

18th UK Heat Transfer Conference (UKHTC2024) Programme

Monday 9th to Wednesday 11th September 2024

INSTRUCTIONS

Keynote lectures: Presentations are for 40 minutes (30 minutes for presentation and 10 minutes for Q&A). All keynote lectures are in the main lecture theatre G03.

Invited talks: Presentations are for 30 minutes (20 minutes for presentation and 10 minutes for Q&A).

All other presentations are for 20 minutes (15 minutes for presentation and 5 minutes for Q&A).

The equipment available on site for the presentations are:

- 1- Computer with windows operating system and standard Microsoft office.
- 2- Projector and laser pointer
- 3- Microphones

The presentations should be uploaded to the computer in the room where you will be presenting and ensure that all your slides (and videos) are finalised beforehand.

Industrial Session:

The industrial session is on 10th of September at 10:30 to 12:30 in the main lecture theatre G03. It is organised by the UK Heat Transfer Society.

The conference has several sponsors who will be displaying banners and providing promotional materials. [Sponsors, Exhibitors and Prizes – 18th UK Heat Transfer Conference \(bham.ac.uk\)](https://www.bham.ac.uk/ukhtc2024/sponsors-exhibitors-prizes)





Sunday 8th September 2024
4:00 to 7:00pm
Registration and Welcome Drinks
School of Engineering Building, Y8 on the attached map
edgbaston-campus-map-mobility.pdf (birmingham.ac.uk)

Monday 9th September 2024 (Morning Sessions)			
08:00-09:00	Registration		
09:00-09:30	<p style="text-align: center;">Venue: Alan Walter Building Main Lecture Theatre G03</p> <p style="text-align: center;">Opening by Dr Raya AL-Dadah and Dr Adriano, Chair of the UKHTC2024</p> <p style="text-align: center;">Welcome by Professor Marika Taylor, PVC and Head of College of Engineering and Physical Sciences, University of Birmingham.</p> <p style="text-align: center;">Welcome by Professor Tassos Karayiannis, Chair of UK National Heat Transfer Committee.</p>		
09:30-10:10 10:10-10:50	<p style="text-align: center;">Venue: Alan Walter Building Main Lecture Theatre G03</p> <p style="text-align: center;">Keynote session 1: Chair by Professor Tassos Karayiannis</p> <p style="text-align: center;">Speaker 1: Professor Renato Cotta, Brazil. Recent Progresses on Fundamentals and Applications of Computational Integral Transforms in Heat and Fluid Flow.</p> <p style="text-align: center;">Speaker 2: Dr Francesco Coletti, Hexxcell Ltd, United Kingdom. Exploring Artificial Intelligence Applications to Heat Transfer: the Good, the Bad, the Hybrid.</p>		
10:50-11:00	Refreshment Break		
Oral Parallel Presentations	Main Lecture Theatre G03	G11	112
11:00-12:40 5x20=100 mins 15 abstracts	<p style="text-align: center;">Session 1 (4A*) Boiling and Evaporation</p> <p style="text-align: center;">Chair: Professor Khellil Sefiane</p> <p style="text-align: center;">Abstracts 67, 83, 87, 95, 121</p>	<p style="text-align: center;">Session 2 (4B*) Convection Heat Transfer</p> <p style="text-align: center;">Chair: Dr Richard Law</p> <p style="text-align: center;">Abstracts 10, 44, 54, 59, 103</p>	<p style="text-align: center;">Session 3 (4C*) Computational Heat Transfer 1</p> <p style="text-align: center;">Chair: Dr Jason Stafford</p> <p style="text-align: center;">Abstracts 25, 26, 47, 105, 123</p>
12:40-13:30	Lunch Break		

*Session Number in Easy Chair.



Monday 9th September 2024 (Afternoon Sessions)			
13:30-15:40 1x30+5x20=130 minutes 18 abstracts	Special Session 1 (5A*) Nuclear Thermal Hydraulics Chair: Dr Dean Wilson and Dr Michael Bluck Invited Talk: Dr Dean Wilson Nuclear Thermal Hydraulics. Abstracts 8, 23, 30, 36, 89	Special Session 2 (5B*) Heat Transfer for Net Zero 1 Chair/Co-Chair: Adriano Sciacovelli/Jian Song Invited Talk: Dr Adriano Sciacovelli Heat transfer for Net- zero Energy Production and Energy Storage 1. Abstracts 7, 27, 38, 46, 53	Special Session 3 (5C*) Heat Pipes Chair: Anastasios Georgoulas and Dr Marco Bernagozzi Invited talk: Dr Anastasios Georgoulas Current state and advancements in Heat Pipe Devices for Smart Thermal Management of Space and Ground applications. Abstracts 34, 42, 75, 98, 108
15:40-15:50	Refreshment Break		
15:50-17:30 5x20=100 15 abstracts	Session 4 (6A*) Heat Transfer Technology 1 Chair: Professor Peter Heggs Abstracts 13, 21, 62, 97, 107	Session 5 (6B*) Thermal Management Chair: Dr Peter Kew Abstracts 5, 6, 128, 144, 158	Session 6 (6C*) Heat Transfer in Renewable Energy Systems Chair: Dr Haw Choon Yian Abstracts 33, 109, 117, 131, 151
17:30 – 22:00	End of Day 1		

*Session Number in Easy Chair.



