

# Jason Chan

Mechanical Engineer, Research Scientist  
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## SUMMARY

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Experienced in flow boiling experiments using optical measurement techniques. Familiar with SolidWorks, MATLAB, LabVIEW and Zemax.

## EDUCATION

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<b>University of Wisconsin - Madison</b> <i>PhD in Mechanical Engineering, GPA: 3.8/4.0</i>	Madison, WI <i>Expected graduation Dec. 2023</i>
<b>University of Wisconsin - Madison</b> <i>Master of Science, Mechanical Engineering</i>	Madison, WI <i>Graduated May 2020</i>
<b>University of Wisconsin - Madison</b> <i>Bachelor of Science, Mechanical Engineering</i>	Madison, WI <i>Graduated May 2018</i>

## RESEARCH

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<b>Multiphase Flow Visualization and Analysis Laboratory (MFVAL)</b> <i>Research Assistant</i>	Fall 2018 - present <i>UW-Madison</i>
Sponsor: Dr. Evan Hurlburt at the Naval Nuclear Laboratory	
<ul style="list-style-type: none"><li>Designed, fabricated, instrumented, and operated a closed-loop flow facility for vertical annular flow heat transfer experiments with pressurized refrigerant.</li><li>Quantified experimental uncertainties using vibration and optical analyses.</li><li>Developed and validated new experimental techniques for non-intrusive thermometry and liquid-film thickness measurements using laser optics.</li><li>Developed image processing programs using high-performance computing for the optical film-thickness measurement techniques.</li><li>Designed LabVIEW programs to control the flow loops, enable high-speed data collection, and monitor system status.</li><li>Developed process for documenting facility components and experimental procedures.</li><li>Mentored 10 undergraduate research assistants throughout their research projects.</li><li>Co-authored 4 publications in peer-reviewed scientific journals. Presented work at two international conferences. Wrote yearly progress reports for sponsor.</li></ul>	
<b>Two Phase Solver</b> <i>Lead Software Developer</i>	2023 - present <i>UW-Madison</i>
<ul style="list-style-type: none"><li>Collaboration between scientists from UW-Madison, Westinghouse and the Naval Nuclear Lab.</li><li>Developed flow boiling simulation software in MATLAB for a wide range of conditions, fluids, and geometry.</li><li>Designed the program framework and optimized computational performance.</li><li>Managed project and delegated tasks to team members.</li></ul>	
<b>Advanced Materials for Energy and Electronics Group</b> <i>Undergraduate Research Assistant</i>	Spring 2016 - Spring 2018 <i>UW-Madison</i>
<ul style="list-style-type: none"><li>Designed and fabricated instruments for producing highly reproducible, large-scale arrays of carbon nanotubes on wafers.</li><li>Developed optical setup for tracking ink/water interface during nanotube deposition.</li><li>Developed MATLAB-based image processing program to characterize the alignment of carbon nanotubes deposited in a high-shear flow for next-generation transistors.</li><li>Co-authored 2 publications in peer-reviewed scientific journals.</li></ul>	

## SKILLS

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<b>Programming</b>	LabVIEW, MATLAB, Python, Fortran, Bash, Git, JavaScript, L <sup>A</sup> T <sub>E</sub> X
<b>Applications</b>	EES, ANSYS Fluent, Zemax, Adobe Illustrator
<b>Fabrication</b>	Vertical milling machines (CNC, manual), Lathe work (CNC, manual; metal), Woodworking, 3D Printing, Electronics soldering, MIG & TIG Welding, Laser cutting, Sheet metal work, Proof-of-concept prototypes
<b>Language</b>	Mandarin Chinese (native), English (fluent), Japanese (conversational)

