



2009 Inaugural US-EU-China Thermophysics Conference - *Renewable Energy*

Beijing University of Technology

Grand Gongda Jianguo Hotel
No. 100 Pingleyuan, Chaoyang District
Beijing, China 100124
May 28-30, 2009

Sponsored by



IOP Institute of Physics



I MECH E

2009 Inaugural US-EU-China Thermophysics Conference
- Renewable Energy

Conference Program (Final)

Thursday (May 28, 2009)

Registration: 13:00 – 17:00 PM

Technical Tour:

14:00-17:00 Future House Demonstration Park

Welcome Reception 19:00

Friday (May 29, 2009)

Plenary Session: 8:00 – 12:05

Welcome to 2009 UECTC-RE & Recognitions:

Prof. Chongfang Ma

Introduction of Keynote Speakers

DR. Y. X. TAO

Keynote Speeches

Prof. Robert F. Boehm, *USA*, "Prospects for Concentrating Solar Power Systems"

Prof. Tim Tong, *Hong Kong*, "World Energy Consumption and Options for Sustainable Energy Supply"

Prof. John W Rose, *UK*, "Microchannel Condensation Heat Transfer"

Coffee Break 10:10 – 10:30

Keynote Speeches

Prof. Guobiao Gu, *China*, "Heat Issue in Conventional Electrical Machines and Renewable Energy Wind Power"

Prof. Zengyuan Guo, *China*, "Entransy: a New Physical Quantity in Heat Transfer"

Prof. Wenquan Tao, *China*, "Multiscale computations of fluid flow and heat transfer problems"

Prof. Xiaofeng Peng, *China*, "Two-phase flow behavior during boiling in coiled tubes"

Lunch 12:05 – 13:30

Technical Sessions 13:30 – 15:00

Coffee Break 15:00 – 15:20

Technical Sessions 15:20 – 17:00

Dinner 19:00 –

Saturday (May 30, 2009)

Technical Sessions 8:00 – 10:10

Coffee Break 10:10 – 10:30

Technical Sessions 10:30 – 12:05

Lunch 12:05 – 13:30

Technical Sessions 13:30 – 15:00

Coffee Break 15:00 – 15:20

Technical Sessions 15:20 – 17:00

Committee Meeting 19:00 –

Technical Program

Friday (May 29, 2009)

Track 1: Renewable Energy Applications

Session 1-1 (Chamber A): Solar Energy / Renewable Energy for Heating and Water Distillation/Renewable Energy and Sustainable Technology I

13:30 – 15:00

Session Chair: Moncef Krarti, *USA*

Co-chair: J. W. Rose, *UK*, Yuting Wu, *China*,

UECTC2009-342 (Invited Paper) Regional Impacts on Energy Demands from a Changing Climate in the Coastal California Environment, *Bereket Lebassi, Jorge Gonzalez, Dranzen Fabris, Robert Bornstein*

UECTC2009-122 Numerical Study on the Coupled Heat Transfer Performance of the Parabolic Solar Absorber Tube, *Yu Bing Tao, Ya Ling He*

UECTC2009-124 Numerical Study of Heat Transfer Characteristics in the Solar Receiver Tube Combined with MCRT Method, *Z.D. Cheng, Y.L. He, J. Xiao, Y.B. Tao, R.J. Xu*

UECTC2009-137 Application Analysis of Solar Heating Technology in Rural Residence of Typical Heating Areas, *Wei Cai, Guozhen Xie*

UECTC2009-169 Research for Flow and Heat Transfer in Solar Driven Air Gap Membrane Distillation System, *Gao Hong Rui Tian, Song Li, Hongxiao Yang*

UECTC2009-411 Experimental Study for Turbulent Convective Heat Transfer with Molten Salts in a Circular Tube, *Liu Bin, WU Yuting, Ye Meng, Chongfang Ma*

Session 1-2 (Chamber A): Solar Energy / Renewable Energy for Heating and Water Distillation/ Renewable Energy and Sustainable Technology II

15:20 – 17:00

Session Chair: Yaling He, *China*

Co-chair: Moncef Krarti, *USA*,

UECTC2009-238 Experimental Investigation of Heat Transfer and Flow Characteristics in A Solar Chimney Prototype, *Tingzhen Ming, Wei Liu, Zhou Zhou, Yuan Pan*

