MONDAY, JULY 11, 2022

K-08 FUNDAMENTALS OF BOILING/CONDENSATION INCLUDING MICRO/NANO-SCALE EFFECTS I [INCLUDES MOLECULAR LEVEL SIMULATION OF PHASE CHANGE]

8:30AM–10:10AM **INDIA C**

Chair: **Amitabh Narain** - *Michigan Technological University*
Chair: **Diana-Andra Borca-Tasciuc** - *Rensselaer Polytech Institute*
Co-Chair: **Van P. Carey** - *University of California, Berkeley*
Co-Chair: **Dong Liu** - *University of Houston*

Parameters of Micro-Nano Structured Surface on Condensation Heat Transfer Performance of Steam With Various Amounts of Non-Condensable Gas: A Theoretical Analysis

Technical Paper Publication: SHTC2022-81679

Benli Peng - *Dalian Maritime University,* **Wenlong Sheng** - *Dalian Maritime University,* **Yong Zhou** - *Dalian Maritime University,* **Meizhuting Qiu** - *Dalian Maritime University,* **Zhengyu He** - *Dalian Maritime University*

Comparison of Micro Fin Array Configurations for Heat Transfer Enhancement in Microchannels

Technical Paper Publication: SHTC2022-85752

Colton Frear - *Florida Polytechnic University,* **Gerardo Carbajal** - *Florida Polytechnic University,* **Edwar Romero-Ramirez** - *Florida Polytechnic University*

Data-Driven Modeling of Liquid-Vapor Interface Dynamics During Pool Boiling

Technical Paper Publication: SHTC2022-85582

Christy Dunlap - *University of Arkansas,* **Hari Pandey** - *University of Arkansas,* **Han Hu** - *University of Arkansas*

Heat Transfer Rate Predictions of the Air-Cooled Condenser With Machine Learning Algorithm Based on the Operating Big Data of the Power Plant

Technical Paper Publication: SHTC2022-83767

Kai Chen - *Baidu Inc.,* **Xin Xie** - *Baidu Inc.,* **Yan Chu** - *China Huadian Corporation Ltd.,* **Meng Leng** - *China Huadian Corporation Ltd.,* **Jinyi Zhang** - *Baidu Inc.,* **Zhenwei Xu** - *China Huadian Corporation Ltd.,* **Feng Huang** - *Baidu Inc.,* **Heming Zhang** - *Tsinghua University*

Water Thermodynamic Behavior Under Influence of Electric Field: A Molecular Dynamics Study

Technical Paper Publication: SHTC2022-83813

Malcolm Porterfield - *Rensselaer Polytechnic Institute,* **Diana-Andra Borca-Tasciuc** - *Rensselaer Polytechnic Institute*

K-09 NANOSCALE RADIATIVE THERMAL DEVICES/SYSTEMS

8:30AM–10:10AM **FREEDOM E**

Chair: **Richard Zhang** - *University of North Texas*

Self-Thermal Regulating VO2-Fabry-Perot Cavity Coating for Passive Radiative Cooling Device

Technical Presentation Only: SHTC2022-80428

Ken Araki - *University of North Texas,* **Richard Zhang** - *University of North Texas*

Dynamic Emissivity Control Mediated by Breaking of Inversion Symmetry: Dark Mode to Bright Mode Conversion

Technical Presentation Only: SHTC2022-83960

Alok Ghanekar - *University of Southern California,* **Michelle Povinelli** - *University of Southern California*

Active Directional Control of Emissivity With Quasi-Localized Guided Modes

Technical Presentation Only: SHTC2022-84370

Alok Ghanekar - *University of Southern California,* **Michelle Povinelli** - *University of Southern California*

Magnetic Resonance Imaging for 3D Thermometry

Technical Presentation Only: SHTC2022-97599

Darshan Darshan- *University of Illinois at Urbana-Champaign,* **David Cahill** - *University of Illinois at Urbana-Champaign*

Development of a Numerical Model to Assess Sensitivity for Fiber-Based Frequency-Domain Thermoreflectance Measurements

Technical Paper Publication: SHTC2022-80540

Ronald Warzoha - *United States Naval Academy*

K-16 HEAT TRANSFER IN ELECTRONIC EQUIPMENT

8:30AM–10:10AM **PARLOR B**

Chair: **Ronald Warzoha** - *United States Naval Academy*
Co-Chair: **Raffaele Luca Amalfi** - *Seguente, LLC*
Co-Chair: **Solomon Adera** - *University of Michigan*
Co-Chair: **Filippo Cataldo** - *Wieland Provides Srl*

A Loop Heat Pipe for Vehicle CPU Cooling: Peak Performance and Partial Flooding and Dryout Regimes

Technical Paper Publication: SHTC2022-83836

Julio Ferreira - *University of Michigan,* **Massoud Kaviany** - *University of Michigan,* **Vincent Dupont** - *Calyos AS,* **Olivier De Laet** - *Calyos AS,* **Thomas Nicolle** - *Calyos AS,* **Erik Yen** - *GM R&D Center*

Optimal Design of Additively Manufactured Metal Lattice Heat Sinks for Electronics Cooling

Technical Paper Publication: SHTC2022-85400

Bharath Bharadwaj - *Virginia Tech,* **Prashant Singh** - *Mississippi State University,* **Roop Mahajan** - *Virginia Tech*

Hybrid Thermal Management System Combining Vapor Chamber and Composite Phase Change Heat Sink for High Heat Flux Electronic Devices

Technical Presentation Only: SHTC2022-88232

Junjie He - *Xi'an Jiaotong University,* **Shihong Ma** - *Xi'an Jiaotong University,* **Qiuwang Wang** - *Xi'an Jiaotong University,* **Wenxiao Chu** - *Xi'an Jiaotong University*

Heat Transfer Enhancement in Microchannel Heat Sink With Transverse Tesla Valve-Shaped Ribs for Cooling of High-Power Density Electronics

Technical Presentation Only: SHTC2022-88245

Jian-Fei Zhang - *Xi'an Jiaotong University,* **Xing Xu** - *Xi'an Jiaotong University,* **Wei Gao** - *Xi'an Jiatong University,* **Zhiguo Qu** - *Xi'an Jiaotong University,* **Zhiyuan Jiang** - *Xi'an Jiaotong University*

Improved Femtosecond 3D Light Field Lithography With a Phase-Controlled Spatial Light Modulator

Technical Paper Publication: SHTC2022-85681

Aravind Jakkinapalli - *Texas A&M University,* **Sy-Bor Wen** - *TAMU*

Design and Development of a Hybrid Thermal Management System for Electromechanical Actuator for Aircraft

Technical Presentation Only: SHTC2022-89150

Jiajun Xu - *University of the District of Columbia,* **Andoniaina M Randriambololona** - *University of the District of Columbia,* **Kymani Brown** - *University of the District of Columbia,* **Kuuku Botchway** - *University of the District of Columbia*

K-10 HEAT TRANSFER EQUIPMENT I

8:30AM–10:10AM **INDIA D**

Chair: **Kashif Nawaz** - *Oak Ridge National Laboratory*
Co-Chair: **Prashant Singh** - *North Carolina State University*

