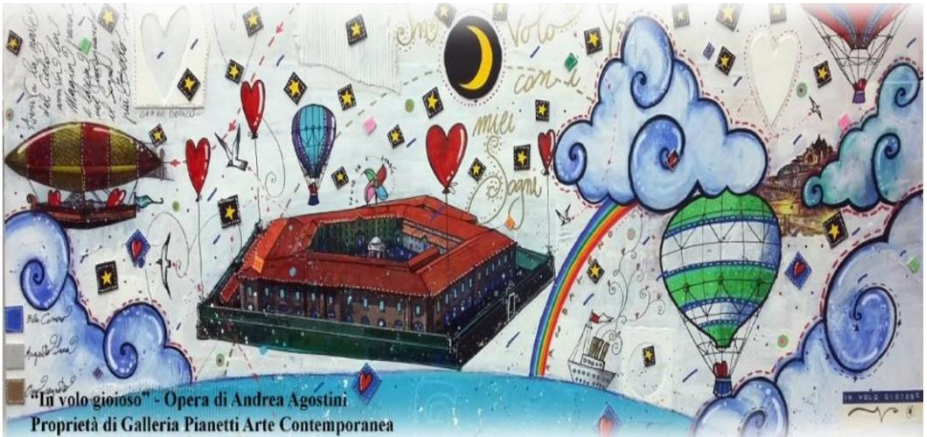




35th UIT Heat Transfer Conference



Ancona, Italy
June 26-28, 2017

www.uitancona.univpm.it
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CONFERENCE PROGRAMME

Monday, June 26th

- 08:30 – 10:00 Registration - Science, Building 3, Hall
- 10:15 – 10:45 Opening Ceremony and presentation of UIT Prizes
Science, Building 3, Room “Aula Azzurra”
- 10:45 – 11:30 **Invited lecture** - Science, Building 3, Room “Aula Azzurra”
Prof. Giovanni Latini
Thermophysical properties of fluids
- 11:45 – 13:15 **Poster session** - Blocco Aule Sud (BAS) (ground floor)
-

On the forced convection of a nanofluid: analysis of the Couette flow
E. R. DI SCHIO

Analysis of a full-scale integrated test in PERSEO facility by using TRACE code
S. D'AMICO, C. LOMBARDO, I. MOSCATO, M. POLIDORI, G. VELLA

Analysis of unmitigated large break loss of coolant accidents by using MELCOR code
M. PESCARINI, F. MASCARI, D. MOSTACCI, F. DE ROSA, F. GIANNETTI,
C. LOMBARDO

Experimental investigation on predictive models for motive flow-rate calculation through ejectors for transcritical CO₂ heat pumps
G. BOCCARDI, G. LILLO, R. MASTRULLO, A. W. MAURO, L. SARACENO,
M. PIEVE, R. TRINCHIERI

Water holdup estimation from pressure drop measurements in oil-water two-phase flows by means of the two-fluid model
L. P. M. COLOMBO, M. GUILIZZONI, G. SOTGIA, P. B. DEHKORDI,
A. LUCCHINI

Characterization of highly hydrophobic textiles by means of X-ray microtomography, wettability analysis and drop impact
M. SANTINI, M. GUILIZZONI, S. FEST-SANTINI, M. LORENZI

Anisotropy effects on convective heat transfer and pressure drop in Kelvin's open-cell foams
M. IASIELLO, N. BIANCO, W. K. S. CHIU, V. NASO

Modelling analysis of flow field geometrical features in polymer electrolyte fuel cells porous media
M. MESSAGGI, R. MEREU, A. BARICCI, M. ZAGO, F. INZOLI,
A. CASALEGNO

Simulation of the behavior of building components containing phase change material
P. GORI, C. GUATTARI, L. EVANGELISTI, F. ASDRUBALI

Energetic performance analysis of a commercial water-based photovoltaic thermal system (PV/T) under summer conditions

I. NARDI, D. AMBROSINI, T. DE RUBEIS, D. PAOLETTI, M. MUTTILLO, S. SFARRA

Use of phase change materials during compressed air expansion for isothermal CAES plants

B. CASTELLANI, A. PRESCIUTTI, E. MORINI, M. FILIPPONI, A. NICOLINI, F. ROSSI

Thermal analysis of a phase change material for a solar organic Rankine cycle

M. IASIELLO, K. BRAIMAKIS, A. ANDREOZZI, S. KARELLAS

Development of a low-cost temperature data monitoring. An upgrade for hot box apparatus

