

## Kishan Bellur

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<b>Research-Interests</b>	Micro-scale Thermophysics, Interfacial Transport, Capillary Phenomena, Heat Transfer, Cryogenics, Material Characterization, Computational Fluid Dynamics and Scientific Computing.				
<b>Education</b>	Michigan Technological University, Houghton, MI	PhD	ME	2018	GPA: 4.00
	Michigan Technological University, Houghton, MI	MS	ME	2016	GPA: 4.00
	Milwaukee School of Engineering, Milwaukee, WI	BS	ME	2013	GPA: 3.38
<b>Experience</b>	<i>Instructor</i>	Michigan Tech.		01/2019 – Present	
	<ul style="list-style-type: none"><li>Primary instructor for a 4 credit, 3<sup>rd</sup> year undergraduate class on “internal flow”, combining concepts from both fluid mechanics (control volume theory) and heat transfer (conduction and convection).</li></ul>				
	<i>Postdoctoral Scholar</i>	Michigan Tech.		10/2018 – Present	
	<ul style="list-style-type: none"><li>Liquid-vapor phase change in micro-gravity.</li></ul>				
	<i>Summer Youth Program Instructor</i>	Michigan Tech.		06/2018	
	<ul style="list-style-type: none"><li>Developed and taught a 1 week “hands-on” course on rocket propulsion.</li></ul>				
	<i>Doctoral Finishing Fellow</i>	Michigan Tech.		01/2018 – 05/2018	
	<ul style="list-style-type: none"><li>Determination of phase change coefficients for cryogenic propellants.</li></ul>				
	<i>Graduate Teaching Assistant</i>	Michigan Tech.		09/2017 – 12/2017	
	<ul style="list-style-type: none"><li>ME Practice 2 laboratory instructor.</li></ul>				
	<i>Graduate Research Assistant</i>	Michigan Tech.		05/2017 – 09/2017	
	<ul style="list-style-type: none"><li>SPR microscopy/ Ellipsometry of water transport in thin ionomer films.</li></ul>				
	<i>Winnikow Fellow</i>	Michigan Tech.		05/2016 – 05/2017	
	<ul style="list-style-type: none"><li>Modeling of phase change experiments.</li></ul>				
	<i>Graduate Teaching Assistant</i>	Michigan Tech.		01/2016 – 05/2016	
	<ul style="list-style-type: none"><li>Mechanical Engineering Laboratory instructor.</li></ul>				
	<i>Graduate Research Assistant</i>	Michigan Tech.		01/2014 – 12/2015	
	<ul style="list-style-type: none"><li>Cryo-Neutron imaging phase change experiments.</li></ul>				
	<i>Engineering Learning Center Coach</i>	Michigan Tech.		01/2014 – 03/2014	
	<ul style="list-style-type: none"><li>Tutored undergraduates on several topics including Thermodynamics, Statics and MATLAB.</li></ul>				
	<i>Hydraulics Engineer</i>	The Raymond Corporation		03/2013 – 08/2013	
	<ul style="list-style-type: none"><li>Modified hydraulic systems to account for “thermal lift drift” in forklifts.</li><li>Developed models to predict hydraulic system performance as part of an efficiency study.</li></ul>				
<b>Service</b>	Senior Capstone Design Review Panelist			2014 – 2017	
	Orientation Facilitator			2017	
	Design Expo Oral/Poster Presentation Judge			2014 – 2016	
	Engineers Without Borders, Guatemala			2013	

## Funded Grant Proposals

- ***K. Bellur*** and J. S. Allen, “Testing the equivalence of evaporation and condensation coefficients using the Constrained Vapor Bubble (CVB) data from ISS experiments”, *Principal author of a graduate student proposal* submitted to NASA NNH17ZTT001N-17PSI\_D. Two year budget (2018-2020) : \$197,580.