UECTC2009-266 Performance of the Amonix High Concentration Photovoltaic System at the NV Energy Clark Station, *Aaron Sahm, Robert Boehm, Kenneth Stone, Kelly Johnson*

UECTC2009-323 Study on Thermal Performance of the Collector of the Solar Membrane Distillation System, *Suying Yan, Rui Tian, Wenyan Yu, Junfeng Han*

UECTC2009-328 Solar powered thermodynamic cycle using supercritical fluids, *Xin-Rong Zhang, Hiroshi Yamaguchi*

UECTC2009-343 Genetic Algorithm Based Daylighting Controller, *Seifeddine Beldi, Moncef Krart*

UECTC2009-427 Performance Characteristics of Combined Solar Photovoltaic and Thermal System for Brackish Water Desalination, *Zehui Chang, Rui Tian, Xin Jiang*

Session 1-3 (Chamber B): Biomass Technology, Wind Turbine & Energy Conservation/ Recovery Technologies I

13:30 – 15:00

Session Chair: Shun Kang, *China*

Co-chair: Jorge Gonzalez, *USA*

UECTC2009-107 Numerical Simulation of Pine Sawdust and Coal Co-Firing, *Chaouki Ghenai, Isam Janajreh*

UECTC2009-204 Three-dimensional Modeling on the Hydrodynamics of a Circulating Fluidised Bed, *Lindsay-Marie Armstrong, Sai Gu, Kai Luo*

UECTC2009-157 Numerical Simulations of the Aerodynamics of Horizontal Axis Wind Turbines, *Zhongyao Fan, Shun Kang*

UECTC2009-171 Effects of Flexible Vanes on the Hydrodynamic Characteristics of Tidal Stream Turbine with Flexible Vanes, *Dong Li, Shujie Wang*

UECTC2009-175 Optimizing Control Strategy and Experimental Research of Small-Scale Wind Turbine, *Daorina Bao, Wan-xiang Zhang Rui Tian, Zhizhang Liu, Guoying Feng*

Session 1-4 (Chamber B): Biomass Technology/ Wind Turbine & Energy Conservation/ Recovery Technologies II

15:20 – 17:00

Session Chair: Lili Zheng, *USA*

Co-chair: K. Guo, *China*

UECTC2009-221 The Flow Simulation and the Micrositing for Wind Turbines over Askervein Hill, *Shun Kang, Wenbo Shao, Sichao Liang*

UECTC2009-229 Numerical Investigation of Reynolds Number Effect on Airfoil Aerodynamic Performances, *Shun Kang, Jie Li, Zhongyao Fan*

UECTC2009-255 A Study of the Modified Models for 3d Stall Delay in the Design of Horizontal Axis Wind Turbine Blades, *Shun Kang, Zuoming Yin*

UECTC2009-094 Performance Analysis for an Organic Rankine Cycle Using Engine Exhaust Gas as Heat Source, *Tao Han, Tzu-Chen Hung, K. David Huang, Chii-Ruey Lin*

UECTC2009-290 Performance Analysis of a Combined Cooling Heating and Power System, *Y.T. Ge, S.A. Tassou, I Chaer, N. Sagartha*

Track 2: Transport Phenomena in Renewable Energy

Session 2-1 (Chamber C): Thermal Analysis in Renewable Energy Systems and Components I

13:30 – 15:00

Session Chair: Yunting Ge, *UK*

Co-chair: Yanjun Dai, *China*

Invited Presentation Prof. R. Z. WANG: "Trends on Cost-effective Solar Heating and Cooling"

UECTC2009-114 (Invited Paper) Thermal Behaviors of Solid Particles in a Solid Particle Solar Receiver, *Taide Tan, Yitong Chen*

UECTC2009-099 Experiment study on the Current density Distribution of PEMFC, *Xing Wei, Jinxuan Fan, Zengyao Li, Yaling He, W.Q. Tao*

UECTC2009-100 Experimental Study on the Dynamic Response Characteristics of Fuel Cell, *Xing Wei, Hong Lin, Jinxuan Fan, Yaling He, W.Q. Tao*

UECTC2009-106 Development of a Two-Stage Solar Concentrator Using Fresnel Lens and Dish Reflector, *Yanjun Dai, Y.M. Han, R.Z. Wang*

UECTC2009-150 Source Items Treatment of Coupled Heat Transfer of Radiation and Convection, *Hua Dong, Wen-Chao Guo*

Session 2-2 (Chamber C): Thermal Analysis in Renewable Energy Systems and Components II