Effect of Hydraulic Diameter and Surface Roughness on Additively Manufactured Offset Strip Fin Heat Exchanger Performance

Technical Paper Publication: SHTC2022-80416

Teri Baker - *The Pennsylvania State University,* **Michael Manahan** - *The Pennsylvania State University,* **Stephen Lynch** - *The Pennsylvania State University,* **Edward Reutzel** - *The Pennsylvania State University*

Heat Transfer Enhancement in Spirally Corrugated Tube and V-Spirally Corrugated Tube: Computational and Numerical Study

Technical Paper Publication: SHTC2022-81790

Xin-Ji Chen - *Institute of Process Equipment,* **Feng-Lei Wang** - *Qingdao Changlong Power Equipment Co., Ltd.,* **Chen Yang** - *Institute of Process Equipment,* **Zhi-Jiang Jin** - *Institute of Process Equipment,* **Jin-Yuan Qian** - *Institute of Process Equipment*

Diffusion Bonded Compact Heat Exchanger in 740H for High Temperature and High Pressure Applications

Technical Paper Publication: SHTC2022-81837

Zhijun Jia - *CompRex LLC,* **Tom Parlow** - *CompRex, LLC,* **Dane Kuhr** - *University of Wisconsin-Madison,* **Mark Anderson** - *University of Wisconsin-Madison,* **Brian Baker** - *Special Metals*

Numerical Study on the Influence of Fin Parameters on the Flow and Heat Transfer Characteristics for 3-D Finned Flat Tube

Technical Presentation Only: SHTC2022-88238

Yudong Ding - *Chongqing University,* **Yuheng Gu** - *Chongqing University,* **Xiang Yang** - *Chongqing University,* **Zhehao Zhang** - *Chongqing University,* **Xun Zhu** - *Chongqing University,* **Hong Wang** - *Chongqing University,* **Min Cheng** - *Chongqing University,* **Qiang Liao** - *Chongqing University*

Flow and Heat Transfer Characteristics of Supercritical Rp-3 Kerosene in an Inclined Rectangular Channel Heated on One Side

Technical Presentation Only: SHTC2022-86203

Lie-Bin Jiang - *Chongqing University,* **Gu-Yuan Li** - *Chongqing University,* **Jin Yu** - *Chongqing Jiaotong University,* **Bin-Bin Yu** - *Army Logistical Academy,* **Jia Jia Yu** - *Chong Qing University*

Enhancing Data Center Efficiency by a Novel Phase-Change Heat Sink Architecture

Technical Presentation Only: SHTC2022-80216

Suhas Tamvada - *University of Florida,* **Saeed Moghaddam** - *University of Florida*

K-08 FUNDAMENTALS OF BOILING/CONDENSATION INCLUDING MICRO/NANO-SCALE EFFECTS II [INCLUDES MOLECULAR LEVEL SIMULATION OF PHASE CHANGE]

2:00PM–3:40PM **INDIA C**

Chair: **Diana-Andra Borca-Tasciuc** - *Rensselaer Polytech Institute*
Chair: **Amitabh Narain**, *Michigan Technological University*
Co-Chair: **An Zou**, *Syracuse University*
Co-Chair: **Navdeep Dhillon**, *California State University – Long Beach*
Co-Chair: **Ming-chang Lu**, National Taiwan University

A Combined Active and Passive Enhanced Nucleation Rate Flow- and Pool-Boiling Approach for Enabling New Science and Applications

Technical Presentation Only: SHTC2022-81625

Amitabh Narain - *Michigan Technological University,* **Divya Pandya** - *Michigan Technological University,* **Noah Agata** - *Michigan Technological University,* **Logan Canull** - *Michigan Technological University,* **Vibhu Vivek** - *Vivek Technologies LLC,* **Soroush Sepahyar** - *Michigan Technological University,* **Atharva Rahane** - *Michigan Technological University*

Determining Micro Droplet Profiles Using Reflection Interference Fringe (RIF) Technique

Technical Presentation Only: SHTC2022-90374

Iltai (Isaac) Kim - *Texas A&M University-Corpus Christi,* **Yang Lie** - *Texas A&M University-Corpus Christi,* **Jasesung Park** - *Texas A&M University,* **Hyun-Joong Kim** - *CEKO,* **Hong-Chul Kim** - *CEKO*

CaCO3 Crystallization in Droplet Evaporation on Surfaces With Microstructure

Technical Presentation Only: SHTC2022-84351

Hong-Qing Jin - *University of Illinois at Urbana-Champaign,* **Sophie Wang** - *University of Illinois at Urbana-Champaign*

The Effect of Real Gas Radiation on Laminar Natural Convection on a Vertical Plate

Technical Presentation Only: SHTC2022-88078

Nathan Hale - *Brigham Young University,* **Brent Webb** - *Brigham Young University*

Adiabatic Section Flow Resistance of Axial-Groove Heat Pipes for Slowly-Varying Meniscus Curvature

Technical Presentation Only: SHTC2022-94816

Marc Hodes - *Tufts University,* **Andrew Daetz** - *Tufts University,* **Toby Kirk** - *Oxford University*

K-20 COMPUTATIONAL METHODS FOR MATERIALS DEVELOPMENT AND MANUFACTURING I

2:00PM–3:40PM **FREEDOM G**

Chair: **Aaron Wemhoff** - *Villanova University*
Chair: **Mohamed Abdelhady** - *National Research Council Canada*
Chair: **Aaron Wemhoff** - *Villanova University*
Chair: **Hamidreza Najafi** - *Florida Institute of Technology*
Chair: **Shima Hajimirza** - *Stevens Institute of Technology*
Chair: **Cheng-xian Lin** - *Florida International University*
Co-Chair: **Like Li** - *Mississippi State University*
Co-Chair: **Leitao Chen** - *Tennessee State University*

Heat Transfer Enhancement in V-Spirally Corrugated Tube: Computational and Numerical Study

Technical Presentation Only: SHTC2022-88041

Jin-Yuan Qian - *Zhejiang University,* **Xin-Ji Chen** - *Zhejiang University,* **Feng-Lei Wang** - *Zhejiang University,* **Chen Yang** - *Zhejiang University*

Adjoint-Based Shape Optimization of Mini-Channel Radiator Tubes Using a CAD-Based Parametrization

Technical Presentation Only: SHTC2022-90554

Praharsh Pai Raikar - *VITO,* **Nitish Anand** - *VITO,* **Carlo De Servi** - *VITO,* **Matteo Pini** - *Technische Universität Delft*

Heat Pipe-Based Enhanced Dehumidification System Modeling and Comparison

Technical Presentation Only: SHTC2022-96488

Tara Housen - *Villanova University,* **Aaron Wemhoff** - *Villanova University*

Calculating Radiation View Factors Using Hybrid GRU-LSTM Recurrent Neural Networks

Technical Presentation Only: SHTC2022-97760

Alireza Kianimoqadam - *University of Maine,* **Justin Lapp** - *University of Maine*

