

Jason Chan

Mechanical Engineer, Research Scientist
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SUMMARY

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

EDUCATION

University of Wisconsin - Madison <i>PhD in Mechanical Engineering, GPA: 3.8/4.0</i>	Madison, WI <i>Graduated Jan. 2024</i>
University of Wisconsin - Madison <i>Master of Science, Mechanical Engineering</i>	Madison, WI <i>Graduated May 2020</i>
University of Wisconsin - Madison <i>Bachelor of Science, Mechanical Engineering</i>	Madison, WI <i>Graduated May 2018</i>

EXPERIENCE

Wisconsin IceCube Particle Astrophysics Center (WIPAC) <i>Instrumentation Engineer</i> <ul style="list-style-type: none">Deployed to Summit Station, Greenland to drill ice holes for a NSF-funded radio neutrino observation project.Developed a glycol spraying system for rescuing stuck ice drills.Designed an inclination and temperature sensor package for monitoring the Antarctic ice sheet, as part of IceCube Upgrade.	Spring 2024 - present <i>UW-Madison</i>
Two Phase Solver <i>Lead Software Developer</i> <ul style="list-style-type: none">Collaboration between scientists from UW-Madison, Westinghouse and the Naval Nuclear Lab.Developed flow boiling simulation software in MATLAB for a wide range of conditions, fluids, and geometry.Designed the program framework and optimized computational performance.Managed project and delegated tasks to team members.	Spring 2023 - present <i>UW-Madison</i>
Multiphase Flow Visualization and Analysis Laboratory (MFVAL) <i>Research Assistant</i> <p>Sponsor: Dr. Evan Hurlburt at the Naval Nuclear Laboratory</p> <ul style="list-style-type: none">Designed, fabricated, instrumented, and operated a closed-loop flow facility for vertical annular flow heat transfer experiments with pressurized refrigerant.Quantified experimental uncertainties using vibration and optical analyses.Developed and validated new experimental techniques for non-intrusive thermometry and liquid-film thickness measurements using laser optics.Developed image processing programs using high-performance computing for the optical film-thickness measurement techniques.Designed LabVIEW programs to control the flow loops, enable high-speed data collection, and monitor system status.Developed process for documenting facility components and experimental procedures.Mentored 10 undergraduate research assistants throughout their research projects.Co-authored 4 publications in peer-reviewed scientific journals. Presented work at two international conferences. Wrote yearly progress reports for sponsor.	Fall 2018 - Spring 2024 <i>UW-Madison</i>

- Designed and fabricated instruments for producing highly reproducible, large-scale arrays of carbon nanotubes on wafers.
- Developed optical setup for tracking ink/water interface during nanotube deposition.
- Developed MATLAB-based image processing program to characterize the alignment of carbon nanotubes deposited in a high-shear flow for next-generation transistors.
- Co-authored 2 publications in peer-reviewed scientific journals.

SKILLS

Programming	LabVIEW, MATLAB, Python, Fortran, Bash, Git, PLC, JavaScript, L ^A T _E X
Applications	EES, ANSYS Fluent, Zemax, Adobe Illustrator
Fabrication	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
Language	Mandarin Chinese (native), English (fluent), Japanese (conversational)

TEACHING EXPERIENCES

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

PUBLICATIONS

- J. Chan, R. W. Morse, E. T. Hurlburt, K. M. Dressler, G. F. Nellis, A. Berson (2024). *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 (2024). *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, T. A. Moreira, J. Chan, J. J. Valois, E. T. Hurlburt, J. M. Le Corre, A. Berson, K. M. Dressler, G. F. Nellis (2023). *Wall heat transfer and dryout governed by disturbance wave frequency in annular two-phase 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.

CONFERENCE PROCEEDINGS

- J. Chan, R. W. Morse, K. Dressler, G. F. Nellis, A. Berson. *Liquid-Film Flow Rate From Measurements of Disturbance Wave Characteristics for Applications in Two-Phase Annular Flow*. ASME Summer Heat Transfer Conference. Washington, DC. 2023
- J. Chan, B. Fehring, R. W. Morse, K. M. Dressler, G. F. Nellis, A. Berson. *Thermoreflectance Wall Temperature Measurement in Annular Two-Phase Flow*. APS Division of Fluid Dynamics. Atlanta, GA. 2018.

SELECT INTERESTS

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

REFERENCES

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: argantheael.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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