastic characterization of biofilms and soft materials based on optical coherence
elastography” at the MMAE Seminar Series, Illinois Institute of Technology, Chicago, IL,
USA. March 24th, 2021
15. “Thermal Characterization of Thin Films using the Thermoreflectance and Optothermal
Raman Thermometry Techniques”, at the 2020 IEEE Chicago’s Joint Annual Meeting of
IEEE Nanotechnology & Magnetism Society Chapters, Chicago, IL, USA. November 23rd,
2020
14. “Mechanical Characterization using Elastic Waves and Mechanical Vibrations”, at the
Northwestern University Murphy Scholars Program, McCormick School of Engineering,
FALL 2020
13. “Quantitative Characterization of Viscoelastic Properties of Environmental Biofilms based
on Optical Coherence Elastography”, at the Northwestern University SPREE Seminar Series.
Civil and Environmental Engineering, FALL 2020

12. “Quantitative Characterization of Viscoelastic Properties of Biofilms and Soft Materials Based on Optical Coherence Elastography” at the IEEE IUS 2020, International Ultrasonics Symposium, Virtual Conference. September 11th, 2020
11. “Thermal Conduction Measurements in Low Dimensional Materials and Heterostructures” at the 20th IEEE International Conference on Nanotechnology, Virtual Conference. July 29th, 2020
10. “Multiscale Experiments and Simulations” at the PS&ED Fellows Lecture Series, Department of Mechanical Engineering, Northwestern University, Evanston, IL USA. November 7th, 2019
9. “Near-field Optical Detection of Acoustic and Nanomechanical Vibrations using Localized Surface Plasmon Polaritons” at the 17th IEEE International Conference on Nanotechnology, Pittsburg PA, USA. July 28th, 2017
8. “Exploring Plasmonic Nanofocusing Approaches to Enable Photoacoustic and Photothermal Measurements at the Nanoscale”, at the 18th International Conference on Photoacoustic and Photothermal Phenomena , Novi Sad, Serbia September, 6th, 2015
7. “Nanometrology and Imaging of Materials using Laser Generated Stress Waves”, ME 512 Seminar Mechanical Engineering Department, Northwestern University, Chicago, IL, USA. October, 27th, 2014
6. “Towards High Resolution Imaging and Materials Characterization using Ultrasonic Near-field Optical Microscopy”, at Motorola Mobility, Chicago, IL, USA. August, 28th, 2014
5. “Enabling Nondestructive Nanomechanical Characterization by Coupling Plasmonic Nanofocusing and Photoacoustics”, at the Department of Aerospace Engineering and Engineering Mechanics Seminar Series, University of Cincinnati, Oh, USA. October. 18th, 2013
4. “Local Characterization and Imaging of Materials Using Photoacoustic Techniques”, at the Structural Mechanics Seminar Series, Georgia Institute of Technology, Atlanta, GA, USA. April. 4th, 2013
3. “Photoacoustic Microscopy for Imaging and Materials Characterization Using Near-field Optical Techniques”, at the Mechanical Engineering Department Seminar Series. University of Colorado, Boulder, USA. December. 6th, 2012
2. “Photoacoustic Microscopy with Applications in Materials Characterization and Imaging”, at the Materials Interest Group Seminar, Materials Science and Engineering Department, University of Illinois, Urbana Champagne, IL, USA. Nov. 15th, 2012

1. “Mechanical Characterization of Nanoscale Structures using Ultrasonic Near-Field Optical Microscopy”, at the Materials Science and Engineering Department Seminar Series, The Johns Hopkins University, Baltimore, MD, USA. Feb. 1st, 2011

