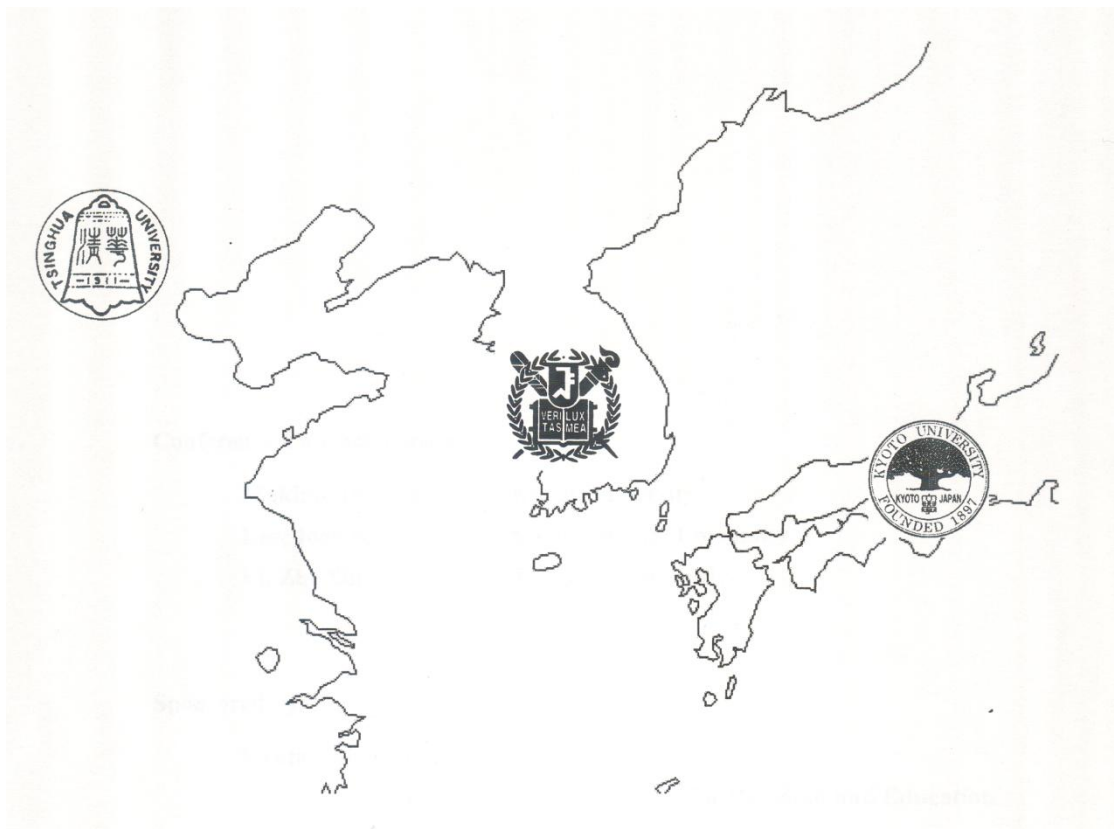
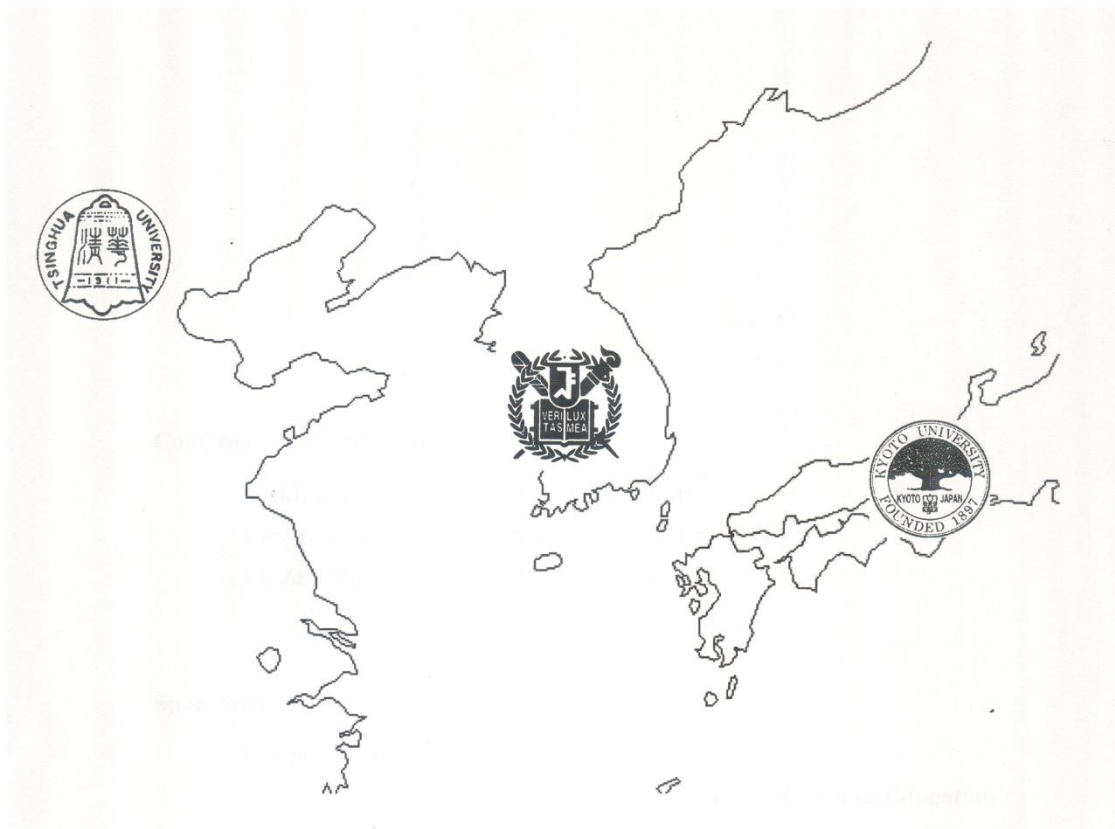


