William Walker Clark

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Mechanical Engineering and Materials Science Department
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Education

Ph.D. 1991	Mechanical Engineering, *Virginia Polytechnic Institute and State University*
M.S. 1988	Mechanical Engineering, *Virginia Polytechnic Institute and State University*
B.S. 1986	Mechanical Engineering, *Virginia Polytechnic Institute and State University*

Professional Experience

2023 – present	Professor, Clinical and Translational Science Institute, University of Pittsburgh (secondary appointment)
2016 – present	Director of the Innovation, Product Design, and Entrepreneurship Program, Swanson School of Engineering, University of Pittsburgh
2013- present	Founder and Chair of Scientific Advisory Board, *Diamond Kinetics, Inc.*
2010-2012	Chair of Scientific Advisory Boards, *Telecardia, Inc.* and *pHase2 Microtechnologies, Inc.*
2005 - present	Professor of Mechanical Engineering, *University of Pittsburgh,*
1998-2005	Associate Professor of Mechanical Engineering, *University of Pittsburgh*
1999	Acting Chair of Mechanical Engineering Department
1997-2001	Graduate Coordinator of Mechanical Engineering Department
1992-1998	Assistant Professor of Mechanical Engineering, *University of Pittsburgh*.
1989-1990	Instructor of Mechanical Engineering, *Virginia Polytechnic Institute and State University*. Taught undergraduate courses in vibrations and controls.
1986-1991	Graduate Researcher, Mechanical Engineering, *Virginia Polytechnic Institute and State University,* Advisor Harry H. Robertshaw, PhD

Refereed Journal Publications

Kenawy, D., Y. Zhang, M. Elsisy, M. Abdel-Rasoul, Y.J. Chun, W.W. Clark, B. Tillman, "A Self Calibrating, Magnetic Sensor Approach Accurate Positions an Aortic Damage Control Stent in a Porcine Model," *Trauma Surgery & Acute Care Open,* 8(1), December, 2023, https://doi.org/10.1136/tsaco-2023-001220.

Michelle Riffitts, Adrianna Oh, Abenezer Alemu; Vikrant Patel; Clair N. Smith, Sebastian Murati, Anna Bailes, Marcus Allen, Malcom Dombrowski, Joon Y. Lee, William F. Donaldson III, William W. Clark, Kevin Bell, "Functional Range of Motion of the Cervical Spine in Cervical Fusion Patients During Activities of

Daily Living," Journal of Biomechanics, Vol 152, https://doi.org/10.1016/j.jbiomech.2023.111528, May 2023.

Yifan Zhang, William W Clark, Bryan Tillman, Youngjae Chun, Stephanie Liu, Sung Kwon Cho, "A System to Track Stent Location in the Human Body by Fusing Magnetometer and Accelerometer Measurements," *Sensors* 2023, *23*(10), 4887; https://doi.org/10.3390/s23104887.

Ahmad Y. Al Rashdan, Hany S. Abdel-Khalik, Kellen M. Giraud, Daniel G. Cole, Jacob A. Farber, William W. Clark, Abenezer Alemu, Marcus C. Allen, Ryan M. Spangler, Athi Varuttamaseni, "A Qualitative Strategy for Fusion of Physics into Empirical Models for Process Anomaly Detection," *Energies*, Vol. 15, Issue 15, 2022.

Catherine Go, Moataz Elsisy, Youngjae Chun, Parthasarathy D. Thirumala, William W. Clark, Sung Kwon Cho, Anthony J. Demetris, Bryan W. Tillman, "A Three Tier Rescue Stent Improves Outcomes over Balloon Occlusion in a Porcine Model of Non-Compressible Hemorrhage," *Journal of Trauma and Acute Care Surgery*, Vol. 89, No. 2, DOI: 10.1097/TA.0000000000002715, August 2020.

Moataz Elsisy, Bryan Tillman, Catherine Go, Jenna Kuhn, Sung Kwon Cho, William W. Clark, Junkyu Park, and Youngjae Chun, "Comprehensive Assessment of Mechanical Behavior of an Extremely Long Stent Graft to Control Hemorrhage in Torso," *Journal of Biomedical Materials Research: Part B – Applied Biomaterials*, Vol. 108, Issue 5, pp. 2192-2203, 2020, **https://doi.org/10.1002/jbm.b.34557**.

Sethi, A., M. Allen, D. Weber, W. Clark, J. Ting, "Advances in wearable technologies for upper extremity rehabilitation: A review," *Journal of Hand Therapy*, April 1, 2020. Volume 33, Issue 2. Pages 180-187. DOI: https://doi.org/10.1016/j.jht.2019.12.021

Clark, William W. and Mary Besterfield-Sacre, "Full Court Press as a Come-From-Behind Strategy to Win the Innovation and Entrepreneurship Game: A Case Study at the University of Pittsburgh", ASEE *Advances in Engineering Education, Spring 2020, 8(3).*

Raj, Sandesh, Dounskaia, Natalia, Clark, William, Sethi, Amit, "Effect of Stroke on Joint Control during Reach-to-Grasp: A Preliminary Study", *Journal of Motor Behavior*, Vol. 52, 2020, Issue 3, pp. 294-310. DOI: https://doi.org/10.1080/00222895.2019.1615861

Turer DM, Qaium EB, Lawrence AM, Clark WW, Rubin JP. *A "*'Smart' Sensing Cannula for Fat Grafting" *Plastic and Reconstructive Surgery,* 144(2), August, 2019, pp 385-388. DOI: 10.1097/PRS.0000000000005866

Lavrineca, A., O. Orozovica, K. Williamsa, M. G. Jonesa, G. Klinzing, W. Clark (2019) "Observations of dense phase pneumatic conveying using an inertial measurement unit," *Powder Technologies*, Volume 343, 1 February 2019, Pages 436-444, https://doi.org/10.1016/j.powtec.2018.11.039.

Chen, Y., Tillman, B., Go, C., Cho, S. K., Clark, W. W., Hur, T. B., Chun, Y. (2019) "A novel customizable stent graft that contains a stretchable ePTFE with a laser-welded nitinol stent" *Journal of Biomedical Materials Research - Part B Applied Biomaterials*, *107*(4), 911-923. doi:10.1002/jbm.b.34186

Go, C., Chun, Y. J., Kuhn, J., Chen, Y., Cho, S. K., Clark, W. C., & Tillman, B. W. (2018) Damage control of caval injuries in a porcine model using a retrievable Rescue stent. *Journal of Vascular Surgery: Venous and Lymphatic Disorders*, *6*(5), 646-656. doi:10.1016/j.jvsv.2018.04.011

Mandala, Mahender, Christian Schunn, Stephen Dow, Mary Goldberg, Jon Pearlman, William W. Clark, Irene Mena, (2018) "Impact of Collaborative Peer Team Review on the Quality of Feedback in Engineering Design Projects," *International Journal of Engineering Education*, Vol 34.

Allen, M., Q. Zhong, N. Kirsch, A. Dani, W. W. Clark, N. Sharma "A Nonlinear Limb Angle Estimator for Functional A Nonlinear Limb Angle Estimator for Functional Electrical Stimulation-elicited Tasks," *IEEE Transactions on Neural Systems & Rehabilitation Engineering,* Vol 25, Issue 12, 2017, pp. 2365 – 2374. DOI: 10.1109/TNSRE.2017.2748420

Tillman, Bryan W., Youngjae Chun, Sung Kwon Cho, Clark C. William, William R. Wagner, Xinzhu Gu, Amit D. Tevar, and Ryan M. McEnaney (2017) "A retrievable RESCUE stent and radiofrequency positioning for rapid control of noncompressible hemorrhage," *Journal of Trauma and Acute Care Surgery* Aug, pp. 249-255.