CONFERENCE TALKS

56. H.-C. Liou, F. Sabba, A. I. Packman, A. Rosenthal, G. F. Wells, and **O. Balogun**, “Nondestructive mechanical characterization of biofilms by optical coherence elastography measurements of elastic waves”, IEEE UFFC Symposium, Glasgow, UK., October 9th, 2019, Finalist for best student paper competition.
55. **O. Balogun**, B. Lu., L. Zhang, and X Chen, Detection of gigahertz nanomechanical vibrations with local localized gap plasmons in a pillar nanoantenna architecture, 18th IEEE International Conference on Nanotechnology (IEEE-Nano 2018)
54. Matthew Ford and **O. Balogun** “Analytical model for the radial strength and collapse of the bicycle wheel”, Proceedings of the 6th Annual International Cycling Safety Conference, <https://doi.org/10.6084/m9.figshare.5404960.v1> CA, (2017).
53. **O. Balogun**, Near-field optical detection of acoustic and nanomechanical vibrations using localized surface plasmon polaritons 17th IEEE International Conference on Nanotechnology (IEEE-Nano 2017), Proceedings of the 17th IEEE Nanotechnology Conference on Nanotechnology, DOI: [10.1109/NANO.2017.8117295](https://doi.org/10.1109/NANO.2017.8117295).
52. M. Ford, J.M. Papadopoulos, and **O. Balogun**, Buckling and collapse of the bicycle wheel. 24th International Conference of Theoretical and Applied Mechanics (ICTAM 2016), 2770-2771
51. Matthew Ford, J.M. Papadopolous, and **O. Balogun**, “Buckling of the bicycle wheel”, *Proceedings of the 2016 Bicycle and Motorcycle Dynamics Conference*, (2016).
50. A.F. Rosenthal, **O. Balogun**, and G. Wells, Morphological examination of nitrifying biofilms in a moving bed biofilm reactor using optical coherence tomography and fluorescence in situ hybridization, 89th Annual Water Environment Federation Technical Exhibition and Conference (WEFTEC 2016), 4546-4555
49. Bradley Sherman, Li Zhang, and **O. Balogun**, “Controlled Dynamic Delamination of Thin Films using High Intensity Pulsed Laser Materials Interaction”, International Symposium on Laser Ultrasonics and Advanced Sensing, Northwestern University, Evanston, IL, June 29th-July 3rd, 2015.
48. Hong-Cin Liou and **O. Balogun**, “Laser Ultrasonic Characterization of 316 Stainless Steel Alloys Fabricated by Additive Manufacturing”, International Symposium on Laser Ultrasonics and Advanced Sensing, Northwestern University, Evanston, IL, June 29th-July 3rd, 2015.
47. Xiang Chen, Kenan Li, Motonoby Tomoda, and **O. Balogun**, “Optical Enhancement of Picosecond Ultrasonic Responses using Surface Plasmon Polaritons”, International

Symposium on Laser Ultrasonics and Advanced Sensing, Northwestern University, Evanston, IL, June 29th-July 3rd, 2015.

46. B. Sherman and **O. Balogun**, “Constrained Laser Generated Surface Acoustic Waves: Applications to Thin Film Delamination”, Review of Progress in Quantitative Nondestructive Evaluation, Boise, Idaho, July 18th -25th, 2014.
45. Xiang Chen and **O. Balogun**, “Ultrasonic Near-field Optical Microscopy using a Plasmonic Nanofocusing Probe”, Review of Progress in Quantitative Nondestructive Evaluation, Boise, Idaho, July 18th-25th, 2014.
44. **O. Balogun**, P. Ahn, Z. Zhang, and C. Sun., “Time resolved Measurement of Pulsed Laser Generated Ultrasound using a Plasmonic Nanofocusing Probe”, 3rd International Symposium of Laser Ultrasonics and Advanced Sensing, Yokohama, Japan, June 24th -28th, 2013.
43. **O. Balogun**, P. Ahn, Z. Zhang, and C. Sun., “Local Mapping of Photothermally Actuated Nanomechanical Resonators with Sub-wavelength Lateral Spatial Resolution”, 3rd International Symposium of Laser Ultrasonics and Advanced Sensing, Yokohama, Japan, June 24th -28th, 2013.
42. J.D. Achenbach and **O. Balogun**, “Surface Waves on a halfspace with depth dependent properties”, Euromech Colloquium 540, Advanced Modeling of Wave Propagation in Solids, Oct. 1-3, 2012, Prague, Czech Republic.
41. P. Ahn, Z. Zhang, Cheng Sun, and **Oluwaseyi Balogun**, “Optical Detection of Ultrasound Using an Apertureless Near-Field Scanning Optical Microscopy System”, QNDE Conference, Denver, CO., 2012, AIP Conference Proceedings, 1511(1), 360-356, (2013)
40. B. Sherman and **Oluwaseyi Balogun**, “Optical Generation of High Amplitude Laser Generated Surface Acoustic Waves”, QNDE Conference, Denver, CO., 2012, AIP Conference Proceedings, 1511(1), 337-344, (2013)
39. Y. Zhu, Q. Huang, O. Balogun, and S. Krishnaswamy, Adaptive multi-channel fiber Bragg grating interrogation system for rapid detection of acoustic emission and impact. 2012 SAMPE International Symposium and Exhibition-Emerging Opportunities: Materials and Process Solutions
38. P. Ahn, Z. Zhang, Cheng Sun, and **Oluwaseyi Balogun**, “Frequency Domain Photoacoustics Using a Surface Plasmon Enhanced Near-field Scanning Optical Microscope”, International Conference on Photoacoustic and Photothermal Phenomena, Merida, Mexico, 2011
37. B. Sherman and **Oluwaseyi Balogun**, “Laser Generation of Finite Amplitude Surface Acoustic Waves using the Phase velocity Scanning Technique”, International Conference on Photoacoustic and Photothermal Phenomena, Merida, Mexico, 2011

