

Curriculum Vitae of Benjamin J.A. Wise

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# Benjamin J.A. Wise

# Mechanical/Aerospace Engineering

**Objective** Experienced and published graduate researcher, with a lifelong passion for Engineering and over 5 years of laboratory experience, who is looking to utilize theoretical and practical knowledge to advance the fields of Aerospace and Mechanical Engineering by pursuing a Ph.D. or Dr. Eng.

# Education

2016 - , Southern Methodist University	<b>Cumulative GPA:</b>	3.950
M.S. in Mechanical Engineering, Anticipated Graduation Date: Ma	y 2018	
2011 - 2016, Southern Methodist University	Cumulative GPA:	3.838

2011 - 2010, Southern Methodist Oniversity
B.S. in Mechanical Engineering, cum laude
B.S. in Mathematics, cum laude
B.S. in Physics, <i>cum laude</i>
Minor in Computer Science

With Honors in the Liberal Arts

## Experience

#### Sept. 2013 - Present, Research Assistant, Micro-Sensor Laboratory, SMU

- Worked individually and with a team of high school, undergraduate, and graduate students on a number of micro-scale sensing projects, such as:
  - Electric Field Sensing for Advanced Prosthetic Application
    - The development of micro-scale WGM-based spherical sensors, to design implantable, biocompatible E-Field sensors for direct nerve control of advanced prosthetic devices.

GPA:

GPA:

GPA:

3.869

3.800

3.791

- The study of time-dependent dielectric polarization and response of PDMS based cantilever beams, with a focus of enhancing the sensitivity and bandwidth of WGM E-Field sensors.
- The development of methods for coating commercially available hollow micro-spheres in optical PDMS, to improve response of WGM-based E-Field sensors to transient signals.
- Micro-fluidic fabrication methods for producing hollow optical PDMS micro-spheres via flowfocusing, with an aim to produce thin walled, low mass sensors for sensing high frequency transient signals.
- Laser Velocimetry for Mars Entry Descent and Landing (EDL) Operations
  - Developing a miniaturized, low weight, high measurement resolution system to accurately
    determine relative velocity between a Mars Lander and atmospheric particles, to improve
    probability of success of EDL Operations.

### Aug. 2012 - Aug. 2013, Undergraduate Research Assistant, SuperCDMS Laboratory, SMU

Assisted in the creation and population (via data import scripts) of the radiopurity.org database, currently the largest public database of material radio-purity measurements used by the low-background particle physics community to design and build experiments.

## Aug. 2011 - Aug. 2012, Student OIT Assistant, Office of Information Technology, SMU

Assisted in the administration and maintenance of multiple computational servers, as well as student and faculty computers, including helping faculty with computation requirements of their research.

# Publication

#### 2018, Presentation and Conference Paper, AIAA 2018 SciTech Forum

Benjamin J. Wise, Vahid Eghbalifarkoosh, Volkan Ötügen, and Dominique Fourguette, "A Microresonator Based Laser Velocity Sensor", *2018 AIAA Aerospace Sciences Meeting*, AIAA SciTech Forum, (AIAA2018-1770). DOI:10.2514/6.2018-1770

## **Poster Presentations**

2017, Poster Presentation, Lyle School of Engineering Research Day Expo

**Wise, B.J.A.**, DaSilva, J., Salameh, E.R., and Ötügen , M.V. (2017). "An Improved Compact Atmospheric Speed Sensor for Mars Missions." Lyle Research Day Expo.

2016, Poster Presentation, Lyle School of Engineering Research Day Expo

Wise, B.J.A., Eghbalifarkoosh, V., and Ötügen , M.V. (2016). "A Compact Atmospheric Entry Speed Sensor for Mars Missions." Lyle Research Day Expo.

# Presentation

# 2015, Presentation, Lyle School of Engineering Recruitment Event

**Wise, B.J.A.** and Ötügen , M.V. (2015). "Hollow Microsphere Resonators for Advanced Prosthetics." Lyle School of Engineering Recruitment Event for group of approximately 500 prospective students and parents.