Tuesday 10th September 2024 (Morning Sessions)			
09:00-9:40 9:40-10:20	Venue: Venue: Alan Walter Building Main Lecture Theatre G03 Keynote session 2: Chair by Dr Raya AL-Dadah Speaker 1: Professor Ji Hwan Jeong, Pusan National University, Korea Heat Transfer and Fluid Flow Characteristics in Open Cell Porous Metal Structures. Speaker 2: Dr Marilize Everts, University College London, United Kingdom. The Basics, Beauty and Benefits of Mixed Convective Flow.		
10:20-10:30	Refreshment Break		
Oral Parallel Presentations	Main Lecture Theatre G03	G11	112
10:30-12:30 6x20=120 mins 18 abstracts	Session 7 (9A*) Industrial session Chair: David Norton HTS Chairman Invited Talk: Mr Martin Gough National/International effort of heat recovery and CO2 reduction Synchrostor, Calgavin, Graham Hart, SheCanEngineer, TWI	Session 8 (9B*) Condensation and Droplets Chair: Dr Nan Gao Abstracts 1, 12, 19, 90, 110, 157	Session 9 (9C*) Machine Learning Chair: Dr Francesco Colletti Abstracts 9, 68, 76, 127, 142, 145
12:30-13:30	Lunch Break		

*Session Number in Easy Chair



Tuesday 10th September 2024 (Afternoon Sessions)			
13:30-15:40 1x30+5x20=130 minutes 18 abstracts	Special Session 4 (10A*) Nuclear Engineering Chair/Co-Chair: Michael Bluck and Robin Kamenicky Invited Talk: Dr Michael Bluck and Dr Robin Kamenicky Current state and advances in Nuclear Engineering-including aspects of heat transfer.	Special Session 5 (10B*) Heat Pumps: Enablers of Decarbonisation Chair: Dr Matthew Hughes and Dr Jurriaan Peeters. Invited Talk: Dr Matthew Hughes THE BROAD REACH OF HEAT PUMPS TO DECARBONIZE NUMEROUS END USES (Abstract Number 138)	Special Session 6 (10C*) Heat Transfer in Sorption Systems Chair: Dr Ahmed Rezk and Dr Stan Shire Invited Talk: Dr Ahmed Rezk Latest Advances in Heat Transfer in Sorption Systems
	Abstracts 17, 24, 29, 50, 72	Abstracts 61, 77, 126, 130, 133	Abstracts 15, 55, 65, 80, 81
15:40-15:50	Refreshment Break		
15:50-17:30 5x20=100 15 abstracts	Session 10 (11A*) Heat Transfer Technology 2 Chair: Dr Hafiz Muhammad Ali Abstracts 4, 69, 84, 116, 120,	Session 11 (11B*) Energy Conversion and Efficiency Chair: Dr Edward Ishiyama Abstracts 3, 18, 57, 58, 135	Session 12 (11C*) Computational Heat Transfer 2 Chair: Prof. Yuying Yang Abstracts 92, 94, 115, 147, 148
18:30 – 22:00	Conference Evening Dinner- Botanical Gardens <u>University of Birmingham, Birmingham to The Birmingham Botanical Gardens - Google Maps</u> Awards		

*Session Number in Easy Chair



Wednesday 11th September 2024 (Morning Sessions)			
09:00-9:40 9:40-10:20	Venue: Venue: Alan Walter Building Main Lecture Theatre G03 Keynote session 3: Chair by Dr Adriano Sciacovelli Speaker 1: Dr Matteo Bucci, Massachusetts Institute of Technology (MIT), USA. Faraway, so close: high resolution investigations in boiling heat transfer, from cryogenics fluids to high pressure water. Speaker 2: Professor Peter Ireland, Oxford University, United Kingdom The thermal journey to zero carbon flight.		
10:20-10:30	Refreshment Break		
Oral Parallel Presentations	Main Lecture Theatre G03	G11	112
10:30-12:30 6x20=120 mins 16 abstracts	Session 13 (14A*) Heat Transfer Enhancement Chair: Dr Md. Amirul Islam Abstracts 71, 73, 119, 124, 141, 149,	Session 14 (14B*) Fluid Flow and Heat Transfer Chair: Dr Nima Nazemzadeh Abstracts 22, 99, 114, 137, 146, 154	Session 15 (14C*) Heat Transfer Technology 3 Chair: Dr Monica Tirapelle Abstracts 16, 49, 118, 143, 150
12:30-13:30	Lunch Break		

Wednesday 11th September (Afternoon Sessions)			
13:30-15:30 6x20=120 minutes 18 abstracts	Special Session 7 (15A*) Nuclear Thermal Hydraulics 2 Chair/Co-Chair: Dr Dean Wilson and Dr Robin Kamenicky Abstracts 31, 32, 35, 43, 111, 159	Special Session 8 (15B*) Heat transfer for Net-Zero 2 Chair/Co-Chair: Dr Adriano Sciacovelli/ Dr Jian Song Abstracts 20, 37, 82, 96, 106, 132	Special Session 9 (15C*) Electric Vehicles Battery Thermal Management Chair/Co-Chair: Dr Jose Herreros/ Dr Ji Li Abstracts 28, 41, 52, 78, 91, 129
15:30-15:40	Refreshment Break		
15:40 – 17:00	Closing Ceremony / Conference Prizes		

*Session Number in Easy Chair



9th September 2024

Session 1 (4A*): Boiling and Evaporation		Chair: Professor Khellil Sefiane
Abstract Number	Authors	Title
67	Bradley D. Bock, John R. Thome, Josua P. Meyer	THE ROLE OF BUBBLE DYNAMICS IN THE ENHANCEMENT OF FALLING FILM REFRIGERANT BOILING.
83	Yutaku Kita	PROBING HYDRODYNAMIC AND THERMAL BEHAVIOUR OF VOLATILE DROPS IMPACTING HOT SURFACES NEAR THE LEIDENFROST POINT.
87	N. Zhang, D. Orejon, J. Liu and K. Sefiane	BUBBLE COALESCENCE DURING NUCLEATE BOILING OF BINARY MIXTURES FROM ARTIFICIAL CAVITIES.
95	Marilize Everts, M Welzl, D Brüggemann	SINGLE BUBBLE NUCLEATE POOL BOILING FOR CLIMATE FRIENDLY COOLING SOLUTIONS.
121	Alok Kumar, Atul Srivastava	UNDERSTANDING BUBBLE GROWTH MECHANISM(S) OF HIGH VOLATILE FLUID USING ADVANCED GRAIDENTS-BASED DIAGNOSTICS.

