

# SOURAV BANERJEE

Ph.D., P.E., Fellow-ASME

## CURRICULUM VITAE

Professor

Director of Integrated Material Assessment and Predictive  
Simulation Laboratory (i-MAPS)  
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[Affiliated Laboratory / LAMSS](#)



### Articles on Prof. Banerjee

[Tangible Math](#) - August 4, 2017

[Material Whisperer](#) - June 14, 2019

[SHM Person of the Year 2019](#) - October 29, 2019

[AR-VR in Online Teaching](#) - April 6, 2020

### Education

- **Ph.D.**, Department of Engineering Mechanics, **University of Arizona**, Tucson, August 2005.  
Major: **Engineering Mechanics**; Minor: **Applied Mathematics**
- **M.Tech.** Indian Institute of Technology (IIT), Bombay, India, March 2002.  
DAAD Project at Institute of Static and Dynamics of Aerospace Structures (ISD), University of Stuttgart, Germany, Major: **Structural Engineering**
- **B.E.**, Bachelor of Civil Engineering, Indian Institute of Engineering Science and Technology (IIEST), formerly known as Bengal Engineering College (D.U.), West Bengal, India, May 2000.

### Research- Central Theme: Acoustics and Ultrasonics

1. **Acoustics and Ultrasonics**: ultrasonic nondestructive evaluation (NDE) & structural health monitoring (SHM), ultrasonic signal processing, physics based predictive modeling of acoustics & ultrasonic waves in solids, fluids, composites, nuclear & engineered metamaterials, impact mitigation and wave suppression.
2. **Material State Awareness for SHM**: composites damage precursors; predictive material degradation; progressive damage assessment at multiple scales; experimental NDE and SHM
3. **AI Robotics, System Identification & Digital Twin**: AI Driven robotics, automation for land robots, Signal Processing; Big-Data analytics; Surrogate modeling of complex systems for Digital Twin.
4. **Metamaterials, Mechatronics and Robotics**: smart materials and sensing technologies; robotic hearing, acoustic/ultrasonic energy harvesting; ultrasonic wave guiding/ tunneling/ lensing, topological structure,
5. **AcoustoBiomechanics, Bio-Origami & Programmable Matter**: exploring the physics of acoustics in nature to device new devices / sensors; metamaterial applications; computationally predict the complex dynamics of bioorganisms.

### In-house Research tools

1. Robotic Enabled Universal Scanner (UltraScanner) - Experimental
2. Quantitative Acoustic Contrast Tomography (Q-ACT) - Experimental
3. Quantitative Ultrasonic Image Correlation (QUIC) - Experimental
4. Distributed Point Source Method (DPSM-SISMAG – Wave-FILM) – Computational
5. Peri-elastodynamic Simulation Approach (PESA) - Computational
6. Finite Spectral Element Method (FSEM) – Computational
7. Inverse Digital and Computational Analysis Terminal (INDICATE) – Big-Data Processing, SIGNAL

### Honors and Awards

- 2022-2023: **ONR Sabbatical Program Award**, worked at NAVSEA Carderock, MD
- 2021, 2022: **ONR Summer Research Faculty Award**, ONR, NAVSEA, Carderock, MD









- 2020: **Outstanding Paper Award** by ASME Journal of Nondestructive Evaluation, Diagnostics and Prognostics of Engineering Systems
- 2020: **NASA Group Achievement Award**: A team member of Advanced Composite Program (ACP- 2015-2019)
- 2020: Become an **American Society of Mechanical Engineers (ASME) Fellow**, Honored by ASME.
- 2020: Mentioned as a leading faculty to ease the online teaching at UofSC. President of UofSC visited the virtual class to recognize his effort. Pls refer the article [AR-VR in Online Teaching](#).
- 2020: Invited for **Graduate Seminar**, Civil Engineering and Engineering Mechanics Department, University of Arizona, Tucson,
- 2019: **Structural Health Monitoring Person of the Year Award**, by Structural Health Monitoring: An International Journal. [An Article on Dr. Banerjee's award](#)
- 2019: **Breakthrough Star Award**: Prestigious highest research award to a young faculty by USC Office of Vice President of Research, University of South Carolina, February 2019 [An Article on Dr. Banerjee's Research](#)
- 2019: Invited for a Technical Expert Talk, Aerospace Engineering Department, Indian Institute of Technology, Kharagpur, India
- 2019: **Banerjee's student Ms. Fariha Mir, received Outstanding Master Thesis award**, honored by University of South Carolina, Graduate School.
- 2018: **Banerjee's student Mr. Sajan Shrestha, received Outstanding Master Thesis award**, honored by University of South Carolina, Graduate School.
- 2018: **Invited Author**: Advanced Composite Program Handbook on NDE of Composite, NASA
- 2018: **Invited Guest Lecture**: R&D division, TATA Steel, Jamshedpur, India, Jan 9<sup>th</sup> 2018.
- 2017: **Michael J. Mungo Teaching Award**: Prestigious highest teaching award at University of South Carolina, by the Office of Provost, University of South Carolina, May 2017. [An Article on Dr. Banerjee's teaching](#)
- 2016: **Invited Speaker**: IEEE CMMI conference at Jadavpur University, Kolkata 700047
- 2015: **ASPIRE** Award grant by the Office of Vice President of Research, University of South Carolina
- 2014: **Invited Guest Lecturer**: Industry workshop on SHM of Composites at Skolkovo technological Institute (Skoltech), Moscow, Russia, Dec 8<sup>th</sup> – Dec 12<sup>th</sup>
- 2014: **Invited Speaker**: 29<sup>th</sup> American Society of Composites, Annual Technical Conference, University of California, San Diego, Special Session on NDE and SHM of Composites
- 2013: Who is Who in America
- 2012: **Invited Speaker**: 164<sup>th</sup> ASA Meeting, Kansas City, Missouri, USA, Special Session 2pSA
- 2010: **Achenbach Medal to recognize the outstanding contribution as a young researcher** in the field of structural health monitoring, sponsored by Embraer, Given at IWSHM 2011
- 2009: **Best Practical SHM Solution** in Aerospace awarded by Airbus at IWSHM 2009
- 2008: **Professional Engineers (PE) License**, Since 2008
- 2007: **Invited speaker** Sponsored by NSF to present contemporary research in "World Forum on Smart Materials and Smart Structures Technology", Chongqing & Nanjing, China"
- 2007: Invited as a leading author to write a technical article on contemporary research in "Industrial Sensing and Measurement" column of Optical Engineering Magazine, SPIE Newsroom
- 2006: Honored as a **Technical Expert**, by Department of Engineering Mechanics, University of Arizona, Tucson.
- 2004: Visiting research scholar to IIT Bombay, Awarded by University of Arizona, National Science Foundation (NSF)

- 2002: **National Award for one of the best M.Tech Thesis**, Honored by Indian Society of Technical Education (ISTE)
- 2002: **Jaya Seetha Ranjani Harihar Subramani Award**, for being outstanding graduate student. Honored by Indian Institute of Technology (IIT) Bombay
- 2001: **DAAD Scholar**, Honored by German Academic Exchange Program Service, German

