<table>
<thead>
<tr>
<th>time/room</th>
<th>Monarchy 4</th>
<th>Monarchy 1</th>
<th>Monarchy 2</th>
<th>Monarchy 3</th>
<th>Maui Suite 2</th>
<th>Maui Suite 3</th>
<th>Maui Suite 4</th>
<th>Lahaina 2</th>
<th>Lahaina 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:30-8:00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Opening at Monarchy 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9:00-9:40</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plenary lecture 1 at Monarchy 4</td>
<td>Prof. Prof. John K. Eaton, Stanford University, USA</td>
<td>Turbulent thermal transport: MRI experiments, large-eddy simulation, and machine-learning models</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9:40-10:20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plenary lecture 2 at Monarchy 4</td>
<td>Prof. Min Soo Kim, Seoul National University, Korea</td>
<td>Hydrogen economy and fuel cell technology</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:20-10:40</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>coffee break</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:40-12:00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Topic (a-7): Heat Transfer in Manufacturing 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Topic (c-2): Heat and Mass Transfer in MEMS 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12:00-13:20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>lunch break</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13:20-15:00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Panel discussion 1 Emerging Topics in Nanoscale Thermal Transport</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Topic (a-2): Computational Heat and Mass Transfer - Fundamentals 1-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Topic (a-3): Phase Change Phenomena and Heat Transfer - Pool Boiling 1 -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Topic (b-4): Heat and Mass Transfer in Energy Devices - Heat Pipe -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Topic (b-5): Heat and Mass Transfer in Air Conditioners &amp; Refrigeration 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Topic (b-1): Fundamentals in Combustion I</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15:00-15:20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>coffee break</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15:20-15:50</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KL 01 Prof. Asegun Henry</td>
<td>Massachusetts Institute of Technology, USA</td>
<td>Rethinking problems in thermal science and engineering - From atoms to applications</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KL 02 Prof. Ying Sun, Drexel University, USA</td>
<td>Probing the temperature profile across a liquid-vapor interface during phase change</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KL 03 Prof. Yong Tae Kang, Korea University, Korea</td>
<td>Development of core refrigeration technologies with low GWP refrigerants</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15:50-16:25</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>break</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16:25-16:30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>break</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16:30-17:50</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Topic (a-1): Convective Heat and Mass Transfer - Turbulence -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Topic (a-7): Heat Transfer in Manufacturing 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Topic (c-2): Heat and Mass Transfer in MEMS 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

KL 01

Prof. Asegun Henry, Massachusetts Institute of Technology, USA
Rethinking problems in thermal science and engineering - From atoms to applications

KL 02

Prof. Ying Sun, Drexel University, USA
Probing the temperature profile across a liquid-vapor interface during phase change

KL 03

Prof. Yong Tae Kang, Korea University, Korea
Development of core refrigeration technologies with low GWP refrigerants

KL 05

Dr. Jungho Lee, KIMM, Korea
Role of microporous coating on boiling heat transfer enhancement in thermosyphon and thermal ground plane

KL 06

Prof. Dereje Agonafer, University of Texas at Arlington, USA
Thermal and control design for dynamic air and liquid cooling in data centers

KL 07

Prof. Kenji Yasuoka, Keio University, Japan
Acceleration and analysis of molecular dynamics simulation with machine learning

KL 08

Prof. Jungho Lee, KIMM, Korea
Role of microporous coating on boiling heat transfer enhancement in thermosyphon and thermal ground plane

KL 09

Dr. Jungho Lee, KIMM, Korea
Role of microporous coating on boiling heat transfer enhancement in thermosyphon and thermal ground plane
<table>
<thead>
<tr>
<th>time/room</th>
<th>Monarchy 4</th>
<th>Monarchy 1</th>
<th>Monarchy 2</th>
<th>Monarchy 3</th>
<th>Maui Suite 2</th>
<th>Maui Suite 3</th>
<th>Maui Suite 4</th>
<th>Lahaina 2</th>
<th>Lahaina 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:30-9:10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Plenary lecture 3 at Monarchy 4</td>
<td>Prof. Taku Ohara, Tohoku University, Japan</td>
<td>Lecture title: TBA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9:10-9:50</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Plenary lecture 4 at Monarchy 4</td>
<td>Prof. Chi-Chuan Wang, National Chiao Tung University, Taiwan</td>
<td>Lecture title: TBA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9:50-10:10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>coffee break</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11:50-13:30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>break</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13:30-17:00</td>
<td>Round table on future of thermal engineering</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Session at a Glance - Monday, December 16, 2019