15:20 – 17:00

Session Chair: Mingheng Shi, *China*

Co-chair: Ruzhu Wang, *China*, Yitong Chen, *USA*

UECTC2009-339 Experimental Investigation and Analysis on a Parabolic Trough Solar Collector Using Triangle Cavity Receiver, *Bai Tao, Yanjun Dai*

UECTC2009-345 Ammonia-Water Absorption Cycles for Transportation of Low-Grade Thermal Energy over Long Distance, *Qiang Ma, Lingai Luo, Ruzhu Wang*

UECTC2009-352 Numerical Simulation of the Flow inside the Entrained Flow Gasifier
Isam Janajreh, Ilham Talab, Rana Qudaih

UECTC2009-382 Performance Analysis of an Innovative Ejector, *J. Guo, H.G. Shen, M.M. Sun, Z. Liang*

UECTC2009-413 A Method Based on the Fluctuation of the Temperature Difference to Select the Zeotropic Refrigerant Mixture in the Air-Conditioning Condition, *Jin Xing, Xiaosong Zhang*

Session 2-3 (Chamber D): Heat Transfer Enhancement Techniques / Heat and Mass Transfer I

13:30 – 15:00

Session Chair: Chang-ying Zhao, *UK*

Co-chair: Peixue Jiang; Heping Tan, *China*

UECTC2009-103 Heat Transfer and Pressure Drop Correlations for Compact Heat Exchangers with Multi-Region Louver Fins, *Wei Li, Xialing Wang*

UECTC2009-206 Irreversibility Analysis of Heat Exchanger Network Based on Equivalent Thermal Resistance, *Xiongbin Liu, Ji'an Meng*

UECTC2009-307 The Thermal Performance of a Cross-flow Plate Heat Exchanger for Indirect Evaporative Cooling, *Xuelai Liu, Yongan Li, Jizhi Li, Hengliang Chen, Hongxing Yang*

UECTC2009-422 Heat and Mass Transfer Enhancement of Falling Film Absorption for various Surface Geometries, *Xuehu Ma, Zhong Lan, Pei Chen, Tao Bai, Jiabin Chen*

UECTC2009-135 Numerical Study on Coupled Heat and Mass Transfer in Potato during Hot-air Drying, *Wei Cai, Guozhen Xie, Lina Zhang, Xuemei Gong, Zhaohui Wu*

Session 2-4 (Chamber D): Heat Transfer Enhancement Techniques / Heat and Mass Transfer II

15:20 – 17:00

Session Chair: Peixue Jiang, *China*

Co-chair: Chang-ying Zhao, *UK*

UECTC2009-251 Numerical Simulation for Nature Convection Heat Transfer of Liquid Metal Flow with Fusion Magnetic Fields, *Hongyan Wang, Xidong Zhang, Keke Ding, Qing Lin*

UECTC2009-252 Study of Heat and Mass Transfer Based on Air Humidity Potential, *Genming Zhou, Ying Shi, Jianmin Ma*

UECTC2009-327 Optimization of Film Condensation Driven Thermal Energy Storage Containers, *Quinn Leland, Krishna Kota, Louis Chow*

UECTC2009-340 Analysis on Temperature Field of Buried Gas Pipeline by Heat Pipe Technology, *Dazhong Yuan, Wei Qu, Bangxian Wu*

UECTC2009-371 Template-Based Evaluation of High Speed Video Recording of Bubble Formation with Pool Boiling of Propane, *Andrea Luke, Yabai Wang*

Saturday (May 30, 2009) 8:00-17:00

Session 2-5 (Chamber A): Thermal Radiation and Radiative Properties for Energy Harvesting I
8:00-10:10

Session Chair: Qunzhi Zhu, *China*

Co-chair: Ceji Fu, *China*, Zhuomin Zhang, *USA*

UECTC2009-308 (Invited Presentation) On Tuning the Spectral Emission and Absorption Properties of Photovoltaic and Thermophotovoltaic Devices: Near-Field Radiative Transfer Effects, *M. Pinar Mengüç*

UECTC2009-134 (Invited Presentation) Near-field Heat Exchange between Two Thin Silicon Films, *Philippe Ben-Abdallah*

UECTC2009-128 (Presentation Only) Transmission through Double-Layered Periodic Metallic Nanoslit Arrays, *Liping Wang, Zhuomin Zhang*

