

# Yuqiao (Joy) Fan

[Linked-in](#) | [fany1@ornl.gov](mailto:fany1@ornl.gov) | Work: 865-341-1932 | ORCID: 0000-0002-2975-1735

## EDUCATION

---

<b>PhD in Nuclear Engineering</b> (Minor in <b>Mech. Eng.</b> ) NC State University (NCSU), Raleigh NC	Jul. 2017-Dec. 2021 <i>summa cum laude</i>
<b>MSE in Nuclear Engineering</b> University of Michigan (UMich), Ann Arbor MI	Aug. 2015-Dec. 2016 <i>cum laude</i>
<b>BE in Nuclear Engineering</b> Xi'an Jiaotong University (XJTU)	Sep. 2011-Jun. 2015 Rank: 1/94
<b>Visiting Student</b> Hong Kong University of Science and Technology (HKUST)	Summer 2013, 2014 Grades: A, A+

## EMPLOYMENT EXPERIENCE

---

<b>Blanket, Fuel Cycle, and Fusion Engineer, R&amp;D Associate Staff</b> Fusion Energy Division, Oak Ridge National Laboratory (ORNL) <i>Supervisor: Dr. Larry Baylor (baylorlr@ornl.gov)</i>	Feb. 2022-
<ul style="list-style-type: none"><li>• Conducting liquid metal (LM) magnetohydrodynamics (MHD) flow study in Dual-Coolant Lead-Lithium blanket, optimizing design of the LM feeding geometry for the breeding blanket.</li><li>• Integrating various physics (MHD, conjugated heat transfer, mass transfer, two-phase, etc.) to tackle cutting-edge challenges related to plasma-facing components and corrosion issues.</li><li>• Performing high-fidelity Computational Fluid Dynamics (CFD) simulations on cryogenic hydrogen extruder for leakage-reduced fuel injection into the fusion reactors, which contributes to ITER's success.</li><li>• Studied the feasibility of a novel blanket candidate, Toroidally Symmetric Lead Lithium blanket, by demonstrating lower MHD pressure drop under significant magnetic fields.</li><li>• Co-PI on CFD modeling of the helium cooling performance at the heated first wall of the fusion blanket; worked closely with experimentalists and advance manufacturing staff on the design and fabrication of the helium flow channel.</li><li>• Managing computational servers and coordinate licenses for ANSYS and COMSOL.</li><li>• Active involvement in hiring committees for recruiting staff members, postdocs, and interns.</li></ul>	

### Research Assistant

Multiphase Research Group, NCSU <i>Advisor: Prof. Igor Bolotnov (igor_bolotnov@ncsu.edu)</i>	Jul. 2017-Feb. 2022
<ul style="list-style-type: none"><li>• Integrated proportional–integral–derivative (PID) control with level-set method in PHASTA code; achieved highly scalable, efficient, accurate, and robust two-phase flow rate control</li><li>• Applied PID flow rate control to study Counter Current Flow Limitation (CCFL) in light water reactor (LWR) debris bed channels; developed correlations and dimensionless numbers to predict CCFL occurrence and for safety analysis in severe accident scenarios</li><li>• Developed novel gravity control method and added this new capability into existing PID bubble controller; achieved more accurate bubble simulation results for verification and validation (V&amp;V)</li><li>• Applied bubble controller on closure development of bubble interfacial forces as well as deformation and break-up regimes with validation from experimental research</li><li>• Conducted pool boiling simulations with multiple nucleation sites; concluded bubble departure behaviors under different nucleation site patterns, site distances, and heat fluxes</li></ul>	

### Intern (remote)

Institute of Fluid Dynamics, Helmholtz-Zentrum Dresden-Rossendorf, Germany	Summer 2020
----------------------------------------------------------------------------	-------------

# Yuqiao (Joy) Fan

[Linked-in](#) | [fany1@ornl.gov](mailto:fany1@ornl.gov) | Work: 865-341-1932 | ORCID: 0000-0002-2975-1735

