

*Kunning Gabriel Xu (Gabe)*  
Associate Professor  
Mechanical and Aerospace Engineering

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## **EDUCATIONAL BACKGROUND**

<b>Degree</b>	<b>Field</b>	<b>Institution</b>	<b>Year</b>
<b>Ph.D.</b>	Aerospace Engineering	Georgia Institute of Technology	2012
<b>M.S.</b>	Aerospace Engineering	Georgia Institute of Technology	2009
<b>B.S.</b>	Aerospace Engineering	Georgia Institute of Technology	2006

## **EMPLOYMENT HISTORY**

<b>Title</b>	<b>Organization</b>	<b>Years</b>
<b>Associate Professor</b>	Department of Mechanical and Aerospace Engineering University of Alabama in Huntsville Huntsville, AL, USA 35899	2018-present
<b>Assistant Professor</b>	Department of Mechanical and Aerospace Engineering University of Alabama in Huntsville	2012-2018
<b>Research Assistant</b>	School of Aerospace Engineering Georgia Institittue of Technology Atlanta, GA, USA 30332	2006-2012
<b>Engineering Intern</b>	Electron Technologies Inc. L3 Communications Torrance, CA, USA 90505	Summer 2010
<b>Space Scholar</b>	Space Vehicles Branch Air Force Research Lab Hanscom AFB, Bedford, MA, USA 01730	Summer 2006
<b>Undergraduate Research Assistant</b>	High Power Electric Propulsion Lab Georgia Institute of Technology Atlanta, GA, USA 30332	2005-2006
<b>Undergraduate Research Assistant</b>	Georgia Tech Combustion Lab Georgia Institute of Technology Atlanta, GA, USA 30332	2004-2005
<b>Engineering Intern</b>	Boeing Commercial Aircrafts The Boeing Company Seattle, WA, USA 98124	Summer 2004

## I. RESEARCH AND SCHOLARSHIP

### Thesis and Publications

#### Ph.D. Thesis

Title: “*Ion Collimation and In-Channel Potential Control Using In-Channel Electrodes for Hall Thrusters*”

Completed: July 2012

Advisor: Dr. Mitchell Walker

University: Georgia Institute of Technology

#### Refereed Journal Papers

##### Published

1. Gott, R.P., Miller, S.D., Hodges, J.C., Xu, K.G., “A Comparison of Atmospheric Pressure Plasma Based Water Purification,” *Advances in Space Research*, 2021. (Accepted)
2. Walsten, A.T., Xu, K.G., Sanderson, C., Ballmann, C., Matyas, D., “Discharge Dynamics of a Nanosecond Pulsed Helium/Argon Nanosecond Atmospheric Pressure Glow Discharge,” *Physics of Plasmas*, 2021. (Accepted)
3. Gott, R.P., Xu, K.G., “Time-Resolved Imaging and Spectroscopy of Atmospheric Pressure Plasma Bullet Propagation and RONS Production,” *Journal of Physics D: Applied Physics*, Vol 53, No 31, 2020. [10.1088/1361-6463/ab876a]
4. Dextre, R.A., Yamauchi, Y., Polzin, K., Xu, K.G., “Concentric Split-Ring Resonator Microwave Microplasma Generation at Off-Resonant Frequencies” *IEEE Transactions on Plasma Science*, Vol 48, No 4, 2020. [10.1109/TPS.2020.2978838]
5. Sanderson, C.R., Ballmann, C.W., Han, J., Clark, A.B., Hokr, B.H., Xu, K.G., and Heaven, M.C., "Demonstration of a quasi-CW diode-pumped metastable xenon laser," *Optics Express* 27, 36011-36021, 2019. [10.1364/OE.27.036011]
6. Gott, R.P., Xu, K.G., “OH production and jet length of an atmospheric pressure plasma jet for soft and biomaterial treatment,” *IEEE Transactions on Plasma Science*, Vol.47, No. 11, 2019. [10.1109/TPS.2019.2942576]
7. Volkov, A.G., Hariston, J.S., Patel, D., Gott, R.P., Xu, K.G., “Cold Plasma Poration and Corrugation of Pumpkin Seed Coats,” *Bioelectrochemistry*, Vol. 128, p 175-185, 2019. [doi: 10.1016/j.bioelechem.2019.04.012]
8. Volkov, A.G., Xu, K.G., Kolobov, V.I., “Plasma generated reactive oxygen and nitrogen species can lead to closure, locking and constriction of the *Dionaea muscipula* Ellis trap,” *Journal of the Royal Society Interface*, 16: 20180713, 2018. [doi: 10.1098/rsif.2018.0713]
9. Tucker, B. S., Baker, P. A., Xu, K. G., Vohra, Y., Thomas, V., "Atmospheric Pressure Jet Plasma: A Facile Method to Modify the Intimal Surface of Polymeric Tubular Conduits," *Journal of Vacuum Science and Technology A*, Vol. 36, No. 04F404, 2018. [doi: 10.1116/1.5023259]
10. Salvador, P. R., Xu, K. G., “Direct current forcing of an atmospheric multi-burner flame with a cylindrical electrode for rocket combustor emulation,” *Journal of Spacecrafts and Rockets*, Vol. 55, No. 1, 2018. [doi: 10.2514/1.A33737]

