

2020 International Conference on Thermodynamics and Thermal Metamaterials (ThermoMeta2020)

(August 7-9, 2020, GMT+8, Beijing Time; Avenue: Zoom)

<http://phys.fudan.edu.cn/97/9f/c7453a235423/page.htm>

Deadline: June 17, 2020 for returning the Reply Slip (which can be downloaded by clicking "a-reply-slip.docx" at this page: <http://phys.fudan.edu.cn/97/9f/c7453a235423/page.htm>)

1. Purpose

With the success of 2019 National Conference on Thermodynamics and Thermal Metamaterials (<http://econophysics.fudan.edu.cn/jphuang/Photo2019>), we feel obligated to launch its international counterpart since 2020 (ThermoMeta2020), which will be held every two years. The ThermoMeta2020 will provide interdisciplinary and in-depth discussions among and in various disciplines of physics, engineering thermophysics, and material science. In particular,

its aim is to gather scholars from different areas, especially, thermodynamics and statistical physics, heat transfer, and materials thermodynamics, with a special focus on thermal metamaterials from basic researches to industrial applications. Thermal metamaterials mean those materials or devices with artificial structures that can be used to control heat conduction, convection, and radiation in novel manners. In this case, geometric structures (rather than physical properties) play a dominating role. This fact makes thermal metamaterials different from other materials including thermoelectric materials, pyroelectric materials, magnetocaloric materials, and photothermal conversion materials; for the latter, physical properties (rather than geometric structures) play a dominating role instead.

2. Topic

A. Interdisciplinary research of thermodynamics and statistical physics, heat transfer, and materials thermodynamics: thermal metamaterials and their basic researches, technology developments, engineering applications, industrialization, and commercialization. Topics include, but are not limited to:

(a) Theoretical thermotics: transformation thermotics and extended theories for thermal metamaterials

(b) Controlling heat transfer with metamaterials, such as cloaks, concentrators, rotators, radiative coolers, illusion/camouflage, macroscopic diodes, transparency and thermocrystals

(c) Metathermotics: Thermal effects/responses of metamaterials, such as thermal conduction of vacuum, anti-parity-time symmetry and topology in diffusion, and temperature-dependent thermal conductivities

(d) Nonlinear thermotics: thermal counterpart of nonlinear optics

(e) Metamaterials for thermal energy storage or harvesting, such as ultra-low thermal conductivities

(f) Metamaterials for thermal energy transport or transfer, such as ultra-high or effectively infinite thermal conductivities

(g) Metamaterials for thermal energy conversion, such as thermophotovoltaic systems with high efficiency

(h) Metamaterials for thermal energy utilization or application, such as zero-energy or negative-energy heat preservation

B. Other interdisciplinary research of thermodynamics and statistical physics, heat transfer, and materials thermodynamics:

theory, computer simulation, and experiment. Topics may come from (but are not limited to) stochastic thermodynamics, quantum thermodynamics, electrocalorics, photothermics, phononics, thermal machines, and modern thermodynamics.

3. Organization

Conference Chairman: Ji-Ping Huang (Fudan University, China)

Organizing committee members (in no particular order):

Cheng-Wei Qiu (National University of Singapore)

Lu Hao (Beijing Electro-mechanical Engineering Institute)

Bing-Yang Cao (Tsinghua University)

Er-Jun Liang (Zhengzhou University)

Peng Tan (Fudan University)

Zheng-Hua An (Fudan University)

Lei Gao (Soochow University)

Run Hu (Huazhong University of Science & Technology)

Xue-Feng Zhu (Huazhong University of Science & Technology)

Ying Li (National University of Singapore)

Xiang-Ying Shen (The Chinese University of Hong Kong)

Tian-Cheng Han (University of Electronic Science and Technology of China)

Li-Fa Zhang (Nanjing Normal University)

Jie Chen (Tongji University)

Xiang-Fan Xu (Tongji University)

Jun Zhou (Tongji University)

Yun-Yun Li (Tongji University)

Jian Wang (Yangzhou University)

Xue-Ao Zhang (Xiamen University)

Zhi-Gang Zheng (Huaqiao University)

Jian-Hui Wang (Nanchang University)

Chun-Zhen Fan (Zhengzhou University)

Ji-Zhou He (Nanchang University)

Da-Hai He (Xiamen University)

Hao-Chun Zhang (Harbin Institute of Technology)

Hong-Liang Yi (Harbin Institute of Technology)

Li Chen (Xi'an Jiaotong University)

Zhi-Guo Qu (Xi'an Jiaotong University)

Jian-Fei Zhang (Xi'an Jiaotong University)

Quan-Wen Hou (Northwestern Polytechnical University)

Yun-Gui Ma (Zhejiang University)

Jie Ren (Tongji University)

Jian-Hua Jiang (Soochow University)

Chu-Yun Deng (National University of Defense Technology)

Sen Zhang (National University of Defense Technology)

Zong-Hua liu (East China Normal University)

Yu-Peng Zhang (Innovation & Research Institute of Hiwing
Technology Academy)

Li-An Zhu (National University of Defense Technology)

Ji-Ping Huang (Fudan University)

Supported by Department of Physics and State Key Laboratory
of Surface Physics, Fudan University, Shanghai, China

4. Time and avenue

Date: August 7-9, 2020 (GMT+8, Beijing Time)

Avenue: Zoom (meeting number is to be announced)

5. Schedule (tentative)

Pre-recorded oral presentation: 25 minutes for each invited talk;
15 minutes for each oral talk; 5 minutes for each talk by
students. After a talk, interactive discussion (question and
answer, Q/A) between the speaker and audience will take place.

August 7, Friday, morning: opening

August 7, Friday, afternoon: oral presentations and Q/A

August 8, Saturday, morning: oral presentations and Q/A

August 8, Saturday, afternoon: oral presentations and Q/A

August 9, Sunday, morning: oral presentations and Q/A

August 9, Sunday, afternoon: closing

6. Fee

No registration fee is needed.

7. Reply slip

Please fill in the Reply Slip (whose Word format can be downloaded by clicking "a-reply-slip.docx" at this page: <http://phys.fudan.edu.cn/97/9f/c7453a235423/page.htm>), and send your completed Reply Slip to the following two email addresses simultaneously: <19210190010@fudan.edu.cn> and <ThermoMeta2020@gmail.com>. Should you have questions, please feel free to contact the same two email addresses as well.

Deadline 1: June 17, 2020 for returning the Reply Slip

Deadline 2: July 17, 2020 for returning the pre-recorded oral presentation (detailed requirements will be announced after June 17)