## Troy Michael Bouman, PhD, MSE, MBA

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EDUCATION	
Doctor of Philosophy in Mechanical Engineering Michigan Technological University, Houghton, MI Focus: Acoustics, Vibrations, and Dynamic Systems	May 2021
Awards: -Graduate School's Outstanding Scholarship Award -1st Place – Best Overall Paper at 2017 SAE Noise and Vibration Conference	
Master of Science in Mechanical Engineering GPA: 3.89 Michigan Technological University, Houghton, MI Awards: -Outstanding Graduate Student Teaching -Best of Show Award at 2015 SAE Noise and Vibration Conference -Excellence in Noise Control from INCE 2016 Certificate: LabVIEW Associate Developer	May 2016
Master of Business Administration GPA: 3.95 Grand Valley State University, Grand Rapids, MI AACSB Accredited	April 2014
Beta Gamma Sigma International Honors Society Award: Dean's Citation for Academic Excellence Certificate: Managing Business, Government, and Public Policy, Washington, D.C.	
Bachelor of Science in Mechanical Engineering GPA: 3.80 Michigan Technological University, Houghton, MI Minors: Electrical Engineering & General Music	May 2012
INDUSTRY EXPERIENCE	
Great Lakes Sound and Vibration, Houghton, MI Senior Engineer – Supporting government dynamic systems projects	Feb 2022-Present
Michigan Technological University, Houghton, MI Research Engineer – Supporting government and industry dynamic system projects	May 2021-Feb 2022
Bouman Technologies, Houghton, MI Fall 2013-Present Owner - Supporting small businesses with NVH consulting, IT solutions, and web development	
Roush Industries, Livonia, MISumm <b>NVH Engineer – NVH consulting for a variety of customers in many sectors</b> Certificate: Recognition for extraordinary performance in 2017	er 2016-Summer 2019
Michigan Technological University Mechanical Engineering Department, Houghton, MI Senior Design – Design and fabrication of an acoustic test stand for Tier 1 automotive sup	2011-2012 pplier
Caterpillar Inc., Peoria, IL Internship – Validation and repair of heavy equipment via noise and vibration solutions	Summer 2011
Boston Scientific, Arden Hills, MI Internship – Analysis of conversion from stamping to CNC routing for anode excision	Summer 2010
Magna Donnelly Holland Mirror, Holland, MI Internship – Design and fabrication of electro-chromatic (EC) mirror test stands	Summer 2008
Mission Design & Automation, Holland, MI Machine Builder – Custom design, production, and installation of automated machinery	2004-2007

## PUBLICATIONS

- Bouman, T. "Development of the Carbon Nanotube Thermoacoustic Loudspeaker", Open Access Dissertation, Michigan Technological University, 2021. https://doi.org/10.37099/mtu.dc.etdr/1204
- Bouman, T., Barnard, A., Alexander, J., Continued Drive Signal Development for the Carbon Nanotube Thermoacoustic Loudspeaker Using Techniques Derived from the Hearing Aid Industry, SAE NVH Conference Proceedings, 2017.
   First place paper in SAE NVC Best Student Paper Competition
- Bouman, T., Barnard, A., Asgarisabet, M., Experimental quantification of the true efficiency of carbon nanotube thin-film thermophones, *Journal of the Acoustical Society of America*, 2016.
- Asgarisabet, M., Bouman, T., Barnard A., Near field acoustic holography measurements of carbon nanotube thin film speakers, *Journal of the Acoustical Society of America*, 2016.
- Van Karsen, C., **Bouman, T.**, Gwaltney, G., Operating Deflection Shapes of a Violin String via High Speed/High Resolution Videography, *IMAC Conference Proceedings*, March, 2013.
- Moyer, J., Priest, R., **Bouman, T.**, Abraham, A. Donahue, T., Indentation properties and glycosaminoglycan content of human menisci in the deep zone, *Acta Biomaterialia Journal*, December 2012

## **RESEARCH EXPERIENCE**

Dr. Andrew Barnard, Assistant Professor Michigan Technological University Research Assistant – Development of carbon nanotube (CNT) thinfilm thermophone (speaker)	2014-present
Prof. Charles D. Van Karsen, Associate Professor & Associate Chair and Director of Undergraduate Studies Michigan Technological University Research Assistant – Testing the use of a high speed camera to gain input force into violin body	2011-2012
Dr. Tammy Haut Donahue, Associate Professor, Colorado State University Research Assistant – Method development to better understand the mechanical properties of the	2011-2012 human knee
Dr. Scott Miers, Assistant Professor, Michigan Technological University Research Assistant – Design and fabrication of a servo-controlled four bar linkage to control engi	Summer 2009 ne throttle
PRESENTATIONS	
Subjective evaluation of carbon nanotube thermophones using spoken text	
Acoustic Society of America Fall Annual Meeting	2020
Continued Drive Signal Development for the Carbon Nanotube Thermoacoustic Loudspeaker Using	g Techniques
Derived from the Hearing Aid Industry	
SAE Noise & Vibration Conference and Exhibition, Grand Rapids, MI	2017
Demonstration of Solidstate Carbon Nanotube Thinfilm Speaker	2015
SAE Noise & Vibration Conference and Exhibition, Grand Rapids, MI	
Measuring True Power Efficiency of Carbon Nanotube Thin Film Speakers	2015
SEM Regional Conference, Madison, WI	