Clark, R.M., M. Besterfield-Sacre, D. Budny, K.M. Bursic, W.W. Clark, B.A. Norman, R.S. Parker, J. F. Patzer, W.S. Slaughter, "Flipping Engineering Courses: A School-Wide Initiative," *Advances in Engineering Education*, 2016, Fall, 5 (3), pp. 1-39.

Auletta, J, LeDonne, G, Gronborg, K., Ladd, C., Liu, H., Clark, W., and Meyer, T. , "Stimuli-Responsive Iron-Crosslinked Hydrogels that undergo Redox-Driven Switching between Hard and Soft States," *Macromolecules*, 2015, 48 (6), pp. 1736-1747.

Auletta, Jeffrey T. LeDonne, Gregory J. Ladd, Colin D. Gronborg, Kai C. Nguyen, Hang T. Swigon, David Vainchtein, Anna A. Clark, William W. Liu, Haitao Meyer, Tara Y., "Physical studies on stimuli-responsive iron-based hydrogels," *Abstracts of Papers of the American Chemical Society*, Vol. 248, Aug 2014.

Kimber, M.A., W.W. Clark, L.A. Schaefer, "Conceptual Analysis and Design of a Partitioned Multifunctional Smart Insulation*," Journal of Applied Energy*, Vol. 114, pp. 310-319, February 2014.

Mo, C., J. Davidson, W.W. Clark, "Energy Harvesting with Piezoelectric Circular Membrane under Pressure Loading" *Smart Materials and Structures*, Vol. 23, No. 4, February, 2014.

Motlagh, A. and W.W. Clark, "An Investigation of Shape Morphing by Modulus Variation: Forward Approach," *Journal of Engineering*, vol. 2014, Article ID 706830, 12 pages, 2014.

Meyer, T., R. Harris, J. Auletta, S.A. Motlagh, L. Weiland, D. Waldeck, W.W. Clark, "Chemical and Electrochemical Manipulation of Mechanical Properties in Stimuli-Responsive Copper-Crosslinked Hydrogels," *ACS Macro Letters*, 2(12), pp. 1095-1099, December 2013.

Bond, D.E.M., M.L. Kimber, and W.W. Clark, "Configuring wall layers for improved insulation performance," *Journal of Applied Energy*, Vol. 112 pp. 235-245, July, 2013.

Mo, C., D. Arnold, W.C. Kinsel, and W.W. Clark, "Modeling and Experimental Validation of Unimorph Piezoelectric Cymbal Design in Energy Harvesting," *Journal of Intelligent Material Systems and Structures,* 24(7), pp. 828-836, April 2013. DOI: https://doi.org/10.1177/1045389X12463459

Mo, C., R. Wright, R.R. Knight and W. W. Clark, "Finite element analysis of unimorph rectangular piezoelectric diaphragm actuators with experimental verification," *Journal of Smart Materials and Structures,* 21(8), July 2012.

Calvo-Marzal, P., M. P. Delaney, J. T. Auletta, T. Pan, N.M. Perri, L.M. Weiland, W.W. Clark, and T.Y. Meyer, “Manipulating Mechanical Properties with Electricity: Electroplastic Elastomer Hydrogels,” *ACS Macro Letters*, 1(1), pp. 204-208, 2012.

Mo., C., R.R. Knight, A.A. Frederick, and W.W. Clark, "Fabrication and Energy Harvesting Measurements of Vibrating MEMS Piezoelectric Benders,", *ASME Transactions: Journal of Vibration and Acoustics*, 133(1), Feb. 2011, pp.1-7.

Knight, R.R., C. Mo, and W.W. Clark, “MEMS Interdigitated Electrode Pattern Optimization for a Unimorph Piezoelectric Beam,” *Journal of Electroceramics*, 26(1), pp 14-22, 2011.

Knight, R. R., Frederick, A. A., Mo, C., and Clark, W. W., “Tuning of sol-gel derived PZT MEMS resonators,” *Journal of Micromechanics and Microengineering*, Vol. 20, 125028 (10pp), 2010.

Mo, C., Radziemski, L. J., and Clark, W. W., “Analysis of piezoelectric circular diaphragm energy harvesters for use in a pressure fluctuating system,” 19(2), *Smart Materials and Structures*, 2010.

Mo, C., Radziemski L.J., and Clark, W.W., “Experimental validation of energy harvesting performance for pressure-loaded piezoelectric circular diaphragms,” 19(7) *Smart Materials and Structures,* 2010.

Mo, C., Kim, S., and Clark, W. W., “Theoretical Analysis of Energy Harvesting Performance for Unimorph Piezoelectric Benders with Interdigitated Electrodes,” Vol. 18(5), *Smart Materials and Structures*, 2009.

Muriuki, M. and W. W. Clark, “Analysis of a novel technique for tuning a cantilever beam resonator using shunt switching,” *Journal of Smart Materials and Structures*, Vol. 16 (2007) 1527-1533.

Hensel, J. Peter, Randall S. Gemmen, Brian J. Hetzer, Jimmy D. Thornton, Jeffrey S. Vipperman, William W. Clark, and Brian A. Bucci, “Effects of Cell-to-Cell Fuel Mal-Distribution on Fuel Cell Performance”, *Journal of Power Sources*, Volume 164, Issue 1, 10 January 2007, pp. 115-125.

Mo, C., R. Wright, and W. W. Clark, “The Effect of Electrode Pattern on the Behavior of Piezoelectric Actuators in a Circular Diaphragm Structure,” *Journal of Intelligent Material Systems and Structures*, May 2007, Vol. 18, No. 5, pp. 467-476.

Mo, C., Ban, G., Charnegie, D., and Clark, W. W., "Energy Harvesting from a Vibrating Piezoelectric Unimorph Bender," *J. of KSIA*, Vol. 10(3), pp. 157-163, 2007.

Corr, L. R. and W. W. Clark, “Similarities Between Mechanical Springs and Piezoceramic Switching Shunts,” *AIAA Journal*, Vol. 44, No. 11, pp. 2797-2800, November 2006. DOI:10.2514/1.24013

Mo, C., R. Wright, W. S. Slaughter and W. W. Clark, “Behavior of a Unimorph Circular Piezoelectric Actuator,” *Journal of Smart Materials and Structures*, Vol. 15, pp. 1094-1102, 2006.

Kim, S., W. W. Clark, and Q-M. Wang, “Piezoelectric Energy Harvesting Using a Bimorph Circular Plate: Analysis,” *Journal of Intelligent Material Systems and Structures*, Vol 16, No. 10, October, 2005, pp. 847-854.

Kim, S., W. W. Clark, and Q.-M. Wang, "Piezoelectric Energy Harvesting Using a Bimorph Circular Plate: Experimental Study,” *Journal of Intelligent Material Systems and Structures*, Vol. 16, No. 10, October, 2005, pp. 855-864. DOI: https://doi.org/10.1177/1045389X05054044

Li, Q., M. R. Lovell, J. Mei, and W. W. Clark, "A Study of Displacement Distribution in a Piezoelectric Heterogeneous Bimorph," *ASME Journal of Design*, Vol. 126, July 2004, pp. 757-764.