**The Tenth
Kyoto – Seoul National – Tsinghua
University
Thermal Engineering Conference, 2010**



**October 23 – 25, 2010
Tsinghua University**

**The Tenth
Kyoto – Seoul National – Tsinghua
University
Thermal Engineering Conference, 2010**



**October 23 – 25, 2010
Tsinghua University**

List of Participants from Kyoto University

Kyoto 606-8501, Japan

Hanazaki, Hideshi (花崎秀史), Professor

Department of Mechanical Engineering and Science

Phone & Fax: +81-75-753-4825

E-mail: hanazaki@mech.kyoto-u.ac.jp

Iwai, Hiroshi (岩井裕), Associate Professor

Department of Aeronautics and Astronautics

Phone: +81-75-753-5218, Fax: +81-75-753-5203

E-mail: iwai.hiroshi.4x@kyoto-u.ac.jp

Kurose, Ryoichi (黒瀬良一), Associate Professor

Department of Mechanical Engineering and Science

Phone: +81-75-753-9218, Fax: +81-75-753-9218

E-mail: kurose@mech.kyoto-u.ac.jp

Makino, Toshiro (牧野俊郎), Professor

Department of Mechanical Engineering and Science

Phone: +81-75-753-5265, Fax: +81-75-771-7286

E-mail: makino.toshiro.2a@kyoto-u.ac.jp

Masao, Yusuke (正尾裕輔), MC Student

Department of Mechanical Engineering and Science

Phone: +81-75-753-5217, Fax: +81-75-771-7286

E-mail: yusuke.masao@kw7.ecs.kyoto-u.ac.jp

Matsuda, Keigo (松田景吾), Ph. D. Student

Department of Mechanical Engineering and Science

Phone: +81-75-753-5245, Fax: +81-75-753-5245

E-mail: matsuda.keigo@t03.mbox.media.kyoto-u.ac.jp

Saito, Motohiro (齋藤元浩), Assistant Professor

Department of Aeronautics and Astronautics

Phone & Fax: +81-75-753-5203

E-mail: msaito@mech.kyoto-u.ac.jp

Sugimoto, Hiroshi (杉元宏), Lecturer

Department of Aeronautics and Astronautics,

Phone: +81-75-753-5811, Fax: +81-75-753-4947

E-mail: sugimoto@kuaero.kyoto-u.ac.jp

Tatsumi, Kazuya (巽和也), Associate Professor

Department of Mechanical Engineering and Science

Phone: +81-75-753-5224, Fax: +81-75-753-5209

E-mail: tatsumi@me.kyoto-u.ac.jp

Teramoto, Katsuyuki (寺本勝行), MC Student

Department of Aeronautics and Astronautics

Phone & Fax: +81-75-753-5203

E-mail: katsuyuki.teramoto@t05102517.mbox.media.kyoto-u.ac.jp

Yoshida, Hideo (吉田英生), Professor

Department of Aeronautics and Astronautics

Phone & Fax: +81-75-753-5255

E-mail: sakura@hideoyoshida.com

List of Participants from Seoul National University

Seoul 151-742, Korea

Kang, Shin Hyung (姜信榮), Professor

School of Mechanical and Aerospace Engineering

Phone: +82-2-880-7113, Fax: +82-2-883-0179

E-mail: kangsh@snu.ac.kr

Kim, Min Soo (金民洙), Professor

School of Mechanical and Aerospace Engineering