Session 2 (4B*): Convection Heat Transfer		Chair: Dr Richard Law
Abstract Number	Authors	Title
10	Milan Mihajlovic	A NUMERICAL STUDY OF THE IMPACT OF BEND CURVATURES TO FLOW PATTERNS IN NATURAL CONVECTION LOOPS.
44	Rodrigo Vicente Cruz, Cedric Flageul, Eric Lamballais, Vladimir Duffal, Erwan Le Coupanec and Sofiane Benhamadouche	NUMERICAL INVESTIGATION OF THE MAINLY AXIAL FLOW IN MIXED CONVECTION REGIME WITHIN TUBE BUNDLES.
54	Leelasagar Konet, K. Venkatasubbaiah	EFFECT OF ASPECT RATIO ON NATURAL CONVECTION HEAT TRANSFER INSIDE ENCLOSURE WITH NANOFUIDS USING TWO-PHASE EULERIAN-EULERIAN MODEL.
59	Abdulrahman Almuwailhi , Adel Nasser, Hector Iacovides, Ahmed Alamoudi	STUDY OF NATURAL CONVECTION OVER VERTICAL AND INCLINED FIN ARRAYS.
103	Tzu-Hsuan Chiu, Chao-An Lin	NATURAL CONVECTION OF DIFFERENTIAL HEATED CAVITY WITH POLYMER ADDITIVES.

*Session Number in Easy Chair



Session 3 (4C*): Computational Heat Transfer 1		Chair: Dr Jason Stafford
Abstract Number	Authors	Title
25	Khalid Alraddadi, Abdelmagid Ali, Hector Iacovides and Dominique Laurence	INVESTIGATING RANS PREDICTIONS FOR HEAT AND MASS TRANSFER IN TURBULENT FLOW ACROSS A BACKWARD-FACING STEP.
26	Mirco Magnini, Edward Smith, Gabriele Gennari and Gavin Pringle	A COUPLED MOLECULAR-CONTINUUM FRAMEWORK FOR MULTISCALE SIMULATIONS OF BOILING.
47	Matt Lenahan, Andrew Owen and David Gillespie	A SIMPLE TRANSIENT APPROACH TO MEASURING THERMAL CONTACT CONDUCTANCE AT LOW CONTACT PRESSURES.
105	Elena Lopez, Samira Gruner, Alex Selbmann, Maximilian Buchholz, Lukas Stepien, Christian Bach and Frank Brückner	LATEST IMPROVEMENTS IN ADDITIVELY MANUFACTURED AEROSPIKE ROCKET ENGINE.
123	Rachael C. Lowe, Peter J. Heggs, Tariq Mahmud and Keeran Ward	EXTENDED HEAT TRANSFER MODEL OF A JACKETED BATCH STIRRED TANK REACTOR.

*Session Number in Easy Chair



UK National Heat Transfer Committee



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Special Session 1 (5A*): Nuclear Thermal Hydraulics 1		Chair: Dr Dean Wilson and Dr Michael Bluck
Abstract Number	Authors	Title
Invited Talk	Dean Wilson	NUCLEAR THERMAL HYDRAULICS.
8	Constantinos Katsamis, Timothy Craft, Hector Iacovides and Dean Wilson	EFFECT OF PARTIAL HEATING ON NATURAL CONVECTION IN A CUBICAL CAVITY WITH AN INTERNAL OBSTACLE: A URANS STUDY.
23	Jakub Cranmer, Giovanni Giustini, Alex Skillen and Ryan Tunstall	NUMERICAL MODELLING OF CONDENSATION PHENOMENA FOR SUBCOOLED FLOW BOILING APPLICATIONS.
30	Jake Ineson, Alex Skillen and Aleksander Dubas	DNS OF MAGNETOHYDRODYNAMIC RAYLEIGH-BÉNARD CONVECTION WITH APPLICATIONS IN FUSION THERMAL HYDRAULICS.
36	Bo Liu, Charles Moulinec and Stefano Rolfo	DEVELOPMENT OF A COARSE-GRID METHODOLOGY FOR HEAT TRANSFER CALCULATIONS IN PRISMATIC HTGR FUEL ASSEMBLIES.
89	D. Wilson, H. Iacovides, E. Tatli, P. Ferroni, S.J. Lee	CFD MODELLING OF LEAD SOLIDIFICATION AND NATURAL CONVECTION FOR THE WESTINGHOUSE LEAD-COOLED FAST REACTOR.

*Session Number in Easy Chair



Special Session 2 (5B*): Heat Transfer for Net Zero 1		Chair: Dr Adriano Sciacovelli and Dr Jian Song
Abstract Number	Authors	Title
Invited Talk	Adriano Sciacovelli	HEAT TRANSFER FOR NET ZERO ENERGY PRODUCTION AND ENERGY STORAGE.
7	Eike Alexander Schmidt, Margaux Zehnder, Frank Fellmoser and Klarissa Niedermeier	LOW-PRANDTL NUMBER HEAT TRANSFER FLUIDS IN PACKED-BED HEAT STORAGE.
27	Lucong Han and Yuying Yan	THE APPLICATION OF PHASE CHANGE MATERIALS IN FOOD PRESERVATION USING INDIRECT TYPE SOLAR DRYER (ITSD).
38	Ehsan Baniyadi, Yetenayet Bekele Tola, Ahmed Rezk, Abed Alaswad and Muhammad Imran	MATERIAL-LEVEL EXPERIMENTAL EVALUATION OF SOIL-BASED THERMAL ENERGY STORAGE FOR SOLAR-POWERED ADSORPTION REFRIGERATION SYSTEM.
46	Yue Zhang and Siddig Omer	APPLICATION OF PCM IN EXTERNAL WALLS OF TYPICAL RESIDENTIAL BUILDINGS IN THE UK AND THEIR IMPACT ON BUILDING ENERGY CONSUMPTION.
53	Han Wang, Mohammad Jadidi, Yasser Mahmoudi	HEAT TRANSFER SIMULATION IN ENCAPSULATED PHASE CHANGE MATERIALS FOR HIGH-TEMPERATURE ENERGY STORAGE APPLICATION.