36. Y. Zhu, Y. Zhu, **O. Balogun**, S. Zhu, Y.L. Xu, and S. Krishnaswamy, "Dynamic Strain Sensing in A Long-Span Suspension Bridge Using Fiber Bragg Grating Sensors", QNDE Conference, San Diego, CA, 2010 , AIP Conference Proceedings, 1335(1), 1418-1423, (2011)
35. Y. Zhu, O. Balogun, and S. Krishnaswamy, Single-longitudinal model fiber Bragg grating ring laser for real-time strain monitoring. 5th European Workshop on Structural Health Monitoring, 754-759, (2010)
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29. **O. Balogun** and S. Krishnaswamy, "A fiber Bragg grating based tunable laser source for quasi-static and dynamic strain monitoring", Proc. SPIE 7295, pp. 729501, 2009
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21. Claire Prada, Dominique Clorennec, Daniel Royer, **O. Balogun** and Todd Murray, “Laser Generation and Detection of Zero Group Velocity Lamb Mode Resonance in Thin Plates”, *Acoustical Society of America (ASA) June meeting*. J. Acoust. Soc. Am., 119(5), pp. 3285, 2006. (abstract)
20. **O. Balogun**, R. Huber, D. Chinn, and J.B. Spicer, “Materials Defect Characterization using Mesoscopic Laser Ultrasonic Methods”, *18th AeroMat Conference and Exposition*, Baltimore, Maryland, June, 2007
19. C. Prada, **O. Balogun** and T. W. Murray, “Experimental Evidence of S1 Mode Quasi-Resonance in Thin Plates using a Laser Based Acoustic Microscope”, *2005 IEEE Ultrasonics Symposium Volume 2*, 18 – 21, pp. 1011 – 1014, September 2005.
18. R. Huber, D. Chinn, **O. Balogun** and T.W. Murray “High Frequency Laser-Based Ultrasound”, *2005 Review of Progress in Quantitative Nondestructive Evaluation (QNDE)*, American Institute of Physics (AIP) Conference Proceedings, 820, pp. 218-224, 2006.
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15. T.W. Murray, **O. Balogun** and N. Pratt, “High Frequency Laser Based Acoustic Microscopy using a CW Generation Source,” *Proc. 16th World conference on Nondestructive testing*, August 2004, Montreal, Canada 2004. (abstract)

