



**11<sup>th</sup> International Conference on  
Boiling and Condensation Heat Transfer  
15-17 May, Edinburgh, Scotland, UK**

South Hall, Pollock Halls, Edinburgh



# Conference Programme



## Conference Chair

Sefiane, Khellil (University of Edinburgh, UK)

## Co-Chairs

Takahashi, Koji (Kyushu U., Japan)

Buongiorno, Jacopo (MIT, USA)

Colin, Catherine (U. Toulouse, France)

Garimella, Srinivas (Georgia Tech., USA)

Kim, Jungho (U. Maryland, USA)

## Secretary-General

- Daniel Orejon (University of Edinburgh, UK)

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- Stephan, Peter (Germany)
- Thome, John (Switzerland)
- Tryggvason, Gretar (USA)

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- Prof Khellil Sefiane (University of Edinburgh), Chair
- Dr Gail Duursma (University of Edinburgh)
- Prof Prashant Valluri (University of Edinburgh)
- Dr Daniel Orejon (University of Edinburgh)
- Dr John Christy (University of Edinburgh)
- Laura Smith (University of Edinburgh)
- Karen Brocklehurst (University of Edinburgh)
- Rooney Smyth (University of Edinburgh)



11<sup>th</sup> International Conference on Boiling and Condensation  
Heat Transfer, Edinburgh 15-17 May 2023

11<sup>th</sup> ICBCHT 2023

South Hall, Pollock Halls, Edinburgh

Monday 15 May, 2023

Time	Registration and opening	Chair/affiliation
8:30 am - 9:15 am	Registration	
9:15 am - 9:30 am	Opening session	K. Sefiane University of Edinburgh UK
9:30 am - 10:15 am	Key Note Lecture 1: <b>Professor Yasuyuki Takata</b> Kyushu University, Japan <i>Title: A Challenge of Lowering Wall Superheating at Onset of Nucleate Boiling</i>	K. Sefiane University of Edinburgh UK
10:15 am - 10:45 am	Break	
<b>Session 1</b>		
10:45 am - 12:15 am	<p style="text-align: center;"><b>Session 1: Pool Boiling I</b></p> <p>10:45-11:00 <b>Alekos I. Garivalis, Italy</b> Pool Boiling Performances Comparison of FC-72 and Novec 649 in the Presence of an Electric Field</p> <p>11:00-11:15 <b>Zhen Liu, USA</b> Nanostructure-Enabled Clean Storage for Consistent Phase-Change Heat Transfer Experiments</p> <p>11:15-11:30 <b>Luca Brandt, Sweden</b> Contact-line Treatment For Boiling Flows In a Diffusive Interface Framework</p> <p>11:30-11:45 <b>Vadim Nikolayev, France</b> On the Microlayer and Contact Line Dynamics at Nucleate Boiling</p> <p>11:45-12:00 <b>Shoji Mori, Japan</b> Improvement on the Onset of Nucleate Pool Boiling of HFE-7100 using the Porous Material and Heated Fine Wire</p> <p>12:00-12:15 <b>Marilize Everts, South Africa</b> The Influence of Cavity Geometry on the Single Bubble Nucleate Pool Boiling</p>	P. Valluri University of Edinburgh UK
12:15 - 13:15	Lunch	
13:15 - 14:00	Key Note Lecture 2: <b>Professor Nenad Miljkovic</b> University of Illinois at Urbana – Champaign, USA <i>Title: Tailoring Surface Chemistry and Surface Roughness to Enable the Long-Term Stable Dropwise Condensation of Steam and Refrigerant Working Fluids</i>	S. Garimella Georgia Tech. USA