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UK National Heat Transfer Committee



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Special Session 3 (5C*): Heat Pipes		Chair: Dr Anastasios Georgoulas
Abstract Number	Authors	Title
Invited Talk	Anastasios Georgoulas	CURRENT STATE AND ADVANCEMENT IN HEAT PIPE DEVICES FOR SMART THERMAL MANAGEMENT OF SPACE AND GROUND APPLICATIONS.
34	Volfango Bertola	POLYMER MATERIALS IN PULSATING HEAT PIPES: CHALLENGES AND OPPORTUNITIES.
42	Marco Bernagozzi, Anastasios Georgoulas, Nicolas Miché and Marco Marengo	TOWARDS THE IMPLEMENTATION OF LOOP HEAT PIPES IN AUTOMOTIVE BATTERY THERMAL MANAGEMENT SYSTEMS.
75	N. Miché, A. Candan Candere, F. Clemens, M. Bernagozzi, A. Georgoulas, V. Bertola, O. Aydin, M. Marengo	FLEXIBLE POLYMERIC PULSATING HEAT PIPES: FABRICATION TECHNIQUES AND THERMAL PERFORMANCE INVESTIGATION.
98	W.D. Alexander	FASTT - AN ALTERNATIVE TO HEATPIPE AND MICROCHANNEL HEAT TRANSFER TECHNOLOGIES.
108	T. Mamtaz, R. Law, R. McGlen	MANUFACTURING OF A COST-EFFECTIVE FLAT COPPER WATER LOOP HEAT PIPE.

*Session Number in Easy Chair



Session 4 (6A*): Heat Transfer Technology 1		Chair: Professor Peter Heggs
Abstract Number	Authors	Title
13	Prasenjit Kabi, Simrandeep Bahal, Mohammed Alabdullatif and Manish K. Tiwari	MORPHOLOGICAL TRANSITIONS IN FROZEN COLLOIDAL DROPLETS.
21	Simrandeep Bahal, Manish K. Tiwari and Vikramjeet Singh	FUNCTIONALIZED COVALENT ORGANIC FRAMEWORKS FOR ICE NUCLEATION INHIBITION.
62	Abdallah Ahmed, Edward Wright and Yuying Yan	EXPERIMENTAL ANALYSIS OF FILM HOLE WALL HEAT TRANSFER USING TRANSIENT LIQUID CRYSTALS.
97	Arif Widyatama, Mandi Venter, Jaco Dirker, Daniel Orejon, Khellil Sefiane	FLOW BEHAVIOUR AND WALL TEMPERATURE DISTRIBUTION OF LOW CONCENTRATION BUTANOL-WATER MIXTURE FLOW BOILING UNDER DIFFERENT FLOW ORIENTATION.
107	Addis Lemessa Jembere, Tomasz Jakubowski	OPTIMIZATION OF UV-C RADIATOR TO ENHANCE MECHANICAL PROPERTIES OF IRRADIATED SEMI-FINISHED POTATO TUBER FOR EXTENDED STORAGE PERIOD.

Session 5 (6B*): Thermal Management		Chair: Dr Peter Kew
Abstract Number	Authors	Title
5	Zongguo Xue, Yunfei Yan, Chenghua Zhang and Jinxiang You	INVESTIGATION ON HEAT TRANSFER CHARACTERISTICS OF LOCAL HOT SPOT ON THE HIGH-POWER ELECTRONIC CHIP SURFACE.
6	Ali H. Zaidi, Mohamed Mahmoud, Atanas Ivanov and Tassos Karayiannis	SINGLE-PHASE PRESSURE DROP AND HEAT TRANSFER IN MICRO-PIN FIN HEAT EXCHANGERS.
128	Hongnan Zhang, Ruqaiyah Khan, Bo Li, Fang Xu	DEVELOPMENT OF SILICONE POLYMER COMPOSITES WITH HYBRID BN AND SIC FILLERS FOR IMPROVED THERMAL CONDUCTIVITY.
144	Mark A. Turner, Stuart M. Clarke, D. Ian Wilson, Michael J. Sargent, Giles Prentice	DIRECT THERMAL MANAGEMENT FOR LITHIUM ION BATTERIES.
158	Joel Yi Yang Loh, Chun Fei Siah and Yeow Kheng Lim	THERMAL METAMATERIALS FOR COOLING FLEXIBLE POLYMER SUBSTRATE ELECTRONICS.

*Session Number in easy Chair



Session 6 (6C*): Heat Transfer in Renewable Energy Systems		Chair: Dr Haw Choon Yian
Abstract Number	Authors	Title
33	Bayu Sutanto, Hector Iacovides, Adel Nasser, Andrea Cioncolini and Imran Afgan	CONJUGATE HEAT TRANSFER ANALYSIS OF FLOATING PHOTOVOLTAIC PANELS WITH HYBRID NATURAL CONVECTION COOLING LOOPS AND SOLAR FILTER.
109	Ján Kubačka, Tassos G. karayiannis³	PERFORMANCE OF HDPE AND VACUUM-INSULATED CENTRAL PIPES FOR COAXIAL HEAT EXCHANGERS IN GEOTHERMAL SYSTEMS.
117	Haseeb Yaqoob, Hafiz Muhammad Ali	SOLAR DESALINATION INNOVATIONS: A COMPARATIVE ANALYSIS OF PYRAMID AND INCLINED SOLAR STILL.
131	Hadi Tannous, Valentina Stojceska, Savvas Tassou	EXPERIMENTAL VALIDATION OF TWO NUMERICAL MODELS OF A SOLAR-POWERED MULTIPLE AIR JETS IMPINGEMENT TUBE HEATER.
151	Amin Balazadeh Koucheh, Ali Sadaghiani, Ahmet Cenk Ünlü, Ali Koşar	EXPERIMENTAL STUDIES ON TWO-PHASE HFE-7000 FOR BATTERY THERMAL MANAGEMENT.