<table>
<thead>
<tr>
<th>Time</th>
<th>Room</th>
<th>Session Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:30-9:10</td>
<td>Monarchy 1</td>
<td>Plenary lecture 5 at Monarchy 1</td>
</tr>
<tr>
<td></td>
<td>Monarchy 4</td>
<td>Prof. Yuji Suzuki, The University of Tokyo, Japan</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Electret-based thermal and kinetic energy harvesting for wearable devices</td>
</tr>
<tr>
<td>9:10-9:50</td>
<td>Monarchy 2</td>
<td>Plenary lecture 6 at Monarchy 2</td>
</tr>
<tr>
<td></td>
<td>Monarchy 4</td>
<td>Prof. Andrei G. Fedorov, Georgia Institute of Technology, USA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Thermal dissipation at extremes using confined evaporating liquid films with streaming gas/vapor flows</td>
</tr>
<tr>
<td>9:50-10:10</td>
<td></td>
<td>Coffee break</td>
</tr>
<tr>
<td>10:10-11:50</td>
<td>Maui Suite 1</td>
<td>Topic (a-1): Convective Heat and Mass Transfer - Natural Convection 1</td>
</tr>
<tr>
<td></td>
<td>Maui Suite 2</td>
<td>Topic (a-2): Computational Heat and Mass Transfer - Optimization and Control 2</td>
</tr>
<tr>
<td></td>
<td>Maui Suite 3</td>
<td>Panel discussion 2</td>
</tr>
<tr>
<td></td>
<td>Maui Suite 4</td>
<td>Topic (a-4): Radiative Heat Transfer - Radiation Properties</td>
</tr>
<tr>
<td></td>
<td>Lahaina 2</td>
<td>Topic (a-3): Phase Change Phenomena and Heat Transfer - Two Phase Flow 1</td>
</tr>
<tr>
<td></td>
<td>Lahaina 3</td>
<td>Topic (a-5): Biological Heat and Mass Transfer - Solidification</td>
</tr>
<tr>
<td>11:50-13:10</td>
<td>Lahaina 2</td>
<td>Lunch break</td>
</tr>
<tr>
<td>13:10-14:00</td>
<td>KL 07</td>
<td>Prof. Jae Dong Chung, Sejong University, Korea</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Adsorption refrigeration: Numerical approaches for system analysis</td>
</tr>
<tr>
<td></td>
<td>KL 08</td>
<td>Prof. Joerg Petrasch, Michigan State University, USA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Heat transfer challenges in thermochromical grid level storage of electricity using metal/oxide redox systems</td>
</tr>
<tr>
<td></td>
<td>KL 09</td>
<td>Prof. Osamu Nakabeppu, Meiji University, Japan</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MEMS sensor for cooling loss study of IC engine</td>
</tr>
<tr>
<td>13:40-13:45</td>
<td>KL 10</td>
<td>Prof. Hiroshi Suzuki, Kobe University, Japan</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low carbon society realization by using hard shell microcapsules with phase change materials</td>
</tr>
<tr>
<td></td>
<td>KL 11</td>
<td>Prof. Wilson K. S. Chiu, University of Connecticut, USA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Three-dimensional heat and species transport in energy materials</td>
</tr>
<tr>
<td></td>
<td>KL 12</td>
<td>Prof. Ji Hwan Jeong, Pusan National University, Korea</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Inducing drop-wise condensation of steam on metallic surfaces used for heat exchangers</td>
</tr>
<tr>
<td>14:00-14:30</td>
<td>Lahaina 2</td>
<td>Coffee break</td>
</tr>
<tr>
<td></td>
<td>Maui Suite 3</td>
<td>Topic (a-3): Phase Change Phenomena and Heat Transfer - Bubble</td>
</tr>
<tr>
<td></td>
<td>Maui Suite 4</td>
<td>Topic (a-4): Radiative Heat Transfer - Response of Biological System under Thermal Environment</td>
</tr>
<tr>
<td></td>
<td>Lahaina 3</td>
<td>Topic (b-1): Transport Phenomena in Nano and Molecular Scale Systems 1</td>
</tr>
<tr>
<td></td>
<td>Lahaina 4</td>
<td>Topic (b-1): Radiative Heat Transfer - Radiative Properties</td>
</tr>
<tr>
<td>16:00-17:00</td>
<td>Lahaina 2</td>
<td>Coffee break</td>
</tr>
<tr>
<td>16:30-17:30</td>
<td>Lahaina 3</td>
<td>Topic (a-1): Convective Heat and Mass Transfer - Natural Convection 2</td>
</tr>
<tr>
<td></td>
<td>Maui Suite 3</td>
<td>Topic (a-3): Phase Change Phenomena and Heat Transfer - Bubble</td>
</tr>
<tr>
<td></td>
<td>Maui Suite 4</td>
<td>Topic (a-4): Radiative Heat Transfer - Radiative Properties</td>
</tr>
<tr>
<td></td>
<td>Lahaina 3</td>
<td>Topic (b-1): Transport Phenomena in Nano and Molecular Scale Systems 2</td>
</tr>
<tr>
<td></td>
<td>Lahaina 4</td>
<td>Topic (c-3): Thermal Properties at the Micro/Nano-scale - Control and Measurements</td>
</tr>
<tr>
<td>19:00-21:00</td>
<td>Lahaina 3</td>
<td>Conference banquet</td>
</tr>
<tr>
<td>time/room</td>
<td>Monarchy 4</td>
<td>Monarchy 1</td>
</tr>
<tr>
<td>-----------</td>
<td>-----------</td>
<td>-----------</td>
</tr>
<tr>
<td>8:30-8:55</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9:05-9:40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9:50-10:20</td>
<td>KL 13</td>
<td>KL 14</td>
</tr>
<tr>
<td></td>
<td>Prof. Tong Seop Kim, Inha University, Korea</td>
<td>Prof. Aki Kiyama, Saga University, Japan</td>
</tr>
<tr>
<td></td>
<td>Achieving a very high efficiency using synergistic cycle combination technologies in power plant engineering</td>
<td>Measurement of local heat transfer characteristics and flow behavior of two phase flow in a complex channel</td>
</tr>
<tr>
<td>10:20-10:40</td>
<td>coffe break</td>
<td></td>
</tr>
<tr>
<td>12:20-13:40</td>
<td>lunch break</td>
<td></td>
</tr>
<tr>
<td>15:20-16:00</td>
<td>coffe break</td>
<td></td>
</tr>
<tr>
<td>17:00-17:25</td>
<td>break</td>
<td></td>
</tr>
</tbody>
</table>

Closing remarks at Monarchy 4