## Positions and Employments





Year	Institution	Position
2023-Present	University of South Carolina	Professor (Tenured)
2018-2022	University of South Carolina	Associate Professor (Tenured)
2012-2017	University of South Carolina	Assistant Professor
2009-2011	Acellent Technologies Inc.	Director of Product Development
2008-2009	Acellent Technologies Inc.	Senior Project Engineer
2008-2008	Arizona State University	Research Assistant Professor
2005-2008	University of Arizona	Technical Expert (Part time)
2006-2007	Consulting Engineers Corporation	Project Engineer, Structure
2005-2006	AMEC, Earth and Environment	Staff Professional, NDE Engineer

## Awards and Funding - Present to old

Sponsor	Project Title	Years Funded
	Physics Deep-link and Digital Twin for Structural Health Monitoring of Naval Structures	2023-2026
	Development of a novel sensor for rapid onsite detection of microcystin in rural livestock ponds	2023-2025
	Manufacturing Advanced Composites for Hypersonics (MACH): AI enabled Digital NDE of Hypersonic Composites	2023-2026
	Unravelling the Coupled Physics of Piezoelectric and Plasma Behavior in Piezoelectric Simulated Plasma Sources	2022-2025
	Hi-Rate Advanced Manufacturing of Composites - HiCAM Thermoplastic Composite Manufacturing and Health Assessment of Welding Joint using Ultrasonics	2022-2025
	Phase I II and III: AI-driven robotic planting, placement, and removal of stakes on ground for plants with weak stem	2022-2025
	Hi-Rate Advanced Manufacturing of Composites - HiCAM Nondestructive Evaluation	2022-2024
	SBIR Phase II Subcontract: Vision based autonomous driving of robots for the disinfection and decontamination of transit assets	2022-2024

	Digital NDE Twin Application for Ship Hulls	2021
	SBIR Phase I: Ultrasonic Energy Interaction with Composite Damage in Both Frequency and Time Domains, Subcontract by Advent Innovation.	2021
	Application of robotics in vegetable harvesting	2020-2021
	STTR: Ensemble Feature Extraction (EFEX) Algorithm and AI for Machine Fault Classification	2020-2021
	DURIP: Real-time Edge Computing in Structures Experiencing Shock	2020-2022
	HiCAM Assess SAO NDE for Hi-rate Manufacturing	2021-2022
	Fully Automated Ultrasonic Detection and Robotic Removal of Bones & Foreign Materials from Ground Poultry and Rendered Products	2019-2021
	Damage Detection using Two Stage Compressive Sensing (Phase I & II)	2019-2022
	PVDF-film for Robust Online Assessment of Composite Tanks (PROACT)	2019-2020
NASA ACP 	Composite bond line Inspection through Ultrasonics and Bond Quality Index	2017-2020
	TOXIMAP: Computational Framework for Prediction of Geographical and Temporal Incidence of Mycotoxins in US Crop Fields	2017-2021
	Demonstration of model using cover crops to improve soil health and reduce crop stress and aflatoxin contamination	2016-2018

<p>NASA LaRC*</p> 	Multiscale Computational NDE and SHM for Composites	2015-2018
<p>Boeing Co.*</p> 	<p>Nondestructive evaluation of Composite</p> <p>Project 1: Energy Harvesting using Acoustoelastic Metamaterials for SHM</p> <p>Project 3: Physics based model of wave composite interaction</p> <p>Project 4: Angle beam ultrasonic for wrinkle inspection in composites</p>	2016-2019
<p>ARL SBIR Phase I*</p> 	Explaining to Damage State in Composites at Multiple Length Scale using Quantitative Ultrasonic and SEM	2015-2016
<p>ASPIRE I, USC*</p>	"Is it possible to Quantify the Growth of Entropy due to Material Damage?"	2015-2016
<p>NASA SC SGC Office*</p> 	"A novel computational method for nondestructive evaluation of space composite" (Palmetto Academy Program)	2015
<p>SPARC program USC/VPR*</p>	Graduate Research: "Autonomous energy scavenging from low frequency ambient noise using Acoustoelastic Metamaterials (AEMM)"	2015-2016
<p>Magellan USC*</p>	UG Research: "Development of broad band mechanical energy harvester using cochlea mechanics"	2015
<p>NCI/NIH*</p> 	"Center for Colon Cancer Research: Mechanical landscaping of a colon tissue with customized gut microflora (pilot project)"	2014-2015
<p>ASPIRE II, USC*</p>	"Uncertainty quantification driven multi-scale model development for aflatoxin prediction"	2014-2015
<p>SkolTech, Russia*</p> 	<p>Advanced Structures, Processes and Engineered Materials (ASPEM),</p> <p><b>Project 1.2:</b> Predictive Multi-scale Quantification of Precursor to Damage State in Composites</p>	2014-2015
<p>AFOSR</p> 	Development of CSLAN for real time monitoring of F-15 aircraft components	2009-2010
<p>AFOSR</p>	Development of CSLAN for real time monitoring of F-15 aircraft components: Phase II	2010-2012
<p>ONR</p> 	Development of SMART HULL system for Naval Structures	2011-2011

	Development of on-board SHM system for full-composite Unmanned Air Vehicles	2010-2011
	Development of predictive model to classify disbond and delamination in Composite Structures	2010-2011
	Structural Health Monitoring System for Composite Propellant Tank used in space applications	2010
	Development of SCANSn System for Infrastructure health management. PI: Dr. Shawn Beard	2008-2012

## Professional Services for Broader Scientific Community

### Professional Societies

- Served as a Secretary, and currently, Executive Committee member of the NDE division of ASME
- Serving as a Chair of the Ultrasonic Technical Committee (TC) of the NDE division of ASME.
- Serving as a member, SHM of Aerospace Structures TC of SMASIS, ASME
- Member since 2008, The American Society of Mechanical Engineers (ASME)

### Conferences

- **Special Session Organizer**, QNDE 2020, Organized by ASME NDPD division, Minneapolis, MN
- **Symposium Organizer**, Conference wide Symposium on NDE, ASME IMECE 2019, Salt Lake City, UT
- **Symposium Organizer**, Conference wide Symposium on NDE, ASME IMECE 2018, Pittsburg, PA
- **Track Organizer**, Track 17- NDE, Diagnosis and Prognosis, ASME IMECE 2017, Tampa, FL
- **Track Organizer**, Track 17- NDE, Diagnosis and Prognosis, ASME IMECE 2016, Phoenix, AZ
- **Topic Organizer**, Track 2, Topic 17, Ultrasonic Manufacturing, ASME IMECE, 2015, Huston, TX
- **Committee Member**, Session Chair, SPIE NDE & Smart Structure Conference, 2008-2016
- **Session Organizer and Chair**, 51<sup>st</sup> Society of Engineering Science (SES) Meeting, Purdue, 2014
- **Session Organizer and Chair**, Special Session: Precursor to damage quantification, IWSHM 2013.
- **Session Organizer and Chair**, 50<sup>st</sup> Society of Engineering Science (SES) Meeting, Brown, 2013
- **Session Chair**, ASME SMASIS, 2011

### Journals and Publishers

- **Associate Editor**, Elsevier, Ultrasonic Journal, 2025-2027.
- **Associate Editor**, ASME Journal of Nondestructive Evaluation, Elsevier, 2023-present
- **Editorial Board Member**, Journal of Composite Science, MDPI Publication, 2020-present
- **Advisory Board Member**, ASME Journal of Nondestructive Evaluation, Diagnostics and Prognostics of Engineering Systems, 2019-present
- **Editorial Board Member**, Scientific Reports, Nature Publishing Group, 2016-2024
- **Editorial Board Member**, International Aeronautics Journal
- **Editorial Board Member**, International Journal of Aeronautics and Aerospace Engineering
- **Book Reviewer**: Springer, CRC Press, Cambridge University Press,
- **Reviewer** to more than ~92 National and International Journals including Nature publishing Group

## Patents

Approved / Pending / Disclosed

- P1. **Banerjee, S.**, Qing, X., Beard, S., Chang, F., "Method and Apparatus for Estimating Damage in a Structure", US Patent No. 8521444, Approved on August 2013.
- P2. **Banerjee, S.**, Chnada, A., "Quantitative Acoustic Contrast Tomography (Q-ACT) for studying fungal growth and toxicity", US Patent No. 9670522, Approved on June 6, 2017.