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10th September 2024

Session 7 (9A*): Industrial Session		Chair: Mr David Norton Chairman of Heat Transfer Society
Abstract Number	Authors	Title
Invited Talk	Martin Gough	NATIONAL/INTERNATIONAL EFFORT OF HEAT RECOVERY AND CO2 REDUCTION.
	Chris Hart	BRIDGING THE GAP BETWEEN UNDERGRADUATES AND INDUSTRY. HOW AN SME IS PLAYING IT'S PART.
	Peter Drögemüller, Jonathan Seville	COLLABORATIONS WITH UNIVERSITIES: A WIN-WIN FOR SMES.
	Maira Pana	SHECANENGINEER: SOCIAL AWARENESS OF HEAT TRANSFER APPLICATIONS & TECHNOLOGIES AND THE ROLE OF DIVERSITY/EQUITY/INCLUSION INITIATIVES.
85	Alexis Dole	DIRECT CONTACT GAS TO SOLID, HIGH PRESSURE MOVING PACKED BED HEAT EXCHANGER FOR PUMPED THERMAL ENERGY STORAGE.
	Abbasi Gandhi, Alex Russell, James Redman and Nick Ludford	ADVANCEMENTS IN DIFFUSION BONDED MICROCHANNEL HEAT EXCHANGERS (MCHXS).

Session 8 (9B*): Condensation and Droplets		Chair: Dr Nan Gao
Abstract Number	Authors	Title
1	Yousuf Alhendal, Sara Touzani and Fatimah Alqallaf	THE EFFECT OF THE TEMPERATURE GRADIENT ON THE THERMOCAPILLARY DROPLET FLOW IN A VIBRATING FLUID INSIDE A ROTATING CYLINDER.
12	John Rose and Lei Chai	CONDENSATION ON A VERTICAL PLATE WITH SINUSOIDAL MICROFINS – FURTHER CONSIDERATIONS.
19	Huachen Su and Yuying Yan	IMPROVED PERFORMANCE OF DROPLET-BASED ELECTRICITY GENERATORS USING SPECIALLY SHAPED SUBSTRATES.
90	Fei Duan	REFLECTING HYDROTHERMAL WAVES FROM FLOW MEASUREMENT IN SESSILE DROPLET.
110	A. Abbas, Gary G. Wells, Glen McHale, Khellil Sefiane, Daniel Orejon	CONTROLLING DROPLET SIZE DENSITY DURING DROPWISE CONDENSATION ON SILICONE OIL GRAFTED SURFACES.
157	Hafiz Muhammad Ali	A COMPARISON OF HEAT TRANSFER DURING FREE CONVECTION CONDENSATION OF STEAM ON HORIZONTAL COPPER INTEGRAL FIN AND PIN-FIN TUBES.

*Session Number in Easy Chair



Session 9 (9C*): Machine Learning		Chair: Dr Francesco Coletti
Abstract Number	Authors	Title
9	Joseph Widginton, Fang Wang, Atanas Ivanov and Tassos Karayiannis	A NOVEL FEED-FORWARD NEURAL NETWORK FOR FLOW BOILING PATTERN PREDICTION.
68	Waqar Muhammad Ashraf, Muhammad Ahmad Jamil, Syed Muhammad Arafat, Akhtar Muhammad, Ghulam Moeen Uddin, Muhammad Wakil Shahzad, Vivek Dua	MULTI-OBJECTIVE ROBUST OPERATION-OPTIMIZATION OF GAS TURBINE SYSTEM INSTALLED IN INDUSTRIAL COMBINED CYCLE GAS POWER PLANT.
76	D. Jalili, A. Keshmiri, Y. Mahmoudi	STUDY OF BOILING HEAT TRANSFER AND TWO-PHASE FLOWS USING PHYSICS-INFORMED NEURAL NETWORKS.
127	Monica Tirapelle, Parag Patil, Emilio Diaz-Bejarano, Francesco Coletti	PREDICTION OF FOULING BY CALCIUM PHOSPHATE IN A COOLING WATER SYSTEM USING MACHINE LEARNING.
142	Ahmad Al Miaari, Hafiz Muhammad Ali	TEMPERATURE PREDICTION OF HEAT SINK BASE INTEGRATED WITH COPPER FOAM/PHASE CHANGE MATERIAL USING MACHINE LEARNING FOR THERMAL MANAGEMENT APPLICATIONS.
145	A. Shateri, Z. Yang, J. Xie	EXPLORING THE POTENTIAL OF MACHINE LEARNING IN COMBUSTION ENGINE OPTIMIZATION.

*Session Number in Easy Chair



Special Session 4 (10A*): Nuclear Engineering		Chair: Dr Michael Bluck and Dr Robin Kamenicky
Abstract Number	Authors	Title
Invited Talk	Michael Bluck Robin Kamenicky	CURRENT STATE AND ADVANCES IN NUCLEAR ENGINEERING, INCLUDING ASPECTS OF HEAT TRANSFER A NEW HEAT FLUX FRONTIER, WHO HAS THE WALLS FOR IT?.
17	Marius Wirtz, Daniel Dorow-Gerspach, Mauricio Gago and Gerald Pintsuk	QUALIFICATION AND TESTING OF MATERIALS AND COMPONENTS FOR APPLICATIONS IN FUSION.
24	Giorgio Khalil Youssef, Rossella Bonetti, Michele Frignani, Marco Caramello, J. Liao, C. Stansbury, G. Macpherson and R. Watkins	ADVANCEMENTS IN EXPERIMENTAL INFRASTRUCTURE FOR LEAD FAST REACTOR RESEARCH: THE VLF AND PHRF FACILITIES.
29	Jundi He, Shuisheng He, Graham Macpherson, Dillon Shaver and Elia Merzari	DIRECT NUMERICAL SIMULATIONS OF FORCED AND MIXED CONVECTION FLOWS IN A REACTOR VESSEL AUXILIARY COOLING SYSTEM (RVACS).
50	Xiaoxue Huang and Shuisheng He	THERMAL HYDRAULIC SAFETY CONSIDERATIONS, METHODS AND RESEARCH FOR HIGH-TEMPREATURE GAS-COOLED REACTORS (HTGRs).
72	Alessandro Tassone, Lorenzo Melchiorri, Sonia Pignatiello, Simone Siriano, Gianfranco Caruso	COMPUTATIONAL MAGNETOHYDRODYNAMICS CODES FOR THE DEVELOPMENT OF LIQUID METAL BREEDING BLANKETS IN MAGNETIC FUSION REACTORS.