## Honors and Awards

- Best poster award, American Society of Gravitational and Space Research (ASGSR) annual meeting, 2018.
- 1<sup>st</sup> place award for best oral presentation, Graduate Research Colloquium, Michigan Tech, 2018.
- Dean's award for outstanding scholarship, Michigan Tech, 2018.
- Doctoral finishing fellowship, Michigan Tech, 2018.
- Winnikow fellowship, Michigan Tech, 2016-2017.
- T.H.K. Frederking Space Cryogenics Workshop Student Scholarship, 2017.
- American Society of Gravitational and Space Research (ASGSR) annual meeting travel award, 2017.
- 2<sup>nd</sup> place award, 3 Minute Thesis (3MT) competition, Michigan Tech, 2017.
- 3<sup>rd</sup> place award for best poster, ACS UPLS Student Research Symposium, 2017.
- Multiple travel grant awards from the Graduate Student Government at Michigan Tech, 2016-2017.

## Peer-reviewed Journal publications

1. ***K. Bellur***, E. F. Médici, J. Hermanson, C. K. Choi and J. S. Allen, “Determining solid-fluid interface temperature distribution during phase change of cryogenic propellants using transient thermal modeling”, *Cryogenics*, Vol 91, pp. 103-111, 2018.
2. ***K. Bellur***, D. S. Hussey, D. L. Jacobson, J. M. LaManna, E. F. Médici, J. Hermanson, J. S. Allen, and C. K. Choi. “Neutron attenuation analysis of cryogenic propellants”, *Journal of Heat Transfer*, 140(3), 2018.
3. ***K. Bellur***, V. Konduru, E. F. Médici, D. S. Hussey, D. L. Jacobson, J. M. LaManna, J. S. Allen, and C. K. Choi. “Visualization of the Evaporation/Condensation Phenomena in Cryogenic Propellants”, *Journal of Flow Visualization and Image Processing*, 23(1-2), pp. 137-156, 2017.
4. V. Konduru, ***K. Bellur***, E. F. Médici, J. S. Allen, C.K. Choi, D. S. Hussey, D. L. Jacobson, J. Leão, J. McQuillen, J. Hermanson, A. Tamilarasan, “Examining Liquid Hydrogen Wettability using Neutron Imaging”, *Journal of Heat Transfer*, 138(8), 2016.
5. ***K. Bellur***, E. F. Médici, M. Kulshreshtha, V. Konduru, D. Tyrewala, A. Tamilarasan, J. McQuillen, J. Leão, D. S. Hussey, D. L. Jacobson, J. Scherschligt, J. Hermanson, C. K. Choi, J. S. Allen, “A new experiment for investigating evaporation and condensation of cryogenic propellants”, *Cryogenics*, Vol 74, pp. 131-137, 2016.
6. ***K. Bellur***, V. Konduru, M. Kulshreshtha, D. Tyrewala, E. F. Médici, J. S. Allen, C.K. Choi, D. S. Hussey, D. L. Jacobson, J. Leão, J. McQuillen, J. Hermanson and A. Tamilarasan, “Contact Angle Measurement of Liquid Hydrogen (LH2) in Stainless Steel and Aluminum Cells”, *Journal of Heat Transfer*, 138(2), 2016.
7. ***K. Bellur***, E. F. Médici, J. S. Allen, C.K. Choi, J. Hermanson, A. Tamilarasan, D. S. Hussey, D. L. Jacobson, J. Leão, and J. McQuillen, “Neutron Radiography of Condensation and Evaporation of Hydrogen in a Cryogenic Condition”, *Journal of Heat Transfer*, 137(8), 2015.

## Manuscripts under preparation

- ***K. Bellur***, E. F. Médici, C. K. Choi, J. Hermanson, and J. S. Allen. “An optical technique to probe length scales lower than the imaging resolution”.
- ***K. Bellur***, E. F. Médici, C. K. Choi, J. Hermanson, and J. S. Allen. “A combined experimental and multi-scale modeling approach to determine accommodation coefficients of cryogenic propellants”.