Session 2		
14:00 - 15:30	<p align="center"><b>Session 2: Condensation I</b></p> <p>14:00-14:15 <b>Srinivas Garimella, USA</b> Acoustic Enhancement of Condensation Heat Transfer in Horizontal Tubes</p> <p>14:15-14:30 <b>Hafiz Muhammad Ali, Saudi Arabia</b> A Comparison of Condensation of Steam on Circular Finned and Pin-Finned Tubes</p> <p>14:30-14:45 <b>Stefano Bortolin, Italy</b> Numerical Simulations of Growth, Interaction and Departure of Droplets during Dropwise Condensation of Steam</p> <p>14:45-15:00 <b>Evan P. Suryawijaya, Japan</b> Theoretical Dropwise Condensation Heat Transfer Analysis of Polymer Infused Porous Sintered Copper Nanoparticle</p> <p>15:00-15:15 <b>Tibin Thomas, India</b> Confinement Effects During Atmospheric Water Vapor Condensation on Engineered Interface</p> <p>15:15-15:30 <b>Conrad Zimmermann, Germany</b> New Superposition Approach for the Prediction of Zeotropic Mixture Condensation</p>	S. Sett IIT Gandhinagar India
15:30 - 16:00	Break	
Session 3		
16:00 - 17:15	<p align="center"><b>Session 3: Experimental Measurements</b></p> <p>16:00-16:15 <b>Christos Markides, UK</b> A Single-Dye Two-Colour LIF Method for Ratiometric Thermographic Imaging in Boiling Flows</p> <p>16:15-16:30 <b>Yuyan Jiang, China</b> Measurement and Theoretical Modeling of Transient Liquid Film During Micro-channel Flow Boiling</p> <p>16:30-16:45 <b>Matthew McCarthy, USA</b> Visualization of Particle Assisted Thin Film Evaporation Underneath a Growing Bubble using Infrared Thermography</p> <p>16:45-17:00 <b>Ahyeong Cho, Korea</b> Development of Surface Temperature Measurement Method using Thermographic Phosphor for Boiling Heat Transfer Studies at High Pressures</p> <p>17:00-17:15 <b>Yutaku Kita, UK</b> Thermal Imaging of Condensation Heat Transfer Using Temperature Sensitive Paints</p>	C. Colin IMFT Toulouse France
17:15 - 17:45	Break	
Poster Session 1 (P1-P18)		
17:45 - 19:00	Poster session	
End of day 1		

Tuesday 16 May, 2023

Time		Chair/affiliation
9:00 am - 9:45 am	Key Note Lecture 3: <b>Professor Tassos Karayiannis</b> Brunel University, UK <i>Title: Aspects of Flow Boiling in Small to Micro Scale Heat Exchangers</i>	Y. Takata Kyushu University Japan
<b>Session 4</b>		
9:45 am - 11:15 am	<p style="text-align: center;"><b>Session 4: Flow Boiling I</b></p> <p>9:45-10:00 <b>Jaco Dirker, South Africa</b> Experimental Flow Boiling with Binary and Self-Rewetting Mixtures at Low Mass Fluxes in a High Aspect Ratio Microchannel with One-sided Heating</p> <p>10:00-10:15 <b>Catherine Colin, France</b> Theoretical Modelling of Heat Transfer in Vertical Upward and Downward Annular Flow Boiling</p> <p>10:15-10:30 <b>Erçil Toyran, Turkey</b> Flow Boiling Heat Transfer and Pressure Drop of HFE-7000 on Bio-coated Surfaces</p> <p>10:30-10:45 <b>Arif Widyatama, UK</b> Flow Boiling Characteristics of Water/Ethanol Binary Mixture in High Aspect Ratio Microchannel</p> <p>10:45-11:00 <b>Magdalena Piasecka, Poland</b> Boiling Heat Transfer Investigation for Refrigerants Flow in Minichannels</p> <p>11:00-11:15 <b>Florian Chavagnat, USA</b> Experimental Investigation of Saturated Liquid Nitrogen Flow Boiling in Earth Gravity and Microgravity</p>	P. Stephan TU Darmstadt Germany
11:15 am - 11:45 am	Break	
11:45 am - 13:15	<p style="text-align: center;"><b>Session 5: Pool Boiling II</b></p> <p>11:45-12:00 <b>Antonio della Volpe, France</b> Influence of Confinement and Subcooling in Different Steady-State Boiling Regimes</p> <p>12:00-12:15 <b>Rishi Raj, India</b> Acoustic Characterization of Bubbles for In-situ Prediction and Control of Boiling Heat Transfer Regimes</p> <p>12:15-12:30 <b>Vahid Ebrahimpour Ahmadi, Turkey</b> Graphene-coated Porous Copper Surface for Flow Boiling Enhancement at sub-atmospheric Pressures</p> <p>12:30-12:45 <b>Robert Pastuszko, Poland</b> Bubble Diameter Determination for Boiling Water on Surfaces with Deep Minichannels</p> <p>12:45-13:00 <b>Marco Graffiedi, USA</b> Experimental Investigation of The Impact of Surface Characteristics on Boiling of Liquid Nitrogen</p> <p>13:00-13:15 <b>Yosef Aharon, Israel</b> Experimental Investigation of Critical Heat Flux for Zero Flow of Water in Three-Rod Bundle near Atmospheric Pressure</p>	T. Karayiannis Brunel University UK