T. DE RUBEIS, I. NARDI, M. MUTTILLO

A pilot plant with hybrid PV/T panels: system integration of solar assisted heat pump with existing heating devices

L. A. TAGLIAFICO, A. ARTECONI, A. MARCHITTO, C. SAIO, F. SCARPA

Recent trends in the development of heat exchangers for geothermal systems

A. FRANCO, M. VACCARO

Multi-objective optimization of a solar humidification dehumidification desalination unit

M. RAFIGHI, M. MIRZAEIAN, B. NAJAFI, F. RINALDI, R. MARCHESI

On the effect of the aspect ratio on the mixed convection in a vertical cylindrical cavity with rotating inner wall

A. FICHERA, M. MARCOUX, A. PAGANO

Artificial neural network modeling of liquid thermal conductivity for alkanes, ketones and silanes

G. LATINI, G. DI NICOLA, M. PIERANTOZZI, S. TOMASSETTI, G. COCCIA

Dry deposition models for radionuclides dispersed in air: a new approach for deposition velocity evaluation schema

M. GIARDINA, P. BUFFA, A. CERVONE, F. DE ROSA, C. LOMBARDO, M. CASAMIRRA

A brief compendium of correlations and analytical formulae for the thermal field generated by a heat source embedded in a porous medium

P. CONTI, D. TESTI, W. GRASSI

On the temperature prediction in a fire escape passage

G. CASANO, S. PIVA

An experimental investigation on compact heat exchanger with aluminum foam to evaluate the PPI effects on fluid dynamic and thermal behaviours

L. CIRILLO, O. MANCA, B. BUONOMO, S. NARDINI

Numerical investigation on natural convection in horizontal channel partially filled with aluminium foam and heated from above

B. BUONOMO, A. DIANA, O. MANCA, S. NARDINI

13:30 – 14:45 *Lunch*

Session A Micro and nano scale thermo-fluid dynamics - BAS Room A4

Chairman: Prof.sa Sara Rainieri

15:00 – 15:20 *Nanoparticles deposition during Cu-water nanofluid pool boiling*
L. DORETTI, G. A. LONGO, S. MANCIN, G. RIGHETTI, J. A. WEIBEL

15:00 – 15:40 *Electro-osmotic flow in rectangular microchannels: geometry optimization*
M. LORENZINI

15:40 – 16:00 *Multi-scale modelling of heat and mass transport in nanostructures: the NANO-BRIDGE project*
P. ASINARI, P. POESIO, E. CHIAVAZZO, M. FASANO, A. CARDELLINI, M. MORCIANO, A. DAMONE, F. BENFENATI

16:00 – 16:20 *A multiscale approach to interpret and predict the apparent slip velocity at liquid-liquid interfaces*
P. POESIO, A. DAMONE, O. K. MATAR

16:20 – 16:40 *Coffee break*

Session B Heat transfer in nuclear plants - BAS Room A4

Chairman: Prof. Giuseppe Vella

16:40 – 17:00 *Verification of RELAP5-3D code in natural circulation loop as function of the initial water inventory*
C. BERTANI, N. FALCONE, A. BERSANO, M. CARAMELLO, T. MATSUSHITA, M. DE SALVE, B. PANELLA

17:00 – 17:20 *Pool temperature stratification analysis in CIRCE-ICE facility with RELAP5-3D© model and comparison with experimental tests*
V. NARCISI, F. GIANNETTI, M. TARANTINO, D. MARTELLI, G. CARUSO

17:20 – 17:40 *Pre-test analysis of protected loss of primary pump transients in CIRCE-HERO facility*
V. NARCISI, F. GIANNETTI, A. DEL NEVO, M. TARANTINO, G. CARUSO

17:40 – 18:00 *Study of steam condensation at sub-atmospheric pressure: setting a basic research using MELCOR code*
A. MANFREDINI, M. MAZZINI

Session C.1 Multi-phase fluid dynamics, heat transfer and interface phenomena – section 1 - BAS Room A6