UECTC2009-235 (Presentation Only) A Si-Based Layered Structure with a Metallic Grating for Photovoltaic Applications, *Ceji Fu*

UECTC2009-329 (Invited Paper) Radiative Properties of High Temperature Particles in Their Phase Transitions and Inverse Radiation Problem of Particles, *Hong Qi, Jiayu Li, Hongliang Yi, He-Ping Tan*

Session 2-6 (Chamber A): Thermal Radiation and Radiative Properties for Energy Harvesting II
10:30-12:05

Session Chair: Ceji Fu, *China*

Co-chair: Zhuomin Zhang, *USA*, Qunzhi Zhu, *China*

UECTC2009-205 Experimental Testing and Modeling of a Micro Solar Thermal Collector with Direct Absorption Nanofluids, *Todd Otanicar, Patrick Phelan, Gary Rosengarten, Ravi Prasher*

UECTC2009-155 Radiative Properties of GAAS from First Principles Calculations, *Hua Bao, Xiulin Ruan*

UECTC2009-148 An Online Monitoring Technology for Visualization of 3-D High Temperature Field in a Tubular Furnace, *Qiang Cheng, Huaichun Zhou, Xiangyu Zhang, Song Shao, Wei Wang, Xiaoyang Ma*

UECTC2009-218 (Presentation Only)

Measurements of bidirectional reflectance and transmittance of silica aerogel

Qunzhi Zhu, Jiesshu Zou, Jun Shen, Yongguang Li

UECTC2009-331 Performance of a novel evacuated solar air collector, *Yong Li, Y.L. Yuan, Y.J. Dai, R.Z. Wang*

Track 3: Low Carbon Technologies and Emission Reduction Technologies (Fuel Cells/Hydrogen Technology / Heat Pump)

Session 3-1 (Chamber B): Fuel Cells/Hydrogen Technology
8:00-10:10

Session Chair: Yitung Chen, *USA*

Co-chair: T. S. Zhao, *Hong Kong*

UECTC2009-113 Three-Dimensional Numerical Simulation and Design of PEM Fuel Cell, *Jianfei Wu, Jianhu Nie, Yitung Chen*

UECTC2009-123 A Two-Phase Non-Isothermal Mass Transport Model for Direct Methanol Fuel Cells, *Zheng Miao, Ya Ling He, Xiaoyue Li, Jinqiang Zou*

UECTC2009-126 Low-Cost and Light Bipolar Plates of PEM Fuel Cell, *Shiuh-Ming Chang, Jenn-Kun Kuo*

UECTC2009-275 Study of Hydrogen Storage by Adsorption on Activated Carbon, *Qingrong Zheng, Qinrong Yang, Zhenxiang Cai, Haifeng Liao, Chaoyu Zheng*

UECTC2009-304 Numerical Study on a Novel SOFC with bi-layer Interconnector, *Qiuyang Chen, Jian Zhang, Qiuwang Wang, Min Zeng*

UECTC2009-394 A High Temperature Tubular Solar Receiver for Production of Hydrogen and Carbon Nanoparticles From Methane Cracking, *Sylvain Rodat, Stéphane Abanades, Gilles Flamant*

UECTC2009-423 An Easy-to-approach Comprehensive Model and Computation for SOFC Performance and Design Optimization, *Peiwen Li, Ananth Kotwal, J.L. Sepulveda, R.O. Loutfy, S. Chang*

UECTC2009-208 Photocatalytic Generation of Hydrogen from Water over InVO₄ Nanoentities Confined in SBA-15, *Lixia Sang, Lixian Xu, Chongfang Ma, Hongxing Dai*

Session 3-2 (Chamber B): Heat Pump

10:30-12:05

Session Chair: Hang Guo, *China*

Co-chair: Y. Y. Yan, *UK*

UECTC2009-125 Study on a Combination System of Heat Pumps with Hot & Cold Water Recovery, *Handong Wang*

UECTC2009-153 Air Source Heat Pump Based on the Underground Tunnel Air, *Yongan Li, Lin Wang, Yanan Gao, Xuelai Liu*

UECTC2009-165 Design and Performance Analysis of a Solar Energy Water Heating System in Conjunction with Air Source Heat Pump, *Huilong Luo, Yongqiao Wang, Ming Li, Hao Zhong*

UECTC2009-192 Performance analysis of Natural Working Fluid CO₂ Heat Pump System, *Junlan Yang, Yitai Ma, Minxia Li*

