Center for Wireless Integrated MicroSensing & Systems

presents

WIMS² SEMINAR

Monday, July 8, 2016 10:00 am – 11:00 am 1003 EECS Bldg.

Motionless Heat Pump – A New Application of Thermal Transpiration

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Abstract: A motionless heat pump system using a combination of thermal transpiration flow of a rarefied gas and a phase change of water has been proposed. This system mainly consists of the thermal transpiration pump, which is called a Knudsen pump, and two chambers filled with water and its vapor. The Knudsen pump moves water vapor from one chamber to the other. The pressure drop encourages water to evaporate and to absorb heat inside the outflow chamber. On the contrary, the pressure rise encourages vapor to condense and to generate heat inside the inflow chamber. The delivery capacity of the vapor of the Knudsen pump composed of the glass fiber filter was measured experimentally.

Bio:

WORK EXPERIENCE
2009-Present: TOYOTA CENTRAL R&D LABS., INC.

- Application of the Knudsen pump
- Topology optimization of the engine structure
- Combustion improvement in the engine etc

EDUCATION
2007-2009: Master of Engineering, Kyoto University
Department of the Mechanical Engineering and Science

- Performance estimation of the Knudsen pumps connected in cascade by the computation

2004-2007: Bachelor of Engineering, Kyoto University

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