*Session Number in Easy Chair



Special Session 5 (10B*): Heat Pumps: Enablers of Decarbonisation		Chair: Dr Matthew Hughes
Abstract Number	Authors	Title
Invited Talk (138)	Dr Matthew Hughes	THE BROAD REACH OF HEAT PUMPS TO DECARBONIZE NUMEROUS END USES.
61	Özer Bağcı , Richard Kemp, Andries van Wijhe, Yasin Bulut	ANALYSIS OF HEAT EXCHANGER MODELS UNDER DRY, WET, AND FROST CONDITIONS FOR THE EVAPORATORS OF HEAT PUMPS.
77	Chiara D'Ignazi, Luca Molinaroli	ASSESSMENT OF THE USE OF ARTIFICIAL NEURAL NETWORKS TO DETECT AND DIAGNOSE SOME SOFT FAULTS IN HEAT PUMPS.
126	P. I. Widdows, S. Klein, R. Pecnik, J. W. R. Peeters	OPTIMIZATION OF A TRANS- CRITICAL HEAT PUMP CYCLE USING A MIXTURE OF PROPANE AND BUTANE INTEGRATED WITH AN INDUSTRIAL DRYER.
130	Zahra Hajabdollahi, Zhibin Yu	DYNAMIC SIMULATION AND PERFORMANCE COMPARISON OF TWO-STAGE AND SINGLE-STAGE HEAT PUMPS WITH INTERMEDIATE TEMPERATURE CONTROL.
133	Roshan Hehara, William Burgesa, Thomas Fender, Jonathan Radcliffe, Neha Mehta	EVALUATING THE GREENHOUSE GAS EMISSIONS REDUCTION POTENTIAL DUE TO THE USE OF HEAT PUMPS.

*Session Number in Easy Chair



Special Session 6 (10C*): Latest Advances in Heat Transfer in Sorption Systems		Chair: Dr Ahmed Rezk and Dr Stan Shire
Abstract Number	Authors	Title
Invited Talk	Ahmed Rez	LATEST ADVANCES IN HEAT TRANSFER IN SORPTION SYSTEMS.
15	Amir Zivariravan, Giulio Santori and Alessia Arteconi	DYNAMIC ANALYSIS OF ADSORPTION HEAT TRANSFORMATION: A DIMENSIONLESS MODEL APPROACH FOR COMPARATIVE EVALUATION OF SORPTION BED DESIGNS.
55	H. Banda, E. Baniyadi, A. Rezk	NOVEL COMPOSITE ADSORBENTS TO ENHANCE HEAT AND MASS TRANSFER IN ADSORPTION COOLING AND DESALINATION SYSTEMS.
65	Md. Amirul Islam, Tahmid Hasan Rupam, Bidyut Baran Saha	PRESSURIZED CO₂ ACTIVATION OF WASTE JUTE STICK FOR ENHANCED CO₂ CAPTURE APPLICATIONS.
80	Dae Yeob Lee, Yasser Mahmoudi, Vincenzo Spallina, Amir Keshmiri	NUMERICAL SIMULATION OF HYDROGEN ABSORPTION IN METAL HYDRIDE WITH INTERNAL FIN AND EMBEDDED HEAT TRANSFER FLUID CHANNEL.
81	Jake A. Locke, Steven J. Metcalf, George S. F. Shire, Robert E. Critoph	EVALUATION OF AMMONIA-SALT MIXTURE REACTIONS.

*Session Number in Easy Chair



Session 10 (11A*): Heat Transfer Technology 2		Chair: Dr Md. Amirul Islam
Abstract Number	Authors	Title
4	Giovanni Roberti, Michael Giovannini, Luca Molinaroli and Marco Lorenzini	STEADY-STATE MODELLING OF HEAT EXCHANGERS FOR REFRIGERATION APPLICATIONS.
69	Henry Allan-Jones, Anil Taskin, Mehdi Jangi	USING CFD TO IMPROVE THE HEAT TRANSFER PERFORMANCE OF AN OIL SPRAY COOLING SYSTEM FOR AN ELECTRIC MOTOR BY VARYING THE INCLINATION ANGLE.
84	Choon-Yian Haw, Kok-Loong Lim, Jo-Ey Liow	BIOMASS-DERIVED 2D AND 3D PHOTOABSORBERS: INSIGHTS INTO HEAT PROLIFERATION FOR ENHANCED PHOTOTHERMAL INTERFACIAL SOLAR STEAM GENERATION (ISSG).
116	Simon Wredh, Mingjin Dai, Kenta Hamada, Md Abdur Rahman, Nur Qalishah Adanan, Golnoush Zamiri, Steve Qing Yang Wu, Nancy Lai Mun Wong, Wenhao Zai, Zhaogang Dong, Wakana Kubo, Qi Jie Wang, Jeol Yang and Robert Simpson	DIRECT PHOTO-THERMOELECTRIC CONVERSION BASED MID-INFRARED DETECTION.
120	Q.Royer, R. Guibert, P.Horgue, A.Swadling, G.Debenest	NUMERICAL PREDICTION OF THE EVAPORATION RATE OF A HORIZONTAL WATER SPAN.

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Session 11 (11B*): Energy Conversion and Efficiency		Chair: Dr Edward Ishiyama
Abstract Number	Authors	Title
3	James Layton, Benjamin Rothwell, Stephen Ambrose, Humberto Medina and Carol Eastwick	A NOVEL MULTISCALE THERMAL METHODOLOGY FOR APPLICATION IN AEROSPACE TRANSMISSION SYSTEMS.
18	Yuying Yan and Pengfei Hu	STUDY ON HETEROGENEOUS CONDENSING FLOW CHARACTERISTICS IN TURBINE CASCADE.
57	Ahmed Mahmoud, Raihan, Muhammad F.B., Timothy Cockerill, Greg DeBoer, Harvey Thompson, Jochen Voss	MULTI-OBJECTIVE OPTIMIZATION OF THE THERMAL MANAGEMENT OF ELECTRIC VEHICLE USING COLD PLATE TECHNOLOGY.
58	Edward Ishiyama, David Oakley, James Kennedy, Simon Pugh, and Hans Zettler	NAVIGATING THE CHALLENGES: OPTIMIZING FIRED HEATERS WITH AIR PREHEATERS.
135	Jacob W. Tjards, Kristian Lockyear, Srinivas Garimella	RADIO FREQUENCY CALCINATION OF GYPSUM FOR SUSTAINABLE WALLBOARD PRODUCTION.