Phone: +82-2-880-8362, Fax: +82-2-883-0179

E-mail: minskim@snu.ac.kr

Lee, Joon Sik (李俊植), Professor

School of Mechanical and Aerospace Engineering

Phone: +82-2-880-7117, Fax: +82-2-883-0179

E-mail: jslee123@snu.ac.kr

Min, Kyoung Doug (閔庚德), Professor

School of Mechanical and Aerospace Engineering

Phone: +82-2-880-1661, Fax: +82-2-883-0179

E-mail: kadmin@snu.ac.kr

Song, Jeong Chul (宋正哲), Ph.D. Student

School of Mechanical and Aerospace Engineering

Phone: +82-2-880-7123, Fax: +82-2-883-0179

E-mail: sjc7595@snu.ac.kr

Yoo, Jung Yul (劉丁烈), Professor

School of Mechanical and Aerospace Engineering

Phone: +82-2-880-7112, Fax: +82-2-883-0179

E-mail: jyyoo@snu.ac.kr

List of Participants from Tsinghua University

Beijing 100084, China

Cao, Bing-Yang (曹炳阳), Associate Professor

School of Aerospace

Phone & Fax: +86-10-62781610

E-mail: caoby@tsinghua.edu.cn

Chen, Qun (陈群), Assistant Professor

School of Aerospace

Phone & Fax: +86-10-62781610

E-mail: chenqun@tsinghua.edu.cn

Cheng, Xue-Tao (程雪涛), Ph.D. Student

School of Aerospace

Phone: +86-10-62782982, Fax: +86-10-62781610

E-mail: xtcheng2001@163.com

Christopher, David M. (柯道友), Professor

Department of Thermal Engineering

Phone: +86-10-62772986, Fax: +86-10-62770209

E-mail: dmc@tsinghua.edu.cn

Duan, Yuan-Yuan (段远源), Professor

Department of Thermal Engineering

Phone & Fax: +86-10-62796318

E-mail: yyduan@tsinghua.edu.cn

Guo, Zeng-Yuan (过增元), Professor

School of Aerospace

Phone: +86-10-62782660, Fax: +86-10-62783771

E-mail: demgzy@tsinghua.edu.cn

Jiang, Pei-Xue (姜培学), Professor

Department of Thermal Engineering

Phone: +86-10-62772661, Fax: +86-10-62770209

E-mail: jiangpx@tsinghua.edu.cn

Li, Zhi-Xin (李志信), Professor

School of Aerospace

Phone & Fax: +86-10-62772919

E-mail: lizhx@tsinghua.edu.cn

Liang, Xin-Gang (梁新刚), Professor
School of Aerospace
Phone & Fax: +86-10-62788702
E-mail: liangxg@tsinghua.edu.cn

Song, Meng-Xuan (宋梦饒), Ph.D. Student
School of Aerospace
Phone: +86-10-62782982, Fax: +86-10-62781610
E-mail: songmx07@tsinghua.edu.cn

Wang, Xin (王馨), Associate Professor
School of Architecture
Phone: +86-10-62796113, Fax: +86-10-62773461
E-mail: wangxinlj@tsinghua.edu.cn

Xu, Rui-Na (胥蕊娜), Assistant Professor
Department of Thermal Engineering
Phone: +86-10-62792294, Fax: +86-10-62770209
E-mail: ruinaxu@tsinghua.edu.cn

Yang, Zhen (杨震), Associate Professor
Department of Thermal Engineering
Phone & Fax: +86-10-62772299
E-mail: zhenyang@tsinghua.edu.cn