UECTC2009-284 Experimental Study on Operation Characteristics of R410A Heat Pump Water Heater at High Frequency, *Fang Wang, Xiaowei Fan, Zhiwei Lian, Fengkun Wang, Xianping Zhang*

UECTC2009-424 Theoretical and Experimental Investigation of Air or Ground Source CO₂ Heat Pump and Air-conditioning Systems, *Peixue Jiang, Fuzhen Zhang, Youwei Zhang, Yusong Li, Guoliang Wang*

Track 4: Sustainable Energy Technologies in Built Environments

Session 4-1 (Chamber C): Building Envelopes / Engineering Systems I

8:00-10:10

Session Chair: Jingfu Wang, *China*

Co-chair: Yong X. Tao, *USA*

UECTC2009-320 (Invited paper) A Life Cycle Exergy Consumption Analysis of Building Envelope in Cold Climate, *Ming Feng, Yong X. Tao*

UECTC2009-014 Characteristics of Heat Transfer and Flow in a New Porous Heat-Storage Solar Wall, *Ouyang Li, Wei Liu*

UECTC2009-142 Experimental Investigation of an Improved Thermal Response Test Equipment for Ground Source Heat Pump Systems, *Huajun Wang, Chengying Qi, Jihao Gu, Hongpu Du*

UECTC2009-214 Application Analysis and Experimental Study on Performance of Energy-saving Electret Fiber, *Yinghui Wang, Henggen Shen, Gang Li*

UECTC2009-272 Numerical Simulation and Analysis about Harmonic Performance Used for Heat Transfer and Air-conditioning Cooling Load of Energy-saving Porous Brick and Hollow Brick Wall, *Da-Yu Huang, Fu-Qin Ma, Xiao-Lu Wang*

UECTC2009-358 Study on Liquid Metal Cooling of Photovoltaic Cell, *YueGuang Deng, Jing Liu, YiXin Zhou*

Session 4-2 (Chamber C): Building Envelopes / Engineering Systems II

10:30-12:05

Session Chair: Xudong Zhao, *UK*

Co-chair: K. H. Luo, *UK*

UECTC2009-102 Cooling of the Solar Cells for a Compound Parabolic Concentrating Photovoltaic Systems, *Jian Sun, Mingheng Shi*

UECTC2009-108 A Solar-Driven Absorption Energy Storage System Based on Membrane Distillation Technology, *Zanshe Wang, Zhaolin Gu, Shiyu Feng, Yun Li*

UECTC2009-213 Application of Residential R744 Heat Pump Water Heater in Zhongyuan Area of China, *Xianping Zhang, Henggen Shen, Fengkun Wang*

UECTC2009-236 Study on Solar Refrigeration Technology Used for the Building, *Wenyan Yu, Rui Tian, Suying Yan*

UECTC2009-241 Method Research of Calculation Solar Collector Areas in Solar Heating and Hot Water System, *Yin Liu, Angui Li, Guanghui Zhou*

Session 4-3 (Chamber D): Engineering Systems / From Demonstration to Wide Applications I

8:00-10:10

Session Chair: Yong X. Tao, *USA*

Co-chair: Yinping Zhang, *China*

UECTC2009-265 Performance Prediction of Solar Absorption Cooling Systems Assisted by Gas Heaters, *Suresh Babu Sadineni, Ahmad G. Abu Heiba, Robert Boehm, Isaac Y. Mahderekal*

UECTC2009-332 Two-Stage Liquid Desiccant Dehumidification/Regeneration, *Z.Q. Xiong, Y.J. Dai, R.Z. Wang, B.L. Xia*

UECTC2009-389 Performance Assessment of a Novel Dew Point Air Conditioning System in the UK Climate Conditions, *X Zhao, Zhiyin Duan, Changhong Zhan, Saffa B Riffat*

UECTC2009-147 Analysis of Energy Consumption for Water Source Heat Pump System in Wuhan, China,

Xiaojiang Ye, Zhaoxia Zhou, Huanxin Chen, Zhijian Hou, Xianchun He

UECTC2009-421 Performance Comparison of Air-Cooled and Water-Cooled Air-Conditioners Applied in Residential Buildings, *Chen Hua, Di Qianqian, Lee WL*

Session 4-4 (Chamber D): Engineering Systems / From Demonstration to Wide Applications II
10:30-12:05