14. **O. Balogun**, N. Pratt and T. W. Murray, "A Novel Technique for Improving the Signal to Noise Ratio of Laser based Ultrasonic Systems", 2004 IEEE International Ultrasonics, Ferroelectrics and Frequency Control (UFFC) Joint 50th Anniversary Conference, Volume 1, 23 – 27, pp. 48-51, August, 2004.
13. **O. Balogun** and Todd W. Murray, "Graded Coating inspection Using Laser Generated Surface Acoustic Waves", in Review of Progress in Quantitative Nondestructive Evaluation, American Institute of Physics (AIP) Conference Proceedings, 700, pp. 294-298, 2004.
12. T.W. Murray and **O. Balogun**, "A Novel Approach to High-Frequency Laser-based Acoustic Microscopy", Acoustical Society of America (ASA) November meeting. J. Acoust. Soc. Am., 116, pp. 2617, 2004. (abstract)
11. T.W. Murray, **O. Balogun**, V. K. Sarin, and S. N. Basu, "Laser Ultrasonic Inspection of Compositionally Graded Mullite Coatings", Review of Progress in Quantitative Nondestructive Evaluation, American Institute of Physics (AIP) Conference Proceedings. 657, pp. 1471-1474, 2003.
10. **O. Balogun**, T. W. Murray and Soumendra Basu, "Characterization of Graded Coatings using Laser Generated Acoustic Waves", Acoustical Society of America (ASA) November meeting, J. Acoust. Soc. Am., 112, pp. 2350, 2002. (abstract)
9. **O. Balogun**, R. Huber, D. Chinn, and J.B. Spicer, "Materials Defect Characterization Using Mesoscopic Laser Ultrasonic Methods", 18th AeroMat Conference and Exposition, Nondestructive Evaluation, Structural Health Monitoring, and Prognosis, Baltimore, MD, June 2007. (Oral Presentation)
8. T. W. Murray, C. Prada and **O. Balogun**, "Characterization of Films and Plates Using Frequency Domain Photoacoustic Microscopy", International Symposium on Mechanical Waves in Solids, Hangzhou, China, May 2006. (Oral Presentation)
7. **O. Balogun**, C. Prada, A. Sampath Kumar and T.W. Murray, "Laser Based Acoustic Microscopy Using a Modulated CW Excitation Source", 2005 Gordon Research Conference on Photothermal and Photoacoustic Phenomena, Trieste, Italy, June 2005. (Poster Presentation) (Travel Support was provided by the Center for Nanoscience and Nanobiotechnology, Boston University)
6. Kumar, **O. Balogun**, T. Kouh, K.L. Ekinici and T.W. Murray, "Photoacoustic Characterization of Nanoelectromechanical Systems", 2005 American Physical Society (APS) March Meeting, Los Angeles, California, USA, January 2005. (Oral Presentation)
5. Prada, O. Balogun, and T.W. Murray, Experimental evidence of S1 mode quasi-resonance in thin plates using a laser based acoustic microscope. IEEE Ultrasonics Symposium, 2, 1011-1014, (2005)

4. O. Balogun, N. Pratt, and T.W. Murray, A novel technique for enhancing the signal to noise ratio of laser-based ultrasonic systems. IEEE Ultrasonics Symposium, 1, 48-51, (2004)
3. O.O. Balogun and T.W. Murray, Graded coating inspection using laser generated surface acoustic waves. AIP Conference Proceedings, 700(1), 294-301, (2004)
2. T.W. Murray, T.L Steen, **O. Balogun**, S. N. Basu and V. K. Sarin, “Inspection of Compositionally Graded Mullite Coatings Using a Laser Based Ultrasonic System”, 8th International Conference on the Science of Hard Materials, San Juan, Puerto Rico, November 2004. (Oral Presentation)
1. R. Huber, D. Chinn, D. Chambers, **O. Balogun** and T.W. Murray, “Optical Mapping of the Acoustic Output of a Focused Transducer”, Acoustical Society of America (ASA) May meeting, New York, USA, May 2004. (Oral Presentation)