- P3. **Banerjee**, S., Ahmed, R., "Power Optimization for a Unit Cell Metamaterial Energy Harvester", US Patent No. 10694466, Approved on June 23, 2020.
- P4. **Banerjee**, S., Saadatzi, MdS., "Artificial Cochlea for Mechanical Processing of Sound", UofSC Patent File No. 1491, 2021
- P5. Saadatzi, MdS., **Banerjee**, S., "High Voltage Energy Harvesting and Sensing with 3D Spiral Design", UofSC Patent File No. 1488, 2021
- P6. **Banerjee**, S., Mandal, D., "Ultrasonic biosensor for the detection of infectious disease and contamination", USC Patent File No. USC-735-P (1588), 2022
- P7. **Banerjee**, S., Leydig, C., Mechanism and Methods for Robotic Installation of Stakes, USC-731 (1582), 2022
- P8. Mandal, D., **Banerjee**, S., Gilliam, J. R., Silfies, S., Innovative vibrational system for the trunk proprioceptive impairment study, Being Disclosed, Awaiting File No. 2023.

## Books / Chapters

Published / In Press / Writing

- B1. **Banerjee**, S., *Metamaterials in Topological Acoustics*, CRC Press Taylor and Francis Group, 2023.
- B2. **Banerjee**, S., Leckey, C., *A Handbook of Computational Nondestructive Evaluation*, CRC Press Taylor and Francis Group, May 28, 2020, ISBN 9781138314542.
- B3. **Banerjee**, S., Patra S., Chapter 15 Multiscale Quantification of Damage Precursors, *Nonlinear Acoustic Techniques for Nondestructive Evaluation*, Acoustical Society of America. ISBN 978-3-319-94474-6, 2018
- B4. **Banerjee**, S., Shrestha, S., "Numerical Modeling of Wave Propagation in Composites", *Structural Health Monitoring for Advanced Composite Structures*, World Scientific. ISBN 978-1-78634-392-5, 2018
- B5. **Banerjee**, S., Kundu, T., Chapter 4 "Advanced Application of Distributed Point Source Method - Ultrasonic Field Modeling in Solid media". Ed. T. Kundu and D. Placko, *John & Willey Publication*, Hoboken, New Jersey, USA, ISBN: 978-0-471-73314-0 (Lib. CAT# TA347.D57P585), 2007.

## Magazine Articles

Published / In Press / Writing

- M1. **Banerjee**, S., Kundu, T., "Modeling of Ultrasonic Wave-scattering by Internal Anomalies for NDE/SHM Application.", Column - Industrial Sensing and Measurement, SPIE News Room, Optical Engineering Magazine (2007).

## Journal Publications

Published / In Press / Accepted / Submitted

2025

- J1. **Banerjee**, S., Quantum analogous spin states of ultrasonic guided waves, *Ultrasonics* 146, 107478, 2025.
- J2. Mandal, D., Bovender, T., Geil, R.D., Sahoo, D., **Banerjee**, S., Surface acoustic waves (SAW) sensor for the active detection of Microcystin-LR (Cyanobacteria), *Sensing and Bio-Sensing Research*, 47, 100724, 2025.
- J3. Ahmed, H., Sadaf, A., **Banerjee**, S., Precursor Damage Quantification in Composite Structures Using Coda Wave Interferometry and Nonlinear Ultrasonics, *Journal of Nondestructive Evaluation, Diagnostics and Prognostics of Engineering Systems*. Vol 8(1), 2025.

## 2024

- J4. Rahman, F. M. M., **Banerjee**, S., Peri-elastodynamic: Peridynamic simulation method for guided waves in materials, *Mechanical Systems and Signal Processing* 219, 111560, 2024.
- J5. Ahmed, R., Ahmed, H., **Banerjee**, S., Stiffness driven design of membrane sensors: For broadband and selective frequency sensing, *Journal of Appl. Phys.* 136(2), 2024.
- J6. Gilliam, J. R., Mandal, D., Wattananon, P., **Banerjee**, S., Herter, T. M., Silfies, S.P., Vibration-Induced Alteration in Trunk Extensor Muscle Proprioception as a Model for Impaired Trunk Control in Low Back Pain, *Brain Sciences*, 14(7), 657, 2024.
- J7. **Banerjee**, S., Tavaf, V., Indaleeb, M. M., Ultrasonic Nondestructive Evaluation of Composite Bond Strength: Quantification through Bond Quality Index (BQI), *Journal of Composite Science*, Vol. 8(3), 2023.
- J8. Indaleeb, M. M., **Banerjee**, S., Spin resolved topological bulk state in acoustics, *Sci. Rep.* 14(1), 3213.
- J9. Mandal, D., Bovender T., Geil, R.D., **Banerjee**, S., Surface Acoustic Wave (SAW) Devices: Tone-Burst Sensing for Lab-on-a-chip Devices, *Sensors*, 24 (2), 644. 2024

## 2023

- J10. Mir, F., Mandal, D., **Banerjee**, S., Metamaterials for Acoustic Noise Filtering and Energy Harvesting, *Sensors*, 23 (9), pp 4277. 2023.
- J11. Indaleeb, M. M., Ahmed, H., Beard, S., **Banerjee**, S., Nondestructive evaluation (NDE) of multilayered attenuative structures using ultrasonic Bessel beams, *Mechanical Systems and Signal Processing*, 187, pp. 109960.
- J12. Sultana, P., Kham. M., Mandal, D., Saadatzi, M., **Banerjee**, S., Investigation of the Effect of Atmospheric Plasma Treatment in Nanofiber and nanocomposite Membranes for Piezoelectric Applications, *Membranes*, 13(2), pp. 231. 2023.

## 2022

- J13. Akter, K., Ahmed, H., **Banerjee**, S., Anisotropic guided wave in isotropic metaplate with orthogonal perturbation, *International Journal of Solids and Structures*, 254, 111922, 2022.
- J14. Indaleeb, M.M., Ahmed, H., **Banerjee**, S., Acoustic Computing: At tunable pseudospin-1 Hermitian Dirac-like cone, *Journal of Acoustical Society of America*, 152(3), pp. 1449-1462, 2022.
- J15. Mandal, D., Indaleeb, M.M., Younan, A., **Banerjee**, S., Piezoelectric point-of-care biosensor for the detection of SARS-COV-2 (COVID-19) antibodies, *Sensing and Bio-Sensing Research*, 37, 100510, 2022.
- J16. Mandal, D., **Banerjee**, S., Surface Acoustic Wave (SAW) Sensors: Physics, Materials, and Applications, **Sensors**, Vol. 22(3), 820, 2022.
- J17. Tavaf, V., **Banerjee**, S., Effect of Defects Part I: Degradation of Constitutive Coefficients as an input to the Composite Failure Model with Micro voids and Porosity, **Journal of Composite Science**, Vol.. 6 (2), 37. 2022.