Session Chair: H. S. Wang, *UK*

Co-chair: Y. Hao, *China*, Y. Li, *China*

UECTC2009-118 Clean Energy Used in Intelligence-Ecology Building, *Jinmei Feng, Zhiwei Lian*

UECTC2009-160 Demonstration Project of Rural Existing Residential Building Energy Saving Retrofit in Beijing, *Chunxia Jia, Jiandong Ye, Yongjie Xing*

UECTC2009-211 Investigation for Energy Consumption and Analysis for Energy Saving Potential of Residential Buildings in Wuhan, *Xiaojiang Ye, Huanxin Chen, Zhaoxia Zhou, Zhijian Hou, Xianchun He*

UECTC2009-306 Comparison of Building Codes and Insulation in China and Iceland, *Haiyan Lei, Pall Valdimarsson*

UECTC2009-379 Study on the Effect of Mass Transfer on the Photocatalytic Removal of Formaldehyde, *Yuanwei Lu, Dinghui Wang, Chongfang Ma, Hongchang Yang*

UECTC2009-278 Numerical Simulation and Experimental Validation on Intermittent Operation Characteristics of a Ground-Coupled Heat Pump, *Weibo Yang, Mingheng Shi*

UECTC2009-276 Theoretical Analysis on the Building Internal Thermal Mass in Passive Solar House Based on a Simplified Thermal Model, *Ruolang Zeng, Xin Wang, Yinping Zhang, Hongfa Di*

UECTC2009-313 The Layered Insulation Model and Mean Apparent Thermal Conductivity of an Environmental Friendly Polyurethane Foam at Low Temperatures, *C.G. Yang, N. Zhang, X. Gao, X. Shao*

Lunch 12:05 – 13:30

Track 5: Multidisciplinary Computational Simulation Methodology

Session 5-1 (Chamber A): Multidisciplinary Computational Simulation Methodology I
13:30-15:00

Session Chair: Wenquan Tao, *China*

Co-chair: Chenn Zhou, *USA*, Dong Fu, *USA*

UECTC2009-172 Modeling and Thermal Performance Investigation of Parabolic Trough Receiver, *Yaxuan Xiong, Wu Yuting, Chongfang Ma, Yejiang Zhan*

UECTC2009-197 Numerical Simulation of the Heating Behavior of Zirconium Oxide in Microwave High-

Temperature Reactor, *Huilong Luo, Jinhui Peng, Libo Zhang, Shenghui Guo, Guo Chen, Jinling Mao*

UECTC2009-254 Research on Heat and Mass Transfer of VOCs in a Partially Porous Cavity, *Fang Liu, Baoming, Aimin Liu, Wen-Guang Geng*

UECTC2009-289 Numerical Simulation of High Titanium Slag in Microwave Heating Processes, *Guo Chen, Jinhui Peng, Jin Chen, Huilong Luo, Xinhui Duan*

UECTC2009-298 CFD Simulations and VR Visualization for Process Design and Optimization, *Dong Fu, Bin Wu, John Moreland, Guoheng Chen, Chenn Zhou*

UECTC2009-305 Prediction of the Temperature Rising Characteristic of Underground Power Transmission Tunnel, *Xiaofeng Guo, Jingyi Wu, Zaizhong Xia, Ruzhu Wang, Yu Meng*

UECTC2009-322 Discussing the Indoor Calculated Temperature of Capillary Radiation Air-conditioned Room, *Hongxiang Xue, Xuelai Liu, Yongan Li, Lei Wang*

Session 5-2 (Chamber A): Multidisciplinary Computational Simulation Methodology II
15:20-17:00

Session Chair: Andrea Luke, *Germany*

Co-chair: Y. J. Dai, *China*

UECTC2009-335 Experiments and Molecular Dynamics Simulation of Droplets Behaviour and Phase Change in Magnesium Heat Pipe, *Xiao Yang, Yuying Yan, David Mullen, Jo Darkwa*

UECTC2009-350 Numerical Simulation of Nucleate Spray Cooling: Effect of Droplet Impact on Bubble Growth and Heat Transfer in a Thin Liquid Film, *Yujia Tao, Xiulan Huai, Ziyi Guo, Zhigang Li*

UECTC2009-351 Influence of Variable Properties and Increasing Flow Rate with Time on Convection Heat Transfer in a Tube, *Lei Chen*