*Advisors: Dr. Dirk Lucas (d.lucas@hzdr.de), Dr. Roland Rzehak (r.rzehak@hzdr.de)*

- Conducted high resolution simulations of lift and drag forces on bubbles at high shear rates
- Developed closures of interfacial forces for Eulerian-Eulerian baseline models

## Intern

Advanced Reactor Engineering and Development Section & CASL, ORNL

Fall 2019

*Advisors: Dr. David Pointer (pointerwd@ornl.gov), Dr. Marc-Olivier Delchini (delchining@ornl.gov)*

- Worked on application, model validation, uncertainty quantification, and documentation of Eulerian-Eulerian FY19 CASL boiling models
- Conducted two-phase Reynolds Averaged Navier Stokes (RANS) simulations using Star-CCM+ on departure from nucleate boiling in cylindrical channel
- Performed bug-hunting and solution verification of nek4nuc (integrated Nek5000 into NEAMS Workbench) via turbulent simulations of pipe channel
- Applied nek4nuc in flow characteristics study of High Flux Isotope Reactor (HFIR) cooling channel with high resolution Large Eddy Simulations (LESs)

## Graduate Student Research Assistant

*Experimental and Computational Multiphase Flow Laboratory, UMich*

Aug. 2015-Dec. 2016

- Designed bubble injector for water-air fuel bundle in experiment system
- Programmed 3D data visualization acquired by wire mesh sensor at bubble column facility

## EXPERIMENTAL RESEARCH EXPERIENCE

---

### Undergraduate Student Research Assistant

Dec. 2014- Jun. 2015

Laboratory on flow and heat transfer characteristics of steam generator tube bundles, XJTU

*Advisor: Prof. Wenxi Tian (wxtian@mail.xjtu.edu.cn)*

- Conducted shakedown tests on large-scale experimental facility of partial scaled tube bundles at secondary side in steam generator of nuclear reactor CAP1400
- Studied the flow and heat transfer characteristics by experiments and simulations and developed correlations for friction loss of tube bundles

### Research Intern

Centre for Energy and Thermal Systems, HKUST

Summer 2014

*Advisor: Prof. Huihe Qiu (meqiu@ust.hk)*

- Designed and performed copper cylinder pool boiling experiments and obtained boiling curves
- Improved heat transfer performance by fabricating nanostructures on heated copper surfaces

### Undergraduate Student Research Assistant

Sep. 2013-Jul. 2014

Laboratory of Thermal Science and Engineering, XJTU

*Advisor: Prof. Yaling He (yalinghe@mail.xjtu.edu.cn)*

- Designed and fabricated polymer filled copper plates to rearrange thermal resistance distribution
- Changed heat flow on the plate and improved thermal isolation performance at center volume

### Undergraduate Student Research Assistant

Mar. 2013- Aug. 2015

Laboratory of Fluid Machinery, XJTU

*Advisor: Prof. Zhongguo Sun (sun.zg@mail.xjtu.edu.cn)*

- Designed and fabricated experimental apparatus for bottleneck effect, an **original research** study
- Studied flow instability influenced by inclination angles at the bottleneck of flask-shape container

# Yuqiao (Joy) Fan

[Linked-in](#) | [fany1@ornl.gov](mailto:fany1@ornl.gov) | Work: 865-341-1932 | ORCID: 0000-0002-2975-1735