Poster Session 2 (P19-P35)		
13:15 - 14:30	Lunch + Poster session	
14:30 - 15:15	Key Note Lecture 4: <b>Professor Catherine Colin</b> IMFT Toulouse, France <i>Title: Hydrodynamics and heat transfer in vertical upward and downward annular flow boiling</i>	N. Miljkovic University of Illinois at Urbana – Champaign USA
Session 6		
15:15 - 16:45	<p align="center"><b>Session 6: Droplets I</b></p> <p>15:30-15:45 <b>Yoshihiko Haramura, Japan</b> Bubbling Behavior Just After a Water Drop Contacts with a Hot Surface</p> <p>15:45-16:00 <b>Koji Hasegawa, Japan</b> Self-propulsion of Leidenfrost Droplets Driven by a Temperature Gradient</p> <p>16:00-16:15 <b>Arthur Oliveira, Brasil</b> Dissipated Energy and Peak Heat Flux of a Single-Droplet Impact on a Heated Metallic Sheet Using High-Speed Thermography</p> <p>16:15-16:30 <b>Anna Malachtari, Greece</b> Evaporation of Multiple Droplets on a Soft Viscoelastic Substrate</p> <p>16:30-16:45 <b>Guillaume Mialhe, France</b> Direct Numerical Simulation of a Spherical Leidenfrost Droplet</p>	J. Dirker Pretoria University South Africa
16:45 - 17:00	Break	
Session 7		
17:00 - 18:00	<p align="center"><b>Session 7: Energy Systems I</b></p> <p>17:00-17:15 <b>Bradley D Bock, South Africa</b> Proposed Heat Transfer Degradation Mechanisms in Refrigerant Pool Boiling and Condensation on Nanocoated Commercially Enhanced Tubes</p> <p>17:15-17:30 <b>Li Dong Huang, USA</b> Impacts of Vapor Shear and Nucleate Boiling on Falling Film Evaporation</p> <p>17:30-17:45 <b>Wookyoung Kim, Korea</b> Experimental Investigation on the Flow and Thermal Characteristics of Falling Film Evaporator using R-1233zd(e) Refrigerant</p> <p>17:45-18:00 <b>Akio Miyara, Japan</b> Development of Heat Transfer Database for Boiling and Condensation</p>	M. Kohno Kyushu University Japan
18:00 - 20:00	Free time	
20:00 - 23:00	Banquet and Ceilidh	
End of day 2		

**Wednesday 17 May, 2023**

Time		Chair/affiliation
9:00 am - 9:45 am	Key Note Lecture 5: <b>Dr Matteo Bucci</b> Massachusetts Institute of Technology (MIT), USA <i>Title: The Percolation Law of the Boiling Crisis</i>	M. Spector ONR USA
<b>Session 8</b>		
9:45 am - 11:15 am	<p style="text-align: center;"><b>Session 8: Pool Boiling III</b></p> 9:45-10:00 <b>Patrick Sullivan, UK</b> Surface Wettability Effects on Heterogeneous Inertio-Thermal Vapour Bubble Growth 10:00-10:15 <b>Giada Minozzi, UK</b> Analysis of Surface Wettability Effect on Nucleate Boiling with a Diffuse Interface Method 10:15-10:30 <b>Gauthier Bourdon, France</b> Direct Numerical Simulation of Film Boiling around a Superheated Solid in a Subcooled Liquid 10:30-10:45 <b>Loric Torres, France</b> Direct Numerical Simulation of Boiling in Microgravity 10:45-11:00 <b>Leo Tranier, France</b> A Subgrid Model for the Numerical Simulation of Nucleate Boiling 11:00-11:15 <b>Ilya T'Jollyn, Belgium</b> The Effects of Surface Fouling on Nucleate Pool Boiling Heat Transfer of FK-649 for Power Electronics Cooling	I. Golobič Ljubljana University Slovenia
11:15 am - 11:45 am	Break	
<b>Session 9</b>		
11:45 am - 13:15	<p style="text-align: center;"><b>Session 9: Condensation II</b></p> 11:45-12:00 <b>Soumyadip Sett, India</b> Atmospheric Water Vapor Condensation on Nanoengineered Surfaces 12:00-12:15 <b>Jun Soo Kim, Korea</b> Ceria-based Superhydrophobic Surfaces for Long-lasting Dropwise Condensation 12:15-12:30 <b>Till Pfeiffer, Germany</b> Condensation of Water on Superamphiphobic Surfaces 12:30-12:45 <b>Gulfam Raza, China</b> Condensation Heat Transfer on Paraffin-Based Slippery Liquid-Infused Porous Surfaces 12:45-13:00 <b>Abubaker Sayed Omer, UAE</b> Dropwise Condensation on Amphiphilic Polymer Films for Enhanced Atmospheric Water Harvesting 13:00-13:15 <b>Younghyun Choi, Korea</b> Sustainable & Enhanced Thin Film Condensation with CuO Oxidation Layer	A. Kosar Sabanci University Turkey
<b>Poster Session 3 (P36-P53)</b>		