11. Henderson, B. R., Xu, K. G., “Electric Field Damping of Rijke Tube Combustion Instabilities,” *Journal of Propulsion and Power*, Vol. 34, No. 1, 2018. [doi:10.2514/1.B36435]
12. Doyle, S. J., Salvador, P. R., Xu, K.G., “Flame exposure time on Langmuir probe degradation, ion density, and thermionic emission for flame temperature,” *Review of Scientific Instruments*, 88, 113503, 2017. [doi: 10.1063/1.5010994]
13. Doyle, S. J., Salvador, P. R., Xu, K. G., “Microplasma jet cleaning of Langmuir probes for methane-air premixed flame diagnostics,” *Journal of Vacuum Science and Technology A*, 35, 061309, 2017. [doi: 10.1116/1.4986891]
14. Volkov, A. G., Xu, K. G., Kolobov, V. I., “Cold plasma interaction with plants: morphing and movement of Venus flytrap and Mimosa pudica induced by argon plasma jet,” *Bioelectrochemistry*, Vol. 118, 2017. p. 100-105. [doi: 10.1016/j.bioelechem.2017.07.011]
15. Salvador, P. R., Xu, K. G., “Electric Field Modified Bunsen Flame with Variable Anode Placement,” *Journal of Thermophysics and Heat Transfer*, Vol. 31, No. 4, 2017. [doi:10.2514/1.T5069]
16. Doyle, S. J., Xu, K. G., “Use of thermocouples and argon line broadening for gas temperature measurement in a radio frequency atmospheric microplasma jet,” *Review of Scientific Instruments*, Vol. 88, 023114, 2017. [doi: 10.1063/1.4976683.]
17. Dextre, R. A., Xu, K. G., “Effect of the Split Ring Resonator Width on the Microwave Microplasma Properties,” *IEEE Transactions on Plasma Science*, Vol. 45, No. 2, 2017. [doi:10.1109/TPS.2016.2646661]
18. Xu, K. G., Doyle, S. J., “Measurement of an Atmospheric Pressure Microplasma Jet with Langmuir Probes,” *Journal of Vacuum Science and Technology A*, 34, 051301, 2016. [doi:10.1116/1.4959565]
19. Jacobs, S. V., Xu, K. G., “Examination of Ionic Wind and Cathode Sheath Effects in a E-Field Premixed Flame with Ion Density Measurements,” *Physics of Plasmas*, 23, 043504, 2016. [doi: 10.1063/1.4945614]
20. Langendorf, S., Xu, K. G., Walker, M. L. R., “Effect of Wall Electrodes on Hall Effect Thruster Plasma,” *Physics of Plasmas*, 22, 023508, 2015. [doi: 10.1063/1.4908273]
21. Xu, K. G., “Plasma Sheath Behavior and Ionic Wind Effect in Electric Field Modified Flames,” *Combustion and Flame*, 161, 2014. [doi: 10.1016/j.combustflame.2013.12.008]
22. Xu, K. G., Walker, M. L. R., “Effect of External Cathode Azimuthal Position on Hall Effect Thruster Plume and Diagnostics” *Journal of Propulsion and Power*, Vol.30, No. 2, 2014. [doi: 10.2514/1.B34980]
23. Xu, K. G, Dao, H., Walker, M. L. R., “Potential Contour Shaping and Sheath Behavior with Wall Electrodes and Near-Wall Magnetic Fields in Hall Thrusters.” *Physics of Plasmas*, Vol. 19, No. 10, 2012. [doi: 10.1063/1.4762856]
24. Xu, K. G, Walker, M. L. R., “Plume Characterization of an Ion Focusing Hall Thruster.” *Journal of Propulsion and Power*, Vol. 28, No. 5, 2012. [doi: 10.2514/1.B34433]
25. Xu, K. G, Walker, M. L. R., “Technique to Collimate Ions in a Hall Effect Thruster Discharge Chamber,” *Journal of Propulsion and Power*, Vol. 27, No. 3, 2011. [doi: 10.2514/1.49171]
26. Xu, K. G, and Walker, M.L.R., “High-Power, Null-Type, Inverted Pendulum Thrust Stand,” *Review of Scientific Instruments*, 80, 2009. [doi: 10.1063/1.3125626]