Muriuki, M. and W. W. Clark, "Modeling and Testing the Force-Generating Characteristics of Magnetorheological Dampers" *International Journal of Vehicle Design*, Vol. 33, Nos. 1/2/3, 2003, pp. 171-188.

Campbell, B. H, W. W. Clark, and J. H-C. Wang, "A Multi-Station Culture Force Monitor System to Study Cellular Contractility," *Journal of Biomechanics*, Vol. 36, No. 1, pp. 137-140, 2003.

Corr, L. R. and W. W. Clark, "Active and Passive Vibration Confinement using Piezoelectric Transducers and Dynamic Vibration Absorbers," *Journal of Mechanical Behavior of Materials,* Vol. 13, No. 2, pp. 117-133, 2002.

Kurdilla. A. J., W.W. Clark, W. Wang, D. E. McDaniel, "Stability of a Class of Real-Time Switched Piezoelectric Shunts," *Journal of Intelligent Material Systems and Structures*, Vol. 13, No. 2, pp. 107-116, 2003. DOI: https://doi.org/10.1177/104538902761402503

Corr, L. R. and W. W. Clark, "A Novel Semi-Active Multi-Modal Vibration Control Law for a Piezoceramic Spring," *ASME Transactions: Journal of Vibration and Acoustics*, Vol. 125, April 2003, pp. 1-9.

Corr, L. R. and W. W. Clark, "Energy Dissipation Analysis of Piezoceramic Semi-active Vibration Control," *Journal of Intelligent Material Systems and Structures*, Vol. 12, No. 11 pp. 719-792, November 2002.

Corr, L. R. and W. W. Clark, "Comparison of Low Frequency Piezoceramic Switching Shunt Techniques for Structural Damping," *Journal of Smart Materials and Structures*, Vol. 11 (2002), pp. 370-376.

Cain, J. T., W. W. Clark, L. A. Schaefer, D. J. Ulinski, M. H. Mickle, W. M. Mandecki, "Energy Harvesting for DNA Gene Sifting and Sorting," *International Journal of Parallel and Distributed Systems & Networks,* Vol. 4, No. 3, pp. 140-149, 2001

Clark, W. W., "Vibration Control with State-Switched Piezoelectric Materials," *Journal of Intelligent Material Systems and Structures*, Vol. 11, No. 4, pp. 263-271, April, 2000.

Shelley, F.J., and W.W. Clark, "Active Mode Localization in Distributed Parameter Systems with Consideration of Limited Actuator Placement: Part I, Theory ," *ASME Journal of Vibration and Acoustics,* Vol. 122, No. 2, pp. 160-164, 2000.

Shelley, F.J., and W.W. Clark, "Experimental Application of Feedback Control to Localize Vibration," *ASME Journal of Vibration and Acoustics*, Vol. 122, No. 2, pp. 165-168, 2000.

Shelley, F.J., and W.W. Clark, "Active Mode Localization in Distributed Parameter Systems with Consideration of Limited Actuator Placement: Part II, Simulations and Experiments," *ASME Journal of Vibration and Acoustics,* Vol. 122, No. 2, pp. 143-150, 2000.

Clark, W.W., J.H. Kim, and R.D. Marangoni, "Using Residual Flexibility for Improved Observation of Reaction Forces in Flexible Structures," *ASME Journal of Vibration and Acoustics*, Vol. 120, No. 2, pp. 401-408, 1998.

Clark, W.W. and H.H. Robertshaw, “Force Feedback in Adaptive Trusses for Vibration Isolation in Flexible Structures,” *ASME Journal of Dynamic Systems, Measurement, and Control,* Vol. 119, No. 3, September 1997.

Kim, J.H., W.W. Clark, and R.D. Marangoni, “Comparison of Reaction Force Suppression to Displacement Suppression for Vibration Control in a Flexible Structure,” *Journal of Sound and Vibration,* Vol. 208, No. 2, pp. 225-242, 1997.

Clark, W. W., J. H. Kim, and R. D. Marangoni, “Active Control of Dynamic Bearing Loads in Rotating Machinery Using the Deflection Coefficient Method for Load Estimation,” *International Journal of Acoustics and Vibration,* Vol. 2, No. 4, 1997, pp. 153-160.

Shelley, F.J. and W.W. Clark, “Eigenvector Scaling for Mode Localization in Vibrating Systems,” *AIAA Journal of Guidance, Control, and Dynamics,* Vol. 19, No. 6, pp. 1342-1348, 1996.

Clark, W.W., H.H. Robertshaw, and T.J. Warrington, “A Comparison of Actuators for Vibration Control of the Planar Vibrations of a Flexible Cantilevered Beam,” *Journal of Intelligent Material Systems and Structures*, Vol. 1, No. 3, pp. 289-308, 1991.

Funded Research

NSF, “Interior Northeast I-Corps Hub”, Faculty Lead for Pitt, $1M, 2022-2027, (this project is a collaboration of 10 universities and is being led by Cornell University, $15M total).

Veteran’s Administration, “Multimodal Guidance towards Precision Rehabilitation to Improve Upper Extremity Function in Stroke Patients, Co-Investigator (Dr. George Wittenberg, PI).

NIH, “U19 Low Back Pain: Biological, Biomechanical, Behavioral Phenotypes (LB3P) Mechanistic Research Center”, Collaborator (Dr. Gwen Sowa, PI), $2.5M, 2019-2024.

Philadelphia Pediatric Medical Device Consortium, “ThreadRite IV”, Co-PI with Dr. Cameron Dezfulian, $50,000, 2019-2020.

Pitt Clinical and Translational Science Institute Pinch, “ThreadRite IV”, Co-PI with Dr. Cameron Dezfulian, $100,000, 2019-2021

Chancellor‘s Innovation Fund, ThreadRite IV, PI with Dr. Cameron Dezfulian, $35,000, 2018.

Pitt Clinical and Translational Science Institute Pinch, “I-HITS”, Co-PI with Dr. Amit Sethi, $10,000, 2017-18.

Pitt Clinical and Translational Science Institute Pinch, “interaction: ADL Module,” Co-PI with Dr. Kevin Bell, $25,000, 2017-18.

DARPA, “Probabilistic Cognitive Molecular Computing Processor (PCMCP)”, Co-PI with Drs. Tara Meyer, Sean Garrett-Roe, and Sung Kwon Cho and in collaboration with BAE Systems, $1,733,950, 11/01/2017 – 10/31/2020.

NIH R01 – R01 EB022591, “An Organ Perfusion Stent as an Alternative to Surgery in Donor Organ Recovery”, Co-PI with Drs. Bryan Tillman (PI), Youngjae Chun, and Sung Kwon Cho, $317,000, 2017-21.

Coulter Research Foundation, Threadrite IV, 2017-18.

US Army – W81XWH-16-2-0062, "A Rapid, Temporary Distal Perfusion Stent for Hemorrhagic Injuries of the Torso," Co-I with COI with Bryan Tillman (PI, UPMC), Sung Kwon Cho (COI, PITT), and Youngjae Chun (COI, PITT), $2.5M, 2017-2020.

University of Pittsburgh Center for Medical Innovation, "Threadrite IV", Co-PI, $20,000, 2016-17.

University of Pittsburgh Center for Medical Innovation, "Fiberoptic light cord safety sheath," Co-PI, $10,000, 2014.

University of Pittsburgh Center for Medical Innovation, "Continuing Evaluation of Automatic Chest Compression Device Adaptable to Physiologic Feedback," Co-PI, $9,000, 2014.