20. TEACHING

COURSES TAUGHT

Course Number	Course Title	Quarter
MECH ENG 419	Elastic Wave Propagation in Periodic Solids	Spring 2021
MECH ENG 363	Mechanical Vibrations	Spring 2021
CIV ENV 415	Theory of Elasticity	Winter 2021
MECH ENG 495	Nanoscale Thermal Transport	Spring 2020
MECH ENG 363	Mechanical Vibrations	Spring 2020
CIV ENV 415	Theory of Elasticity	Winter 2020
MECH ENG 419	Elastic Wave Propagation in Periodic Solids	Spring 2019
MECH ENG 363	Mechanical Vibrations	Spring 2019
GEN ENG 205-2	Engineering Analysis II	Winter 2019
MECH ENG 224	Experimental Engineering	Spring 2018
MECH ENG 363	Mechanical Vibrations	Spring 2018
GEN ENG 205-2	Engineering Analysis II	Winter 2018
MECH ENG 419	Elastic Wave Propagation in Periodic Solids	Spring 2017
MECH ENG 363	Mechanical Vibrations	Spring 2017
GEN ENG 205-2	Engineering Analysis II	Winter 2017

taught GEN ENG 205-2, MECH ENG 363, and MECH ENG 419 every year from 2009 - 2017

21. SERVICE & PEER REVIEW

PROFESSIONAL SOCIETY MEMBERSHIP & SERVICE

- Panelist “Meet the Experts” by IEEE NTC Young Professionals, at the IEEE NMDC Conference, December 13th, 2021
- 2018 – 2021, IEEE UFFC-S Member and AdCom representative to the IEEE Nanotechnology Council
- 2021 – 2023, IEEE UFFC-S Elected Administrative Committee

- Member of the Nano-acoustic Devices, Processes, and Materials Technical Committee (TC-15) at the IEEE Nanotechnology council and the Technical Program Committee for IEEE NMDC
- 2015, Member of Local Organizing Committee for International Symposium on Laser Ultrasonics and Advanced Sensing (LUAS)
- 2013, Member of Local Organizing Committee for Engineering Mechanics Institute (EMI)
- Sensor Chair, LAUS 2013, EMI Conference 2013, SPIE Smart Structures and NDE 2008 and 2009, IEEE UFFC Symposium 2019
- Member, SPIE Sensors and Smart Structures Technologies for Civil, Mechanical and Aerospace Systems
- Member, Society of Engineering Sciences.
- Member, Acoustical Society of America

PEER REVIEW & EDITORIAL SERVICE

- Review Editor, *Frontiers in Materials: Mechanics of materials*
- Associate Editor for Virtual Conference: 2020 IEEE Nanotechnology Conference,
- Guest Editor, Ultrasonics Special Issue on Laser Ultrasonics and Advanced Sensing, 2015
- Publication review: *Journal of the Acoustical Society of America, Ultrasonics, Wave Motion, IEEE UFFC Transactions, Journal of Smart Structures, ASME Applied Mechanics, Measurement Science and Technology, Proceedings of the Royal Society A, NDT&E, Philosophical Magazine, Optics Express, Advanced Materials. Nature Scientific Reports, Nature Communications, ACS Nano Letters, ACS Nano, ACS Advanced Materials and Interfaces, PLOS ONE, PNAS,*
- Proposal review: *NSF CMMI Sensors and Sensing System, NSF CMMI Mechanics of Materials Program, Nuclear Energy University Program, Austrian National Science Foundation, Technology Foundation STW, Netherlands, GEM Fellowship review panelists, NSF Graduate Research Fellowship Program*

DEPARTMENT SERVICE

- 2021- present, NUANCE Advisory Committee
- 2021 – present, MMS Area Coordinator, Civil and Environmental Engineering Department
- 2021, Member NUFAB-MPMF Cleanroom Integration Committee
- 2021 – present, Northwestern University Faculty Ad hoc Committee
- 2021 – present, Northwestern University Faculty Appeals Panel
- 2008 – present, member of Undergraduate Students Academic Standing Committee
- 2020 – present, Chair of Diversity, Equity, and Inclusion Committee, Mechanical Engineering Department
- 2012, Member of TAM Curriculum Committee
- 2010 – present, Faculty Advisor, Northwestern University Mini Baja Racing Team
- 2010-2020, Organizer TAM Seminar Series

- 2008 – present, Undergraduate Advisor, Mechanical Engineering Department