
Oral presentation | 22 Joint Session M | 22.1 Joint Session M "Phonon Engineering"

[7a-C22-1~12]22.1 Joint Session M "Phonon Engineering"

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Thu. Sep 7, 2017 9:00 AM - 12:45 PM C22 (C22)

△：奨励賞エントリー

▲：英語発表

▼：奨励賞エントリーかつ英語発表

空欄：どちらもなし

11:00 AM - 11:30 AM

[7a-C22-8][INVITED] Micro- and Nano-scale Heat Transfer in Liquid-Vapor Phase Change on Solid Surface

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Keywords:liquid-vapor phase change, interface, heat transfer

Active use of the latent heat transport is one of important topics in thermal management of energy devices using liquid-vapor phase change. In the ultimate situations, the wettability behaviors of solid surface with liquid film play important roles as well as the transport phenomena at solid-liquid and liquid-vapor interfaces. In the presentation, the mechanism of the critical heat flux (CHF) phenomenon in the boiling heat transfer is explained on a base of the microlayer model and a novel heat transfer mode at the post-CHF region in the subcooled boiling is introduced for showing higher heat flux than the CHF. As for the condensation heat transfer, it is shown that the wettability controlled surface with mixed patterns of hydrophilic and hydrophobic surfaces has a possibility to enhance the condensation heat transfer. Also, the transport phenomena at solid-liquid and liquid-vapor interfaces are discussed based on the molecular dynamics studies.