Session 12 (11C*): Computational Heat Transfer 2		Chair: Professor Yuying Yang
Abstract Number	Authors	Title
92	Ainul Nadirah Izaharuddin, Ahmed Rezk, Tim Hordley, Muhammad Imran, Stuart Allen	HEAT CONDUCTIVITY FOR THE ALUMINIUM SCRAP IN A DECOATING FURNACE.
94	Kyle McKee, John Lienhard	SYMMETRY CRITERIA FOR THE EQUALITY OF INTERIOR AND EXTERIOR HEAT CONDUCTION SHAPE FACTORS.
115	Hengyang Li, Yasser Mahmoudi Larimi, Mohammad Jadidi	EMBEDDED LARGE EDDY SIMULATION OF PARTIALLY PREMIXED HYDROGEN FLAME: STUDY OF INJECTOR NOZZLE GEOMETRY.
147	Faysal Khaleel, Fahad Al-Gburi, Yulong Ding, Jason Stafford	EFFECT OF INTERFACIAL FORCE ON FLOW BEHAVIOR AND LIQUID FILM THICKNESS IN THREE-PHASE TAYLOR FLOW.
148	Fahad Al-Gburi, Faysal Khaleel, Yulong Ding, Jason Stafford	NUMERICAL MODELLING OF MULTI-PHASE TAYLOR FLOW WITH NANOPARTICLES USING MPPIC-VOF APPROACH FOR HEAT TRANSFER ENHANCEMENT.

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Session 13 (14A*): Heat Transfer Enhancement		Chair: Dr Md Amirul Islam
Abstract Number	Authors	Title
71	H. Malah, S. Ramzani Movafagh	AN EXPERIMENTAL STUDY OF LAMINAR JUNCTURE FLOW DOWNSTREAM OF THE SURFACE-MOUNTED SQUARE CYLINDER
73	Waruna Maddumage, Souad Harmand, Alasdair Cairns, Amin Paykani	NUMERICAL STUDY OF OIL JET COOLING FOR HAIRPIN WINDING MOTORS IN ELECTRIC VEHICLES.
119	Hamzah Sheikh, William Osley, Stephen Pitt, Oluwatobiloba Henry, Andrei-Leonard Niçusan, Jonathan Seville, Peter Drögemüller	ENHANCEMENT FOR LAMINAR FLOW USING STATIC IN-TUBE DEVICES.
124	F.Z Benouis, A. Egea, R. Herrero-Martín, A. García	OPTIMIZING HEAT TRANSFER EFFICIENCY: EXPERIMENTAL ANALYSIS OF WIRE-COIL INSERTS IN RECTANGULAR TUBES UNDER NON-UNIFORM HEAT FLUX CONDITIONS.
141	Faridatul Ain, M. R. ; Mahmud, T., Heggs, P. J.	ACOUSTIC ENHANCEMENT OF MALTODEXTRIN DROPLET DRYING: INSIGHTS FROM MODELLING AND EXPERIMENTAL OBSERVATIONS.
149	H. Baker, J. McDonough ¹ , R. Law	ENHANCING HEAT TRANSFER IN MICRO PIN FIN HEAT SINKS USING FLOW OSCILLATIONS.

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Session 14 (14B*): Fluid Flow and Heat Transfer		Chair: Dr Nima Nazemzadeh
Abstract Number	Authors	Title
22	Keziah Magit, Buddhika Hewakandandamby, David Hann and Wigdan Kisha	EFFECT OF VISCOSITY ON VOID FRACTION OF A GAS-LIQUID FLOW IN VERTICAL PIPE.
99	Akanksha K. Menon, Walter P. Parker Jr., Jordan D. Kocher	NUMERICAL MODEL AND DEMONSTRATION OF A THERMAL BRINE CONCENTRATOR FOR CLEAN WATER PRODUCTION.
114	J. Uribe, S. Benhamadouch, A. Morente, P. Rotach, J.-L. Vacher, M. S. Chae, D. Paladino	SCOPING ANALYSES FOR THE DEFINITION OF NEW EXPERIMENTS FOR NATURAL CONVECTION AT HIGH RAYLEIGH NUMBERS.
137	C. Wang, W. Han, B. Li	DISTRIBUTED FIBRE OPTIC SENSORS FOR SOLID-LIQUID PHASE CHANGE DETECTION IN THERMAL ENERGY STORAGE APPLICATIONS.
146	Oliver Obst, Marian Lottis, Andrea Luke	INFLUENCE OF EXTERNAL PROCESS FLUID INJECTION ON THE CONVEYING BEHAVIOUR OF SCREW PUMPS WITH DECREASING SPINDLE PITCH.
154	Mayouf Si Abdallah and Sihem Bouafia	NUMERICAL ANALYSIS OF LAMINAR AND PERMANENT THERMAL NATURAL CONVECTION IN A CLOSED ENCLOSURE WITH DIFFERENT CONDITIONS.

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Session 15 (14C*): Heat Transfer Technology 3		Chair: Dr Monica Tirapelle
Abstract Number	Authors	Title
16	Seohee Jang, Shirin Golkaram and Yasser Mahmoudi	HEAT TRANSFER MODELLING OF GRANULAR FLOW IN POROUS MEDIA.
49	Thomas Werner, Volker Pickert and Yuying Yan	ANALYTICAL MODEL AND COMPARATIVE FLUID ANALYSIS TOOL FOR SCREEN AND SINTER WICK HEAT PIPES.
118	G. Favero, G. Slaviero, S. Zhang, A. Pepato, S. Mancin	ADDITIVE MANUFACTURING FOR THERMAL MANAGEMENT APPLICATIONS: ADVANTAGES AND CURRENT LIMITATIONS.
143	Lukas Franken, Daniel Friedrich	CAN ENHANCED GEOTHERMAL SYSTEMS DECREASE THE COST OF A DECARBONISED SECTOR-COUPLED EUROPEAN ENERGY SYSTEM?.
150	Adewale Odukamaiya, Jeffrey Milkie, Nickolas Roberts, Meha Setiya, Kelly P. Ryan, Joe Huyett, Todd M. Bandhauer	PERFORMANCE OF AN AMBIENT-TEMPERATURE-SOURCE STEAM-GENERATING HEAT PUMP.