Forward and Inverse Design of Spectral Emissivity Using Common Machine-Learning Models

Technical Presentation Only: SHTC2022-97667

Sean Lubner - *Massachusetts Institute of Technology,* **Mahmoud Elzouka** - *Lawrence Berkeley National Lab,* **Charles Yang** - *Lawrence Berkeley National Lab,* **Alok Singh** - *Lawrence Berkeley National Lab,* **Minok Park** - *Lawrence Berkeley National Lab,* **Collin Guo** - *Lawrence Berkeley National Lab,* **Adrian Albert** - *Lawrence Berkeley National Lab,* **Vassilia Zorba** - *Lawrence Berkeley National Lab,* **Ravi Prasher** - *Lawrence Berkeley National Lab*

K-19 ENVIRONMENTAL HEAT TRANSFER

2:00PM–3:40PM **FREEDOM E**

Chair: **S.A. Sherif** - *University of Florida*
Co-Chair: **Kashif Nawaz** - *Oak Ridge National Laboratory*
Co-Chair: **Michael Pate** - *Texas A&M University*

A Numerical Study on the Effect of Physical Changes of Air Distribution Setup on the Heating Performance of a Forced Air Circulation System

Technical Paper Publication SHTC2022-84389

Vincent Akula - *Idaho State University,* **Anish Sebastian** - *Idaho State University*

Effects of Air Flow and Micro-Dust Layer on the Onset of Condensation for Solar Glass Applications

Technical Presentation Only: SHTC2022-97554

Mayameen Naser Reda - *Chair of Thermodynamics,* **H.H. Al-Kayiem** - *Universiti Teknologi PETRONAS*

Use of Genetic Algorithms to Extract Fundamental Heat Transfer Performance Parameters From Evaporative Cooler Test Data

Technical Paper Publication: SHTC2022-86172

Samuel Cabrera - *University of California, Berkeley,* **Van P. Carey** - *University of California, Berkeley*

Application of Particle Image Velocimetry to Molten Chloride Salts

Technical Presentation Only: SHTC2022-81525

Noah LeFrancois - *McGill University,* **Valerie Lamenta** - *McGill University,* **Jovan Nedic** - *McGill University,* **Melanie Tetreault-Friend** - *McGill University*

Growth of Zeolite Crystals on Surface

Technical Presentation Only: SHTC2022-93659

Ashok Thapa - *Syracuse University,* **Shalabh C. Maroo** - *Syracuse University*

Non-Equilibrium Energy Transport During Ultrafast Laser Sintering of Nanoparticles for Nanoscale Metal Printing

Technical Presentation Only: SHTC2022-81490

Chinmoy Podder - *Texas A&M University,* **Heng Pan** - *Texas A&M University*

K-10 HEAT TRANSFER EQUIPMENT II
2:00PM–3:40PM INDIA D

Chair: **Kashif Nawaz**- *Oak Ridge National Laboratory*
Co-Chair: **Prashant Sing h**- *North Carolina State University*
Co-Chair: **Sandra Boetcher** - *Embry Riddle Aeronautical University*
Co-Chair: **Ravi Annapradagga** - *Carrier Corporation*

Pool Boiling Heat Transfer Enhancement of Dielectric Fluids on Round Tubes Using Open-Cell Metal Foams

Technical Presentation Only: SHTC2022-87805

Cheng-Min Yang - *Oak Ridge National Laboratory,* **Kashif Nawaz** - *Oak Ridge National Laboratory*

HVAC Systems Improvement for Environment Control to Minimize the Covid 19 Infection Spreads

Technical Presentation Only: SHTC2022-88524

Nazia Afrin - *St. Mary's University*

Thermal Stability of Cryogenic Fluid Flow in Microgravity

Technical Presentation Only: SHTC2022-97391

Qian Lei - *New Jersey Institute of Technology,* **Boris Khusid** - *New Jersey Institute of Technology,* **Joel L. Plawsky** - *Rensselaer Polytechnic Institute,* **Corey Woodcock** - *Rensselaer Polytechnic Institute,* **David Money** - *Princeton CryoTech, Inc,* **Christopher Smith** - *Princeton CryoTech, Inc,* **Tom M. Conboy** - *Creare LLC,* **Mohammad Kassemi** - *Case Western Reserve University*

Numerical Investigation on Shell and Tube Latent Thermal Energy Storage Partially Filled With Metal Foam and Corrugated Internal Tube

Technical Paper Publication: SHTC2022-81806

Bernardo Buonomo - *Università degli studi della Campania "Luigi Vanvitelli",* **Oronzio Manca** - *Università degli studi della Campania "Luigi Vanvitelli",* **Sergio Nardini** - *Università degli studi della Campania "Luigi Vanvitelli",* **Renato Elpidio Plomitallo** - *Università degli studi della Campania "Luigi Vanvitelli"*

Evaluation of Printed Circuit Heat Exchanger Perfromance Using Expermental and Numerical Approaches

Technical Paper Publication: SHTC2022-91451

Kyle Zada - *Vacuum Process Engineering, Inc.,* **Dereje Amogne** - *Vacuum Process Engineering, Inc.*

K-06 HEAT AND MASS TRANSFER IN RENEWABLE ENERGY SYSTEMS
4:00PM–5:40PM INDIA C

Chair: **Leitao Chen** - *Tennessee State University*
Co-Chair: **Hohyun Lee** - *Santa Clara University*

Implementation of a Model Predictive Control Strategy to Regulate Temperature Inside a Plug-Flow Solar Reactor With Counter-Current Flow

Technical Paper Publication: SHTC2022-85609

Assaad Alsahlani - *Purdue University Northwest,* **Kelvin Randhir** - *Michigan State University,* **Michael Hayes** - *Michigan State University,* **Philipp Schimmels** - *Michigan State University,* **Nesrin Ozalp** - *Purdue University Northwest,* **James Klausner** - *Michigan State University*

Analysis of the Heat Transfer and Criterion of Freezing of Molten Salt Startup Flow in Relatively Cold Pipes

Technical Paper Publication: SHTC2022-81902

Ye Zhang - *University of Arizona,* **Peiwen Li** - *University of Arizona*

A Numerical Study of the Dominant Condensation Mechanism in Cross-Flow Transport

Technical Paper Publication: SHTC2022-81884

Saja Al-Rifai - *Florida International University,* **Cheng-xian Lin** - *Florida International University*

Convective Heat Transfer Potential of Particles/Airflow Through Single Cell Thick Additively Manufactured Octet-Shaped Lattice Frame Material

Technical Paper Publication: SHTC2022-81856

Youssef Aider - *Mississippi State University,* Heejin Cho - *Mississippi State University,* Prashant Singh - *Mississippi State University*

Design and Analysis of a Modular High-Temperature Recuperator for Multi-Method Additive Manufacturing

Technical Presentation Only: SHTC2022-81886

Jacob Bryan - *Utah State University,* Aiden Meek - *Utah State University,* Hailei Wang - *Utah State University*