Telecardia, Inc., "Microelectroelectromechanical Sensors," PI, $121,500, 2011-2013.

Department of Energy DE-EE004261 (EEB-HUB), Co-PI (with L.A. Schaefer, M. Bilec, J.S. Vipperman, M. Kimber), $75,000 of larger project, 2011-2012.

Oklahoma Department of Transportation (via the University of Oklahoma), "Design of a Piezoelectric Bridge Energy Harvester," PI, $30,000, 2009-2012.

National Science Foundation, "Metal Redox Control of Polymer Properties," Co-PI, (with T. Meyer, D. Waldeck, and L. Weiland), $174,792, 2009-2011.

Corporate Scholars Program, "Hybrid structures incorporating programmable shape and programmable stiffness," with Intel Labs Pittsburgh, PI, $40,000, 2009-2010.

Mascaro Sustainability Initiative, "Thermal Semiconductors for Adaptive Heat Management in Buildings," PI, (with L. Schaefer) $87,000, 2008-2010.

Provost Development Fund, "A Long Lifetime Miniaturized pH Sensor Enabled by Mirofluidic Switching for Human Body Implantation," PI (with S.K. Cho), $30,300, 2007-2009.

DARPA / Army (Phase I and Phase II SBIR's through Cornerstone Research Group), "Light-Activated Shape Memory Polymer Composites," Co-PI (with L. Weiland), $340,000, 2006-2009.

Mascaro Sustainability Inititive, "Micro-Fabricated PMN-PT Energy Harvesters for Self-Powered Sensors in Sustainable Buildings," $46,540, 2007-2008.

National Science Foundation (Phase I and Phase Ib SBIR through Piezo Energy Technologies), "Augmenting the lifetime of batteries for implantable devices," PI, $62,000, 2006-2007.

DARPA / Air Force, "Structures with Reconfigurable Circulatory Systems," PI (with E. Beckman, L. Weiland, S.K. Cho, and C. Bielawski), $212,750, 2006-2007.

DARPA / Army (Phase I SBIR through NextGen Aeronautics), "Fiber-Reinforced Morphing Composite Skin," PI (with L. Weiland), $40,000, 2006-2007.

Bechtel Bettis, "Mechanical Energy Harvesting—Phase II," $134,611, PI (with G. Kusic and L. Schaefer), 2006.

Department of Energy NETL/RDS Copnsortium, "ACT—Active Combustion Throttling,"Co-PI (with J.S. Vipperman and M.A. Clarke, Univ. of West Virginia), $186,381, 2006-2007.

Bechtel Bettis, "Mechanical Energy Harvesting," $110,000, PI (with G. Kusic and L. Schaefer), 2005.

National Science Foundation, "REU Supplements to 'Investigation of Tunable Piezoelectric Resonators'," $10,750, PI, 2004-2006.

Bechtel Bettis, "Machine Diagnostics," $200,000, Co-PI with G. Kusic (EE) and R.D. Marangoni, 2004.

Xerox University Affairs Program, "Thin Piezoelectric Structures for Printhead Transducers and Energy Harvesters," $60,000, PI, 2004-2006.

National Science Foundation, "Investigation of Tunable Piezoelectric Resonators," $230,000, PI, 2003-2006.

Swanson Center for Micro and Nano Systems, University of Pittsburgh, "Investigation of Energy Harvesting for Miniature Remote Sensors using Piezoelectric Beams," $30,000, PI, 2003-2004.

Department of Energy, "Variable Orifice Area Technique," $200,134, Co-PI with J.S. Vipperman, 2002-2004.

Pittsburgh Digital Greenhouse, "SOC Frequency Synthesis and Control for Radio Frequency Communication" $249,698, PI, (Co-PI's are Q-M. Wang, M. Mickle, T. Cain, and M. Lovell), 2002-2003.

Department of Energy, "Micromechanical Valve Design and Control for Fuel Cell Systems," $280,398, Co-PI with J.S. Vipperman, 2001-2004.

Respironics, "Graduate Fellowships for the Swanson Center for Product Innovation," Lovell M.R., Clark W., Mickle M.R., $50,000.

DARPA, "Smart Structures – Advanced Development Demonstration for Army Weapon Systems," $195,901, PI, (Co-PI's are J.S. Vipperman and W.S. Slaughter), 1999 - 2000.

Naval Surface Warfare Center – Carderock Division, "Passive-Semi-Active Vibration Isolation", $40,000, PI, 1999.

NASA Langley, "Linear Inchworming Motor Utilizing THUNDER Technology" $22,000, PI, 1998-99.

NASA Langley, "Piezoelectric Driven Active Flexure Actuator," $22,000, PI, 1998-99

NSF, "Integrated Approaches to Vibration Control Utilizing Eigenstructure Assignment," $205,000 (with supplements), PI, 1997-2001.

CRDF, University of Pittsburgh, "Magneto-Rheological Fluid Actuators for Vibration Control," $14,000, PI (Co-PI is Dr. Pradeep Phule of MSE Dept.), 1997-1999.

QRDC, Inc., "Experiment Investigation of Vibration Confinement to Enhance Conventional Vibration Control," $10,000, PI, 1997-98.

NSF, "Analytical and Experimental Investigation of Active Mode Localization for Vibration Control in Structures," $90,000 (with supplements), PI, 1994-1997.

QRDC, Inc., "Vibration Confinement to Enhance Conventional Vibration Control," $8,000, PI, 1996.

Alcoa, "Vibration Analysis and Control of a Dragline Boom," $25,000, PI, 1995-1996.

CRDF, University of Pittsburgh, "Investigation of Active Mode Localization for Vibration Suppression," $12,985, PI, 1993-1995.

Lockheed Sanders, "Intelligent Control for Precision Manufacturing Using Neural Networks," $100,000, 1993-94, Co-PI with Drs. Alice Smith and Amro El-Jaroudi of the University of Pittsburgh.

Development Funds for Teaching Labs

Source: US Steel, "New Measurements Teaching Lab in the Mechanical Engineering and Materials Science Department," $100,000 (through the School of Engineering Development Office), 2007.

Source: Charitable Donation from an Alumnus, "New Mechatronics Teaching Lab in the Mechanical Engineering Department," $120,000 (through the School of Engineering Development Office), 2004.

Conference Papers

Dahlia M. Kenawy, Yifan Zhang, Moataz Elsisy, Youngjae Chun, Marlene I. Garcia-Neuer, Mahmoud Abdel-Rasoul, William W. Clark, Bryan W. Tillman, "A Magnetic Sensor Approach to Position Damage Control Stentgrafts In The Austere Environment," American College of Surgeons Clinical Congress, San Diego, CA, October 16-20, 2022.

Dahlia Kenawy, Yifan Zhang, Moataz Elsisy, Youngjae Chun, Marlene I. Garcia-Neuer, Mahmoud Abdel-Rasoul, William W. Clark, and Bryan W. Tillman, "A Magnetic Sensor-Equipped Retrievable Aortic Rescue Stent Graft for Non-Compressible Torso Hemorrhage," Vascular Annual Meeting, Boston, MA, June 15-18, 2022.

Morrison, Katelyn, Daniel Yates, Maya Roman, and William W. Clark, "Using Object Tracking Techniques to Non-Invasively Measure Thoracic Rotation Range of Motion" ICMI _20 Companion: Companion Publication of the 2020 International Conference on Multimodal Interaction, pp. 150-155, 2020. DOI: https://doi.org/10.1145/3395035.3425189

Lee A. Dosse, Irene B Mena, and William W. Clark, "Assessment of a university makerspace using a quantitative and qualitative student survey," 2019 ASEE Annual Conference & Exposition, June 15, 2019.