UECTC2009-359 Influences of Two-Component Mixture Spontaneous Condensation for Different Shape of Nozzles, *W.M. Jiang, Z.L. Liu, H.Z. Pang, L.L. Bao, J.F. Sun*

UECTC2009-385 Optimum Geometric Arrangement of Vertical Rectangular Fin Arrays in Natural Convection, *Xiaohui Zhang, Qi Wei*

UECTC2009-406 Molecular Dynamics Simulations of the Thermal Conductivity of Bismuth Telluride Using Two-body Interatomic Potentials, *Bo Qiu, Xiulin Ruan*

UECTC2009-245 Integration of an Analytical Model for Top Insulated Metal Cooled Ceiling Panels with a Building Energy Simulation Program, *Fenglei Li, Qi Tian, Fenghua Lu*

Track 6: Nanotechnology and Nano-materials

Session 6-1 (Chamber B): Nanofluids and Nanoscale Transport Phenomena 13:30-15:00

Session Chair: Hong Ye, *China*
Co-chair: R.J. Crookes, *UK*

UECTC2009-297 Modeling Grain Boundary Scattering in Nanocomposites, *Austin Minnich, Daryoosh Vashaee, Gang Chen*

UECTC2009-116 Rheological Behaviour and Heat Transfer of Al₂O₃ Nanoparticles Dispersed in Ethylene Glycol and Water Mixture, *Wei Yu, Huaqing Xie*

UECTC2009-120 An Approach for Optimizing Thermal Conductivity in Nanofluids, *Huaqing Xie, Lifei Chen*

UECTC2009-149 Research and Development of a Miniature Cooling System, *Yuting Wu, Chongfang Ma, Ziaohui Zhongyao*

UECTC2009-244 Experimental research of Enhancing Influence of FeO Nanofluid on Ammonia Bubble Absorption Process, *Hui Liu, Weidong Wu, Wei Sheng, Huanxi Hong*

UECTC2009-246 Study on the Dispersion Stability Influencing Factors of Nanofluids, *Huanxi Hong, Weidong Wu, Xi Chen, Wei Sheng, Hui Liu*

UECTC2009-431 Electrical Double Layer in Nano-Flows, *Zhuorui Song, Heng Ban*

Session 6-2 (Chamber B): Nanomaterials 15:20-17:00

Session Chair: Quinn Leland, *USA*
Co-chair: Zhixin Li, *China*

UECTC2009-232 Measuring the temperature dependence of photoelectric conversion efficiency with DSSCS, *Wei-Shi Chao, Chen-Ching Ting*

UECTC2009-209 Simultaneous Thermal Conductivity and Specific Heat Measurements of Thin Samples by Transient Joule Self-Heating, *Bo Feng, Weigang Ma, Zhixin Li, Xing Zhang*

UECTC2009-117 Green Process for Preparing Cuprous Oxide Nanoparticles under Ultrasonic Radiation, *Wei Yu, Huaqing Xie, Lifei Chen, Yang Li*

UECTC2009-119 Preparation and Thermal Property of Phase Change Nanocomposites Using Carbon Nanotubes as Additives, *Jifen Wang, Huaqing Xie, Zhong Xin, Yang Li, Huijie Dong*

UECTC2009-156 Temperature Dependence of Hot Carrier Relaxation in Pbse Quantum Dot: An AB Initio Study, *Hua Bao, Bradley F. Habenicht, Oleg V. Prezhdo, Xiulin Ruan*

UECTC2009-227 The Suppression of the Atmospheric Window Band Emission Using Photonic Crystals, *Li Jin, Hong Ye, Weimeng Liu*

Track 7: Advances in Energy Storage Technology

Session 7-1 (Chamber C): Advances in Energy Storage Technology

13:30-15:00

Session Chair: Zhongliang Liu, *China*
Co-chair: H. Ban, *US*

UECTC2009-111 Numerical Study on Dynamic Discharging Performance of Packed Bed Using Spherical Capsules Containing N-Tetradecane, *Shuangmao Wu, Guiyin Fang, Xu Liu, Man Zhang*

UECTC2009-115 Numerical Study on Dynamic Charging Performance of Packed Bed Using Spherical Capsules Containing N-Tetradecane, *Shuangmao Wu, Guiyin Fang, Xu Liu, Man Zhang*

UECTC2009-139 Research of Aquifer Thermal Energy Storage Technology, *Xueling Liu, Jialing Zhu, Ning Li*