## FUNDING AWARDS

- 
- |                                                                                                                                                                                                                                                                   |                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| <b>Department of Energy, PI</b>                                                                                                                                                                                                                                   | Under review        |
| <ul style="list-style-type: none"><li>Private Facility Research Program, “<i>Fundamental Study of Liquid First Wall Technology Leveraging EX-Fusion’s High-Repetition Rate Inertial Fusion Energy Facility</i>”</li></ul>                                         |                     |
| <b>Department of Energy, ORNL PI</b>                                                                                                                                                                                                                              | Feb. 2025-Feb. 2028 |
| <ul style="list-style-type: none"><li>Reaching a New Energy Science Workforce (RENEW) Program, “<i>Initiatives to Grow New Innovative Talent to Enable Fusion Energy (IGNITE Fusion Energy)</i>”</li></ul>                                                        |                     |
| <b>Department of Energy, PI</b>                                                                                                                                                                                                                                   | Jan. 2023-present   |
| <ul style="list-style-type: none"><li>NERSC DOE Mission Science Allocation Award, “<i>Liquid metal plasma-facing component</i>”</li><li>Recipient for the Allocation Years 2023, 2024, and 2025</li></ul>                                                         |                     |
| <b>Oak Ridge National Laboratory, Co-PI</b>                                                                                                                                                                                                                       | Jul. 2022-Sep. 2024 |
| <ul style="list-style-type: none"><li>Laboratory Directed Research and Development (LDRD), “<i>Predictive modeling of Helium flow with validation</i>”</li><li>Awarded a third-year extension for fiscal year 2024, recognizing outstanding performance</li></ul> |                     |

## HONORS & OTHER AWARDS

- 
- |                                                                                                                                                                                                                                                                                                                                         |             |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| <b>Selected participant, ATPESC, Argonne National Laboratory (ANL)</b>                                                                                                                                                                                                                                                                  | Summer 2025 |
| <ul style="list-style-type: none"><li>Selected through a highly competitive global application process to participate in the prestigious supercomputing training program, <b>Argonne Training Program on Extreme-Scale Computing</b> (two weeks, fully funded by ANL)</li></ul>                                                         |             |
| <b>Finalist in the Your Science in a Nutshell competition, ORNL</b>                                                                                                                                                                                                                                                                     | Summer 2023 |
| <ul style="list-style-type: none"><li>Distinguished participant in one of the most prestigious contests for early-career researchers, presenting “<i>Squeezing better performance out of fusion reactors</i>”</li></ul>                                                                                                                 |             |
| <b>Best Talk in Nuclear Energy, ORNL</b>                                                                                                                                                                                                                                                                                                | May 2023    |
| <ul style="list-style-type: none"><li>Received the People’s Choice Award during 2023 ORPA Research Symposium, an annual research symposium for researchers from ORNL and partner universities to share their research, presenting “<i>Helium Flow Visualization Simulation for Fusion Reactor Blanket First Wall Cooling</i>”</li></ul> |             |
| <b>Mentored Teaching Fellowship, College of Engineering (COE), NCSU</b>                                                                                                                                                                                                                                                                 | Jan. 2020   |
| <ul style="list-style-type: none"><li>Offered to only 10 teaching assistants in COE</li></ul>                                                                                                                                                                                                                                           |             |
| <b>Selected participant, Nuclear Innovation Bootcamp, UC Berkeley</b>                                                                                                                                                                                                                                                                   | Summer 2018 |
| <ul style="list-style-type: none"><li>Completed group project of starting an innovative company utilizing machine learning to reduce redundant labor cost in reactor power plants</li></ul>                                                                                                                                             |             |
| <b>Graduate Merit Award, College of Engineering, NCSU</b>                                                                                                                                                                                                                                                                               | Jul. 2017   |
| <ul style="list-style-type: none"><li>Offered to only 2-3 entering graduate students per department</li></ul>                                                                                                                                                                                                                           |             |
| <b>Outstanding Student Pacesetter, XJTU</b>                                                                                                                                                                                                                                                                                             | Nov. 2014   |
| <ul style="list-style-type: none"><li>Only 10 out of ~16,000 undergraduates awarded each year.</li><li>The highest and the most prestigious honor for the students at XJTU.</li></ul>                                                                                                                                                   |             |

# Yuqiao (Joy) Fan

[Linked-in](#) | [fany1@ornl.gov](mailto:fany1@ornl.gov) | Work: 865-341-1932 | ORCID: 0000-0002-2975-1735

**National Scholarship**, The Ministry of Education of China

Sep. 2013, Sep. 2014

- Top 0.2%; one of the highest honors for university students in China

**Meritorious Winner, Mathematical Contest in Modeling**

Consortium for Mathematics & its Applications, USA

Feb. 2014

- Top 9.7%; a three-person team solving an applied math problem by modeling and programming

## FEATURING

---

### ORNL Today

- Featured in “DOE awards ORNL grant through RENEW initiative to mentor next generation of fusion researchers” as the PI who initiated the majority of the original concepts for this proposal.