13:15 - 14:30	Lunch + Poster session	
14:30 - 15:15	Key Note Lecture 6: <b>Professor David Quéré</b> ESPCI Paris & École polytechnique, France <i>Title: The Quest for Dew-repellent Materials</i>	G. Duursma University of Edinburgh UK
<b>Session 10</b>		
15:15 - 16:30	<p style="text-align: center;"><b>Session 10: Flow Boiling II/Droplets II/Energy Systems II</b></p> <p>15:15-15:30 <b>Masamichi Kohno, Japan</b> Effect of Surrounding Pressure on Spray Cooling of Hot Surface</p> <p>15:30-15:45 <b>Nabajit Deka, India</b> Coupled Efficiency of Evaporator and Condenser in a Thermal Desalination System</p> <p>15:45-16:00 <b>Hemanth Dileep, India</b> Thermal Performance of a Flat Plate Pulsating Heat Pipe with Surface Wettability Modifications</p> <p>16:00-16:15 <b>Julio Cesar Passos, Brasil</b> Effect of Non-Uniform Heating on Horizontal Flow Boiling Heat Transfer and Dryout Incipience</p>	C. Markides Imperial College UK
16:30 - 16:45	Break	
<b>Session 11</b>		
16:45 - 18:15	<p style="text-align: center;"><b>Session 11: Flow Boiling II/Droplets II/Energy Systems II cont.</b></p> <p>16:45-17:00 <b>Joseph Widgington, UK</b> Predicting Microscale Bubble to Slug Transition Boundary using an Artificial Neural Network</p> <p>17:00-17:15 <b>Hyung Ju Lee, Korea</b> Evaporation Characteristics and Vapor Accumulations of Multiple Droplets</p> <p>17:15-17:30 <b>Dorbolo Stéphane, Belgium</b> Droplet Heat Exchange with a Hot Pool of Liquid and with a Hot Pool of Grains</p> <p>17:30-17:45 <b>Tali Bar-Kohany, Israel</b> Nucleation in a Rapidly Composite Drop: Experimental Observation and Modelling</p> <p>17:45- 18:00 <b>Xuehu Ma, China</b> Nanowire Bundles Enhanced Capillary Evaporation</p> <p>18:00-18:15 <b>Akiko Kaneko, Japan</b> Effect of Water Jet Behaviour on the Internal Flow Field of a Supersonic Steam Injector</p>	J. Christy University of Edinburgh UK
18:15 - 18:30	Wrap up	
End of day 3 End of Conference		



## List of Oral Presentations

### Session 1: Pool Boiling I

<b>PB1</b>	Alekos I. Garivalis	University of Pisa	Italy	Pool boiling Performances Comparison of FC-72 and Novec 649 in the Presence of an Electric Field
<b>PB2</b>	Zhen Liu	Rice University	USA	Nanostructure-Enabled Clean Storage for Consistent Phase-Change Heat Transfer Experiments
<b>PB3</b>	Luca Brandt	KTH	Sweden	Contact-line Treatment For Boiling Flows In a Diffusive Interface Framework
<b>PB4</b>	Vadim Nikolayev	CÉA Paris Saclay	France	On the Microlayer and Contact Line Dynamics at Nucleate Boiling
<b>PB5</b>	Shoji Mori	Kyushu University	Japan	Improvement on the Onset of Nucleate Pool Boiling of HFE-7100 using the Porous Material and Heated Fine Wire
<b>PB6</b>	Marilize Everts	University of Pretoria	South Africa	The Influence of Cavity Geometry on the Single Bubble Nucleate Pool Boiling

### session 2: Condensation I

<b>CD1</b>	Srinivas Garimella	Georgia Tech	USA	Acoustic Enhancement of Condensation Heat Transfer in Horizontal Tubes
<b>CD2</b>	Hafiz Muhammad Ali	KFUPM	Saudi Arabia	A Comparison of Condensation of Steam on Circular Finned and Pin-finned Tubes
<b>CD3</b>	Stefano Bortolin	University of Padova	Italy	Numerical Simulations of Growth, Interaction and Departure of Droplets during Dropwise Condensation of Steam
<b>CD4</b>	Evan P. Suryawijaya	Tokyo Institute Technology	Japan	Theoretical Dropwise Condensation Heat Transfer Analysis of Polymer Infused Porous Sintered Copper Nanoparticle
<b>CD5</b>	Tibin Thomas	IIT Madras	India	Confinement Effects During Atmospheric Water Vapor Condensation on Engineered Interface
<b>CD6</b>	Conrad Zimmermann	Leibniz Un. Hannover	Germany	New Superposition Approach for the Prediction of Zeotropic Mixture Condensation