**Reviewer for** *Cryogenics*,  
*Nano*,  
*Journal of Thermophysics and Heat Transfer*.

## Proceedings, oral & poster presentations in conferences and colloquia

1. ***K. Bellur***, E. F. Médict, J. Hermanson, D. S Hussey, C. K. Choi and J. S. Allen, “A combined experimental and multi-scale modeling technique to determine accommodation coefficients of cryogenic propellants”, Gordon Research Conference on Micro and Nanoscale Phase Change Heat Transfer, Lucca (Barga), Italy, February 3 – 8, 2019. (Poster Presentation)
2. ***K. Bellur***, E. F. Médict, J. Hermanson, D. S Hussey, C. K. Choi and J. S. Allen, “A combined experimental and multi-scale modeling technique to determine accommodation coefficients of cryogenic propellants”, Gordon Research Seminar on Micro and Nanoscale Phase Change Heat Transfer, Lucca (Barga), Italy, February 2 – 3, 2019. (Poster & Oral Presentation)
3. ***K. Bellur***, E. F. Médict, J. Hermanson, D. S Hussey, C. K. Choi and J. S. Allen, “Mass Accommodation Coefficients of Cryogenic Propellants”, 34th Annual Meeting American Society for Gravitational and Space Research, Washington, DC, October 31 – November 03, 2018. (Poster & Oral Presentation, Best Poster Presentation award)
4. ***K. Bellur***, D. S Hussey, E. F. Médict, C. K. Choi, J. Hermanson, D. Jacobson, J. LaManna and J. S. Allen, “Determining the evaporation and condensation coefficients of cryogenic propellants”, 11th World Conference on Neutron Radiography, Sydney, Australia, September 3 - 7, 2018. (Poster Presentation)
5. ***K. Bellur***, E. F. Médict, J. Hermanson, D. S Hussey, C. K. Choi and J. S. Allen “Visualization of Evaporation/Condensation in Cryogenic Propellants”, Graduate Research Colloquium, MTU, February 28, 2018. (Best Oral Presentation Award)
6. ***K. Bellur***, E. F. Médict, J. Hermanson, D. S Hussey, C. K. Choi and J. S. Allen, “A novel method to determine accommodation coefficients of cryogenic propellants”, 33rd Annual Meeting American Society for Gravitational and Space Research, Renton, WA, October 25-28, 2017. (Poster & Oral Presentation)
7. C.K. Choi, ***K. Bellur***, D. S. Hussey, D. Jacobson, J. Lamana, E. F. Médict, J. Hermanson and J. S. Allen, “Neutron attenuation analysis of cryogenic propellants”, ASME Summer Heat Transfer Conference, Bellevue, WA, July 9-12, 2017. (Poster & Oral presentation)
8. ***K. Bellur***, E. F. Médict, J. Hermanson, C. K. Choi and J. S. Allen, “Determining solid-fluid interface temperature distribution during phase change of cryogenic propellants using transient thermal modeling”, 27th Space Cryogenics Workshop, July 5-7, 2017. (Oral Presentation)
9. ***K. Bellur***, E. F. Médict, J. S. Allen, C. K Choi, “Determining the evaporation and condensation coefficients of cryogenic propellants”, ACS UPLS Student Research Symposium, Marquette, MI, March 25, 2017. (Poster presentation, 3<sup>rd</sup> place award)
10. ***K. Bellur***, E. F. Médict, V. Konduru, A. Tamilarasan, J. Hermanson, C. K. Choi and J. S. Allen, “Neutron Radiography for Determining the Evaporation/Condensation Coefficients of Cryogenic Propellants”, 69<sup>th</sup> Annual Meeting of the APS Division of Fluid Dynamics, Portland, OR, November 22, 2016. (Oral presentation)
11. ***K. Bellur***, V. Konduru, E. F. Médict, J. S. Allen, C. K Choi, “A new method to investigate evaporation and condensation of cryogenic propellants and determine accommodation coefficients”, ACS UPLS Student Research Symposium, Marquette, MI, April 2, 2016. (Poster presentation)
12. V. Konduru, ***K. Bellur***, E. F. Médict, J. S. Allen, C. K Choi, D. S. Hussey, D. Jacobson, J. Leão, J. McQuillen, J. Hermanson, A. Tamilarasan, “Neutron Radiography of Condensation and Evaporation of Hydrogen in a Cryogenic Condition”, ASME-IMECE, Houston, TX, November 13-19, 2015. (Poster & Oral presentation)
13. C.K. Choi, ***K. Bellur***, V. Konduru, M. Kulshreshtha, D. Tyrewala, E. F. Médict, A. Tamilarasan, D. S. Hussey, D. Jacobson, J. Leão, J. McQuillen, J. Hermanson and J. S. Allen, “Contact angle measurement of Hydrogen in a Cryogenic Condition”, 1<sup>st</sup> TFESC, New York, NY, August 9-12, 2015. (Poster & Oral presentation)
14. J. S. Allen, C.K Choi, J. Hermanson , E. F. Médict, ***K. Bellur***, V. Konduru, M. Kulshreshtha, A. Tamilarasan, D. Tyrewala, M. Kostick, “A New Experiment for Determining Evaporation and Condensation Coefficients of Cryogenic Propellants”, 26th Space Cryogenics Workshop, June 24-26, 2015. (Oral Presentation)
15. ***K. Bellur***, E. F. Médict, J. S. Allen, CK Choi, J. Hermanson, A. Tamilarasan, D. S. Hussey, D. Jacobson, J. Leão, and J. McQuillen, “Kinetic modeling and neutron imaging experiments of evaporation in cryogenic propellants”, Graduate Research Colloquium, MTU, 2015. (Oral presentation)