Designing Porous Polymers for Passive Daytime Radiative Cooling

Technical Presentation Only: SHTC2022-96695

Yuan Yang - *Columbia University*

K-09 CHARACTERIZATIONS OF NANOSCALE THERMAL TRANSPORT

4:00PM–5:40PM **FREEDOM E**

Chair: Jun Liu - *North Carolina State University*

A Revisit to the First-Principles Prediction of Interfacial Thermal Conductance of Layered Materials Using Diffuse Mismatch Model

Technical Paper Publication: SHTC2022-78001

Jixiong He - *North Carolina State University,* Jun Liu - *North Carolina State University*

Heat Diffusion Process in the Nonlinear Dynamics in Quasi One-Dimensional Molecules

Technical Paper Publication: SHTC2022-83352

Heeyuen Koh - *Seoul National University,* Maruyama Shigeo - *University of Tokyo*

Non-Intrusive Cooling System Fault Detection and Diagnostics Using Deep Learning of Acoustic Emission

Technical Paper Publication: SHTC2022-85429

Hari Pandey - *University of Arkansas,* Weston Waldo - *University of Arkansas,* Han Hu - *University of Arkansas*

Time-Dependent Solution of Unsteady Flow Equations for Nanoscale Heat and Mass Transfer, Advanced Fluidics, and High Energy Blast Propagations

Technical Paper Publication: SHTC2022-78044

Ramlala Sinha - *Applied Engineering Consultants*

Contact Thermal Resistance Between Boron Nitride Nanotubes With and Without a Polymer Interlayer

Technical Presentation Only: SHTC2022-81528

Zhiliang Pan - *Vanderbilt University,* Yi Tao - *Southeast University,* Matthew Fitzgerald - *Vanderbilt University,* Deyu Li - *Vanderbilt University*

Thermal Transport via Gas Conduction Within Nanoconfinement

Technical Presentation Only: SHTC2022-81599

Greg Acosta - *University of Nebraska-Lincoln,* Mohammad Ghashami - *University of Nebraska-Lincoln*

K-13 CONDENSATION

4:00PM–5:40PM **FREEDOM F**

Chair: Vinod Srinivasan - *University of Minnesota*
Co-Chair: Jovica Riznic - *Canadian Nuclear Safety Commission*

Experimental and Modelling Analysis of a Large-Scale Two-Phase Loop Thermosyphon

Technical Paper Publication: SHTC2022-78822

Debraliz Isaac Aragones - *Purdue University,* Chien-Hua Chen - *Advanced Cooling Technologies,* Justin Weibel - *Purdue University,* David Warsinger - *Purdue University,* Richard Bonner - *Advanced Cooling Technologies*

Numerical Simulation on the Flow and Heat Transfer Characteristics of the Condenser Shell Side in a 3rd Generation Nuclear Power Plant

Technical Paper Publication: SHTC2022-85131

Dong Yan - *Shandong Nuclear Power Company,* Lin Chen - *Shandong Nuclear Power Company,* Yingpei Xia - *Shandong Nuclear Power Company,* Yueheng Sun - *Shandong Nuclear Power Company*

Condensation Heat Transfer Characteristics of Binary Vapor Mixtures of Immiscible Liquids

Technical Presentation Only: SHTC2022-88091

Qiang Liao - *Chongqing University,* **Yuheng Gu** - *Chongqing University,* **Jinkui Jia** - *Chongqing University,* **Yudong Ding** - *Chongqing University,* **Hong Wang** - *Chongqing University,* **Min Cheng** - *Chongqing University,* **Xun Zhu** - *Chongqing University*

Condensation Heat Transfer Characteristics of Binary Vapor Mixtures of Immiscible Liquids

Technical Presentation Only: SHTC2022-87444

Qiang Liao - *Chongqing University,* **Yuheng Gu** - *Chongqing University,* **Jinkui Jia** - *Chongqing University.* **Yudong Ding** - *Chongqing University,* **Hong Wang** - *Chongqing University,* **Min Cheng** - *Chongqing University,* **Xun Zhu** - *Chongqing University*

Prediction of Condensation Freezing Droplet Size on Nano-Textured Superhydrophobic Surfaces

Technical Presentation Only: SHTC2022-84381

Yuchen Shen - *University of Illinois at Urbana-Champaign,* **Sophie Wang** - *University of Illinois at Urbana-Champaign*

K-10 HEAT TRANSFER EQUIPMENT III

4:00PM–5:40PM **INDIA D**

Chair: **Prashant Singh**- *North Carolina State University*
Co-Chair: **Kashif Nawaz**- *Oak Ridge National Laboratory*
Co-Chair: **Sandra Boetcher** - *Embry Riddle Aeronautical University*
Co-Chair: **Arun Muley** - *Boeing*

Polymer Composite Heat Transfer Surfaces in Highly Corrosive Application

Technical Presentation Only: *SHTC2022-83809*

Abisolom Goitom - *Technoform Tailored Solutions Holding GmbH,* **Nicolas Schiffer** - *Technoform Tailored Solutions Holding GmbH*

Thermal Transport in Partially Porous Channel Flow

Technical Presentation Only: SHTC2022-83883

Shilpa Vijay - *University of Southern California,* **Mitul Luhar** - *University of Southern California*

A Computational Model to Predict the Transient Performance of a Thermal Energy Storage Unit Coupled With an Air Pre-Cooler for a Novel Dry-Cooling System for Power Plants

Technical Presentation Only: SHTC2022-84247

Rituja Kulkarni - *University of Cincinnati,* **Milind Jog** - *University of Cincinnati,* **Raj Manglik** - *University of Cincinnati*

Modeling of Local Heating in Thick Fiber Reinforced Thermoplastic Composites

Technical Presentation Only: SHTC2022-97756

James Gayton - *University of Maine,* **Justin Lapp** - *University of Maine*

Thermal Performance Tests for Foam-Based Microevaporator Cold Plates

Technical Presentation Only: SHTC2022-81813

Lucas Arrivo - *Villanova University,* **Steven Schon** - *QuantaCool Corporation,* **Aaron Wemhoff** - *Villanova University*

K-20 COMPUTATIONAL METHODS FOR MATERIALS DEVELOPMENT AND MANUFACTURING II

4:00PM–5:40PM **FREEDOM G**

Chair: **Mohamed Abdelhady** - *National Research Council Canada*
Chair: **Aaron Wemhoff** - *Villanova University*
Chair: **Hamidreza Najafi** - *Florida Institute of Technology*
Chair: **Shima Hajimirza** - *Stevens Institute of Technology*
Chair: **Cheng-xian Lin** - *Florida International University*
Co-Chair: **Like Li** - *Mississippi State University*
Co-Chair: **Leitao Chen** - *Tennessee State University*

Analysis of the Thermal-Moisture Induced Stresses in a Drying of a Cylindrical Log

Technical Presentation Only: SHTC2022-78119

Enayat Mahajerin - *Saginaw Valley State University*

Extension of Cylindrical Inclusion Percolation Theory Towards Non-Uniform Distributions

Technical Presentation Only: SHTC2022-81811

Anh Trinh - *Villanova University,* **Aaron Wemhoff** - *Villanova University*

Exploring the Effects of Minichannel Wall Distance on Falling Film Condensation: A Numerical Study