### Session 3: Experimental Measurements

<b>EM1</b>	Christos Markides	ICL	UK	A Single-Dye Two-Colour LIF Method for Radiometric Thermographic Imaging in Boiling Flows
<b>EM2</b>	Yuyan Jiang	Beijing Inst. of Tech.	China	Measurement and Theoretical Modeling of Transient Liquid Film During Micro-channel Flow Boiling
<b>EM3</b>	Matthew McCarthy	Drexel University	USA	Visualization of Particle Assisted Thin Film Evaporation Underneath a Growing Bubble using Infrared Thermography
<b>EM4</b>	Ahyeong Cho	Kyung Hee University	Korea	Development of Surface Temperature Measurement Method Using Thermographic Phosphor for Boiling Heat Transfer Studies at High Pressures
<b>EM5</b>	Yutaku Kita	Kings College	UK	Thermal Imaging of Condensation Heat Transfer Using Temperature Sensitive Paints

### Session 4: Flow Boiling I

<b>FB1</b>	Jaco Dirker	University of Pretoria	South Africa	Experimental Flow Boiling with Binary and Self-Rewetting Mixtures at Low Mass Fluxes in a High Aspect Ratio Microchannel with One-sided Head
<b>FB2</b>	Catherine Colin	IMFT Toulouse	France	Theoretical Modelling of Heat Transfer in Vertical Upward and Downward Annular Flow Boiling
<b>FB3</b>	Erçil Toyran	Sabancı University	Turkey	Flow Boiling Heat Transfer and Pressure Drop of HFE-7000 on Bio-coated Surfaces
<b>FB4</b>	Arif Widyatama	University of Edinburgh	UK	Flow Boiling Characteristics of Water/Ethanol Binary Mixture in High Aspect Ratio Microchannel
<b>FB5</b>	Magdalena Piasecka	Kielce Un. of Tech.	Poland	Boiling Heat Transfer Investigation for Refrigerants Flow in Minichannels
<b>FB6</b>	Florian Chavagnat	MIT	USA	Experimental Investigation of Saturated Liquid Nitrogen Flow Boiling in Earth Gravity and Microgravity

### Session 5: Pool Boiling II

<b>PB7</b>	Antonio della Volpe	Nantes University	France	Influence of Confinement and Subcooling in Different Steady-State Boiling Regimes
<b>PB8</b>	Rishi Raj	IIT Patna	India	Acoustic Characterization of Bubbles for In-situ Prediction and Control of Boiling Heat Transfer.
<b>PB9</b>	Vahid Ebrahimpour Ahmadi	Sabanci University	Turkey	Graphene-coated Porous Copper Surface for Flow Boiling Enhancement at Sub-atmospheric Pressures
<b>PB10</b>	Robert Pastuszko	Kielce Un. of Tech.	Poland	Bubble Diameter Determination for Boiling Water on Surfaces with Deep Minichannels
<b>PB11</b>	Marco Graffiedi	MIT	USA	Experimental Investigation Of The Impact of Surface Characteristics on Boiling of Liquid Nitrogen
<b>PB12</b>	Yosef Aharon	Ben-Gurion University	Israel	Experimental Investigation of Critical Heat Flux for Zero Flow of Water in Three-Rod Bundle near Atmospheric Pressure

### Session 6: Droplets I

<b>D1</b>	Jiangtao Cheng	Virginia Tech	USA	Manipulating droplet jumping on hot substrates with surface topography: from vibration to explosion
<b>D2</b>	Yoshihiko Haramura	Kanagawa University	Japan	Bubbling Behavior Just After a Water Drop Contacts With a Hot Surface
<b>D3</b>	Koji Hasegawa	Kogakuin University	Japan	Self-propulsion of Leidenfrost droplets driven by a temperature gradient
<b>D4</b>	Arthur Oliveira	University of Sao Paulo	Brasil	Dissipated Energy and Peak Heat Flux of a Single-Droplet Impact on a Heated Metallic Sheet Using High-Speed Thermography
<b>D5</b>	Anna Malachtari	Aristotle University	Greece	Evaporation of Multiple Droplets on a Soft Viscoelastic Substrate
<b>D6</b>	Guillaume Mialhe	IMFT Toulouse	France	Direct Numerical Simulation Of A Spherical Leidenfrost Droplet