## TEACHING EXPERIENCES

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<b>Teaching Assistant</b>	UW-Madison
<i>Thermodynamics, Senior Design, Intro to Mechanical Engineering</i>	<i>Fall 2018 - Fall 2022</i>
<ul style="list-style-type: none"><li>Guided students through an iterative design process.</li><li>Introduced freshmen to a wide array of engineering topics through a hands-on approach.</li></ul>	
<b>Sailing Club Instructor</b>	UW-Madison
<i>Techs, Club 420s, Lasers, Sloops</i>	<i>Summer 2016</i>
<ul style="list-style-type: none"><li>Communicated importance of water safety and developed strategies for resolving unexpected situations on the water.</li><li>Introduced students to the basic techniques of inland sailing and sailboat racing.</li><li>Encouraged students to develop appreciation for teamwork in a fast-paced environment.</li></ul>	

## PUBLICATIONS

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- J. Chan, R. W. Morse, E. T. Hurlburt, K. M. Dressler, G. F. Nellis, A. Berson (in progress). *Liquid-Film Flow Rate From Measurements of Disturbance Wave Characteristics for Applications in Thin Film Flow*. Experiments in Fluids.
- R. W. Morse, J. Chan, E. T. Hurlburt, J.M. Le Corre, A. Berson, G. F. Nellis, K. M. Dressler (under review). *A new paradigm for the role of disturbance waves and wall heat transfer in annular two-phase flow*. International Journal of Heat and Mass Transfer.
- R. W. Morse, J. Chan, K. M. Dressler, E. T. Hurlburt, G. F. Nellis, and A. Berson (under review). *Critical heat flux, liquid-film dryout, and disturbance waves under pulsed vapor conditions in two-phase annular flow*. Experimental Thermal and Fluid Science.
- R. W. Morse, T.A. Moreira, J. Chan, K. M. Dressler, G. Ribatski, E. T. Hurlburt, L.L. McCarroll, G. F. Nellis, and A. Berson (2021). *Critical Heat Flux and the Dryout of Liquid Film in Two-phase Annular Flow*. Int. J. Heat and Mass Transfer.
- Jason Chan (2020). *Thermoreflectance for the Instantaneous Measurement of Temperature at a Wall-Vapor Interface*. Master's thesis. University of Wisconsin - Madison.
- B. F. Fehring, R. W. Morse, J. Chan, K. Dressler, E. T. Hurlburt, G. F. Nellis, and A. Berson (2020). *Instantaneous optical measurement of the temperature at the interface between a wall and a thin liquid film*. Journal of Heat Transfer.
- K. R. Jenkins, J. Chan, R. M. Jacobberger, A. Berson, and M. S. Arnold (2018). *Substrate-Wide Confined Shear Alignment of Carbon Nanotubes for Thin Film Transistors*. Advanced Electronic Materials.
- K. R. Jenkins, J. Chan, G. J. Brady, K. K. Gronski, P. Gopalan, H. T. Evensen, A. Berson, and M. S. Arnold (2017). *Nanotube Alignment Mechanism in Floating Evaporative Self-Assembly*. Langmuir.

## SELECT INTERESTS

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<b>Outdoors</b>	Sailing, birding, cycling, running, swimming, camping
<b>Music</b>	Classical guitar
<b>Creative</b>	Wildlife photography, watercolor, cooking, stained glass, topological map-making

## REFERENCES

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**Prof. Gregory F. Nellis** - Solar Energy Lab at UW-Madison

Email: gfnellis@engr.wisc.edu

**Dr. Arganthaël Berson** - Solar Energy Lab at UW-Madison

Email: arganthaël.berson@wisc.edu

**Dr. Evan T. Hurlburt** - Naval Nuclear Laboratory

Email: evan.hurlburt@unnpp.gov

**Dr. Jean-Marie LeCorre** - Westinghouse Electric

Email: lecorrjm@westinghouse.com

**Dr. Michael Cheadle** - UW-Madison

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**Prof. Scott Sanders** - Engine Research Center at UW-Madison

Email: stsanders@wisc.edu

**Dr. Tiago A. Moreira** - Thermal Hydraulics Laboratory at UW-Madison

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