Jason Chan

Mechanical Engineer, Research Scientist
+1-574-214-7141 | jason.chan@wisc.edu | linkedin.com/in/jasonchan1995

SUMMARY

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

EDUCATION

University of Wisconsin - Madison — Madison, WI
PhD in Mechanical Engineering — *Expected graduation Dec. 2023*

University of Wisconsin - Madison — Madison, WI
Master of Science, Mechanical Engineering — *Graduated May 2020*

University of Wisconsin - Madison — Madison, WI
Bachelor of Science, Mechanical Engineering — *Graduated May 2018*

RESEARCH

Multiphase Flow Visualization and Analysis Laboratory (MFVAL) — Fall 2018 - present
Research Assistant — *UW-Madison*

Sponsor: Dr. Evan Hurlburt at the Naval Nuclear Laboratory

- 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.

Two Phase Solver — 2023 - present
Lead Software Developer — *UW-Madison*

- 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.

Advanced Materials for Energy and Electronics Group — Spring 2016 - Spring 2018
Undergraduate Research Assistant — *UW-Madison*

- 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.

PUBLICATIONS

- 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 Mass 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. Jinkins, 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. Jinkins, 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.

REFERENCES

Prof. Gregory F. Nellis - Solar Energy Lab at UW-Madison
Email: gfnellis@engr.wisc.edu

Dr. Evan T. Hurlburt - Naval Nuclear Laboratory
Email: evan.hurlburt@unnpp.gov

Dr. Jean-Marie LeCorre - Westinghouse
Email: lecorrjm@westinghouse.com

Dr. Tiago A. Moreira - Thermal Hydraulics Laboratory at UW-Madison
Email: tmoreira@wisc.edu

TEACHING EXPERIENCES

Teaching Assistant — UW-Madison
Thermodynamics, Senior Design, Intro to Mechanical Engineering — *Fall 2018 - Fall 2022*

- 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
Techs, Club 420s, Lasers, Sloops — *Summer 2016*

- 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.

SKILLS

Programming	LabVIEW, MATLAB, Python, Fortran, Bash, Git, JavaScript, LaTeX
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)

SELECT INTERESTS

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