## 2021

- J18. Indaleeb, M. M., **Banerjee**, S., Simultaneous Dirac-like Cones at Two energy states in Tunable Phononic Crystals: An Analytical and Numerical Study., **Crystals**, 11 (12), 1528, 2021



- J19. Ahmed, H., Ghosh, S., Sain, T., **Banerjee**, S., Hybrid Bessel beam and metamaterial lenses for deep laparoscopic nondestructive evaluation. **Journal of Applied Physics**, 129(6) 165107, 2021.
- J20. Tavaf, V., Saadatzi, M., **Banerjee**, S., Effect of Defect II: Multiscale Effect of Microvoids, Orientation of Rivet Holes on the Damage Propagation, and Ultimate Failure Strength of Composites, **Journal of Composite Science**, 5(4), 112. 2021
- J21. Sultana, Q. N., **Khan**, M., Mahamud, R., Saadatzi, M., Sultana, P., Farouk, T., Quirino, R., **Banerjee**, S., Fabrication and Characterization of Non-Equilibrium Plasma-Treated PVDF Nanofiber Membrane-Based **Sensors**, Vol. 21(12), 4179, 2021.

## 2020

- J22. Ahmed, R., Ahmed, H., **Banerjee**, S., "A Numerical Approach to Investigate the Influence of Resonator Setting and Volume Fraction on Stop Bands in an Acoustic Metamaterial, **Journal of Engineering Advancement** (Accepted)
- J23. Tavaf, V., **Banerjee**, S., Generalized Analytical Dispersion Equations for Guided Rayleigh-Lamb (RL) waves and Shear Horizontal (SH) waves in Corrugated Waveguides, **International Journal of Solids and Structures**, Vol 202, 1, pp.75-86, 2020.
- J24. Saadatzi, MS., Saaadatzi, S, **Banerjee**, S., Modeling and Fabrication of a Piezoelectric Artificial Cochlea Electrode Array with Longitudinal Coupling, **IEEE Sensors**, Vol. 20, Issue 9, pp. 11163-11172, 2020
- J25. Indaleeb, M.M., Ahmed, H., Saadatzi, MS., **Banerjee**, S., Deaf band-based prediction of Dirac Cone in acoustic metamaterials, **Journal of Applied Physics**, Vol. 127, Issue 6, 10.1063/1.5122297, 2020 (**Featured as Editor's Pick**).
- J26. Shrestha, S., Tavaf, V., **Banerjee**, S., "A Framework for Computational Nondestructive Evaluation of Degraded Composite with Microscale Defects," **ASNT Journal of Materials Evaluation**, Vol. 78(1), pp. 104-118, 2020.

## 2019

- J27. Patra, S., Ahmed, H., Saadatzi, MS., **Banerjee**, S., Effect of Time-Dependent Strength Recovery of Composite Materials: Quantification Through Higher Order Ultrasonic Non-Linearity Using Lamb Waves, **ASME Journal of Nondestructive Evaluation, Diagnostics and Prognostics of Engineering Systems**, Vol. 3(1): 011005, 2019.
- J28. Patra, S., Ahmed, H., Saadatzi, MS., **Banerjee**, S., Experimental Verification and Validation of Nonlocal Peridynamic Approach for Simulating Guided Lamb Wave Propagation and Damage Interaction, **Structural Health Monitoring Journal**, Vol 18(5-6), pp. 1789-1802.
- J29. Tavaf, V., **Banerjee**, S., Quantification of degraded constitutive coefficients of composites in the presence of distributed defects, **Journal of Composite Materials**, Vol. 53(18) 2517–2529, DOI: 10.1177/0021998319832351
- J30. Indaleeb, M.M., **Banerjee**, S., Hossain A., Saadatzi, MS., Ahmed, R., Deaf band based engineered Dirac cone in a periodic acoustic metamaterial: A numerical and experimental study, **Physical Review B**, Vol. 99, 024311; <https://doi.org/10.1103/PhysRevB.99.024311>.
- J31. Patra, S., Hossain A., Saadatzi, MS., **Banerjee**, S., Evidence of dissipative and growing nonlinearity in Lamb waves due to respective stress-relaxation and material degradation in composites, **Ultrasonics**, Jul 2019, Vol. 96, pp. 224-231, doi: 10.1016/j.ultras.2019.01.002.

## 2018

- J32. Hossain A., Indaleeb M.M., Ahmed, R., **Banerjee**, S., Multifunction acoustic modulation by a multi-mode acoustic metamaterial architecture, *Journal of Physics Communication*, Vol 2 (11), pp. 115001.
- J33. Kaur, K., Saxena, A., Debnath, I., L O'Brien, J., Ajami, NJ., Auchtung, TA., Petrosino, JF., Sougiannis AJ., Depaep, S., Chumanevich, A., Gummadidala, PM., Omebeyinje, MH., **Banerjee**, S., Chatzistamou, I., Chakraborty, P., Fayad. R., Berger, F. G., Carson, JA., **Chanda**, A., Antibiotic-mediated bacteriome depletion in *Apc<sup>min/+</sup>* mice is associated with reduction in mucus-producing goblet cells and increased colorectal cancer, *Cancer Medicine*, Vol. 7 (5), pp. 2003-2012, 2018
- J34. Tavaf, V., Saadatzi, MS, Shrestha, S., **Banerjee**, S., Quantification of Material Degradation and its behavior of Elastodynamic Green's function for Computational Wave Field Modeling in Composites, *Materialstoday Communications*, Vol. 17, pp. 402-412.
- J35. **Habib**, A., Shelke, A., Amjad, U., Pietsch, U., **Banerjee**, S., Nonlocal Damage Mechanics for Quantification of Health for Piezoelectric Sensor, *Applied Sciences*, Vol. 8(9), pp. 1683.
- J36. Saadatzi, MS., Mir, F., Saadatzi, M. N., **Banerjee**, S., Modeling and Fabrication of a Multi-axial Piezoelectric Energy Harvester based on a Metamaterial-inspired Structure, *IEEE Sensors Journal*, Vol 18, No. 22, pp. 9410-9419.
- J37. Saadatzi, MS., Saadatzi, M. N., Tavaf, V., **Banerjee**, S., A EVE 3D Acousto-Electrodynamics 3Dimensional Vibration Exciter for Engineering Testing, *IEEE/ASME Transactions on Mechatronics*, Vol. 23, No. 4, pp. 1897-1906.
- J38. Mir. F., Saadatzi, MS., Ahmed, R., **Banerjee**, S., (2018) Acoustoelastic Metawall Noise Barriers for Industrial Application with Simultaneous Energy Harvesting Capability, *Applied Acoustics*, Vol 139, pp.282-292.
- J39. Shrestha, S., Ahmed, R., **Banerjee**, S., (2018) Virtual Nondestructive Evaluation of Anisotropic Plates Using Symmetry Informed Sequential Mapping of Anisotropic Green's function (SISMAG), *Ultrasonics*, Vol 88, pp 53-61.
- J40. Ahmed, R., **Banerjee**, S., (2018) An Articulated Predictive Model for Fluid-free Artificial Basilar Membrane as Broadband Frequency Sensor, *Mechanical Systems and Signal Processing*, Vol. 100, pp. 766-781.
- J41. Patra, S., Ahmed, H., **Banerjee**, S., (2018) Peri-Elastodynamic Simulations of Guided Ultrasonic Waves in Plate-Like Structure with Surface Mounted PZT, *Sensors*, Vol. 18, No. 274, pp. 1-16.