Chairman: Prof. Fabio Polonara

- 15:00 – 15:20 *Micro droplets of non-Newtonian solutions in silicone oil flow through a hydrophobic micro cross-junction*
B. ROSTAMI, G. L. MORINI
- 15:00 – 15:40 *Fluid-flow pressure measurements and thermo-fluid characterization of a single loop two-phase passive heat transfer device*
A. ILINCA, D. MANGINI, M. MAMELI, D. FIORITI, S. FILIPPESCHI,
L. ARANEO, N. ROTH, M. MARENGO
- 15:40 – 16:00 *Bubble shapes in dense bubbly flows: experimental studies in low Morton-numbers systems*
G. BESAGNI, F. INZOLI, T. ZIEGENHEIN, H. HESSENKEMPER, D. LUCAS
- 16:00 – 16:20 *R245fa flow boiling inside a 4.2 mm ID microfin tube*
G. A. LONGO, S. MANCIN, G. RIGHETTI, C. ZILIO
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- 16:20 – 16:40 *Coffee break*
- 16:40 – 17:00 *Flow boiling of R32 in a horizontal smooth tube of 6.0 mm internal diameter: heat transfer coefficient and pressure drop*
R. MASTRULLO, A. W. MAURO, L. VISCITO
- 17:00 – 17:20 *Experimental investigation of R1234yf and R134a condensation inside a 2.4 mm ID microfin tube*
M. T. TAMURA, A. DIANI, L. ROSSETTO
- 17:20 – 17:40 *Heat transfer degradation during condensation of non-azeotropic mixtures*
M. AZZOLIN, A. BERTO, S. BORTOLIN, D. DEL COL
- 17:40 – 18:00 *Numerical simulation of rivulet build up via lubrication equations*
N. SUZZI, G. CROCE

Tuesday, June 27th

09:15 – 10:00 **Invited lecture** - Science, Building 3, Room “Aula Azzurra”
Prof. Peter Stephan, Technische Universität Darmstadt, Germany
Mutual influences of wetting phenomena and evaporative heat transfer

10:10 – 10:30 *Coffee break*

Session C.2 **Multi-phase fluid dynamics, heat transfer and interface phenomena – section 2** - BAS Room A4

Chairman: Prof. Giovanni Longo

10:30 – 10:50 *Novel correlation for the gas holdup and the flow regime transition in two-phase bubble columns*
G. BESAGNI, F. INZOLI

10:50 – 11:10 *Characterization of a Space Pulsating Heat Pipe on board REXUS 22 Sounding Rocket*
P. NANNIPIERI, S. PIACQUADIO, G. BECATTI, A. S. VIGLIONE, P. DI GIORGIO, E. FERRATO, A. CATARSI, G. MEONI, P. GUARDATI, F. NESTI, L. QUADRELLI, M. ANICHINI, F. ZANABONI, E. MANCINI, L. BUONI, F. CELI, L. BARSOCCHI, P. FATTIBENE, E. PRATELLI, S. FILIPPESCHI, M. MAMELI, P. DI MARCO, L. FANUCCI, F. BARONTI, S. MARCUCCIO, C. BARTOLI, M. MARENGO, N. BIANCO

11:10 – 11:30 *Modelling the pressurization induced by solar radiation on above ground installations of LPG pipeline systems*
F. CORVARO, G. GIACCHETTA, M. LEPORINI, B. MARCHETTI, F. POLONARA, A. TERENCE, R. COCCI GRIFONI

11:30 – 11:50 *Effects of force fields on interface dynamics, in view of two-phase heat transfer enhancement and phase management for space applications*
P. DI MARCO, G. SACCONI

11:50 – 12:10 *Transient numerical simulations of condensation in a minichannel compared to flow visualizations*
S. BORTOLIN, M. AZZOLIN, P. TONINELLI, D. DEL COL

Session D.1 **Computational fluid Dynamics and heat transfer – section 1** BAS Room A6

Chairman: Prof. Alfonso Niro

10:30 – 10:50 *Magnetohydrodynamic flow and heat transfer around a heated cylinder of arbitrary conductivity*
A. TASSONE, M. NOBILI, G. CARUSO

10:50 – 11:10 *Investigation of the effect of cylindrical insert devices on laminar convective heat transfer in channel flow by applying the Field Synergy Principle*
P. VOCALE, A. MOCERINO, F. BOZZOLI, S. RAINIERI

- 11:10 – 11:30 *A Spalart-Allmaras local correlation-based transition model for Thermal Fluid-Dynamics*
V. D'ALESSANDRO, S. MONTELPARE, F. GARBUGLIA, A. ZOPPI
- 11.30 – 11:50 *CFD analysis of Aircraft fuel tanks thermal behaviour*
C. ZILIO, G. A. LONGO, G. PERNIGOTTO, F. CHIACCHIO, P. BORRELLI, E. D'ERRICO
- 11:50 – 12:10 *Numerical analysis of flow resistance and heat transfer in the transitional regime of pipe ow with twisted-tape turbulators*
R. ROSSI, F. BOZZOLI, R. CAMINATI, S. RAINIERI, G.PAGLIARINI, L. CATTANI, A. MOCERINO
- 12:10 – 12:30 *Numerical analysis of heat conduction problems on 3D general-shaped domains by means of a RBF Collocation Meshless Method*
R. ZAMOLO, E. NOBILE