**Success Story, Oak Ridge Institute for Science and Education (ORISE)**

- Selected as one of very few researches at ORNL to be showcased in the ORISE column "What's it like Being an ORISE STEM Researcher?"

**Science Headlines, multiple media (energy.gov, phys.org, ornl.gov, etc)**

- Featured in "Fusion Experts Address Cooling Strategies for Fusion Fuel Cycle", contributing to helium flow visualization as a co-PI.

## INVITED TALK

---

“Fusion Energy: Science and Technology research opportunities at Oak Ridge National Laboratory”,  
**Tennessee State University** Nov. 2024

## REVIEWER SERVICE

---

**DOE PAMS** proposal

**ANS journals** (Nuclear Science and Engineering | Nuclear Technology | Fusion Science and Technology)

**Nuclear Engineering and Design**

**Annals of Nuclear Energy**

International Topical Meeting on Nuclear Reactor Thermal Hydraulics (**NURETH**)

Advances in Thermal Hydraulics (**ATH**)

**ANS general Conferences**: Annual Meetings, Winter Meetings, Student Conferences

## SERVICE IN PROFESSIONAL SOCIETIES

---

**Technical Program Committee member for ISFNT-16**, 2025

**Track member of the Technical Program Committee for CFD track, NURETH-21**, 2025

**Proposal team member to host NURETH-22 in Fall 2027**, 2024

**Judge for GEM Tech Talk Competition**, invited by Office of Research Excellence at ORNL, 2023

**Member of American Physical Society (APS)** since 2023

**Member of ORNL Women’s Alliance Council** since 2022

**Session chairs for American Nuclear Society (ANS) conferences** since 2020

**Coordinator for the Keynote Speakers**, 2020 ANS Student Conference

**Member of American Nuclear Society** since Mar. 2018

**Financial Chair**, NCSU Proposal Committee for hosting ANS Student Conference, 2017

# Yuqiao (Joy) Fan

[Linked-in](#) | [fany1@ornl.gov](mailto:fany1@ornl.gov) | Work: 865-341-1932 | ORCID: 0000-0002-2975-1735

## PROFESSIONAL ACTIVITIES

<b>Organization Committee Chair, Fusion Innovation Bootcamp</b> Tennessee State University, Nashville, TN	Summer 2026
<ul style="list-style-type: none"><li>As the ORNL PI, will work with 6 universities to launch the first-ever Fusion Innovation Bootcamp at TSU in Summer 2026</li></ul>	
<b>Fusion Fuel Cycles and Blankets Workshop</b> Electric Power Research Institute (EPRI), Charlotte, NC	May 2023
<ul style="list-style-type: none"><li>Played as a presenter and contributor in the workshop, shaping the 10-year roadmap for advancing fusion fuel cycles and blanket research.</li></ul>	
<b>Virtual Workshop Series on Fission Battery Initiative</b> Idaho National Laboratory and the National University Consortium	Spring 2021
<ul style="list-style-type: none"><li>Attended workshops on markets and economic requirements and technology innovations for fission batteries</li></ul>	
<b>2020 ALCF Computational Performance Virtual Workshop</b> Argonne National Laboratory	May 2020
<ul style="list-style-type: none"><li>Attended trainings to improve utilization of HPCs at ALCF</li></ul>	