### Session 7: Energy Systems I

<b>ES1</b>	Bradley D. Bock	University of Pretoria	South Africa	Proposed Heat Transfer Degradation Mechanisms in Refrigerant Pool Boiling and Condensation on Nanocoated Commercially Enhanced Tubes
<b>ES2</b>	Li Dong Huang	Heat Transfer Research, Inc.,	USA	Impacts of Vapor Shear and Nucleate Boiling on Falling Film Evaporation
<b>ES3</b>	Wookyoung Kim	Korea Inst. of Mach. and Mat	Korea	Experimental Investigation on the Flow and Thermal Characteristics of Falling Film Evaporator using R-1233zd(e) Refrigerant
<b>ES4</b>	Akio Miyara	Saga University	Japan	Development of Heat Transfer Database for Boiling and Condensation

### Session 8: Pool Boiling III

<b>PB13</b>	Patrick Sullivan	University of Edinburgh	UK	Surface Wettability Effects on Heterogeneous Inertio-Thermal Vapour Bubble Growth
<b>PB14</b>	Giada Minozzi	University of Edinburgh	UK	Analysis of Surface Wettability Effect on Nucleate Boiling with a Diffuse Interface Method
<b>PB15</b>	Gauthier Bourdon	IMFT Toulouse	France	Direct Numerical Simulation of Film Boiling Around a Superheated Solid in a Subcooled Liquid
<b>PB16</b>	Loric Torres	IMFT Toulouse	France	Direct Numerical Simulation of Boiling in Microgravity
<b>PB17</b>	Leo Tranier	IMFT Toulouse	France	A Subgrid Model for the Numerical Simulation of Nucleate Boiling
<b>PB18</b>	Ilya T'Jollyn	University of Antwerp	Belgium	The Effects of Surface Fouling on Nucleate Pool Boiling Heat Transfer of FK-649 for Power Electronics Cooling

### Session 9: Condensation II

<b>CD7</b>	Soumyadip Sett	IIT Gandhinagar	India	Atmospheric Water Vapor Condensation on Nanoengineered Surfaces
<b>CD8</b>	Jun Soo Kim	KAIST	Korea	Ceria-based Superhydrophobic Surfaces for Long-lasting Dropwise Condensation
<b>CD9</b>	Till Pfeiffer	TU Darmstadt	Germany	Condensation of Water on Superamphiphobic Surfaces
<b>CD10</b>	Gulfam Raza	SouthEast University	China	Condensation Heat Transfer On Paraffin-Based Slippery Liquid-Infused Porous Surfaces
<b>CD11</b>	Abubaker Sayed Omer	KUST	UAE	Dropwise Condensation on Amphiphilic Polymer Films for Enhanced Atmospheric Water Harvesting
<b>CD12</b>	Younghyun Choi	POSTECH	Korea	Sustainable & Enhanced Thin Film Condensation With CuO Oxidation Layer

### Session 10: Flow Boiling II/Droplets II/Energy Systems II

<b>Mu1</b>	Masamichi Kohno	Kyushu University	Japan	Effect of Surrounding Pressure on Spray Cooling of Hot Surface
<b>Mu2</b>	Nabajit Deka	IISc Bangalore	India	Coupled efficiency of Evaporator and Condenser in a Thermal Desalination System
<b>Mu3</b>	Hemanth Dileep	IIT Madras	India	Thermal Performance of a Flat Plate Pulsating Heat Pipe with Surface Wettability Modifications
<b>Mu4</b>	Julio Cesar Passos	Uni. Fed. St Catarina	Brasil	Effect of Non-Uniform Heating on Horizontal Flow Boiling Heat Transfer and Dryout Incipience
<b>Mu5</b>	Jader Barbosa	Uni. Fed. St Catarina	Brasil	A Comparison of Microchannels, Two-Phase Impinging Jets and Spray Evaporators in a Compact Cooling System for High Heat Flux Thermal Management

### Session 11: Flow Boiling II/Droplets II/Energy Systems II cont.

<b>Mu6</b>	Joseph Widginton	Brunel University	UK	Predicting Microscale Bubble to Slug Transition Boundary using an Artificial Neural Network
<b>Mu7</b>	Hyung Ju Lee	Chung-Ang University	Korea	Evaporation Characteristics and Vapor Accumulations of Multiple Droplets
<b>Mu8</b>	Dorbolo Stéphane	Université de Liège	Belgium	Droplet Heat exchange with a Hot Pool of Liquid and with a Hot Pool of Grains
<b>Mu9</b>	Tali Bar-Kohany	Tel-Aviv University	Israel	Nucleation in a Rapidly Composite Drop: Experimental Observation and Modelling
<b>Mu10</b>	Xuehu Ma	Dalian University	China	Nanowire bundles Enhanced Capillary Evaporation
<b>Mu11</b>	Akiko Kaneko	Tsukuba University	Japan	Effect of Water Jet Behaviour on the Internal Flow Field of a Supersonic Steam Injector