Technical Presentation Only: SHTC2022-85717

Shitiz Sehgal - *Texas A&M University,* Jorge Alvarado - *Texas A&M University,* Ibrahim Hassan - *Texas A&M University-Qatar*

Modeling Heat Transfer Including Radiation in Gravity-Driven Granular Flows Using Discrete Element Method

Technical Presentation Only: SHTC2022-87817

Bingjia Li - *University of Michigan,* Zijie Chen - *University of Michigan,* Rohini Bala Chandran - *University of Michigan*

Data-Driven Techniques to Obtain Radiative View Factor Correlations in Particulate Media

Technical Presentation Only: SHTC2022-87818

Zijie Chen - *University of Michigan-Ann Arbor,* Rohini Bala Chandran - *University of Michigan-Ann Arbor*

TUESDAY, JULY 12, 2022

K-09 FIRST-PRINCIPLES PREDICTION OF PHONON AND ELECTRON THERMAL TRANSPORT I

8:30AM–10:10AM **FREEDOM E**

Chair: Jun Liu - *North Carolina State University*

Interface Thermal Resistance Between Monolayer WSe2 and SiO2: Raman Probing With Consideration of Optical-Acoustic Phonon Nonequilibrium

Technical Presentation Only: SHTC2022-85268

Nick Hunter - *Iowa State University*

Computational Discovery of Ultralow Thermal Conductivity Ternary Semiconductors

Technical Presentation Only: SHTC2022-86070

Ankit Jain – *Indian Institute of Technology Bombay*

Interfacial Thermal Resistance Between Nm-Thick MoS2 and Quartz Substrate: A Critical Revisit Under Phonon Mode-Wide Thermal Non-Equilibrium

Technical Presentation Only: SHTC2022-87733

Hamidreza Zobeiri - *Iowa State University*

Experimental Mapping of Electron Thermal Transport in Metals

Technical Presentation Only: SHTC2022-91032

Mauricio Segovia - *Purdue University,* Xianfan Xu - *Purdue University*

Temperature-Dependent Excited State Lifetimes of Nitrogen Vacancy Centers in Individual Nanodiamonds

Technical Presentation Only: SHTC2022-97680

Andrea Pickel - *University of Rochester,* Dinesh Bommidi - *University of Rochester*

New Experimental Method for Determination of Energy Accommodation Coefficient

Technical Presentation Only: SHTC2022-97664

Greg Acosta - *University of Nebraska-Lincoln,* Mohammad Ghashami - *University of Nebraska-Lincoln*

K-13 EVAPORATION/BOILING I

8:30AM–10:10AM **FREEDOM F**

Chair: Vinod Srinivasan - *University of Minnesota*
Co-Chair: Jovica Riznic - *Canadian Nuclear Safety Commission*

Experimental Results of Simulation of a Combined Flash Evaporation and Phase Separation System for Desalination of Sea Water

Technical Paper Publication: SHTC2022-81203

Vasudevan Chandramouli - *University of California, Los Angeles,* Jin Jen - *University of California, Los Angeles,* Vijay Dhir - *University of California, Los Angeles*

Heat Transfer Measurements in Neutrally Buoyant Suspensions in the Inertial Regime

Technical Paper Publication: SHTC2022-85241

Merin A P - *University of Minnesota,* Vinod Srinivasan - *University of Minnesota*

Nucleate Pool Boiling of Water on a Heater of the Size of a Capillary Length

Technical Paper Publication: SHTC2022-84337

Julia Reed - *University of California, Los Angeles,* **Vijay Dhir** - *University of California, Los Angeles*

The Effect of Bubble Nucleation on the Performance of a Wickless Heat Pipe in Microgravity

Technical Presentation Only: SHTC2022-81765

Joel Plawsky - *Rensselaer Polytechnic Institute,* **Jiaheng Yu** - *Rensselaer Polytechnic Institute,* **Anisha Pawar** - *Rensselaer Polytechnic Institute*

K-20 HEAT TRANSFER ENHANCEMENT
8:30AM–10:10AM **FREEDOM G**

Chair: **Mohamed Abdelhady** - *National Research Council Canada*
Chair: **Aaron Wemhoff** - *Villanova University*
Chair: **Hamidreza Najafi** - *Florida Institute of Technology*
Chair: **Shima Hajimirza** - *Stevens Institute of Technology*
Chair: **Cheng-xian Lin** - *Florida International University*
Co-Chair: **Like Li** - *Mississippi State University*
Co-Chair: **Leitao Chen** - *Tennessee State University*

Investigations on Improving the Performance of Solid Desiccant Cooling Systems With Passive Radiative Sky Cooling Modules

Technical Paper Publication: SHTC2022-81659

Aiqiang Pan - *City University of Hong Kong,* **Siru Chen** - *City University of Hong Kong,* **Tsz Chung Ho** - *City University of Hong Kong,* **Hau Him Lee** - *City University of Hong Kong,* **Chi Yan Tso** - *City University of Hong Kong*

A New Battery Thermal Management System With Integrated Phase Change Materials and Cold Plate: A Numerical Study

Technical Paper Publication: SHTC2022-81860

Xinrui Xiang - *Northeastern University,* **Ruibo Yang** - *Northeastern University,* **Ramaswamy Nagarajan** - *University of Massachusetts Lowell,* **Hongwei Sun** - *Northeastern University*

Topology Optimization Design and Heat Transfer Performance of Cooling Channel Based on Fluid-Solid Coupling

Technical Paper Publication: SHTC2022-85175

Zhijian Duan - *Northwestern Polytechnical University,* **Gongnan Xie** -*Northwestern Polytechnical University,* **Xinrong Ma** - *Xianyang Normal University*

Effects of FIV on Forced Convection Heat Transfer From Two Tandem Cylinders of Unequal Diameters

Technical Paper Publication: SHTC2022-85589

Hamid Khan - *Khalifa University of Science and Technology,* **Md. Islam** - *Khalifa University of Science & Technology,* **Yap Fatt** - *Khalifa University of Science and Technology,* **Isam Janajreh** - *Khalifa University of Science and Technology*

Effects of Flow-Induced Vibration on Heat Transfer From a Circular and Square Cylinder With Different Attack Angle

Technical Paper Publication: SHTC2022-85599

Yuvraj Sarout - *Khalifa University of Science & Technology,* **Md. Islam** - *Khalifa University of Science & Technology,* **Yap Fatt** - *Khalifa University of Science & Technology,* **Isam Janajreh** - *Khalifa University of Science & Technology*

K-07 THERMOPHYSICAL PROPERTIES
8:30AM–10:10AM **INDIA D**

Chair: **Xinwei Wang** - *Iowa State University*
Co-Chair: **Troy Munro** - *Brigham Young University*

Tunable Hydraulic and Thermal Properties via 3-D Printing

Technical Presentation Only: SHTC2022-84363

Shilpa Vijay - *University of Southern California,* **Taylor Mclaughlin** - *University of Southern California,* **Bryce Heitner** - *University of Southern California,* **Stara Shinsato** - *University of California, Berkeley,* **Mitul Luhar** - *University of Southern California*