### **Conference Papers, Presentations, and Posters**

27. Unruh, E. C., Spaulding, M., Lineberry, D. M., Xu, K. G., & Frederick, R. A. "Development of an Optically Accessible Racetrack-Type Rotating Detonation Rocket Engine." *AIAA Propulsion and Energy 2020 Forum*, Virtual, 2020.
28. Bentz, B.Z., White, Z.K., Gott, R.P., Xu, K.G., Barnat, E.V., "Estimating electron density, electron temperature, and signal-to-noise ratio from laser-collision induced fluorescence data by treating the measurement as a stochastic process," *73<sup>rd</sup> Annual Gaseous Electronics Conference*, Virtual Online, 2020.
29. Kolobov, V., Arslanbekov, R., Tahiyat, M., Farouk, T., Xu, K.G., "Computational and experimental studies of plasma stratification in noble gases and nitrogen," *73<sup>rd</sup> Annual Gaseous Electronics Conference*, Virtual Online, 2020.
30. Laya, N., Walsten, A., Xu, K.G., "Three-dimensional measurement of electron temperature and density in a split ring resonator microplasma using Langmuir probes," *73<sup>rd</sup> Annual Gaseous Electronics Conference*, Virtual Online, 2020.
31. Brick, D., Xu, K.G., "Atmospheric pressure plasma jet modeling with smoothed particle hydrodynamics," *73<sup>rd</sup> Annual Gaseous Electronics Conference*, Virtual Online, 2020.
32. Walsten, A.T., Xu, K.G., Sanderson, C., Ballmann, C., Matyas, D., "Temporal imaging and measurement of a high pressure He/Ar microplasma for DPRGL," *72<sup>nd</sup> Annual Gaseous Electronics Conference*, College Station, TX, 2019.
33. White, Z., Gott, R.P., Xu, K.G., "Spatial diagnostic techniques of striations in a DC glow discharge," *72<sup>nd</sup> Annual Gaseous Electronics Conference*, College Station, TX, 2019.
34. Gott, R.P., Xu, K.G., "Synchronized imaging and spectroscopy of atmospheric pressure plasma bullets for soft and biomaterial applications," *72<sup>nd</sup> Annual Gaseous Electronics Conference*, College Station, TX, 2019.
35. Thompson, M., Gott, R.P., Xu, K.G., "Efficiency of methylene blue in water purification using atmospheric plasma jet under varying conditions," *72<sup>nd</sup> Annual Gaseous Electronics Conference*, College Station, TX, 2019.
36. Karri, H., Hazeli, K., Xu, K.G., "Lessons learn in year one: What the undergraduate transfer student experience looks like in a NSF-supported mechanical and aerospace engineering program," *ACHIEVE Conference 2019*, Birmingham, AL, 2019.
37. Walsten, A.T., Latham, N., Xu, K.G., Sanderson, C. and Matyas, D.J., 2019. "Imaging and Measurement of High Pressure He/Ar Microplasma for DPRGL," *AIAA Scitech 2019 Forum*, San Diego, CA, 2019.
38. Gott, R.P., Xu, K.G., "Optical measurements of OH in an atmospheric plasma jet for plasma-based water purification," *71<sup>st</sup> Annual Gaseous Electrons Conference*, Portland, OR, 2018.
39. Latham, N., Xu, K.G., "Optical analysis of high pressure microplasma glow and arc discharges," *71<sup>st</sup> Annual Gaseous Electrons Conference*, Portland, OR, 2018.
40. Volkov, A., Xu, K.G., Kolobov, V.I., "Venus flytrap as a sensor of plasma-produced RONS," *71<sup>st</sup> Annual Gaseous Electrons Conference*, Portland, OR, 2018.
41. Thomas, V., Tucker, B., Xu, K., Becker, P., Vohra, Y., "Atmospheric pressure plasma based modification of soft biomaterials and interfaces," *2019 TMS Annual Meeting & Exhibition*, San Antonio, TX, 2019.
42. Ryota, N., and Xu, K. G., "Development of a Metronome Thrust Stand for Miniature Electric Propulsion." *AIAA Joint Propulsion Conference*. 2018.
43. Toyofumi, Y., and Xu, K G., "A Miniature Gridded Ion Thruster using Split Ring Resonator Microplasma." *AIAA Joint Propulsion Conference*. 2018.