Hur, Tae-Bong, William W. Clark, Youngjae Chun, Catherine Go, Bryan Tillman, Sung Kwon Cho (2019) "Improving Structural Strength and Stability of Parylene-based Capacitive Micro Pressure Sensor Using Corrugated Sidewall", IEEE 32nd International Conference on Micro Electro Mechanical Systems (MEMS), January 27-21, 2019. DOI: 10.1109/MEMSYS.2019.8870736

Dosse, Lee, Irene Mena, William W. Clark, (2019) "Assessment of a University Makerspace Using a Quantitative and Qualitative Student Survey", ASEE Annual Conference & Exposition, Tampa, Florida.

Turer, David, Peter Rubin, April Lawrence, Ehsan Qaium, and William W. Clark (2019) "A 'Smart' Sensing Cannula for Gluteal Fat Grafting," Ohio Valley Society of Plastic Surgeons.

Turer, David, Peter Rubin, April Lawrence, Ehsan Qaium, and William W. Clark (2018) "A 'Smart' Sensing Cannula for Gluteal Fat Grafting," Ivy Society Conference.

Mena, Irene and W. W. Clark, "Designing a Big Machine: A Description and Assessment of a Mechanical Engineering Design Project," ASEE Annual Conference, New Orleans, LA, June, 2016.

Mo, C., S. Jordan and W.W. Clark, "Bimorph Piezoelectric Cymbal Design in Energy Harvesting," ASME 2012 Conference on Smart Materials Adaptive Structures and Intelligent Systems,", Stone Mountain, Georgia, Sept. 2012.

Motlagh, A. and W. W. Clark, "Shape Characterization of a Simply Supported Beam in Morphing,", ASME Conference on Smart Materials, Adaptive Structures, and Intelligent Systems, Stone Mountain, Georgia, Sept. 2012.

Arnold, C.D., W. Kinsel and W. W. Clark, "Unimorph PZT Cymbal Design in Energy Harvesting," ASME 2011 Conference on Smart Materials, Adaptive Structures and Intelligent Systems, Scotttsdale, AZ, September, 2011.

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"Localized Vibration and Smart Materials for Controlling the Dynamic Response of Structures," DARPA Technology Interchange Meeting #3, August 14-15, 1996 (with Daryoush Allaei, QRDC, Inc.)

"Active Vibration Control by Confinement," Naval Undersea Warfare Center, Newport, RI, July 8, 1996.

"Autonomous Maintenance for Integrated Diagnostics in Machinery," Naval Surface Warfare Center, Carderock, MD, March 8, 1994.

"A Planar Comparison of Actuators for Vibration Control of Flexible Structures," The Sixth Annual Ohio State University Control Workshop, April 16, 1989.

Patents and Patent Applications

Issued Patents:

Jeremy Rittenhouse, Michael Ressler, and William W. Clark, "Motion Measurement Device and Methods," US11,977,428, 2024.

William W. Clark, P. Rubin, D. Turer, E. Qaium, A. Lawrence, C. Dezfulian, "Sensing Cannula Systems," US11,547,787, 2023.

C. Dezfulian, W. W. Clark, E. Qaium, D. Wist, "Catheter Insertion Systems," US11,701,494, 2023.

Bryan Tillman, Sung-Kwon Cho, William W. Clark, "Perfusion Device for Treating and Injured Blood Vessel," US11,737,760, 2023.

S. Docimo, W. W. Clark, J. Holmes, A. Delazio, B. Ristau, "Fiberoptic Cable Safety Devices," US11,534,051, 2022.

William W. Clark, M. Zhang, M. Ressler, and J. Rittenhouse, "Ball Spin Rate Measurement Method," US11,083,951, 2021.

Tianqi Pan, Tara Y. Meyer, William W. Clark, David Waldeck, Lisa M. Weiland, Percy Calvo-Marzal, Rachel D. Chrris, and Haitao Liu, "Redox-Stimulated Variable Modulus Material," US10,894,846, 2021.

William W. Clark, M. Zhang, M. Ressler, "Calibration of initial orientation and position of sports equipment and body segments for inertial sensors," US10,888,735, 2021.

Bryan Tillman, Sung Kwon Cho, William W. Clark, Young-Jae Chun, "Perfusion device for treating an injured blood vessel," US 10,413,301, 2019.

Tianqi Pan, Tara Y. Meyer, William W. Clark, David Waldeck, Lisa M. Weiland, Percy Calvo-Marzal, Rachel D. Chrris, and Haitao Liu, "Redox-Stimulated Variable Modulus Material," US 9,944,729, 2019.

William W. Clark and Jeremy Romeiko, "Inertial Measurement of Sports Motion," US 9,851,374, 2017.

William W. Clark, Sung K. Cho, Yuejun Zhao, Timothy J. Syciarz, R. Maxwell Flaherty, J. Christopher Flaherty, David W. Wagner, "Measurement device with sensor array," US 9,791,398, 2017.

William W. Clark and Jeremy Romeiko, “Inertial Measurement of Sports Motion,” US 8,944,939, 2015.

John P. Hensel, Nathaniel Black, Jimmy D. Thorton, Jeffery S. Vipperman, David N. Lambeth, William W. Clark, “Active Combustion Flow Modulation Valve”, US 8,540,209, 2013.

William W. Clark and Qing-Ming Wang, “Tunable Piezoelectric Micro-Mechanical Resonator,” US 6,943,484, 2013.

Randal Gemmen, Jimmy Thornton, Jeffrey S. Vipperman, William W. Clark, “Piezoelectric Axial Flow Microvalve,” US 7,159,841, 2007.

Patent Applications:

S. Docimo, W.W. Clark, J. Holmes, A. Delazio, B. Ristau, “Fiber Optic Cable Safety Devices,” US62/300,431

William W. Clark, P. Rubin, D. Turer, E. Qaium, A. Lawrence, C. Dezfulian, “Sensing Cannula Systems,” US17/625,673.

M. Zhang, J. Rittenhouse, M. Ressler, W.W. Clark, “Ball Spin Rate Measurement System,” US2021/0362027.

J. Rittenhouse, M. Ressler, W.W. Clark, “Motion Measurement Device and Methods,” US17/653,473.

A. Sethi, M. Allen, W.W. Clark, “System and Method for Assessment of Stroke Patients and Personalized Rehabilitation,” PCT/US2022/018466.

A. Delazio, D. Brienza, P. Rubin, W.W. Clark, “Attachable Fiberoptic Cable Support and Light Focusing Accessory,” 63/142,211.

W.W. Clark, M. Ressler, R. Clark, M. Zhang, E. Lim, “Method and System for Sprots Swing Training,” 17/514,688.

Y. Zhang, W.W. Clark, B. Tillman, Y.J. Chun, S.K. Cho, “Magnetic Location Detection System for Location of Implanted Device,” 63/340,309.

Awards, Fellowships, etc.

Inducted as a Fellow of the National Academy of Inventors, class of 2021.

University of Pittsburgh Marlin Mickle Outstanding Innovator Award, 2020

American Society of Mechanical Engineers Robert E. Abbot Award (lifetime service award), 2015.

University of Pittsburgh Innovator Award, 2009, 2010, 2011, 2012, 2013, 2014, 2016, 2017, 2018, 2019.

Fellow of American Society of Mechanical Engineers, 2007.