13:00 – 14:15 *Lunch*

Session D.2 Computational fluid Dynamics and heat transfer – section 2

BAS Room A6

Chairman: Prof. Marco Dell'Isola

- 14:20 – 14:40 *A multiscale numerical algorithm for heat transfer simulation between multidimensional CFD and monodimensional system codes*
A. CHIERICI, L. CHIRCO, R. DA VIÀ, S. MANSERVISI, R. SCARDOVELLI
- 14:40 – 15:00 *An optimal control method for fluid structure interaction systems via adjoint boundary pressure*
L. CHIRCO, R. DA VIÀ, S. MANSERVISI
- 15:00 – 15:20 *Study of the flow field past dimpled aerodynamic surfaces: numerical simulation and experimental verification*
L. BINCI, G. CLEMENTI, V. D'ALESSANDRO, R. RICCI, S. MONTELPARE
- 15:20 – 15:40 *CFD simulations of power coefficients for an innovative Darrieus style vertical axis wind turbine with auxiliary straight blades*
F. ARPINO, G. CORTELLESSA, M. DELL'ISOLA, M. SCUNGIO, V. FOCANTI, M. PROFILI, M. ROTONDI
- 15:40 – 16:00 *Wind turbine wake distortion in complex terrain: a numerical and experimental analysis*
D. ASTOLFI, F. CASTELLANI, L. TERZI
- 16:00 – 16:20 *CFD three-dimensional wake analysis in complex terrain*
F. CASTELLANI, D. ASTOLFI, L. TERZI
- 16:20 – 16:40 *A priori and a posteriori analysis of the flow around a rectangular cylinder*
A. CIMARELLI, A. LEONFORTE, M. FRANCIOLINI, E. DE ANGELIS, D. ANGELI, A. CRIVELLINI

Session E.1 Heat transfer and efficiency in energy system, environmental technologies, and buildings – section 1 - BAS Room A4

Chairman: Prof. Paolo Baggio

- 14:20 – 14:40 *Using transient plane source method in controlled environmental conditions: an innovative thermal characterization procedure for building insulation materials*
C.FABIANI, A. L. PISELLO, F. COTANA
- 14:40 – 15:00 *A Solar Chimney for renewable energy production: thermo-fluid dynamic optimization by CFD analyses*
S. MONTELPARE, V. D’ALESSANDRO, A. ZOPPI, E. COSTANZO
- 15:00 – 15:20 *Transient analysis of the radiative heating of rotating PVC pipes in an oven for end-forming process: influence of angular velocity on tube temperature distribution*
M. LUCCHI, M. LORENZINI
- 15:20 – 15:40 *Energy saving opportunities in the refrigerated transport sector through Phase Change Materials (PCMs) application*
P. PRINCIPI, R. FIORETTI, B. COPERTARO
- 15:40 – 16:00 *Innovative coupling of cogeneration units with fire tube boilers: thermo-fluid dynamics of the fire tubes*
A. ARTECONI, L. CIOCCOLANTI, C.M. BARTOLINI, F. POLONARA
- 16:00 – 16:20 *Analysis of combustion conditions for CO and PM emissions in wood pellet stoves: an experimental study*
L. F. POLONINI, S. P. PARMIGIANI, D. PETROCELLI, A. M. LEZZI
- 16:20 – 16:40 *Analytical solutions for tomato peeling with combined heat flux and convective boundary conditions*
G. CUCCURULLO, L.GIORDANO
-
- 16:40 – 17:00 *Coffee break*
- 17:00 – 18:30 **UIT Assembly - Science, Building 3, Room “Aula Azzurra”**
- Gala Dinner – Ristorante Il Fortino Napoleonico, Portonovo, Riviera del Conero**
- 20:00 – 21:00 *Aperitif in the terrace*
- 21:00 – 23:00 *Gala Dinner*

Wednesday, June 28th

09:45 – 10:30 **Technical seminar** - Science, Building 3, Room “Aula Azzurra”
Prof. Renato Ricci
Unmanned aerial systems for thermo-fluid dynamic