Zhang, Xing (张兴), Professor
School of Aerospace
Phone & Fax: +86-10-62772668
E-mail: x-zhang@tsinghua.edu.cn

Zheng, Li-Li (郑丽丽), Professor
School of Aerospace
Phone & Fax: +86-10-62797961
E-mail: zhenglili@tsinghua.edu.cn



Contents

Session 1 (Chaired by Prof. Xing Zhang)

A New Spectrophotometer System for Measuring Thermal Radiation Characteristics of Real Surfaces Entirely	1
Toshiro Makino, Hidenobu Wakabayashi	
Numerical Method for Accurate Conductive Heat Transfer Prediction in a Coarse Grid System Using a Filtering Technique	11
Jeong Chul Song, Joon Sik Lee	
Entransy Decrease Principle of Heat Transfer in the Isolated System	20
Xue-Tao Cheng, Xin-Gang Liang, Zeng-Yuan Guo	

Session 2 (Chaired by Prof. Hideshi Hanazaki)

Separation of Di-disperse Particles in an Evaporating Sessile Drop	28
Hyunsoo Song, Jung Yul Yoo	
Effect of Turbulence on Radiative Transfer in Clouds	32
Keigo Matsuda, Ryoichi Kurose, Satoru Komori	
Investigation of Supercritical CO ₂ Injecting into Porous Media Containing Water Under the CO ₂ Geological Condition	40
Rui-Na Xu, Shu Luo, Pei-Xue Jiang	

Session 3 (Chaired by Prof. Min Soo Kim)

Wind Farm Micrositing Technology and Its Software Development	46
Meng-Xuan Song, Kai Chen, Xing Zhang	
Microscopic Fluid Temperature Measurements in Channels Using Fluorescence Polarization Method	52
Kazuya Tatsumi, Akihisa Tozaki, Kazuyoshi Nakabe	
Performance Enhancement of a Small Regenerative Gas Blower for Fuel Cell Vehicles	58
Shin Hyoung Kang, Young Hoon Kim, Min Ho Choi	
Small Bubble Jet Flow and Bubble Return Phenomena in Subcooled Boiling of Binary Solutions	65
Zhen Wang, Yuan-Yuan Duan, Zhen Yang	

Session 4 (Chaired by Prof. Iwai, Hiroshi)

New Scheme to Study Phonon Dynamics	69
Yusuke Masao, Mitsuhiro Matsumoto, Toshiro Makino, Hidenobu Wakabayashi	
Nucleate Boiling Bubble Dynamics in a PDMS Microchannel with a Single Nucleation Site	73
Hao-Jie Wang, Xi-Peng Lin, David M. Christopher	
Measurement of the Hydrogen Crossover for Various Gas Diffusion Layer Structures Used in PEMFCs	81
Min Soo Kim, Kyung Don Baik	
Numerical Simulation on the Gas Separator with the Thermal Transpiration of a Rarefied Gas	91
Hiroshi Sugimoto	

Session 5 (Chaired by Prof. David M. Christopher)

Generation of Jets by a Sphere Moving Vertically in Stratified Fluids	97
Hideshi Hanazaki, Hiroyasu Yoshikawa	
Characteristics of the Operation and Emissions of a Diesel Engine through Closed-loop Control of the Main Injection Timing Using the Combustion Pressure	101
Seungeun Yu, Taehyung Koo, Hoimyoung Choi, Kyungchan Han, Sunghwan Cho, Kyoungdoug Min	

Design and Optimization of Low Cost and Low Energy Consumption	
Multi-crystalline Si Ingot Production System	105
Li-Li Zheng, Hui Zhang, Xu Ma	
Session 6 (Chaired by Prof. Shin Hyung Kang)	
Characteristics of Steam Reforming of Dimethyl Ether Under Controlled Temperature	111
Katsuyuki Teramoto, Motohiro Saito, Hiroshi Iwai, Hideo Yoshida	
New Concepts and Approach for Developing Energy Efficient Buildings:	
Ideal Specific Heat for Building Internal Thermal Mass in Passive Rooms	119
Ruo-Lang Zeng, Xin Wang, Hong-Fa Di, Feng Jiang, Yin-Ping Zhang	
The Entransy Theory in Analyzing and Optimizing Evaporative Cooling System	127
Qun Chen, Zeng-Yuan Guo	