## 2017

- J42. Cary, JW., Harris-Coward, P., Scharfenseitein, L., Mack, MM., Chang, PK., Wei, Q., Lebar, M., Carter-Wientjes, C., Majumdar, R., Mitra, C., **Banerjee**, S., **Chanda**, C., The *Aspergillus flavus* homeobox gene, *hbx1*, is required for development and aflatoxin production, *Toxins*, Vol. 9(10), 315, 2018
- J43. Patra, S., **Banerjee**, S., (2017), Material State Awareness for Composites Part II: Precursor Damage Analysis and Quantification of Degraded Material Properties Using Quantitative Ultrasonic Image Correlation (QUIC), *Materials*, Vol. 10(12), pp. 1444
- J44. Patra, S., **Banerjee**, S., (2017), Material State Awareness for Composites Part I: Precursor Damage Analysis Using Ultrasonic Guided Coda Wave Interferometry (CWI), *Materials*, Vol. 10(12), pp. 1436.
- J45. Ahmed, R., Mir, F., **Banerjee**, S., A Review on Energy Harvesting Approaches for Renewable Energies from Ambient Vibrations & Acoustic Waves using Piezoelectricity, *Smart Materials and Structures*, Vol 26, Number 8, (27pp).

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- C74. Soni, S., **Banerjee**, S., Das, S., Chattopadhyay, A., (2008) "Simulation of Damage Features in Complex Joint using Guided Waves", Modeling, Signal Processing, and Control for Smart Structures, Edited by Lindner, Douglas K. Proc. of SPIE, Volume 6926, pp. 69260O-1 69260O-12.
- C75. Das, S., **Banerjee**, S., Kundu, T., (2008) "Modeling of Elastic Wave Scattering by a Hole in a Half Space" Health Monitoring and Smart Nondestructive Evaluation of Structural and Biological Systems, Proc. of SPIE Vol. 6935.
- C76. Dao, C. M., Das, S., **Banerjee**, S., Kundu, T., (2007) "Effect of a Fluid Wedge on the Wave Propagation along a Fluid-Solid Interface: A Modeling Approach", SHM Conference at Stanford University, Sept. 11-13, 2007, Pub. DEStech Inc., Lancaster, PA, USA, Vol. 1, pp. 919-926.

- C77. Dao, C. M., Das, S., **Banerjee**, S., Kundu, T., (2007) "Effect of a Fluid Wedge on the Wave Propagation along a Fluid-Solid Interface: An Experimental Investigation", Review of Progress in Quantitative Nondestructive Evaluation, Colorado School of Mines, Golden, CO, USA, July 22-27, 2007, Pub. Am. Inst. of Physics.
- C78. Kundu, T., **Banerjee**, S., Das, S., Dao, C. M., (2008) "Recent Developments on Theoretical and Experimental Investigation by Ultrasonic Sensors" Paper (# 504) presented at Invited Session of World Forum on Smart Materials and Smart Structures Technology (SMSST, '07), Proceedings of SMSST'07, World Forum on Smart Materials and Smart Structures Technology (SMSST'07), China, 22-27 May, 2007
- C79. **Banerjee**, S., Kundu, T., Placko, D., (2007) "An Improved DPSM Technique for Modelling Ultrasonic Fields in Cracked Solids" Health Monitoring and Smart Nondestructive Evaluation of Structural and Biological Systems, Proc. of SPIE. Vol. 6532, pp. OR 1-11.
- C80. Kundu, T., **Banerjee**, S., (2006) "Theoretical and Experimental investigations in Ultrasonic Guided waves for Structural Health Monitoring Application.", Key Note Lecture, 1st International Conference at Bengal Engineering College and University on recent development in Civil Engineering, 150th Year Celebration.
- C81. Kundu, T., **Banerjee**, S., Kumar, V.J., (2006)"An experimental investigation of guided wave propagation in corrugated plates with series of parabolic gratings", Third European Workshop on Structural Health Monitoring , Granada , Spain , July 5-7 , Ed. A. Guemes, Pub. DEStech Publications, Inc., Lancaster, PA pp. 1037-1044.
- C82. Kundu, T., and **Banerjee**, S., (2006)"Elastic Wave Propagation Modeling by DPSM", International Symposium on Mechanical Waves in Solids (ISOMWS06), Hangzhou, China , May 15-18.
- C83. **Banerjee**, S., Kundu, T., (2006), "Scattering of ultrasonic waves by internal anomalies in plates immersed in a fluid", Health Monitoring and Smart Nondestructive Evaluation of Structural and Biological Systems , Ed. T. Kundu, SPIE's 11<sup>th</sup> Annual International Symposium on NDE for Health Monitoring and Diagnostics, San Diego, California, Feb. 26 - March 2, Vol. 6177, pp.617709-1 to 617709-11.
- C84. Ahmed, R., **Banerjee**, S., Kundu, T., (2006), "Cylindrical guided waves for damage detection in underground pipes using wavelet transforms", Smart Structures and NDE Joint Conference: Sensors and Smart Structures Technologies for Civil, Mechanical and Aerospace Systems, Ed. M. Tomizuka, SPIE Symposium on Smart Structures and Materials and NDE for Health Monitoring and Diagnostics, San Diego, California, Feb. 26 - March 2, Vol. 6174.
- C85. Ahmad, R., **Banerjee**, S., and T. Kundu, (2005) "Influence of Water Flow on Pipe Inspection", Health Monitoring and Smart Nondestructive Evaluation of Structural and Biological Systems, Ed. T. Kundu, SPIE's 10th Annual International Symposium on NDE for Health Monitoring and Diagnostics, March 6-10, 2005, San Diego, California, Vol. 5768, pp. 285-294.
- C86. **Banerjee**, S., Kundu, T., (2005), "Elastic wave propagation in corrugated plate", Health Monitoring and Smart Nondestructive Evaluation of Structural and Biological Systems, Proc. of SPIE, Vol. 5768, pp.323-333.
- C87. Kundu, T., Ahmad, R., **Banerjee**, S., Na, W. B., (2004) "Guided Waves for Health Monitoring of Civil Infrastructure: Pipes and Reinforced Concrete Structures", Joint US-India Workshop on Advanced Sensing Systems and Smart Structures Technologies, in cooperation with IIT Bombay, Mumbai, India, December 20-21.
- C88. **Banerjee**, S., Kundu, T., (2004). "Analysis of wave propagation in symmetrically periodic sinusoidal wave guide", Health Monitoring and Smart Nondestructive Evaluation of Structural and Biological Systems, Proc. of SPIE, Vol. 5394, pp.89-98.
- C89. **Banerjee**, S., Banerji, P., Berning, F., Eberle, K., (2003). "Lamb wave propagation and scattering in laminated composite plates", Health Monitoring and Smart Nondestructive Evaluation of Structural and Biological Systems, Proc. of SPIE, Vol. 5047, pp.13-24.