16. C.K. Choi, J. S. Allen, E. F. Médiçi, ***K. Bellur***, J. Hermanson, A. Tamilarasan, D. S. Hussey, D. Jacobson, J. Leão, J. McQuillen, “Neutron Bidography of Condensation and Evaporation of Hydrogen in a Cryogenic Condition”, ASME-IMECE, Montreal, ON, Canada, November 14-20, 2014. (Poster, & Oral presentation)

### **Workshops**

1. Institute for Mathematics and its Applications (IMA) workshop on “Dynamic Contact Lines: Progress and Opportunities”. University of Minnesota, Minneapolis, MN, March 26-28, 2018. (Poster presentation)
2. NASA Early Stage Innovation Workshop on “Measuring Accommodation coefficients”, Glenn Research Center, Cleveland, OH, November 20, 2014. Oral presentation: J. S. Allen, ***K. Bellur***, E. F. Médiçi and C.K. Choi, “A new experiment for determining evaporation and condensation coefficients of cryogenic propellants”.

### **Invited talks**

1. Portland State University, “Modeling of liquid-vapor phase change and associated processes”, May 24-25, 2018. Invited by Prof. Mark Weislogel.
2. Michigan Technological University, “Using neutron imaging to investigate cryogenic phase change”, September 11, 2018. Invited by Prof. Jaroslaw Drelich.
3. Michigan Technological University, “Grant Writing as a Graduate Student: Practical Tips and Benefits”, October 16, 2018. Invited by Prof. Jaroslaw Drelich. Panel discussion with Jessica Brassard and Allison Hein.

### **Appearances in popular media**

1. Graduate research featured in “Fundamental Questions”, ME-EM departmental annual report, 2016-2017.
2. Featured in “[Tech Today](#)”, Nov 7 2018.

### **Skills**

Neutron Imaging, Small Angle Neutron Scattering, Ellipsometry, Cryogenic Fluid Handling, Surface Plasmon Resonance Microscopy, High Performance Computing.  
Proficient in MATLAB, BASH, PYTHON, LABVIEW, C++, ANSYS FLUENT, HYPERMESH and LAMMPS.