44. Latham, N., Mann, N., Xu, K. G., "Corona, glow, arc transition in high pressure helium-argon microplasma," *AIAA SciTech 2017 Forum*, Kissimmee, FL, 2018.
45. Hopping, E., Xu, K. G., "Design and testing of a Hall effect thruster with 3D printed channel and propellant distributor," *35<sup>th</sup> International Electric Propulsion Conference*, Atlanta, GA, 2017.
46. Gott, R., Xu, K. G., "Development of a microplasma-based heaterless, insertless cathode" *35<sup>th</sup> International Electric Propulsion Conference*, Atlanta, GA, 2017.
47. Dextre, R. A., Xu, K. G., "Understanding concentric split ring resonators and its microwave microplasma properties," *35<sup>th</sup> International Electric Propulsion Conference*, Atlanta, GA, 2017.
48. Salvador, P. R., Xu, K. G., "Effect of DC Electric Fields on The combustion of a Simplified Mult-Element Injector," *AIAA Scitech 2017 Forum*, Grapevine, TX, 2017.
49. Doyle, S. J., Xu, K. G., "Nanoparticle Synthesis via a High Voltage Pulsed DC Atmospheric-Pressure Microplasma Jet," *AVS 63rd International Symposium & Exhibition*, Nashville, TN, 2016.
50. Dextre, R. A., Searcy, B. R., Xu, K. G., "Confined versus Unconfined Analysis of Split Ring Resonator Microplasma Source in a Microwave Electrothermal Thruster," *AIAA SciTech 2016 Forum*, San Diego, CA, 2016. AIAA-2016-1945.
51. Blair, L. M., Xu, K. G., "Langmuir Probe Diagnostics of an Atmospheric-Pressure Microplasma," *AIAA Aviation 2015 Forum*, Dallas, TX, 2015. AIAA-2015-2805
52. Jacobs, S. V., Xu, K. G., "Electron Temperature in a Methane-Air Flame under a DC Electric Field," *AIAA Aviation 2015 Forum*, Dallas, TX, 2015. AIAA-2015-2657
53. Dextre, R. A., Xu, K. G., "Status of Development and Measurement of a Microwave Microplasma Source for Micropropulsion," *51<sup>st</sup> AIAA Joint Propulsion Conference*, Orlando, FL, 2015. AIAA-2015-3724.
54. Jacobs, S. V., Roy, B., Xu, K. G., "Measurement of Plasma Activity in a 1D Methane-Air Flame," *50<sup>th</sup> AIAA Joint Propulsion Conference*, Cleveland, OH, 2014. AIAA-2014-3982.
55. Xu, K.G., Williams, L.T., "Simple Model for Atmospheric Microplasma Sheath." *41<sup>st</sup> International Conference on Plasma Science*, Washington, DC, 2014. ICOPS 5C-1.
56. Xu, K.G., "Micro-Propulsion Concepts Utilizing Microplasma Generators." *33<sup>rd</sup> International Electric Propulsion Conference*, Washington, DC, 2013. IEPC-2013-084
57. Kolasinski, K. M., Harlow, W., Xu, K.G., "Optimum Antenna Design for Microplasma Generation." *2013 IEEE Pulsed Power & Plasma Science Conference*, San Francisco, CA, 2013.
58. Xu, K.G, Dao, H., Walker, M. L. R., "Potential Contours in Ion Focusing Hall Thruster." *48<sup>th</sup> AIAA Joint Propulsion Conference*, Atlanta, GA, 2012.
59. Xu, K.G, Walker, M. L. R., "Plume Characterization of an Ion Focusing Hall Thruster." *47<sup>th</sup> AIAA Joint Propulsion Conference*, San Diego, CA, 2011.
60. Xu, K.G, Walker, M.L.R., "Technique to Collimate Ions in a Hall Effect Thruster Discharge Chamber," *57<sup>th</sup> JANNAF Propulsion Meeting*, Colorado Spring, CO, 2010.
61. Zhang, Q., Noble, R., Meyers, A., Xu, K., Lieuwen, T., "Characterization of Fuel Composition Effects in H<sub>2</sub>/CO/CH<sub>4</sub> mixtures Upon Lean Blowout," *ASME/IGTI Turbo Expo*, Reno, NV, 2005.