**Conference Presentations / Posters**

- CP1. Leydig, C., Indaleeb, M.M., Beard, S., **Banerjee**, S., Universal scanner for ultrasonic NDE and acoustic topology, Monitoring of Aerospace and Composite Structures, Conf. 12048-session 4, Paper No. 10248-82, SPIE Smart Structure NDE, Long Beach CA. March 2022.
- CP2. Khaleda, A., Ahmed, H., Indaleeb, M. M., **Banerjee**, S., Wave propagation in doubly corrugated wave guide, Guided Waves II: AI and Modeling for SHM, Conf. 12048-session 2, Paper No. 10248-13, SPIE Smart Structure NDE, Long Beach CA. March 2022.
- CP3. Mandal, D., Indaleeb, M.M., **Banerjee**, S., Lithium niobate cantilever beams-based piezoelectric point-of-care biosensor for the detection of SARS-COV-2 (COVID-19) antibodies and other diagnostic applications, Sensor Technology, Conf. 12045-session 4, Paper No. 10245-11, SPIE Smart Structure NDE, Long Beach CA. March 2022.
- CP4. Indaleeb, M.M., Beard, S., **Banerjee**, S., Bessel beam in acoustics, Modeling and Detection Sensitivity of SHM, Conf. 12048-session 13, Paper No. 10248-68, SPIE Smart Structure NDE, Long Beach CA. March 2022.
- CP5. Indaleeb, M.M., **Banerjee**, S., Topological features of phononic crystals with Dirac-like cones, Health Monitoring of Engineering and Biological Systems, Phononic Crystals and Acoustic/Elastic Metamaterials III, Conf. 12048-session 7, Paper No. 10248-27, SPIE Smart Structure NDE, Long Beach CA. March 2022.
- CP6. **Banerjee**, S., Application of Computational NDE and SHM for Digital Twin, ASME SMASIS
- CP7. Ahmed, H., Sain, T, Ghosh, S., **Banerjee**, S., Metamaterial Lenses for Ultrasonic NDE of thick attenuative structures, ASME Quantitative Nondestructive Evaluation (QNDE) Conference, Virtual, July 2021
- CP8. Mustahseen, I, Beard, S., **Banerjee**, S., Ultrasonic Bessel Beam for Nondestructive Evaluation of Attenuative Media, ASME Quantitative Nondestructive Evaluation (QNDE) Conference, Virtual, July 2021
- CP9. Patra, S., Ahmed, H., Sadatzi, MS., **Banerjee**, S., Evidence of reduced order nonlinear state of Lamb wave due to stress-relaxation in composites, Health Monitoring of Engineering and Biological Systems XIII, SPIE 2019, Denver, Colorado.
- CP10. Chanda, A., **Banerjee**, S., Terejanu, S., (2016) Multiscale mapping of morphomechanical properties of fungi with ultrasound, Biology and Biochemistry of Fungi, Gordon Research Conference, New Hampshire.
- CP11. **Banerjee**, S., (2014) "Precursor to damage quantification in composites under fatigue: A method for real time implementation", A19: NDE and SHM for Composites, 2014 ASC 29 / US-Japan 16 / ASTM D30 Conference, University of California, San Diego.
- CP12. Terejanu, S., **Banerjee**, S., Chanda, A., (2014) Multiscale Modeling of Fungi, Multiscale Modeling in Biology, organized by IMAG, NIH, NIH Campus, Bethesda, MD.
- CP13. **Banerjee**, S., Ahmed, R., (2013) "Guided Wave Propagation Showing Frequency Trapping in Periodic Structure", Society of Engineering Science, 50 the Annual Technical Meeting and ASME-AMD Annual Summer Meeting (July 28-31 2013).
- CP14. Ahmed, R., **Banerjee**, S., (2013) "Introduction of Novel Split Ring Metamaterial for Acoustic Wave Control", Society of Engineering Science, 50 the Annual Technical Meeting and ASME-AMD Annual Summer Meeting (July 28-31 2013).
- CP15. **Banerjee**, S., (2013), Incubation of Damage State Quantification in Laminated Composites and Metallic Alloys", Session 3aSAb, San Francisco, CA December 2013, Acoustical Society of America. 2013 Nov; 134(5):4105. doi: 10.1121/1.4831066.



- CP16. **Banerjee, S.**, (2012), "Hybrid Microcontinuum Field Approach for Intrinsic Damage State Quantification", Session 2pSA, 164th Meeting, Acoustical Society of America, Kansas City, MO, 2012
- CP17. Beard, S., Banerjee, S., Zhang, D., Kumar, A., Chang, F., (2011), "Networked Elements for Resin Visualization and Evaluation (NERVE) System", DARPA Conference, March 2011.
- CP18. Qing, X., Banerjee, S., Beard, S., (2010) "Maturation of Active Smart patch System for monitoring the integrity of aircraft structures", Aircrafts Airworthiness and Sustainability Conference (AASC), Austin, Texas, 2010.

### Presentations in Professional Technical Meeting

- PM1. **Banerjee, S.**, (2020) Ultrasonic Identification and Quantification of Mechanomorphic Pressure exerted by a Biological Species during their Colony Expansion, Ultrasonic Conference, Portugal, June 1-4 2020. (Cancelled due to Pandemic)
- PM2. **Banerjee, S.**, (2019), Fully automated ultrasonic detection and robotic removal of bones and foreign materials from ground poultry and rendered products, Clemson University, Organized by ACRE, SCDA
- PM3. **Banerjee, S.**, (2018), Multiscale Computational Wave Field Modeling in Composites., NASA, Langley Research Center, Newport News, VA, Spring Review Meeting 2018.
- PM4. **Banerjee, S.**, (2018), Bond Quality Index (BQI), a new method for the evaluation of the quality of composite bond lines, NASA, Langley Research Center, Newport News, VA, Spring Review Meeting 2018.
- PM5. Chanda, A., **Banerjee, S.**, Mechanical Landscaping if Gut Microbiome using Quantitative Acoustic Contrast Tomography (Q-ACT), Invited seminar in COBRE Retreat to demonstrate the technologies applied for colon cancer research, January 2016, River Center at Saluda Shoals Park.
- PM6. **Banerjee, S.**, Terejanu, G., Chanda, A., Hazardous Aflatoxin Map for South Carolina farmers using trans disciplinary UQ driven multi-scale modeling frame work. Invited as Guest Presented at the USDA State Technical Committee Meeting organized by NRCS, South Carolina in Forestry Department, Columbia, SC on 3<sup>rd</sup> March 2015.
- PM7. Chanda, A., **Banerjee, S.**, Mechanical Landscaping if Gut Microbiome using Quantitative Acoustic Contrast Tomography (Q-ACT), Invited seminar in COBRE Retreat to demonstrate possible new technologies, January 2015, River Center at Saluda Shoals Park.
- PM8. Chanda, A., **Banerjee, S.**, Quantitative Acoustic Contrast Tomography (Q-ACT): A possible diagnostic tool for studying invasive cellular colonies, Invited seminar in COBRE Retreat to demonstrate possible new technologies, January 2014, River Center at Saluda Shoals Park.