Thermo-Physical Properties of Drying Process of Dioscorea Alata

Technical Presentation Only: SHTC2022-97334

Emmanuel Nwadike - *Nnamdi Azikiwe University,* **Andrew Azaka** - *Nnamdi Azikiwe University,* **Mathew Abonyi** - *Nnamdi Azikiwe University*

The Effect of Real Gas Radiation on Laminar Developing Flow in a Channel

Technical Presentation Only: SHTC2022-88060

Kyle Pulsipher - *Brigham Young University,* **Brent Webb** - *Brigham Young University*

Natural Convection in a Square Enclosure With Radiatively Participating Real Gases

Technical Presentation Only: SHTC2022-87822

Brennen Clark - *Brigham Young University,* Brent Webb - *Brigham Young University,* Vladimir Solovjov - *Brigham Young University*

K-06 THERMAL STORAGE IN ENERGY SYSTEMS
8:30AM–10:10AM **INDIA C**

Chair: Leitao Chen - *Tennessee State University*

Design of a Thermal Energy Storage System for Heating a Sumaq Wasi House in Ayaviri, Puno (Peru) Using Combustion Gases From a Domestic Stove

Technical Presentation Only: SHTC2022-81883

Luz Estrada Torvisco - *Universidad de Ingeniería y Tecnología,* Carlos Rios Perez - *Universidad de Ingeniería y Tecnología*

Machine Learning Based Control of Multi-Temperature PCM Thermal Storage Assemblies – A Comparison of On/Off Versus Fully Modulating Valve Control

Technical Paper Publication: SHTC2022-86174

Alanna Cooney - *University of California, Berkeley,* Van Carey - *University of California, Berkeley*

Parametric Modelling Study of a High-Temperature Thermal Energy Storage System for Application in Solar Fuel Redox Cycles

Technical Presentation Only: SHTC2022-89249

Alon Lidor - *ETH Zürich,* Ewald Kleefstra - *ETH Zürich,* Aldo Steinfeld - *ETH Zürich*

Experimental Investigation of PCM Melting in a Vertical Capsule

Technical Presentation Only: SHTC2022-90460

Tomer Shockner - *Ben-Gurion University,* Gennady Ziskind - *Ben-Gurion University*

Effect of Phase Change Material Container Design on Hybrid Thermal Management System for a Battery Module

Technical Presentation Only: SHTC2022-90463

İsmail Gurkan Demirkiran - *Izmir Institute of Technology,* Erdal Cetkin - *Izmir Institute of Technology*

PCM Based Heat Sinks for Transient Passive Cooling of an Electronic Device With Localized Power Generation – Numerical and Parametric Study

Technical Presentation Only: SHTC2022-89849

Elad Koronio - *Ben-Gurion University,* Gennady Ziskind - *Ben-Gurion University*

K-06 HEAT AND MASS TRANSFER IN HEATING, COOLING, AND POWER SYSTEMS
4:00PM–5:40PM **INDIA C**

Chair: Leitao Chen - *Tennessee State University*

A Novel Dynamic Spacecraft Radiator Design With Annular Geometry and Varied Thickness Profiles for CubeSat Applications

Technical Paper Publication: SHTC2022-84329

Nicholas Debortolli - *University of Dayton,* Natalie Douglass - *University of Dayton,* David Warburton - *University of Dayton,* Jeremy Price - *University of Dayton,* Josh Cannon - *Brigham Young University,* Brian Iverson - *Brigham Young University,* Rydge Mulford - *University of Dayton*

Experimental Investigation and Heat Transfer Analysis of Innovative Thermal Mechanical Refrigeration System Compared to Electric Compressor

Technical Paper Publication: SHTC2022-85194

Ahmad Sleiti - *Qatar University,* Wahib Al-Ammari - *Qatar University,* Mohammed Al-Khawaja - *Qatar University*

Buoyancy-Driven Convection in Additively Manufactured Cubic Lattice: Effect of Lattice Aspect Ratio and Heating Orientation

Technical Paper Publication: SHTC2022-85740

Prashant Singh - *Mississippi State University,* Mantha S. Phanikumar - *Michigan State University,* Roop Mahajan - *Virginia Tech*

Uncertainty Analysis of Vapor Transport Measurement in a Hollow Fiber Membrane Module for Membrane Humidifier

Technical Paper Publication: SHTC2022-81761

Xuan Linh Nguyen - *Chungnam National University,* **Sangseok Yu** - *Chungnam National University*

Modeling and Simulation of Whole Air Supply System for Proton Exchange Membrane Fuel Cell Under Dynamic Operating Conditions

Technical Paper Publication: SHTC2022-81691

Hoang Nghia Vu - *Chungnam National University,* **Sangseok Yu** - *Chungnam National University*

Investigation of Passive Radiative Cooling Using Bio-Polymers

Technical Presentation Only: SHTC2022-97683

Zahra Kamali Khanghah - *University of Nebraska-Lincoln,* **Mohammad Ghashami** - *University of Nebraska-Lincoln*

K-20 APPLICATIONS OF CHT

4:00PM–5:40PM **FREEDOM G**

Chair: **Mohamed Abdelhady** - *National Research Council Canada*
Chair: **Hamidreza Najafi** - *Florida Institute of Technology*
Chair: **Shima Hajimirza** - *Stevens Institute of Technology*
Chair: **Cheng-xian Lin** - *Florida International University*
Co-Chair: **Like Li** - *Mississippi State University*
Co-Chair: **Leitao Chen** - *Tennessee State University*

Physics Assisted Long-Short-Term-Memory Network for Forecasting Fouling in Regenerative Air Preheater

Technical Paper Publication: SHTC2022-80475

Ashit Gupta - *Tata Consultancy Services,* **Vishal Jadhav** - *Tata Consultancy Services,* **Anirudh Deodhar** - *Tata Consultancy Services,* **Venkataramana Runkana** - *Tata Consultancy Services*

Anisotropy of Flow and Heat Transfer of Gaseous MHD Flows in a Circular Tube Under the Control of Transverse Magnetic Field: A Preliminary Study

Technical Paper Publication: SHTC2022-83763

Qijin Zhao - *Army Academy of Armored Forces,* **Baoquan Mao** - *Army Academy of Armored Forces,* **Xianghua Bai** - *Army Academy of Armored Forces,* **Jintao Guo** - *Troop No. 96901 of PLA,* **Chunlin Chen** - *Army Academy of Armored Forces*

Finite Element Conjugate Heat Transfer Strategy for Self and Applied Magnetoplasmadynamic (MPD) Thrusters

Technical Paper Publication: SHTC2022-85788

K. Joel Berry - *Kettering University*

Large Eddy Simulation of Random Pebble Bed Using the Spectral Element Method

Technical Paper Publication: SHTC2022-87117

Tri Nguyen - *Penn State University,* **Elia Merzari** - *Penn State University,* **Haomin Yuan** - *Argonne National Laboratory,* **Dezhi Dai** - *Argonne National Laboratory,* **Brian Jackson** - *Kairos Power*