Special Session 7 (15A*): Nuclear Reactors Thermal Hydraulics 2		Chair: Dr Dean Wilson and Dr Robin Kamenicky
Abstract Number	Authors	Title
31	Borja Diaz-Guardamino, Giovanni Giustini and Hector Iacovides	FULLY-RESOLVED INTERFACE CAPTURING SIMULATIONS OF SINGLE BUBBLE GROWTH AND MICROLAYER FORMATION ON AN ISOTHERMAL SUPERHEATED SURFACE IN POOL BOILING CONDITIONS.
32	Minto Kavyan, Hector Iacovides, Alex Skillen and Andrea Cioncolini	URANS STUDY OF THERMAL TRANSIENTS IN A T-JUNCTION PIPE.
35	Amy Jardine, Hector Iacovides and Tim Craft	MODELLING SPRAYS OF LIQUIDS INTO GASES AND VAPOURS.
43	Deacon Marshall, Heather Davies, Joseph Hegarty, Sophie Brown, Ryan Tunstall and Alex Skillen	VALIDATION OF UNSTEADY RANS AGAINST LES CALCULATIONS FOR PREDICTING NATURAL CIRCULATION STALL PHENOMENA WITHIN A TEST FACILITY LOOP.
111	Matthew A. Falcone, Ashish Saxena, Shuisheng He	ANALYSIS OF THERMAL STRATIFICATION IN A LIQUID SODIUM TEST FACILITY.
159	Nima Nazemzadeh, Francesco Coletti, Tassos G. Karayiannis	A MACHINE LEARNING APPROACH FOR THE PREDICTION OF FLOW BOILING HEAT TRANSFER COEFFICIENTS IN SMALL TO MICRO-TUBES.

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Special Session 8 (15B*): Heat Transfer for Net-Zero 2		Chair: Dr Adriano Sciacovelli and Dr Jian Song
Abstract Number	Authors	Title
20	Mohammed Alabdullatif, Prasenjit Kabi, Stavroula Balabani and Manish Tiwari	EFFECTS OF SURFACE MODIFICATION AND SURFACTANTS ON STABILITY OF EICOSANE/Al ₂ O ₃ NANOSUSPENSION.
37	Hector Bastida and Adriano Sciacovelli	DYNAMIC MODELLING OF LATENT HEAT THERMAL ENERGY STORAGE UNITS BASED ON PLATE-TYPE HEAT EXCHANGER
82	Davoud Abdi Lanbaran, Dan Dan, Zhen Wu, Bo Li	HARNESSING MICROWAVE AND HEAT EXCHANGER FOR ENHANCED HYDROGEN DESORPTION IN MGH ₂ HYDRIDE STORAGE SYSTEM.
96	Amrita Sharma, Hardik Kothadia, Shobhana Singh and Yongliang Li	A NON-DIMENSIONAL HEAT TRANSFER ANALYSIS OF PCM SOLIDIFICATION.
106	Salem Alotaibi, Abdullah Alajmi and Srou Alotaibi	MECHANICAL TREATMENT OF AGGLOMERATED CA(OH) ₂ /CAO PARTICLES DURING THERMAL ENERGY STORAGE REACTIONS.
132	Meixi Liu, Lorenzo Ciappi, Adriano Sciacovelli	NUMERICAL ANALYSIS OF A THERMAL ENERGY STORAGE SYSTEM WITH PHASE CHANGE MATERIAL BASED ON PLATE HEAT EXCHANGER WITH ROLL-BOND DESIGN.

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Special Session 9 (15C*): Battery Thermal Management		Chair: Dr Jose Herreros and Dr Ji Li
Abstract Number	Authors	Title
28	Pouyan Talebizadehsardari, Alasdair Cairns, Antonino La Rocca and Surojit Sen	THERMAL MANAGEMENT CHALLENGES OF LI-ION BATTERY PACKS USING PARTIAL IMMERSION COOLING: ANALYZING PRESSURE DROP AND TEMPERATURE DISTRIBUTION.
41	Pouyan Talebizadehsardari, Alasdair Cairns, Antonino La Rocca and Surojit Sen	CONJUGATE HEAT TRANSFER ANALYSIS OF A POUCH CELL LI-ION BATTERY PACK USING MINI CHANNEL COLD PLATES WITH A U-SHAPED CONFIGURATION.
52	Sarvjeet Singh, Hardik Kothadia and Prodyut Chakraborty	EVAPORATION IN THIN WATER FILM UNDER REDUCED PRESSURE CONDITIONS: HEAT AND MASS TRANSFER CHARACTERISTICS.
78	Adam Wilkes, Anil Taskin, Raya AL-Dadah, Saad Mahmoud	INTEGRATED TWO-PHASE IMMERSION COOLING OF ELECTRIC VEHICLE BATTERIES WITH ORGANIC RANKINE CYCLE.
91	Aanandsundar Arumugam, Bernardo Buonomo, Oronzio Manca, Monika Ignatowicz, Rahmatollah Khodabandeh	THERMAL PERFORMANCE EVALUATION OF LITHIUM POLYMER BATTERIES: A COMPARISON OF PCM AND PCM WITH METAL FOAMS, FOR THERMAL REGULATION.
129	Zeyu Sun, Yongxiu Chen, Paul Shearing	A NUMERICAL INVESTIGATION ON THERMAL MANAGEMENT SYSTEM DESIGN FOR 4680 CYLINDRICAL LITHIUM-ION BATTERIES.

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