### Workshop / Lectures

- PM9. **Banerjee, S.**, (2020), Acoustics and Ultrasonic waves in Periodic Metamaterials: A new frontier in Engineering, University of Arizona, Civil and Engineering Mechanics Department. Feb 2020
- PM10. **Banerjee, S.**, (2020), Acoustics and Ultrasonic waves in Periodic Metamaterials: A new frontier in Engineering, Indian Institute of Technology, Kharagpur, Aerospace Engineering Department. Jan 2020

- PM11. **Banerjee, S., (2017)**, Acoustic and Ultrasonic Research at University of South Carolina, Indian Institute of Science, Bangalore, India; Aerospace Engineering.
- PM12. **Banerjee, S.**, Acoustoultrasonics: New directions and visions – A pathway to the new Future of Engineering, Department of Mechanical Engineering, Michigan Tech., Hancock, Michigan (April 2017).
- PM13. **Banerjee, S.**, Research to Product: The fundamentals of Online NDE and SHM of Composite, December 2014, Skolkovo Institute of Science and Technology, Moscow, Russia. (65 Professional Registered)

## Teaching

Course	Title	Institution	Enrollment	Max. Rating
EMCH 220	Mechanical Engineering: Fundamental of Fluid Mechanics	<i>University of South Carolina</i>	35	4.7/5.0
EMCH 201 PHYS 311	Introduction to the Application of Numerical Methods for Engineers	<i>University of South Carolina</i>	130-165 / yr.	4.5/5.0
ENCP 201	Numerical Methods for Engineers	<i>University of South Carolina</i>	30 / yr.	4.4/5.0
EMCH 501	Engineering Analysis I (Advanced Mathematical Methods for Engineers)	<i>University of South Carolina</i>	12-25 /yr.	4.8/5.0
EMCH 502	Engineering Analysis I (Advanced Numerical Methods and AI for Engineers)	<i>University of South Carolina</i>	12-25 /yr.	5.0/5.0
EMCH 532	Intermediate Dynamics	<i>University of South Carolina</i>	15 / yr.	4.0/5.0
EMCH 561	Advanced Numerical Methods	<i>University of South Carolina</i>	20	4.6/5.0
EMCH 260	Mechanics of Solids	<i>University of South Carolina</i>	120-135 /yr.	4.85/5.0
EMCH 764	Mechanical Engineering Projects	<i>University of South Carolina</i>	4/yr.	5.0/5.0
EMCH 792	Selected Topics in Mechanics Systems	<i>University of South Carolina</i>	4/yr.	5.0/5.0
EMCH 799	Thesis preparation	<i>University of South Carolina</i>		NA
EMCH 899	Dissertation preparation	<i>University of South Carolina</i>		NA

**PhD Graduated and Current 12****(Old to Present)**

No.	Name	Year	Dissertations Related to
1.	Dr. Riaz U. Ahmed	2012-2015	Bio-inspired Design of Mechanical Band Pass Filter with the Ability of Scavenging Energy
2.	Dr. Subir Patra	2014-2018	Ultrasonic Analysis Methods and Tools for Quantitative Material State Awareness of Engineered and Biological Materials
3.	Dr. Vahid Tavaf	2015-2019	Quantification of Material Degradation for Material State Awareness of Composite Materials
4.	Dr. Sajan Shrestha	2017-2019	Computational Wave Field Modeling in Anisotropic Media
5.	Dr. MdSadeqh Saadatzi	2015-2020	Design of Bio-inspired Multifrequency Acoustic Sensors and Metamaterial Energy Harvesting Smart Structures
6.	Dr. Hossain Ahmed	2016-2020	Acoustic and Ultrasonic Beam Focusing Through Aberrative and Attenuative Layers
7.	Dr. Fariha Mir	2018-2021	Development of Acoustic Metamaterial Noise Barriers and Simultaneous Harvesting Energy using Smart Materials
8.	Dr. I. M. Mustahseen	2018-2022	Topological Black Hole in Metamaterial at Dirac Like Cone
9.	Dr. D. Mandal	2020-2024	Ultrasonic SAW devices for POC Bio-sensing
10.	Mr. Fahim Md.	2024-present	Piezoelectric Plasma and its Physics
11.	Mr. Emrahim Khalil Bhuiyan	2024-present	Spin Topology for Guided Waves
12.	Mr. Corey Leydig	2025-present	Acoustic Quantum Computing

**MS Graduated and Current 11****(Old to Present)**

No.	Name	Year	Theses related to
1.	Ms. Rowshan R. Rima	2012-2014	Modeling of Ultrasonic Wave Filed Emanating from Scanning Acoustic Microscope for Reliable Characterization of Pathogens
2.	Mr. Agbasi Chijioke	2013-2014	Classification of Material Properties of the Foreign Impactors using Acoustoultrasonic Spiral Sensing
3.	Mr. Sajan Shrestha	2015-2017	Computational Wave-field Modeling using Sequential Mapping of Poly-Crepitus Green's Function in Anisotropic Media
4.	Ms. Fariha Mir	2016-2018	Acoustoelastic Metamaterial with Simultaneous Noise Filtering and Energy Harvesting Capability from Ambient Vibration
5.	Mr. I. M. Mustahseen	2016-2018	Topological Conduction and Investigation on Multi-occurrence of Dirac-Cone
6.	Mrs. Akter Khaleda	2019-2021	Anisotropic Wave Behavior in Isotropic Material with orthogonal Surface Perturbation
7.	Mr. Corey Leydig	2021-2023	AI Driven Robotic Planting of Stakes for Agricultural Applications
8.	Mr. Fahim Md.	2022-2024	Simultaneous Crack-Wave propagation using Peri-elastodynamics
9.	Ms. Tally Bovender	2024-present	Non-contact Ultrasonic Inspection System
10.	Mr. Thomas Ferguson	2024-present	Automation for NDE 4.0
11.	Ms. Nafisa Mehtaj	2023-present	Physics Informed Scientific Machine Learning for Wave Modeling

**Paid UG Research Assistants 28****(Old to Present)**

No.	Name	Year	Topics related to
1.	Mr. Dylan Madisetti	2015-2018	Magellan: Energy harvesting for powering bio devices + Automated discretization for DPSM
2.	Ms. Shelby Rushe	2015-2018	Magellan: Energy harvesting for powering bio devices + Fabrication of artificial basilar membrane
3.	Ms. Omolara E. Olorunniwo	2019-2020	Capstone: Air Coupled ultrasonic scanning system
4.	Mr. Jacob Blottenberger	2019-2021	Magellan: Deep Learning of Memory Effect in Composites
5.	Mr. Corey Leydig	2019-2020	3D automation of non-hydro NDE
6.	Ms. Sierra Batson	2020 - present	Magellan & NAVY NREIP: Digital Twin for NDE/SHM of Ship Structure
7.	Ms. Tally Bovender	2020 - 2022	Magellan: Functionality of Piezo protein in cell membrane
8.	Mr. William Davis	2020 - 2021	Robotic application of Guided Wave NDE of Composites
9.	Mr. Trey Nelson	2020 - 2021	Harvesting Energy from Plate Type Harvesters
10.	Mr. Nolan Nimrick	2020 - 2021	Harvesting Energy from Plate Type Harvesters
11.	Mr. Max Bowman	2021 - 2022	SHM of Ship Structure
12.	Mr. Rock Jackson	2022 - 2023	Robotic control of NDE transducers