School of Engineering Faculty Honor Roll, University of Pittsburgh (award given by Mechanical Engineering students to a single faculty): 2001, 2003, 2004.

Fellow in the National Energy Technology Laboratory Institute for Advanced Energy Solutions, 2008-09.

Beitle-Veltri Memorial Teaching Award (annual teaching award in the School of Engineering, University of Pittsburgh), 1998.

Hewlett International Travel Grant, 2000.

Bicentennial Board of Visitors Faculty Fellowship, School of Engineering, University of Pittsburgh, 1999-2005.

Leighton E. and Mary N. Orr Faculty Fellowship, School of Engineering, University of Pittsburgh, 1997 - 1999.

American Society for Engineering Education Navy Summer Faculty Fellowship, NSWC Carderock Division, 1998.

American Society for Engineering Education Navy Summer Faculty Fellowship, NSWC Carderock Division, 1997.

International Gas Turbine Institute Beginning Engineer Fellowship, 1994.

Courses Taught

at University of Pittsburgh:

- Honors Engineering Computing, ENGR 0112
- Statics and Particle Dynamics, ENGR 0013
- Introduction to Mechanical Engineering Design, MEMS 0024
- Dynamic Systems, MEMS 1014
- Rigid Body Dynamics, ME 1017, MEMS 1015
- Mechanical Vibrations, ME 1018, MEMS 1020
- Fundamentals of Mechanical Measurements, ME 1041
- Mechanical Measurements II, ME 1042
- Automatic Controls, ME 1045
- Microprocessor Control, ME 1048
- Mechatronics, MEMS 1049
- Advanced Mechanical Vibrations, ME 2020
- Advanced Dynamics, ME 2027
- Linear Control Systems, ME 2045
- Digital Control Systems, ME 2046
- Innovating for Public Impact (formerly Hacking for Defense), ME 2811

at Virginia Polytechnic Institute and State University:

- Dynamic Systems -- Control Engineering
- Dynamic Systems -- Vibrations

Also advised well over 30 Senior Project Groups, many undergraduate Special Study students, and organized the Graduate Seminar 5 terms.

Graduate Students

Completed:

Qi Yin, April 2024

MS Thesis: "Exploring the Reality Gap: Deep Reinforcement Learning for Training a 6DOF Robotic Arm to Grasp Target Box"
Marcus Allen, April 2020
PhD Dissertation: " Data-Driven Rehabilitation Development for Stroke Patients Using Machine Learning Techniques"
Yifan Zhang, April 2019, MS
MS Thesis: " Location Measurement using Flexible Antennas"
Zibo Wang, September 2018
MS Thesis: "Developing of Inertial-Measurement-Unit-Based Trajectory Reconstruction Algorithm for Studying Pneumatic Conveying"
Ehsan Qaium, May 2018
MS, Thesis: "Investigation of Methods for Detecting Needle Insertion into Blood Vessels"
Yicheng Ding, January, 2018
MS Thesis: "Radio Frequency Antenna Design and Test"
Carlos Arguero, July 2017
MS Thesis: "Analysis of Bending in Partically-Bonded Structures of Electroadhesive Polymers"
Qiaoyi "Joey" Wei, March 2017
MS Thesis: "Energy Harvester Applications of Large-Deformation Piezoelectrics with Synchronized-Mechanical-Switch Circuit"
Qingyuan "Lexie" Guo, April 2016
MS Project: "Development of a Smart Particle Inertial Measurement Device."
Eliot George, April 2015
MS Thesis: "Investigation of Variable Stiffness Based Polymer Morphing Structures," April 2015.
Minmin Zhang, July 2014
PhD Dissertation: "Multi-Sensor Inertial Measurement System for Analysis of Sports Motion"
Danielle Miller Bond, June 2014
PhD Dissertation: "Design and Analysis of Optimal Multi-Layer Walls for Time-Varying Thermal Excitation"
Amin Motlagh, November 2013
PhD Dissertation: "Shape morphing of a simply supported beam by modulus variation"
Siwei Peng, 2013
MS Project: "Design and analysis of smart insulation."
Shibo Li, 2013
MS Project: "Inertial sensors for measurement of sports motion."
Wesley Knotts, May 2010
MS Thesis: "Investigation of Thermal Semiconductors for Adaptive Heat Management in Building."
Elias Hilliard, July 2009
MS Thesis: "Fabrication and Testing of a Micro-Scalable pH Sensor for Implanted Biomedical Use."
Michael Hudzik, July 2009
MS Thesis: "Hydrokinetic Oscillators for Energy Harvesting via Coupling Polyvinylidene Fluoride (PVDF) and Electromagnetics."
Scott Rauscher, MS, April 2008
MS Thesis: "Testing and Analysis of Shape-Memory Polymers for Morphing Aircraft Skin Application"
Ryan Knight, June 2007
MS Thesis: "The Analysis and Testing of MEMS and Macro Scale Piezoelectric Applications"
David Charnegie, May 2007
MS Thesis: "Frequency Tuning Concepts for Piezoelectric Cantilever Beams and Plates for Energy Harvesting"
Amanda Frederick, January 2006
MS Thesis: "Analysis and Fabrication of MEMS Tunable Piezoelectric Resonators"

Jesse Rodgers, January 2005
MS Thesis: “Analysis and Testing of a THUNDER Piezoelectric Actuator as a Prime Mover in a Gas Flow Control Valve”
Muturi Muriuki, July 2004
PhD Dissertation: “An Investigation into the Design and Control of Tunable Piezoelectric Resonators”
Sung-Hwan Kim, December 2002
PhD Dissertation: “Energy Harvesting Using Interdigitated Piezoelectric Ceramics”
Michael Dmuchoski, December 2002
MS Thesis: “Design Issues in Electromechanical Filters with Piezoelectric Transducers”
Ozlem Durmaz, August, 2001
MS Thesis: “Experimental and Analytical Studies on a Novel Semi-Active Piezoelectric Coulomb Actuator”
Michael Ramsay, May, 2001
MS Thesis: “A Study of Electrical Energy Harvesting from Piezoelectric Sources”
Muturi Muriuki, August, 2000
MS Thesis: “Magnetic Field Orientation Effects in Magnetotheological Fluid Dampers”
Lawrence R. Corr, April 2001
PhD Dissertation: “Investigation of Real-Time Switching of Piezoceramic Shunts for Structural Vibration Control”
Christoph Hyder, May 1999
MS Thesis: “A Linear Inchworming Motor Utilizing Thunder Technology”
Lawrence Corr, May 1999
MS Thesis: “Active and Passive Vibration Confinement in Vibrating Structures”
Clifford Wood, May 1999
MS Thesis: “Active Piezoelectric-Driven Flexure Actuator”
Jin Kyoo Lee, August 1998
PhD Dissertation: "A Study of Semi-Active Vibration Control Using a Magnetorheological Fluid Actuator in a Flexible Structure" (working at TongMyung Industries, Korea)
Zhengrong Zhu, August 1998
MS Thesis: "Experimental Investigation of Vibration Confinement to Enhance Active Vibration Control"
Abdulazim Falah, April 1998
MS Thesis: "Modeling of Magnetorheological Fluid Damper with Coaxial Cylinder Analysis"
Alexander Motamed, April 1998
MS Project: “Ultrasonic Transducer Control System for 3-Dimensional Tongue Modeling”
Joo Hyung Kim, April 1996
PhD Dissertation: “Active Control of Reaction Forces in Rotating Machinery with Harmonic Disturbance”
Sung Hwan Kim, December 1996
MS Thesis: “Vibration Analysis and Control of a Dragline Boom”
Franz J. Shelley, April 1995
PhD Dissertation: “Investigation of Active Mode Localization in Vibrating Systems”
John Green, December 1997
MS Project: “Dynamic Analysis of a Drag Line”
Scott Brahney, December 1996
MS Project: “Analysis of the Effects of Rigid Body Motion on Stress in a Dragline Crane Boom - Formulation of the Equations of Motion”
George Demetri, December 1996
MS Project: “Finite Element Analysis of a Dragline Boom”
Marla Tanimoto, September 1996, (with Professor Roy Marangoni)
MS Project: “Forced Vibration of Light Diffusing Screens in a Projection TV”