## **Patents**

Walker, Mitchell LR, and Xu, Kunning G. "Ion focusing in a hall effect thruster." U.S. Patent Application No. US20130026917A1. 2013

Xu, Kunning G, and Hopping, Ethan, "Hall effect thruster with additively manufactured components," U.S. Patent pending, filed 8/24/2017

Xu, Kunning G, and Gott, Ryan, "Microplasma heaterless fast start cathode," U.S. Patent pending, filed 10/4/2017

Xu, Kunning G, and Gott, Ryan, "Continuous Large Area Cold Atmospheric Pressure Plasma Sheet Source," U.S. Patent pending, filed 1/30/2019

## II. TEACHING

### Course Taught

Semester/Year	Course Number & Title	Number of Students	Comments
Fall 2012	MAE 310 – Fluid Mechanics 1	57	
Spring 2013	MAE 310	44	
Spring 2013	MAE 740 - Aerothermodynamics	4	
Fall 2013	MAE 310	61	
Fall 2013	MAE 468/568 – Elements of Spacecraft Design	22	Major overhaul of existing course
Spring 2014	MAE 468/568	37	
Spring 2014	MAE 444/544 – Intro to Electric Propulsion	24	
Fall 2014	MAE 468/568	23	
Spring 2015	MAE 740	18	Addition of computer projects
Fall 2015	MAE 468/568	19	
Fall 2015	MAE 271 – Statics	91	
Spring 2016	MAE 271	52	
Spring 2016	MAE 444/544	22	
Fall 2016	MAE 271H – Honors Statics	25	Faster and more rigorous pace
Spring 2017	MAE 271	96	
Fall 2017	MAE 200 – Principles of Aero and Astro	45	
Fall 2017	MAE 468/568	29	
Spring 2018	MAE 271	72	
Spring 2018	MAE 444/544	31	
Fall 2018	MAE 200	71	
Fall 2018	MAE 271H	25	
Spring 2019	MAE 468/568	60	
Spring 2019	MAE 740	16	Added corona model and Boltzmann plot to homeworks
Fall 2019	MAE 200	55	
Fall 2019	MAE 271H	31	
Spring 2020	MAE 200 and 642 (EP)	128 and 27	
Fall 2020	MAE 271H and 200	45 and 79	Fully online 200
Spring 2021	MAE 468/568 and 740	83 and 15	Fully online 468

## Individual Student Guidance

### Ph.D. Students Supervised: 5

Roberto Dextre

Fall 2012 – Fall 2018

Dissertation title: “*Plasma Characterization of a Single and Double Split Ring Resonator for Micropropulsion*”

Ryan Gott

Spring 2018 – Fall 2020

Dissertation title: “*Analysis of Atmospheric Pressure Plasma Generated Oxidative Species for Water Purification*”

Andrew Walsten

Fall 2018 – Present

Research area: Miniature ion engines with surface plasma source

Zachary White

Fall 2018 – Present

Research area: Magnetic nozzle for pulsed fusion propulsion plasma deflection

Michaela Spaulding

Fall 2019 – Present

Research area: Rotating detonation engine

### M.S. Thesis Students Supervised: 7

Nageshwar Nagaranjan

Spring 2020 – Present

Research area: SRR for miniature ion engine

William Bickett

Spring 2019 – Fall 2019

Thesis Title: “*Aerodynamic Effects of Integrated Lifting Surfaces on Very Low Earth Orbit Small Satellites*”

Ryan Gott

Fall 2016 – Spring 2018

Thesis Title: “*The Development and Analysis of a Heaterless, Insertless, Microplasma-Based Hollow Cathode*”

Ethan Hopping

Spring 2016 – Summer 2017

Thesis Title: “*Design and Testing of a Hall Effect Thruster with Additively Manufactured Components*”



Steven Doyle

Fall 2015 – Spring 2017

Thesis Title: “*A Study of Optical and Physical Probe Diagnostic Techniques for Atmospheric-Pressure Plasmas*”