13.	Mr. Lake Williams	2022-2023	3D design and Modeling of NDE Universal Scanner
14.	Mr. Patrick Hunter	2022-2023	Design and Fabrication of Acoustic end effector for robots
15.	Mr. Will Ward	2022- 2024	Ultrasonic NDE of Composites
16.	Mr. Thomas Ferguson	2023 - 2024	AI application for autonomous robots
17.	Mr. Ethan Flowers	2023-2024	Motor controller for robotic arm
18.	Mr. Keeshawn Bleckley	2023-2024	Motor controller for robotic arm
19.	Ms. Ana Tudor	2023-present	Ultrasonic imaging and signal processing
20.	Ms. Evelyn Atkins	2023-2024	Ultrasonic imaging and signal processing
21.	Mr. Alberto Diaz	2023-present	Physics driven AI algorithms
22.	Mr. Alex Tabakian	2023-present	Signal Processing Portal for Ultrasonic Guided Wave Scanning
23.	Mr. Turner Peel	2023-present	CAD modeling od in-situ Ultrasonic inspection
24.	Mr. Nick Carnes	2024-present	Robotics and Automation for NDE
25.	Mr. Mark Stewart	2024-present	Air Coupled US system design.
26.	Ms. Aletheria Peng	2024-present	Peridynamic Modeling of Wave propagation
27.	Mr. Andrew Huebner	2024-present	TBD
28.	Ms. Ainslee Proffer	2025-present	TBD

## Notable Services with Leadership

### Department of Mechanical Engineering

- Chair of the IT Committee in the DME, 2019 – present
- Evaluated all course, Proposed, and Implemented new Graduate Tracks in Mechanical Engineering, 2020,
- Graduate Committee member, 2012-present.

### College of Engineering and Computing

- Served as an active member (representing Mechanical Engineering) of the “Distant Learning Best Practice Committee” formed by the Dean.
- Helped many faculties in CEC during the pandemic to teach software tools for effective online teaching; Created YouTube videos; Hold many hands on training sessions. See the article [https://www.sc.edu/study/colleges\\_schools/engineering\\_and\\_computing/news\\_events/news/2020/banerjee\\_onlineteaching.php](https://www.sc.edu/study/colleges_schools/engineering_and_computing/news_events/news/2020/banerjee_onlineteaching.php)

### University

- Chair, Graduate Council for Science Math and Related programs, 2024-present.
- Chair, Michael J. Mungo Undergraduate Teaching Award Committee, 2019 - 2021
- Served on the Garnet Apple Teaching Award Committee, 2019-2020
- Served on the Michael J Mungo Undergraduate Teaching Award Committee, 2018.

### Greater Community

- *Project Director*, Bongotsov, Rhythm of Compassion, supported by SC Humanities (\$2200) and SC Art Commission (\$2000), 2017 & 2019. Collaborator: UofSC Music School, UofSC African American Studies Program, Claflin University, SC.
- Diversity Equity and Inclusion (DEI) based small projects with nonprofit organizations in SC to serve underrepresented SC communities. 2016-present.
- Taught Science classes to Grade 2 and 3 kids in the Elementary Schools, Chapin, SC, Topic: Force and Motion. 2018, 2019
- Founder and Secretary of a nonprofit organization Choondeshi. 2015-present

### Professional Community

- Associate Editor, Ultrasonics, 2025 – present
- Associate Editor, JNDE, 2023 – present.
- *Session Organizer*, Metamaterial for NDE in ASME QNDE Conference, 2020 & 2021
- *Editorial Board Member*, Journal of Composite Science, MDPI Publication, 2020 - present
- Organized Conference wide symposium on NDE Diagnostics and Prognostics in 2019 ASME International Mechanical Engineering Congress and Exposition (IMECE), the biggest conference for mechanical engineers, Salt Lake City, UT

- Organized Conference wide symposium on NDE Diagnostics and Prognostics in 2018 ASME IMECE, Pittsburg, PA
- Organized a complete Track composed of 4 topics on NDE Diagnostics and Prognostics in 2017 ASME IMECE, Tampa, Florida.
- Organized a complete Track composed of 9 topics on NDE Diagnostics and Prognostics in 2016 ASME IMECE, Phoenix, Arizona.
- Created and running a Technical Committee on Ultrasonic NDE for Mechanical Systems, which was nonexistent under 'NDE Division' in ASME. Secured 9 members (academia and industry) from all around the globe. Serving as Chair for the committee, selected by executive committee voting. 2015-present
- Organized a session on "Precursor to damage state quantification in materials" Session 11 under "Mechanics of Solids and Structures" at the Society of Engineering Science, 51<sup>th</sup> Annual technical Meeting at Purdue University 2013.
- Serving as a member of the steering committee of QNDE Conference – Flag ship conf. among NDE community and recently revitalized by ASME by taking over the responsibility. 2019- present.
- *Advisory Board Member*: ASME Journal of Nondestructive Evaluation Diagnostics and Prognostics
- Serving as an Executive Member of the 'NDE Division' in ASME (*this is the outcome of NDE revitalization plan I participated in Jan 2013*)
- Chairing Sessions & Serving as a Program Committee member for the Health Monitoring of Structural and Biological Systems IV Conference SSN10 in SPIE Smart Structure/NDE Conference: help the chair in abstract selection, Review submitted articles, 2012- present.

## Professional Services

## Conference | Journal | Grant Reviewer

### Grants Reviewed

- DoE, SBIR FY2020
- DoE, Office of Technology Transition and Technology Commercialization Fund, 2019
- NEUP, DoE, 2014-present
- NSF CMMI: Mechanics of Materials, 2017
- NSF CMMI: Dynamics Systems and Control, 2015
- NSF CMMI: Sensors, Dynamics Systems and Controls, 2016
- USC ASPIRE I Grants to Aspiring Young Faculties, 2016
- USC Magellan Scholar Grants for Under Graduate Research, 2016

### Conference Committee

- ASME QNDE 2020-present
- ASME Pressure Vessel Technology Conference, 2018
- ASME IMECE Conference, 2016-present
- SPIE Smart Structures and NDE Conference, 2008-present
- IEEE Conference

### Journal Reviews

- Reviewer to more than ~120 National and International Journal Articles including articles submitted to Nature publishing Group

## Community Services

## Culture | Compassion | Teaching

- Frequently Teach younger kids in Elementary School about Science and Technology, 2018-present.
- Served as Cultural Secretary and Founding Member of "Chhondeshi", 2016-2018 ([www.chhondeshi.org](http://www.chhondeshi.org))
- Served as Treasurer of "Chhondeshi", 2018-2019
- Serving as Secretary of "Chhondeshi", 2019-present
- Participate in Cultural Events to promote Bengali culture and its heritage in North America.
- **Project Director** of Bongotsov: 2017-present: Wrote proposal and received grants from

1. *South Carolina Department of Humanities*, Project Title: Broader understanding of cultural confluence: Bongotsov 2019: The Rhythm of Compassion, (Grant amount \$1200)  
<https://schumanities.org/news/bongotsov-2019/>
2. *South Carolina Department of Humanities*, Project Title: Broader understanding of cultural confluence: Bongotsov 2017: Bengal Meets the World, (Grant amount \$1000)
3. *South Carolina Art Commission*: Project Title: Bongotsov 2019: The Rhythm of Compassion, (Grant amount \$1000)
4. *South Carolina Art Commission*: Project Title: Bongotsov 2017: Bengal Meets the World, (Grant amount \$1000)
5. *Secured funding for the community events organized by Chhondeshi from local businesses in South Carolina.*

-END-