

# Program of International Forum on Frontier Theories of Thermal Science

December 18-20, 2011, Tsinghua University, Beijing, China

Time		Events
<b>12/18/2011</b>		
15:00 -18:00 pm		Registration
18:00-20:00 pm		Buffet dinner
<b>12/19/2011</b>		
8:30-8:45 am		Opening
<b>Session I: Thermomass theory and applications</b> <b>(Chair: Ping Cheng)</b>		
8:50-9:35 am	8:50-9:20 am	<b>Keynote:</b> Prof. Z.Y. Guo Title: Thermomass theory
	9:20-9:35 am	Questions and Discussion
9:35-9:50 am	9:35-9:45 am	<b>Presentation:</b> Prof. B.Y. Cao Title: General heat conduction law derived from Boltzmann equation based on thermomass theory
	9:45-9:50 am	Questions and Discussion
9:50-10:05 am	9:50-10:00 am	<b>Presentation:</b> Prof. M. Wang Title: Non-Fourier conduction in nanomaterials based on thermomass theory
	10:00-10:05 am	Questions and Discussion
10:05-10:20 am	10:05-10:15 am	<b>Presentation:</b> Prof. X. Zhang Title: Experimental evidence for the validation of thermomass theory
	10:15-10:20 am	Questions and Discussion
10:20-10:30 am		Session Comments
10:30-10:45 am		Coffee break

<b>Session II: Irreversible thermodynamics</b> <b>(Chair: Hideo Yoshida)</b>		
10:45-11:30 am	10:45-11:15 am	<b>Keynote:</b> Prof. D. Jou Title: Extended irreversible thermodynamics and heat transfer in nanosystems
	11:15-11:30 am	Questions and Discussion
11:30-11:45 am	11:30-11:40 am	<b>Presentation:</b> Mr. Y. Dong Title: General expression for entropy production based on thermomass model
	11:40-11:45 am	Questions and Discussion
11:45-12:00 am	11:45-11:55 am	<b>Presentation:</b> Dr. J. Wu Title: Potential energy in heat transfer and thermodynamics
	11:55-12:00 am	Questions and Discussion
12:00-12:10 pm		Session Comments
12:10 -14:00 pm		Lunch
<b>Session III: Entropy and Entransy</b> <b>(Chair: Satish Kandlikar &amp; Liejin Guo)</b>		
<b>Part I: Chair Satish Kandlikar</b>		
14:00-14:45 pm	14:00-14:30 pm	<b>Keynote:</b> Prof. X.G. Liang Title: Entransy, entransy dissipation and extremum principles for heat transfer
	14:30-14:45 pm	Questions and Discussion
14:45-15:00 pm	14:45-14:55 pm	<b>Presentation:</b> Prof. L.G. Chen Title: Optimization for mass transfer processes based on the mass entransy dissipation extremum principle
	14:55-15:00 pm	Questions and Discussion
15:00-15:45 pm	15:00-15:30 pm	<b>Keynote:</b> Prof. W.Q. Tao Title: Numerical study on the inherent relationship between the field synergy principle for enhancing convective heat transfer and the entransy extreme principle
	15:30-15:45 pm	Questions and Discussion
15:45-16:15 pm		Coffee Break & Dessert

<b>Part II: Chair Liejin Guo</b>		
16:15-17:00 pm	16:15-16:45 pm	<b>Keynote:</b> Prof. W. Liu Title: Minimum dispassion principle and its application in heat transfer process optimization
	16:45-17:00 pm	Questions and Discussion
17:00-17:45 pm	17:00-17:30 pm	<b>Keynote:</b> Prof. S. Maruyama Title: Accident at Fukushima Daiichi nuclear power plant -analysis using thermomass conservation law
	17:30-17:45 pm	Questions and Discussion
17:45-18:30 pm	17:45-18:15 pm	<b>Keynote:</b> Prof. V. Bertola Title: A look at thermodynamics from the point of view of mechanics
	18:15-18:30 pm	Questions and Discussion
18:30-18:40 pm		Session Comments
18:40-20:00 pm		Banquet
<b>Session IV: Nonlocal behavior in heat transfer (Chair: D. Jou)</b>		
<b>12/20/2011</b> 8:30-9:15 am	8:30-9:00 am	<b>Keynote:</b> Prof. Robert D.Y. Tzou Title: Nonlocal and lagging behavior in micro/nanoscale heat transport
	9:00-9:15 am	Questions and Discussion
9:15-9:30 am	9:15-9:25 am	<b>Presentation:</b> Prof. L.Q. Wang Title: Re-visit of thermodynamics
	9:25-9:30 am	Questions and Discussion
9:30-9:40 am		Session Comments
9:40-10:00 am		Coffee Break
<b>Session V: Phonon and photon dynamics (Chair: Yimin Xuan)</b>		
10:00-10:45 am	10:00-10:30 am	<b>Keynote:</b> Prof. B.W. Li Title: Energy diffusion and heat conductivity