## SKILLS

**CFD method:** Level-set • Eulerian-Eulerian • DNS • LES • RANS • Finite Element/Volume/Difference  
**CFD code:** PHASTA • ANSYS-FLUENT • ANSYS-Polyflow • Star-CCM+ • Nek5000  
**MHD code:** ANSYS-FLUENT-MHD module • COMSOL Multiphysics • HIMAG  
**Simulation:** ICEM • Ansys Meshing • Cubit • NEAMS Workbench • COBRA-TF • MCNP • SAPPHIRE  
**Pre & Post processing:** Simmodeler • Paraview (parallel) • VisIt • Tecplot  
**HPC system:** FED servers, Libby, Odo (ORNL) • Insight, Henry (NCSU) • Cetus, Cooley, Theta, Polaris (ANL) • Perlmutter (NERSC)  
**Programming:** FORTRAN (MPI) • bash • MATLAB • C • Python  
**Experiment:** AutoCAD • SolidWorks • Machine shop • Calibration  
**Computer Literacy:** Anaconda • Spyder • svn • Git • Latex • Linux • Microsoft Office Suite

## TEACHING EXPERIENCE & ADVISING

Brandon Partee, Tennessee State University, Undergraduate	Summer 2024-present
Zachary Fusinski, University of Michigan, Undergraduate	Summer 2024-present
Lecturer in training, NCSU, NE/MAE 577 Multiscale Two-Phase Flow Simulations	Spring 2020
Graduate Student Instructor, UMich, NERS 444 Thermal-hydraulics for Nuclear Systems	Fall 2016

## JOURNAL PUBLICATION

Yuqiao Fan, Sergey Smolentsev, **Investigation of Anchor Link Magnetohydrodynamic Effects in Toroidally Symmetric Lead-Lithium (TSL) Blanket Concept**, *Fusion Science and Technology* (under review)

# Yuqiao (Joy) Fan

[Linked-in](#) | [fany1@ornl.gov](mailto:fany1@ornl.gov) | Work: 865-341-1932 | ORCID: 0000-0002-2975-1735

Yuqiao Fan, Larry Baylor, Steven Meitner, **High-Fidelity CFD Modeling Techniques of Cryogenic Hydrogen Isotope Extrusion for Fusion Reactor Pellet Fueling**, *Fusion Science and Technology* (under review)

Yuqiao Fan, Igor Bolotnov, **Counter-Current Flow Limitation Studies in Complex Geometries Utilizing Interface Capturing Simulations coupled with PID Flow Rate Controller**, *Nuclear Science and Engineering* (under review)

Sergey Smolentsev, Sunday Aduloju, Yuqiao Fan, et al, **Overview of magnetohydrodynamic studies for liquid metal systems of a fusion power reactor at Oak Ridge National Laboratory**, *Nuclear Science and Engineering* (under review)

Cody Wiggins, Yuqiao Fan, Chris Crawford, Chase Joslin, **Design Overview of a High-Pressure Helium Flow Visualization Apparatus for Blanket Cooling Studies**, *Fusion Science and Technology* (accepted)

Sergey Smolentsev, Sunday Aduloju, Jin Whan Bae, Yuqiao Fan, et al, **Pre-conceptual design and proof of principle assessments of self-cooled Toroidally symmetric lead-lithium (TSL) blanket**, *Fusion Engineering and Design* Oct. 2024

Yuqiao Fan, Cody Wiggins, Charles Kessel, **Simulation of Helium Flow Visualization Apparatus for Studies of Blanket Cooling in Fusion Reactors**, *IEEE Transactions on Plasma Science* Jun. 2024  
- Invited publication by SOFE 2023

Yuqiao Fan, Mengnan Li, William D. Pointer, Igor Bolotnov, **High-fidelity pool boiling simulations on multiple nucleation sites using interface capturing method**, *Nuclear Engineering and Design*  
- Invited publication by NURETH 19 conference Dec. 2022

Yuqiao Fan, Jun Fang, Igor Bolotnov, **Complex bubble deformation and break-up dynamics studies using interface capturing approach**, *Experimental and Computational Multiphase Flow* Jul. 2020