UECTC2009-210 The Experimental Study of Composite Phase-Change Heat-Storage Method, *Ming Zhang, Zhongliang Liu, Chen Wang*

UECTC2009-225 A Hybrid Heating System Based on Solar Energy and Off-Peak Electricity, *Lixia Li, Hua Dong*

UECTC2009-271 Heat Transfer Enhancement for Thermal Energy Storage Using Metal Foams Embedded within Phase Change Materials (PCMs), *Changying Zhao, W. Lu, P.C. Eames*

UECTC2009-360 Numerical Analysis of a Latent Heat Storage Heat Exchanger Considering the Effect Of Natural Convection, *Chaxiu Guo, Junjie Zhou, Xinli Wei*

UECTC2009-430 Optimization of Heat Coupling in Decentralised Energy Supply, *Fang Yang, Dieter Nordmann, Andrea Luke*

Track 8:

Session 8-1 (Chamber C): Industrial Opportunities and Joint Research Collaboration 15:20-17:00

Session Chair: Zhixiong Guo, *US*
Co-chair: Andrea Luke, *Germany*

UECTC2009-199 A Study on the Refrigerant Charge Quantity of Ground Source Heat Pump System, *Zhiwei Tang, Huatao Zhao*

UECTC2009-216 Optimization of Performance Specifications Based on Environmental Parameters, *Aaron Sahm, Robert Boehm, Kenneth Stone*

UECTC2009-316 Flow and Heat Transfer Characteristics in the Finned Back Turn Channel of a Natural Gas Combustor, *Hongyu Si, Ning Mei, Huailiang Li, Weiwei Zhang*

UECTC2009-380 Realization of Practical Vapor Compression Cooling System for Multi-Processor Tower Server, *Ming Liu, Yixin Zhou, Jing Liu*

UECTC2009-433 (Presentation Only) Silicon Germanium Thermoelectric Modules in High Efficiency Wood Stoves, *Zhixi Bian*

Track 9:

**Session 9-1 (Chamber D): General Papers I
13:30-15:00**

Session Chair: W. K. Chow, *Hong Kong*

Co-chair: X. Zhang, W. Liu, *China*

UECTC2009-196 Experimental Investigation of Miniature Loop Heat Pipe with Flat Evaporator, *Dongxing Gai, Zhichun Liu, Wei Liu, Jinguo Yang*

UECTC2009-239 The Design of Non-Homostasis Two Heat Source Composite Heat Exchanger, *Yin Liu, Guanghui Zhou, Angui Li*

UECTC2009-243 Life Cycle Energy and Greenhouse Gas Assessment of Conventional and Alternative Fuel Options for Automobiles in China, *Xiaoyu Yan, Roy J. Crookes*

UECTC2009-283 Experimental Study on Heat pipe Heat Exchanger for Heat Recovery in Room Ventilation, *Wenjing Yu, Yanhua Diao, Yaohua Zhao*

UECTC2009-299 An Analysis of the Feasibility of Photoelectric Technique Applied in Defrost-Control, *Jing Xiao, Wei Wang, Yaohua Zhao, Furong Zhang*

UECTC2009-330 Experiment Investigation of Flow Boiling Process Including Cavitation in Micro-Channel, *Hongzhang Cao, Hongbo Xu, Changqing Tian, Nan Liang*

**Session 9-2 (Chamber D): General Papers II
15:20-17:00**

Session Chair: Xiaofeng Peng, *China*

Co-chair: T. Karayiannis, *UK*

UECTC2009-419 (Invited Paper) Numerical Studies on Fire Whirls in a Vertical Shaft, *G.W. Zou, L. Yang, W. K. Chow*

UECTC2009-393 Performance Evaluation on Heat Transportation over Long Distance by Using Ammonia-Water Absorption Cycle, *Peng Lin, Ruzhu Wang, Zaizhong Xia, Qiang Ma*

UECTC2009-417 Numerical Studies on Fire Environment in an Auditorium, *J. Li, W.K. Chow*

UECTC2009-418 A Review of Regulations of Tunnel Smoke Control Systems, *K.W. Ho, W.K. Chow, J. Li*

UECTC2009-161 Study on Renewable Energy Market System Evolutionary Based on Model of Population Dynamic, *Tao Ma, Jian-Hua Yang, Ping Ma*

UECTC2009-162 The Multilayer Model of Programming and Game for Hydrogen Energy Utilization, *Tao Ma, Ming-Qi Chen, Ping Ma*