Prediction and Validation of Fluid Flow Properties in Additively Manufactured Porous Lattice Structures

Technical Presentation Only : SHTC2022-78222

Ashreet Mishra - *Mississippi State University*, **David Korba -** *Mississippi State University,* **Inderjot Kaur -** *Mississippi State University,* **Youssef Aider** - *Mississippi State University,* **Prashant Singh** - *Mississippi State University,* **Like Li** - *Mississippi State University*

K-18 HEAT TRANSFER UNDER EXTREME CONDITIONS

4:00PM–5:40PM **INDIA D**

Chair: **Qiang Liao** - *Chongqing University*
Co-Chair: **Calvin Li** - *Villanova University*
Co-Chair: **Zhiguo Qu** - *Xi'an Jiaotong University*
Co-Chair: **Junjun Wu** - *Chongqing University*

Structural Design of Thermoelectric Power Generation System Based on Phase Transfer Materials

Technical Presentation Only: SHTC2022-87597

Ning Zhuang - *Xi'an Jiaotong University,* **Peiqin Wu** - *Xi'an Jiaotong University.* **Qiuwang Wang** - *Xi'an Jiaotong University,* **Ting Ma** - *Xi`An Jiaotong University*

Cold Model Experiments of Ash Deposition Characteristics of Flue Gas Across 3-D Finned Tubes

Technical Presentation Only: SHTC2022-88125

Yudong Ding - *Chongqing University,* **Changshen Lu** - *Chongqing University,* **Junnan Zhang** - *Chongqing University,* **Xun Zhu** - *Chongqing, ,* **Hong Wang** - *Chongqing University,* **Min Cheng** - *Chongqing University,* **Qiang Liao** - *Chongqing University*

Temperature Discretized Design Method for Heat Exchangers With Trans- and Super-Critical Hydrogen

Technical Presentation Only: SHTC2022-88244

Chenglong Yang - *Xi'an Jiaotong University,* **Zetian Tang** - *Xi'an Jiatong University,* **Zhiguo Qu** - *Xi'an Jiatong University,* **Jianfei Zhang** - *Xi'an Jiatong University,* **Zhiyuan Jiang** - *Xi'an Jiaotong University*

Modeling the Influence of Heat Transfer on Gas Hydrate Formation

Technical Paper Publication: SHTC2022-79744

Aritra Kar - *The University of Texas Austin,* **Palash Acharya** - *The University of Texas at Austin,* **Awan Bhati** - *The University of Texas at Austin,* **Arjang Shahriari** - *The University of Texas at Austin,* **Ashish Mhahdeshwar** - *ExxonMobil,* **Timothy A. Barckholtz** - *ExxonMobil,* **Vaibhav Bahadur** - *The University of Texas at Austin*

Boundary Conditions for Modeling of a Lead Reverberatory Furnace

Technical Paper Publication: SHTC2022-81206

Nicholas Walla - *Purdue University Northwest,* **Vitalis Anisiuba** - *Purdue University Northwest,* **Armin Silaen** - *Purdue University Northwest,* **Alexandra Anderson** - *Gopher Resource,* **Joseph Grogan** - *Gopher Resource,* **Chenn Zhou** - *Purdue University Northwest*

High Phonon Scattering Rates Suppress Thermal Conductivity in Hyperstoichiometric Uranium Dioxide

Technical Presentation Only: SHTC2022-94546

Hao Ma - *Oak Ridge National Laboratory,* **Matt Bryan** - *Oak Ridge National Laboratory,* **Judy Pang** - *Oak Ridge National Laboratory,* **Douglas Abernathy** - *Oak Ridge National Laboratory,* **Daniel Antonio** - *Idaho National Laboratory,* **Krzysztof Gofryk** - *Idaho National Laboratory,* **Michael Manley** - *Oak Ridge National Laboratory*

K-13 EVAPORATION/BOILING II

4:00PM–5:40PM **FREEDOM F**

Chair: **Vinod Srinivasan** - *University of Minnesota*
Co-Chair: **Jovica Riznic** - *Canadian Nuclear Safety Commission*

Effects of Tube Geometry and Wettability on Liquid Flow and Evaporation Heat Transfer in Falling Film Flow

Technical Presentation Only: SHTC2022-83830

Hong-Qing Jin - *University of Illinois at Urbana-Champaign,* **Sophie Wang** - *University of Illinois at Urbana Champaign*

Porous Nanochannel Wicks Based Solar Vapor Generation Device

Technical Presentation Only: SHTC2022-96668

Durgesh Ranjan - *Syracuse University,* **Shalabh Maroo** - *Syracuse University,* **An Zou** - *Syracuse University*

Structural-Material-Operational-Performance Relationship for Enhanced Pool Boiling Surfaces Using Neural Network Model

Technical Presentation Only: SHTC2022-91012

Sadaf Mehdi - *Wichita State University,* **Gisuk Hwang** - *Wichita State University*

WEDNESDAY, JULY 13, 2022

K-06 THERMAL MANAGEMENT OF BATTERY SYSTEMS

8:30AM–10:10AM **INDIA C**

Chair: **Leitao Chen** - *Tennessee State University*

Validation of Vented Gas Characteristics From Thermal Runaway of Lithium-Ion Batteries Using LIM1TR

Technical Paper Publication: SHTC2022-79560

Ala' Qatramez - *The University of Memphis,* **Andrew Kurzawski** - *Sandia National Laboratories,* **John Hewson** - *Sandia National Laboratories,* **Michael Parker** - *The University of Memphis,* **Adam Porter** - *The University of Memphis,* **Daniel Foti** - *The University of Memphis,* **Alexander Headley** - *The University of Memphis*

Experimental Validation of Condensation Modeling for H2 Drying in Space-Based Electrolysis

Technical Presentation Only: SHTC2022-87908

Nasim Emadi - *Colorado School of Mines,* **David Dickson** - *Colorado School of Mines,* **John Schmit** - *Colorado School of Mines,* **Christopher Dreyer** - *Colorado School of Mines,* **Michele Hollist** - *OxEon Energy, LLC,* **Joseph Hartvigsen** - *OxEon Energy, LLC,* **Gregory Jackson** - *Colorado School of Mines*

Non-Uniform Heat Generation Model for a Li-Ion Battery Cell to Decrease Numerical Cost

Technical Presentation Only: SHTC2022-89088

Sinan Gocmen - *Izmir Institute of Technology,* **Erdal Cetkin** - *Izmir Institute of Technology*

Thermal Metrology for Measuring Lithium Concentration Gradients in Lithium-Ion Batteries (LIBs)

Technical Presentation Only: SHTC2022-97653

Yuqiang Zeng - *Lawrence Berkeley National Laboratory,* **Divya Chalise** - *Lawrence Berkeley National Laboratory,* **Yanbao Fu** - *Lawrence Berkeley National Laboratory,* **Joseph Schaadt** - *Lawrence Berkeley National Laboratory,* **Sumanjeet Kaur** - *Lawrence Berkeley National Laboratory,* **Vince Battaglia** - *Lawrence Berkeley National Laboratory,* **Sean Lubner** - *Lawrence Berkeley National Laboratory,* **Ravi Prasher** - *Lawrence Berkeley National Laboratory*