Paulo Salvador

Fall 2014 – Fall 2016

Thesis Title: “*A Study of Electric Field Modified Flames with Variable Burner and Anode Placement for Rocket Combustor Emulations*”

Stewart Jacobs

Fall 2013 – Fall 2015

Thesis Title: “*A Study of Ion and Electron Responses to DC Electric Fields in a Premixed Methane-Air Flame*”

### **M.S. Non-Thesis Students Supervised: 2**

Wade Harlow

Fall 2012 – Spring 2014

Lindsey Blair

Summer 2014 – Spring 2015

### **Undergraduate Thesis Students Supervised: 2**

Katy Kolasinski

Spring 2013 – Spring 2014

Thesis Title: “*Atmospheric Plasma Analysis*”

Minh Dang

Spring 2015

Thesis Title: “*Design of a Thrust Measurement System for a Micro-Thruster Test Stand*”

## **III. SERVICE**

### **Professional Activities**

1. AIAA Plasmadynamics and Lasers Technical Committee full member, 2014-present
2. AIAA Electric Propulsion Technical Committee associate member, 2015-present
3. Technical Committee service
  - Organized new short course on plasma diagnostics for 2019 SciTech Forum as joint TC activity. Taught optical emissions spectroscopy portion of the course.
  - Organized EP fundamentals short course for EP TC at 2016 P&D Forum
  - Created and chaired invited session at 2017 SciTech Forum on “Diagnostics of Plasma and Gases” (PDL-03, PDL-04)
  - Reviewer for 2021 AIAA Wyld Propulsion Award

4. APS Gaseous Electronics Conference executive committee Secretary-Elect (2020) and Secretary (2021)
  - Plan and organize the GEC in 2021 in Huntsville, AL
5. Journal reviewer
  - Review of Scientific Instruments
  - AIAA Journal of Propulsion and Power, Journal of Spacecrafts and Rockets, AIAA Journal, Journal of Thermophysics and Heat Transfer
  - European Physical Journal D
  - IEEE Journal of MEMS, Transactions on Plasma Science
  - Gravitational and Space Research
  - Plasma Sources, Science, and Technology
  - MDPI Micromachines, Energies, Aerospace, Plants
  - Combustion Science and Technology
  - JOVE
6. Conference session chair
  - AIAA P&E: 2009, 2017, 2018
  - AIAA Scitech: 2015-2021
  - AIAA Aviation: 2015
  - IEPC: 2013, 2017
  - GEC 2020
7. Proposal review
  - NSF Combustion and Fire Program: 2015, 2018
  - NSF/DOE Partnership in Basic Plasma Science and Engineering: 2018, 2019
  - DOE SBIR Phase 1: 2021
8. Reviewer for national graduate fellowships
  - NSF GRFP: 2020-2021
  - NDSEG: 2012-2020
  - SMART: 2020-2021
  - NSTRF: 2019
9. AIAA book proposal reviewer for updated version of Robert Jahn's text on Electric Propulsion, 2014
10. Editor for AIAA Greater Huntsville Section newsletter, 2014-2016, 2018-2019
11. Liaison to Student Branches, AIAA GHS, 2020-present
12. Professional Society Memberships
  - AIAA Associate Fellow
  - IEEE Member
  - APS Member

## University Activities

1. Head of COE undergraduate research program, 2015-present
2. Member of MAE undergraduate curriculum committee, 2012-present
3. Member of Faculty Senate, 2018-2020
4. MAE faculty search committee member, 2017, 2018, 2019.

5. Chair of MAE lecture reappointment committee and CEE tenure-track reappointment committee, 2019.
6. Chair of COE strategic planning ad hoc committee for Community Engagement and Outreach, 2020
7. Member of Honor's Council for UAH Honor's College, 2020-present
8. Panelist for 2014 von Braun Symposium: "Space Exploration – Perspectives with the Millennial Generation," 2014

#### **IV. HONORS AND AWARDS**

- COE Outstanding Research Award, 2018
- 1<sup>st</sup> Place Communications Award, AIAA Section Awards for Greater Huntsville Section. 2015-2016
- NDSEG Fellow, provided funding for 3 years of graduate school, 2007-2010.
- Georgia Tech Institute Fellow, Georgia Institute of Technology, provided funding on top of existing scholarships for 4 years, 2006.
- Boeing Fellow, Boeing Corporation, one time tuition award, 2002