Kui Zhang, Yandong Hou, Wenxi Tian, Yuqiao Fan, et al., **Experimental investigations on single-phase convection and steam-water two-phase flow boiling in a vertical rod bundle**, *Experimental Thermal and Fluid Science* Jan. 2017

Kui Zhang, Yuqiao Fan, et al., **Pressure drop characteristics of two-phase flow in a vertical rod bundle with support plates**, *Nuclear Engineering and Design* Aug. 2016

Jun Wang, Yuqiao Fan, et al., **The development of candling module code in module in-vessel degraded analysis code MIDAC and the relevant calculation for CPR1000 during large-break LOCA**, *ASME Journal of Nuclear Engineering and Radiation Science* Feb. 2016

Yuqiao Fan, Xuejun Zhao, et al., **Experimental study on the influence of the incline angle of narrow-necked container on bottleneck effect**, *Journal of Engineering Thermophysics* Aug. 2015

- Invited publication by Chinese Society of Engineering Thermophysics' Academic Conference 2015

Jun Wang, Wenxi Tian, Yuqiao Fan, et al., **The development of a zirconium oxidation calculating program module for Module In-vessel Degraded Analysis Code MIDAC**, *Progress in Nuclear Energy* May 2014

# Yuqiao (Joy) Fan

[Linked-in](#) | [fany1@ornl.gov](mailto:fany1@ornl.gov) | Work: 865-341-1932 | ORCID: 0000-0002-2975-1735

## PATENT

NO. ZL201420436054.8: the experimental system for bottleneck effect, including an adjustable sized bottleneck, the supporting shelf and the driving system. Aug. 2014

## PEER-REVIEWED CONFERENCE TRANSACTIONS & FULL PAPERS

Brandon Partee, [Yuqiao Fan](#), **Computational Fluid Dynamics Solver for Liquid Metal Flow Channel Simulations**, *ANS Student Conference 2025* (accepted) Apr. 2025

[Yuqiao Fan](#), Cody Wiggins, **Helium Flow Simulations of Heat Transfer Enhancement Structures for Blanket First Wall Cooling**, *2024 ANS Annual Meeting* Jun. 2024

[Yuqiao Fan](#), Mengnan Li, William D. Pointer, Igor Bolotnov, **Interface Capturing Simulations on Pool Boiling Performance with Multiple Nucleation Sites**, *NURETH-19* Mar. 2022

Marc-Olivier Delchini, [Yuqiao Fan](#), **Comparisons between High-Fidelity and Low-Fidelity Modeling of the Turbulent Flow in the High Flux Isotope Reactor Cooling Channel Using Nek5000-V17 and Star-ccm+**, *NURETH-19* Mar. 2022

[Yuqiao Fan](#), Marc-Olivier Delchini, Robert Lefebvre, **Verification of Nek4nuc (Nek5000 Integrated in NEAMS Workbench) via Turbulent Pipe Flow Simulation**, *2020 ANS Winter Meeting and Nuclear Technology Expo* Nov. 2020

[Yuqiao Fan](#), Igor Bolotnov, **Gravity Controller Capability for Single-Bubble Interface-Resolved Simulations**, *2020 ANS Winter Meeting and Nuclear Technology Expo* Nov. 2020

[Yuqiao Fan](#), Igor Bolotnov, **Investigation on Bubble Deformation and Break-up Dynamics Using Interface Tracking Method**, *2019 ANS Annual Meeting* Jun. 2019

[Yuqiao Fan](#), Jinyong Feng, Igor Bolotnov, **Investigation of Wall Effect on Deformable Bubble Using Interface Tracking Method**, *2018 ANS Annual Meeting* Jun. 2018

## CONFERENCE PUBLICATIONS

Sergey Smolentsev, Yuchen Jiang, Sunday Aduloju, Jeremy Lore, [Yuqiao Fan](#), et al, **Use of second coolant in LM open-surface divertor designs**, *2025 US-Japan workshop on liquid metal plasma-facing components (LM PFCs)* Feb. 2025