	10:30-10:45 am	Questions and Discussion
10:45-11:30 am	10:45-11:15 am	<b>Keynote:</b> Prof. M. Kostic Title: Electromagnetic nature of thermo-mechanical mass-energy transfer due to photon diffusive re-emission and propagation
	11:15-11:30 am	Questions and Discussion
11:30-11:45 am		Session Comments
11:45 -14:00 pm		Lunch
<b>Session VI: Applications in energy or micro/nano systems (Chair: Chongfang Ma)</b>		
14:00-14:45 pm	14:00-14:30 pm	<b>Keynote:</b> Prof. S.G. Kandlikar Title: Challenges of high heat flux removal with single-phase and flow boiling heat transfer
	14:30-14:45 pm	Questions and Discussion
14:45-15:00 pm	14:45-14:55 pm	<b>Presentation:</b> Prof. C. Yang Title: Thermophoresis: a microfluidic study and application
	14:55-15:00 pm	Questions and Discussion
15:00-15:15 pm	15:00-15:10 pm	<b>Presentation:</b> Prof. L. Cheng Title: Application of field synergy principle in TCS design of AMS in ISS
	15:10-15:15 pm	Questions and Discussion
15:15-16:00 pm	15:15-15:45 pm	<b>Keynote:</b> Prof. Y. Jiang Title: A new view on indoor built environment from thermal perspective
	15:45-16:00 pm	Questions and Discussion
16:00-16:15 pm	16:00-16:10 pm	<b>Presentation:</b> Prof. Q.W. Wang Title: Heat transfer performance evaluation for internally finned tubes based on entransy dissipation extreme principle
	16:10-16:15 pm	Questions and Discussion
16:15-16:30 pm	16:15-16:25 pm	<b>Presentation:</b> Dr. Q. Chen Title: An entransy dissipation – based method for global optimization of heat exchanger networks
	16:25-16:30 pm	Questions and Discussion

16:30-16:40 pm	Session Comments
16:40-17:00 pm	Coffee break
<b>Session VII: Round table discussion</b> <b>(Chair: Robert D.Y. Tzou)</b>	
17:00-18:00 pm	<b>Discussion</b>
18:00-18:10 pm	Closing
18:10-20:00 pm	Dinner

## Keynote speakers

1. **Zeng-Yuan Guo**, Professor, Tsinghua University, China
2. **David Jou**, Professor, Universitat Autònoma de Barcelona, Spain
3. **Xin-Gang Liang**, Professor, Tsinghua University, China
4. **Wen-Quan Tao**, Professor, Xi'an Jiaotong University, China
5. **Wei Liu**, Professor, Huazhong University of Science and Technology, China
6. **Shigeo Maruyama**, Professor, Tohoku University, Japan
7. **Volfango Bertola**, Senior Lecturer, University of Liverpool, United Kingdom
8. **Robert D.Y. Tzou**, Professor, University of Missouri, USA
9. **Baowen Li**, Professor, National University of Singapore, Singapore
10. **Milivoje Kostic**, Professor, Northern Illinois University, USA
11. **Satish Kandlikar**, Professor, RIT, USA
12. **Yi Jiang**, Professor, Tsinghua University, China

## Session Chair

<b>Chair</b>	<b>Date</b>	<b>Time</b>	<b>Session</b>
Ping Cheng	December 19	8:50 – 10:30 am	Thermomass theory and applications
Hideo Yoshida	December 19	10:45 – 12:10 am	Irreversible thermodynamics
Satish Kandlikar	December 19	14:00 – 15:45 pm	Entropy and Entransy I
Liejun Guo	December 19	16:15 – 18:40 pm	Entropy and Entransy II
David Jou	December 20	8:30 – 9:30 am	Nonlocal behavior in heat transfer
Yimin Xuan	December 20	10:00 – 11:30 am	Phonon and phonon dynamics
Chongfang Ma	December 20	14:00 – 16:30 pm	Applications in energy or micro/nano systems
Robert D.Y. Tzou	December 20	17:00 – 18:00 pm	Round table discussion