Mark Malone, August, 1994
MS Project: "Positive Position Feedback Control"
Mike Malecki, August, 1994
MS Project : "Control of Speed Fluctuation of a Universal Joint"

Current Students:

Stephanie Liu, PhD
Lee Dosse, PhD
Abenezer Alemu, PhD
Abdullah Alturki, PhD
Yifan Zhang, PhD
Joseph Bickson, MS
Qi Yin, MS

Thesis and Dissertation Committees

Robert Lois, PhD, ME (Advisor = Cole), "End-to-End Encryption for Cyber-Physical Systems Using Fully Homomorphic Encryption"
Caroline Chun, PhD, Chemistry (Advisor = Hutchison), "Piezoelectric Properties of Oligopeptides"
Abhimany Kapuria, PhD, ME (Advisor = Cole), "Developing Secure-by-Design Cyber-Physical Systems using Formal Methods"
David Maupin, PhD, ME (Advisor = Vipperman), "Modeling, Fabrication, and Characterization of Microscopic Optical Ultrasonic Sensors"
Marianne Cites, PhD, ME (Advisor = Vipperman), "Low-Range Ultrasonic Acoustic Modeling of the Human Head"
Christopher Dumm, PhD, ME (Advisor = Vipperman), "Structural-acoustic mechanisms for ultrasound transfer in the human temporal bone"
Abhimany Kapuria, MS, ME, "Condition Monitoring of a Centrifugal Pump Using Bayesian Networks," July 2022.
Nicholas Harn, MS, ME, "Estimation of Contact Forces in Reactor Internals using Neutron Noise Data: A Comparison fo Approaches," July 2022.
Ethan Linderman, MS, ME, "Investigation of Performance of Visible Light Communications for Use in Power Plants," April 2022.
Lee Maccarone, PhD, ME, "Stocastic Bayesian Games for the Cybersecurity of Nuclear Power Plants," June 2021.
Audrey Clark, MS, ME, "Crista Volume Measured from 3D Reconstruction of Weightbearing CT Scans Shows a Relationship to Sesamoid Station," April 2021
Jacob Farber, PhD, ME, "Defending Pressurized Water Reactors Against Stealthy Cyber Attacks," February 2021
Vahidreza Molazadeh, PhD, ME, "Iterative Learning Control Methods for Hybrid Wearable Robots," March 2020
Cameron Brown, MS, ME, "State-Augmented Mutating Particle Filtering for Fault Detection and Diagnosis," August 2019
Chris D'Angelo, PhD, ME, "Probabilistic Robustness Analysis of an Actively Controlled Structure that Operates in Harsh and Uncertain Environments," November 2018
Qi Li, PhD, ME, "Design of Arbitrarily Shaped Inertial and Three Dimensional Pentamode Acoustic Cloaks," July 2018
Andrew Neil, MS, ME, "Design of a Rapidly Deployable Surgical Retractor," November, 2017
Albert Dodson, MS, ME, "A Novel User-Controlled Assisted Standing Control System for a Hybrid Neuroprosthesis," October 2017

Naji Alibeji, PhD, ME, "A Human Motor Control-Inspired Control System for a Walking Hybrid Neuroprostheses," June 2017
Jeffrey Auletta, PhD, Chemistry, "Stimuli-responsive Materials and Structures with Electrically Tunable Mechanical Properties," March 2017
Christopher Marvin, PhD, Chemistry, "Computational and Experimental Insight Into Single-Molecule Piezoelectric Materials," March 2017
Jason Pickel, PhD, ME, "Improving Optical Trap Measurements with Adaptive Nonlinear Control Methods," August 2016
Qiang Zhong, MS, ME, "Development And Experimental Evaluation Of A State Dependent Coefficient Based State Estimator For Functional Electrical Stimulation-Elicited Tasks," April 2016
Tianyi Qiu, MS, ME, "Robust Compensation Of Electromechanical Delay During Neuromuscular Electrical Stimulation Of Antagonistic Muscles," March 2016
Nicholas Kirsch, PhD, Mechanical Engineering, "Control Methods for Compensation and Inhibition of Muscle Fatigue in Neuroprosthetic Devices," March 2016
Yangbo He, MS, Mechanical Engineering, "Band Gap Structure Of Two Dimensional Acoustic Metamaterials With Coated Double Hybrid Lattice," November 2015
Luke Solomon, PhD, Electrical and Computer Engineering, "Analysis of DC Link Capacitor Voltage Balancing for Diode-Clamped Multilevel Inverters," February 2015
Kocer, Bilge, PhD, Mechanical Engineering and Materials Science, "Experimental Study of Ionic Polymer Transducers: Characterization of Transient Response in Sensing," August 2014
Raghav Khanna, PhD, Electrical and Computer Engineering, "Analysis of Dynamic Power Electronic Circuits with Wide BandGap Semiconductors and Maximum Power Point Tracking in Photovoltaic Systems,", April 2014
Chris Shelton, MS, Mechanical Engineering, "Six Noise Type Military Sound Classifier," July 2013
Scott Mang, MS, Mechanical Engineering, "Investigation of Performance Evaluation and Design Techniques for large industrial mufflers," July 2013
Daniel McAdams, PhD, Mechanical Engineering, "Dynamic Maskless Holographic Lithography and Applications," August 2012
Jarret Kasan, PhD, Civel and Environmental Engineering, "On the repair of impact-damaged concrete bridge girders," January 2012
Eric Freeman, Phd, Mechanical Engineering, "Harnessing protein transport principles for engineering applications: a computational study," December 2011
Brian Bucci, PhD, Mechanical Engineering, "A practical method for friction compensation in rapid point-to-point motion," January 2011
Fei Gao, PhD, Mechanical Engineering, "Computational Study of Ionic Polymers: Multi-Scale Stiffness Predictions and Modeling of the Electromechanical Transduction," April 2010
David Weir, MS, Mechanical Engineering, "Effect of Distal Biceps Tendon Reattachment on Supination Moment Arm," March 2010
Rich Beblo, PhD, Mechanical Engineering, "Characterization and Modeling of Light Activated Shape Memory Polymer," December, 2009
Mark Delaney, MS, Mechanical Engineering, "Experimental Characterization and Multi-Scale Modeling of Electroplastic Elastomers," December, 2009
Tim Ryan, MS, Mechanical Engineering, "Design and Control of a Standing-Wave Thermoacoustic Refrigerator," November, 2009
Matthey Rhudy, MS, Mechanical Engineering, "Real Time Implementation of a Military Impulse Classifier," October, 2009
Jason Pickel, MS, Mechanical Engineering, "Adaptive Control for the Position of Magnetic Particles Using Matnetic Traps", October 2009
Brad Boyerinas, MS, Mechanical Engineering and Materials Science, "Design and Fabricdation of Variable Stiffness Link for use in a Morphable Unmanned Air Vehicle", 2009
Dan McAdams, MS, Mechanical Engineering and Materials Science, 2008