## Skills and Knowledge

Programmi	ng and Computer S	oftware Knowled	ge			
<ul> <li>SolidWo</li> </ul>	rks o 3D	Printing/CNC	• Mat	hematica	<ul> <li>Matlab</li> </ul>	<ul> <li>LabView</li> </ul>
• LaTeX	• BA	SH Shell	• Pyth	ion	• Java	• C++
Laboratory	and Technical Skills	S				
• Respons	ible Conduct of Resea	arch Training (CIT	'I: Oct. 20	016, SMU [NO	T-OD-10-019 Compli	ant]: Mar. 2018)
<ul> <li>Chemica</li> </ul>	l Safety o Las	ser Safety	• Opti	ical Alignment	<ul> <li>Inventory &amp; T</li> </ul>	'ime Management
<ul> <li>Troubles</li> </ul>	hooting Experiments	5	<ul> <li>Basi</li> </ul>	c Signal Proces	ssing (e.g., Auto and	Cross Correlation)
Relevant En	gineering Coursew	ork				
Design and	d Manufacturing					
<ul> <li>Vibration</li> </ul>	15	• Intermediate	Dynamics	s o Mar	nufacturing Processes	• Vehicle Dynamics
<ul> <li>Classic N</li> </ul>	lechanics	<ul> <li>Engineering M</li> </ul>	Iaterials	• Opt	ics & Laser Aided Ma	nufacturing Processes
Thermo-Fl	uids					
• Thermoo	lynamics	<ul> <li>Statistical Med</li> </ul>	chanics	• The	rmal Systems Design	<ul> <li>Fluid Mechanics</li> </ul>
<ul> <li>Gas Dyn</li> </ul>	amics & Analysis of I	Propulsion System	S	• Inte	rmediate Heat Trans	fer
Modeling	and Control of Syst	ems				
<ul> <li>Laborato</li> </ul>	ory Physics	<ul> <li>Circuit Analys</li> </ul>	is	• Line	ear Systems Analysis	
<ul> <li>Design 8</li> </ul>	Control of Mechani	ical Systems		• Opt	imal & Robust Contro	ol
• Scientifie	e High Performance (	Computing		• Con	cepts of Experimenta	al Physics
Honors an	nd Awards					
2014-	Robert S. Hyer So	ciety Member, SM	U	SMU's most p	restigious Honor Soci	iety
2014-	Phi Beta Kappa M	Iember, SMU		The Nation's	Oldest Academic Hon	or Society
$2014 \qquad Tay Pota Di Mombar SMU$		The Engineeri	ng Honor Society	2		

4	2014-	Phi Beta Kappa Member, SMU	The Nation's Oldest Academic Honor Society
2	2014-	Tau Beta Pi Member, SMU	The Engineering Honor Society
2	2014-	Pi Tau Sigma Member, SMU	The International Honor Society for Mechanical Engineers
2	2014	Robert S. Hyer Outstanding Physics Student Award, SMU	
2	2013	W.J. McDonald Outstanding Physics Student	Award, SMU

2011-16 Engineering Fellows Scholar, SMU

# Organizations and Leadership Experience

2017-	Student Member	American Institute of Aeronautics and Astronautics
2016-17	Regional Director	Theta Tau Professional Engineering Fraternity (National Officer)
2015-16	Regent (President)	Theta Tau Fraternity, Tau Beta (SMU) Chapter Officer
2014-15	Scribe (Secretary)	Theta Tau Fraternity, Tau Beta (SMU) Chapter Officer
2012-	Student Member	American Society of Mechanical Engineers
2011-	Member	American Mensa, The Largest and Oldest High IQ Society in the World

# Interests

# Professional

Sensor Application/Design, Micro-Optical Devices, Laser/Lidar Devices, Thermo-Fluids and Propulsion Systems, Systems Integration, and Computational Electrodynamics/Fluid Dynamics

## Personal

Habitat for Humanity, SCUBA diving (NAUI Advanced Open Water and Enriched Air Diver), Welding (Shielded Metal Arc, GMAW/MIG, and Oxyacetylene), Building, Cooking, Baking, and Zymurgy