# Posters

**Session 1 Monday 15 May**

<b>Poster</b>	<b>Author</b>	<b>Affiliation</b>	<b>Country</b>	<b>Title</b>
<b>P1</b>	Akira Otake	Tokyo University of Science	Japan	High-frequency Vapor-bubble Oscillation and Resultant Ambient Liquid Motion in Microbubble Emission Boiling (MEB)
<b>P2</b>	Alexis Duchesne	University Lille	France	Vertical Impact of a Liquid jet on an Over-heated Plate
<b>P3</b>	Biao Shen	Tsukuba University	Japan	Role of Bubble Entrapment in Enhancing Subatmospheric Boiling
<b>P4</b>	Giovanni Ghigliotti	Université Grenoble Alpes	France	Numerical Simulation of Boiling on Unstructured Grids
<b>P5</b>	Julio Cesar Passos	Universdad Federal Santa Catarina	Brasil	Nucleate Pool Boiling of Carbon Dioxide on a Vertical Surface in Confined
<b>P6</b>	Jure Berce	University of Ljubljana	Slovenia	Functionalized Copper Surfaces for Extreme Boiling Performance and Enhanced Resistance to Fouling
<b>P7</b>	Luvindran Sugumaran	Universiti Malaya	Malaysia	Experimental Investigation of Nucleate Pool Boiling Heat Transfer on Laser-Structured Copper Surfaces of Different Patterns
<b>P8</b>	Anam Abbas	University of Edinburgh	UK	Dropwise Condensation on Silicone Oil grafted and Silicone oil Impregnated Surfaces
<b>P9</b>	Jiangran Wang	Beijing University Civil	China	A Diffusion Model Considering Interfacial Thermal Resistance Of Steam Condensation With Non-condensable Gases
<b>P10</b>	Pouya Sharbati	Sabancı University	Turkey	Evaluation of The Effect of Dynamic Contact angle on Droplet Dynamic in Humid Air Condensation
<b>P11</b>	Samo Jereb	University of Ljubljana	Slovenia	Gravity-Driven Variable-Sized Droplet Generation with a Superhydrophobic Orifice
<b>P12</b>	Zhihao Zhang	Nottingham University	UK	Experimental investigation of the sessile droplet evaporation process based on different surface roughness
<b>P13</b>	Fumie Koshie	Tsukuba University	Japan	Evaluation of Heat Transfer Near CHF in Forced-Flow Boiling in a Circular Tube
<b>P14</b>	Herman Haustein	Tel-Aviv University	Israel	Complex Fluids for Cooling Applications: Emulsion Flow-Boiling
<b>P15</b>	Jana Rogiers	Ghent University	Belgium	Flow Boiling In Different Flow Regimes Under Transient Heat Flux
<b>P16</b>	Myeonggi Cha	POSTECH	Korea	Experimental Investigation of Condensation Heat Transfer Mechanism on Shell Side of Spiral Wound Heat Exchanger
<b>P17</b>	Sae Byul Kang	Korea Institute of Energy Research	Korea	Condensation Heat Transfer Comparison between Hydrophobic and Hydrophilic Surface in Boiler Flue Gas
<b>P18</b>	Mirco Magnini	Nottingham University	UK	Numerical simulation of flow boiling in multi-microchannel evaporators