Korey Gross, MS, Mechanical Engineering and Materials Science, “Mechanical Characterization of Shape Memory Polymers to Assess Candidacy as Morphing Aircraft Skin,” 2008
Nathaniel Black, “Active Combustion Throttle,” MS, Mechanical Engineering, 2008
Eric Freeman, MS, Mechanical Engineering, “Applications of Biologically Inspired Membranes,” 2008.
Adam Smith, “Adaptive Resonant Mode Active Noise Control,” MS, Mechanical Engineering, 2005
Angela M. Flamm, MS, Mechanical Engineering, 2004
Adam Hahn, MS, Mechanical Engineering, 2004
Deyu Li, PhD, Mechanical Engineering, 2003
Seval Genc, PhD, Material Science and Engineering, 2002
Sarkis Juvelekian, MS, Mechanical Engineering, 2002
Fatih Ayhan, MS, Mechanical Engineering, 2002
Gaetano Sterlacci, “A Study of Vibration and Twisting of Beam and Plates Using Shape Memory Materials,” PhD, Mechanical Engineering, 2000
Scott Scoville, “Numerical Analysis of Coordination Patterns on a Slalom Ski Apparatus”, M.S., Mechanical Engineering, 1998
Yih-Choung Yu, “Minimally Invasive Estimation of Cardiovascular Parameters,” PhD, Electrical Engineering, 1998
Seongjin Choi, “Modeling and Control of Left Ventricular Assist System,” Ph.D., Electrical Engineering, 1998
Jayadev Billa, “Dual Channel Auditory Modeling for Robust Speech Recognition,” Ph.D., Electrical Engineering, 1997
Abdullah Balhaddad, M.S., Mechanical Engineering, 1997
Linda Dishart, M.S., Mechanical Engineering, 1996
Venkata Sambasiva Chandramouli, “Flow of Granular Materials in an Orthogonal Rheometer,” M.S., Mechanical Engineering, 1996
Eric B. Glaser, M. S., Mechanical Engineering, 1996
Bonnie E. Turner Jackson, “A Hierarchical Neural Network Approach to Modeling the Wave Solder Process,” M.S., Industrial Engineering, 1995
Soonbae Hong, “Model Variation of Neck Flexion-Extension in Impact,” M.S., Mechanical Engineering, 1995
Michael Rhodes Lovell, “Evaluation of the Ultra-Low Speed Friction Characteristics of Precision MoS_2 Coated Ball Bearings,” Ph.D., Mechanical Engineering, 1994
Shelly Ann Sleith, “Stability Analysis of a Multi-Time Step Integration Using Nodal Partitioning for Second-Order Equations,” M.S., Mechanical Engineering, 1992

Professional Activities and Service

Professional Service:

2020 - 21 Member of the American Baseball Biomechanics Society
2007 - 13 Member of the Executive Committee of the Design Engineering Division of the American Society of Mechanical Engineers (ASME)
2012-2013 Past Chair
2011-2012 Chair
2010-2011 Vice Chair
2008-2010 Technical Committee and IMECE Executive
2007-2008 Secretary
2010-11 Member of Steering Committee of ASME International Mechanical Engineering Congress and Exposition
2007-09 Vice Chair of the 2007 ASME International Design Engineering Technical Conferences
Organizing Committee of the 2009 ASME Internatonal Design Engineering Technical Conferences
2007-10 Member of Oak Ridge National Lab Center for Nanophase Materials Science User Group

2004 -09	Associate Editor of the ASME *Journal of Vibration and Acoustics*
1998-06	Symposium Co-Organizer for ASME International Design Engineering Technical Conferences
1996 -	Member of ASME Technical Committee on Vibration and Sound 2004-06 Chair 2002-04 Vice Chair 2000-02 Secretary
2000-01	Local Vice Chair, Exhibits Organizer, and Technical Symposium Organizer for ASME International Design Engineering Technical Conference
1997-	Organizing Committee for 1998 SPIE Smart Structures & Materials Symposium (Conference on Industrial and Commercial Applications 1997-03; and Damping and Isolation Conference 1999 – 2006; Conference on Active and Passive Smart Structures and Integrated Systems 2007 -) Co-Chair of Damping and Isolation Conference 2004-05, Chair 2006.
1997-98	Symposium Co-Organizer for the 1998 ASME IMECE
1997-00	IMECE Coordinator for ASME Technical Committee on Sound and Vibration
1997	Session Organizer and Chair for the Frontiers in Education Conference
1997-05	Symposium Co-Organizer for 16th ASME Biennial Conf. on Vib.and Noise
1996	Session Co-Organizer and Chair for the 4th Int'l Cong. on Vib. and Noise
1994-	Technical Session Chair at the ASME IMECE
1995-	Technical Session Chair at the ASME Biennial Conf. on Vib. and Noise

Professional Affiliations:

1986 -	American Society of Mechanical Engineers
2006-10	American Association for the Advancement of Science
1989-01	American Society for Engineering Education
1997-01	International Institute of Acoustics and Vibration

Reviewer for:
ASME Journal of Vibration and Acoustics
ASME Journal of Dynamic Systems, Measurement, and Control
ASME Journal of Tribology
Inst. Of Mech. Engrs. Journal of Automobile Engineering
International Journal of Vibration and Acoustics
Journal of Sound and Vibration
Journal of Intelligent Material Systems and Structures
Journal of Vibration and Control
Journal of Smart Materials and Structures
Journal of Engineering for Gas Turbines and Power
Shock and Vibration
AIAA Guidance, Navigation, and Control Conference
ASME Biennial Conference on Vibration and Noise
IEEE Conference on Decision and Control
International Mechanical Engineering Congress and Exposition
Cambridge University Press

Reviewer of Proposals for:
National Science Foundation
Oak Ridge Associated Universities
Department of Defense DEPSCOR Program
Department of Energy
Department of State
Ben Franklin Technology Center

University Service:

2016-22	Appointment, Promotion, and Tenure Review Committee
2016 -	Director of the Innovation, Product Design, and Entrepreneurship Certificate Program
2010 -	Various Search Committees
2007 -	University Technology Transfer Committee
2010-18	Provost Development Fund Committee
2003-08	Mechanical Engineering Strategic Planning Committee
1999-02	School of Engineering Promotion and Tenure Review Committee
1999-00	Faculty Review Policy Committee, School of Engineering
1999	Acting Chair of Mechanical Engineering
1998-99	Chair of School's Integrated Freshman Curriculum Committee
1997-01	Graduate Coordinator, Mechanical Engineering Department
1997-98	Chair of Graduate Curriculum Review Committee, ME Dept.
1997-04	Various Faculty Search Committees, ME Dept.
1997-01	School of Engineering Academic Affairs Committee
1995-01	Chair of Mechanical Engineering Graduate Committee
1995-97	School of Engineering Graduate Studies Committee
1996-97	Search Committee for Mechanical Engineering Department Chairman
1996	School of Engr. Organizing Comm. for the Research and Technology Exchange
1996	School of Engineering TA Utilization Task Force
1995-96	Engineering Research Council
1994-97	Department of Mechanical Engineering Budget Policies Committee
1994-95	Department of Mechanical Engineering Teaching Evaluation Committee
1994	University Mentor for Garfield-Bloomfield *Shadowing Program*

July 2023