Jeremy Lore, Sergey Smolentsev, [Yuqiao Fan](#), et al, **Modeling plasma liquid metal plasma surface interactions for open surface divertors**, *2025 US-Japan workshop on LM PFCs* Feb. 2025

Brandon Partee, [Yuqiao Fan](#), **Generating a Flow Field Solver Through Computational Fluid Dynamics using Liquid Metal**, *66th Annual Meeting of the APS Division of Plasma Physics* Oct. 2024

Matt Beidler, et al, and [Yuqiao Fan](#), **Modeling resilience of fusion blankets for tokamak disruptions**, *66th Annual Meeting of the APS Division of Plasma Physics* Oct. 2024

[Yuqiao Fan](#), Steven Meitner, Larry Baylor, **High-Fidelity CFD Modeling of Cryogenic Hydrogen Isotope Extrusion for Fusion Reactor Pellet Fueling**, *26th Technology of Fusion Energy Meeting (TOFE 2024)* Jul. 2024

# Yuqiao (Joy) Fan

[Linked-in](#) | [fany1@ornl.gov](mailto:fany1@ornl.gov) | Work: 865-341-1932 | ORCID: 0000-0002-2975-1735

Yuqiao Fan, Sergey Smolentsev, **Investigation of Anchor Link Magnetohydrodynamic Effects in Toroidally Symmetric Lead-Lithium (TSLL) Blanket Concept**, *TOFE 2024* Jul. 2024

Cody Wiggins, Yuqiao Fan, Chris Crawford, Chase Joslin, **Design and Commissioning of High-Pressure Helium Flow Visualization Apparatus for Blanket Cooling Studies**, *TOFE 2024* Jul. 2024

M. Shahinul Islam, Jeremy Lore, Sergey Smolentsev, Yuqiao Fan, et al, **Modelling of fast flow liquid lithium divertor for next step fusion devices using coupled boundary plasma and liquid metal transport codes**, *26th International Conference on Plasma Surface Interaction in Controlled Fusion Devices (PSI-26)* May 2024

Yuqiao Fan, Sergey Smolentsev, **Optimal Design of the Liquid Metal Feeding System for Fusion Reactor Blankets through High-Fidelity MHD Simulations**, *76th Annual Meeting of the APS Division of Fluid Dynamics* Nov. 2023

Yuqiao Fan, Cody Wiggins, Charles Kessel, **Simulation of Helium Flow Visualization Apparatus for Studies of Blanket Cooling in Fusion Reactors**, *SOFE 2023* Jul. 2023

Sergey Smolentsev, Yuqiao Fan, Shahinul Islam, *et al.*, **Recent and future work on LM PFC at ORNL, 2023 US-Japan Workshop on Liquid Metal PFCs** Feb. 2023

## TECHNICAL REPORT & DOCUMENTATION

---

Yuqiao Fan, **Fusion-Engr-New Server User Guide** June. 2024

Sergey Smolentsev, Yuqiao Fan, Sunday Aduloju, Paul Humrickhouse, **Liquid Metal Blanket Candidate for the US Fusion Pilot Plant**, *ORNL LDRD report* 2023-2024

Cody Wiggins, Yuqiao Fan, Chris Crawford, Brian Post, **Predictive Modeling of Helium Flow with Validation**, *ORNL LDRD report* 2022-2024

Yuqiao Fan, Cheng-Kai Tai, Igor A. Bolotnov, **Multiple Bubble Boiling Simulation Scaling and Evaluation**, *CASL report* Nov. 2020

Yuqiao Fan, Roland Rzehak, **DNS Study of Lift and Drag Forces on Bubbles at High Shear Rates** (HZDR Contract No: 3725-001) Aug. 2020

Yuqiao Fan, David Pointer, **FY19 CASL Two-phase Model User Guide** Dec. 2019

Yuqiao Fan, Igor A. Bolotnov, Nam T. Dinh, **Debris Bed Formation and Coolability Task 4 Final Report** (NRC Contract No: NRC-HQ-60-16-T-001) Jun. 2019