Thermal Wave Sensing of Electrochemical Information

Technical Presentation Only: SHTC2022-97590

Divya Challise - *Lawrence Berkeley National Laboratory and University of California, Berkeley,* **Sean Lubner** - *Lawrence Berkeley National Laboratory and Massachusetts Institute of Technology,* **Yuqiang Zeng** - *Lawrence Berkeley National Laboratory,* **Sumanjeet Kaur** - *Lawrence Berkeley National Laboratory,* **Venkat Srinivasan** - *Argonne National Laboratory,* **Rob Jonson** - *Lawrence Berkeley National Laboratory,* **Joseph Schaadt** - *Stanford University and University of California, Berkeley,* **Akshey Dhar** - *Lawrence Berkeley National Laboratory and University of California, Berkeley,* **Mike Tucker** - *Lawrence Berkeley National Laboratory,* **Ravi Prasher** - *Lawrence Berkeley National Laboratory and University of California, Berkeley*

K-13 MULTIPHASE FLOW

8:30AM–10:10AM **FREEDOM F**

Chair: **Vinod Srinivasan** - *University of Minnesota*
Co-Chair: **Jovica Riznic** - *Canadian Nuclear Safety Commission*

An Experimental Investigation of Flow Boiling Characteristics in Interconnected Microchannels With Different Slot Arrangement

Technical Paper Publication: SHTC2022-81624

Yun Li - *Shanghai Jiao Tong University,* **Huiying Wu** - *Shanghai Jiao Tong University*

Numerical Simulation of Multiple Bubble Interaction During Flow Boiling in Micro-Channels

Technical Paper Publication: SHTC2022-81866

Dewan Rahman - *California State University, Northridge,* **Abhijit Mukherjee** - *California State University, Northridge*

Anomalous Adverse Effect of Mass Velocity on Convective Flow Boiling in Microfin Tubes: Literature Review and Mechanistic Analysis

Technical Paper Publication: SHTC2022-82761

Lingnan Lin - *National Institute of Standards and Technology,* **Mark Kedzierski** - *National Institute of Standards and Technology*

Review of Datasets and Correlations for Two-Phase Flow Boiling Heat Transfer of Pure Ethanol and Ethanol/Water Binary Mixtures

Technical Paper Publication: SHTC2022-84340

Mohamed Elfaham - *University of North Dakota,* **Clement Tang** - *University of North Dakota*

A Two-Dimensional Numerical Study on Air/Mist Sweeping Jet Impingement Cooling

Technical Paper Publication: SHTC2022-81664

Ting Wang - *University of New Orleans,* **Ramy Abdelmaksoud** - *University of New Orleans*

Effects of Wettability, Porosity, and Subsequent Hydraulic Linkage on Convective Drying of Water From Porous Media

Technical Presentation Only: SHTC2022-81810

Partha P. Chakraborty - *Kansas State University,* **Melanie Derby** - *Kansas State University*

K-12 AEROSPACE HEAT TRANSFER

8:30AM–10:10AM **FREEDOM G**

Chair: **Ashwani Gupta** - *University of Maryland*
Co-Chair: **Ryo Amano** – *University of Wisconsin-Milwaukee*

Europa Lander Terminal Sterilization Subsystem (TSS) Thermal Model Verification, Validation, and Uncertainty Quantification (VVUQ) Processes

Technical Paper Publication: SHTC2022-81162

Kevin Irick - *Sandia National Laboratories,* **Tyler Voskuilen** - *Sandia National Laboratories*, **Philip Sakievich** - *Sandia National Laboratories*

Heat Transfer on Fuel Injector Surface With Backward Facing Stepped Scramjet Flame Holder

Technical Paper Publication: SHTC2022-83853

Hyung Mo Bae - *Yonsei University,* **Jihyuk Kim** - *Yonsei University,* **Juyeong Nam** - *Yonsei University,* **Injoong Chang** - *Yonsei University,* **Hee Koo Moon** - *Yonsei University,* **Hyung Hee Cho** - *Yonsei University*

Thermal Fluid Assessment of Bluff Versus Streamlined Bodies With a Slot for Aligned Flow

Technical Paper Publication: SHTC2022-80024

Sultan Alshareef - *University of Utah ,* **Todd Harman** - *University of Utah,* **Timothy Ameel** - *University of Utah*

An Experimental Study on Heat Transfer Performance of Jet Impingement Arrays

Technical Paper Publication: SHTC2022-81617

Jiahong Fu - *Zhejiang University City College,* **Bengt Sundén** - *Lund University,* **Zhen Cao** - *Lund University*

A Review on Film Cooling Research: Historical Developments in Hole Shapes, Measurement Techniques, Effects of Operating Conditions and Impact of Additive Manufacturing

Technical Paper Publication: SHTC2022-81803

Inderjot Kaur - *Mississippi State University,* **Sandip Dutta** - *Clemson University,* **Prashant Singh** - *Mississippi State University*

K-09 FIRST-PRINCIPLES PREDICTION OF PHONON AND ELECTRON THERMAL TRANSPORT II

8:30AM–10:10AM **FREEDOM E**

Chair: **Richard Zhang** - *University of North Texas*

Modeling Phonon Backscattering in Axially Modulated Nanowires

Technical Presentation Only: SHTC2022-84231

Yingru Song - *Rice University,* **Geoff Wehmeyer** - *Rice University*

Analytical Development of Phononic Energy Propagation Between Thermal and Acoustic Waves

Technical Presentation Only: SHTC2022-84360

Rajib Mahamud - *Texas A&M University,* **Hossain Ahmed** - *Georgia Southern University*

Modeling the High-Frequency Periodic Heating of a Line-Heater-on-Substrate Structure: Towards a Ballistic 3ω Method

Technical Presentation Only: SHTC2022-85125

Tao Li - *Southeast University,* **Zhen Chen** - *Southeast University*

Modeling Frequency-Dependent Rectification in Heterojunction Thermal Diodes, {SHTC2022-84234}

Technical Presentation Only

Trevor Shimokusu - *Rice University,* **Qing Zhu** - *Rice University,* **Natan Rivera** - *Rice University,* **Geoff Wehmeyer** - *Rice University*

RESEARCH FUNDING OPPORTUNITIES PANEL: NSF AND DOE

10:30AM – 12:10PM **LIBERTY A**

Chair: **Satwindar S. Sadhal**, *University of Southern California*
Co-Chair: **Milind A. Jog**, *University of Cincinnati*
Co-Chair: **Mark Kedzierski**, *National Institute of Standards and Technology*

Panelists:

Dr. Ying Sun, *Program Director, Thermal Transport Processes Program National Science Foundation*

Dr. Avi Shultz, *Program Manager, Concentrating Solar-Thermal Power (CSP) Program, U.S. Department of Energy's Solar Energy Technologies Office (SETO)*