<b>Session 2 Tuesday 16 May</b>				
<b>P19</b>	Trevor Shimokusu	Rice University	USA	Aluminum Jumping Droplet Thermal Diodes
<b>P20</b>	Yu Zhao	Nottingham University	UK	Fouling inhibition mechanism of Arabic Gum on calcium sulphate
<b>P21</b>	Ningxi Zhang	University of Edinburgh	UK	Effect of surface wettability on pool boiling nucleation with de-ionized water
<b>P22</b>	Subhakanta Moharana	IIT Bhubaneswar	India	Boiling over 2x3 semi-closed Microstructure Enhanced Tube Bundle
<b>P23</b>	Minchang Kim	Korea Institue of Machineary and M	Korea	A Mechanistic Model of Nucleate Pool Boiling Incorporating the Effect of Bubble Coalescence on Area Fractions
<b>P25</b>	Xin Wang	SouthEast University	China	Dropwise condensation heat transfer and self-removal motion of droplet on asymmetrical structured surfaces
<b>P26</b>	Bin Liu	Tianjin Univeresity of Comerce	China	Study on the Evaporation Characteristics of Liquid in Capillary Tube with Different Placement Inclination
<b>P27</b>	Chenyue Zhu	Nottingham University	UK	Molecular Dynamic Simulation on spreading and evaporation phenomenon of a water droplet on a mixed wettability surface
<b>P28</b>	Tianyu Zhang	Zhejiang University	China	Temperature-Gradient-Enabled Prohibition of Condensation Frosting
<b>P29</b>	Raphael Raab	Technical University Kaiserslautern	Germany	Condensation behavior and aging of black silicon and embossed polymers
<b>P30</b>	Datta Prasad Madurai Rar	IIS Bengaluru	India	The influence of micro-textures on the vapor layer beneath a Leidenfrost droplet
<b>P31</b>	Saikat Datta	University of Edinburgh	UK	Influence of Surface Wettability on Nanopore Evaporation
<b>P32</b>	Kizuku Kurose	Tokyo University of Science	Japan	Numerical simulation of oscillating flow and heat transfer characteristics in parallel two mini-channels evaporator
<b>P33</b>	Mattia Bucci	University of Ljubljana	Slovenia	Investigating the effect of the auxiliary electric field on quasi-static bubble detachment in microgravity
<b>P34</b>	Julien Sebilliau	IMFT Toulouse	France	Isoalted bubble growth and detachment in a shear flow in microgravity
<b>P35</b>	Raihanu Kabir	University of Alberta	Canada	Investigating The Effects Of Surface Chemistry On The Performance Of Heat Pipes

<b>Session 3 Wednesday 17 May</b>				
<b>P36</b>	Tayfun Guler	Sabanci University	Turkey	Effect of graphene coating on porous copper plate in flow boiling of mini-channel
<b>P37</b>	Xiao Yan	Hong Kong UST	Hong Kong	Fast Depressurization Induced Flashing/Boiling and Discharge of Confined Water through Mini-Channels
<b>P38</b>	D. Fotachov	Technical University Kaiserslautern	Germany	Analysis of the droplet distribution on a nanostructured surface
<b>P39</b>	Gianluca Cattelan	University of Padova	Italy	Aluminum Alloy Test Section Made with Additive Manufacturing to Investigate the Local Condensation Heat Tr. Coef.
<b>P40</b>	Yuta Heima	Kyushu University	Japan	AFM Measurements of Nanodroplets Condensed on Subnano-Scale Rough Surfaces
<b>P41</b>	An Zhao	TU Delft	Netherlands	Performance Analysis of Novel Transcritical Heat Pump Cycles for Drying Processes
<b>P42</b>	Annafederica Urbano	ISAE SUPAERO, University of Toulouse	France	Numerical simulation of phase change phenomena in compressible flows
<b>P43</b>	Muhammed MALYEMEZ	ASELSAN	Turkey	Saturated Pool Boiling Enhancement Using Honeycomb Structures Produced by Additive Manufacturing
<b>P44</b>	Hyun Hee Lee	Korea Institute of Energy Research	Korea	Efficiency Increase of a 100kW Condensing Boiler by Water Spraying in Combustion Chamber
<b>P45</b>	Jaejoon Choi	Korea Institute of Energy Research	Korea	Natural cold energy production using oscillating heat pipe
<b>P46</b>	Su-Yoon Doh	Ajou University	Korea	Pool boiling heat transfer characteristics of micro-thick copper foam
<b>P47</b>	Valdimir Serdyukov	Kutateladze Institute of Thermophysics	Russia	The experimental investigation of the pressure effect on the multiscale heat transfer
<b>P48</b>	Calvin H. Li	Villanova University	USA	Pool boiling heat transfer on 3D printed biomimetic structures by root/canopy growth algorithm
<b>P49</b>	Young Jik Youn	Korea Institute of Energy Research	Korea	Liquid film behaviors of unsteady two-phase slug flows in a micro tube
<b>P50</b>	Jonghwi Choi	Kyung Hee University	Korea	Limits in Measuring Microlayer Profile under a Boiling Bubble using Interferometry
<b>P51</b>	Behnam Parizad Benam	Sabanci University	Turkey	Enhancing Pool Boiling Heat Transfer by Interaction of Ultrasonic Waves Bubbles and Boiling Bubbles
<b>P52</b>	Zhenying Wang	Kyushu University	Japan	Droplet Spreading Revisited: A Generalization to Tanner's Law
<b>P53</b>	Teng Dong	UCL	UK	Evaporation of Emulsion Droplets and Film Spreading