10:40 – 11:00 *Coffee break*

Session F Natural, forced and mixed convection - BAS Room A6

Chairman: Prof. Vincenzo Naso

11:00 – 11:20 *Analytical models of Ohmic heating and conventional heating in food processing*

A. SERVENTI, F. BOZZOLI, S. RAINIERI

11:20 – 11:40 *New data processing on local heat transfer evaluation inside a rectangular channel*

P. GRAMAZIO, D. FUSTINONI, L. VITALI, A. NIRO

11:40 – 12:00 *Experimental characterization of a solar cooker with thermal energy storage based on solar salt*

G. COCCIA, G. DINICOLA, G. GABRIELLI, M. CHIERUZZI, M. PIERANTOZZI, S. TOMASSETTI

12:00 - 12:20 *Influence of the boundary conditions on heat or mass transfer in complex channels*

M. CIOFALO, M. F. LA CERVA, M. DI LIBERTO, A. TAMBURINI

Session E.2 Heat transfer and efficiency in energy system, environmental technologies, and buildings – section 2 - BAS Room A4

Chairman: Prof. Francesco Asdrubali

11:00 – 11:20 *Accelerated biological ageing of solar reflective and aesthetically relevant building materials*

G. SANTUNIONE, C. FERRARI, A. LIBBRA, E. SGARBI, A. MUSCIO

11:20 – 11:40 *A cogeneration power plant dedicated to cold ironing and district heating and cooling*

F. ESPOSITO, E. MANCINELLI, G. PASSERINI

11:40 – 12:00 *Optimization of the Temperature-Time Curve for controlling evaporation rate in microwave apple drying*

G. CUCCURULLO, A. METALLO, L. GIORDANO

12:00 – 12:20 *Environmental and economic study of potential biodiesel production from microalgae oil and bioethanol from giant reed*

M. MOGLIE, F. ALBERTI, F. SOLFANELLI, A. NORICI, R. ZANOLI, F. POLONARA

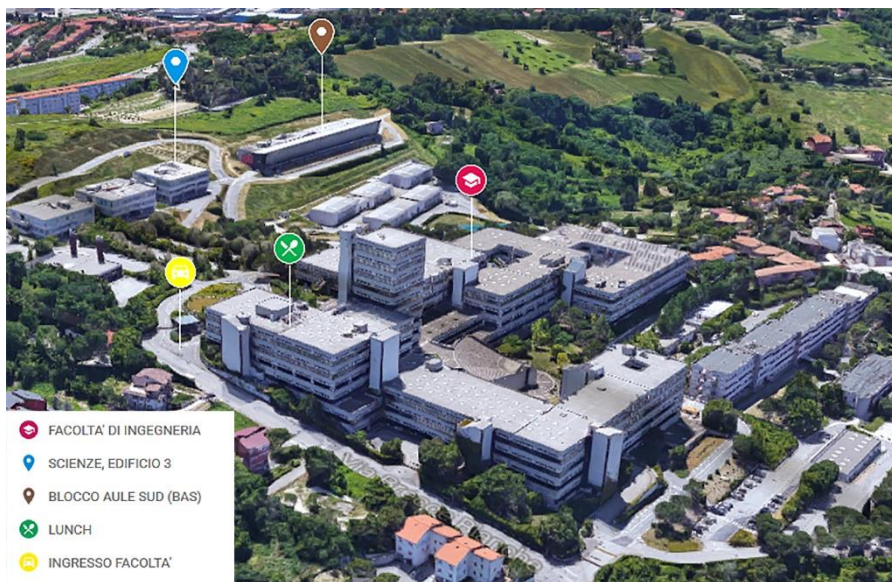
12:20 – 12:40 *Experimental investigation on localized heating based on electric
radiant panels for historical and monumental buildings*
V. MALAGUTI, C. LODI, S. MAGLI, A. MUSCIO, P. TARTARINI

13:00 *Quick lunch*

USEFUL INFORMATION

The conference will take place in the Polytechnic University of Marche.

- **CONFERENCE ROOM**
Science, Building 3, “Aula Azzurra” (ground floor)
Blocco Aule Sud (ground floor)
- **SECRETARIAT**
Science, Building 3, Hall
- **POSTER SESSION, COFFEE BREAKS**
Blocco Aule Sud (ground floor)
- **LUNCHES**
Complesso Belluschi, Aula Polifunzionale (ground floor)
- **REGISTRATION DESK**
Science, Building 3, Hall. A Registration desk will be present during the whole duration of the Conference, from 8:30 to 17:00.
Conference badges and kit will be consigned at the registration.



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