I have placed my abstract in the category 23.10 Microscale Flows: Interfaces and Wetting, since the work I will present has been carried out on micro-textured surfaces and observations reported are at the microscale. However, I believe this work is of much interest to the phase change community and more in particular to condensation phase change.
Please feel free to change the abstract to a more suitable session.
Also, as stated previously, I will be more than happy to act as a chair for any phase change or droplet session.
Best regards,
Dani

Abstract Submitted
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Simultaneous Dropwise and Filmwise Condensation on a Microstructured Surface without the Assistance of a Hydrophobic Coating
DANIEL OREJON, I2CNER, Kyushu University, OREST SHARDT, University of Limerick, NAGA SIVA KUMAR GUNDA, York University, TATSUYA IKUTA, KOJI TAKAHASHI, I2CNER, Kyushu University, SUSHANTA K. MITRA, York University, YASUYUKI TAKATA, I2CNER, Kyushu University — We demonstrate micropillar surfaces on which condensation occurs in a new mode with simultaneous dropwise/filmwise condensation (DWC/FWC). This is achieved without the assistance of a hydrophobic coating; the pillars and base surface are hydrophilic. By considering thermodynamic principles of droplet wetting and spreading, we designed microstructured surfaces where the condensate is able to spread through the structures. The geometry of the microstructures constrains the condensate between the pillars, the rise of condensate above the structures is not thermodynamically favorable and condensation takes place as FWC between pillars. At the same time, the continuous nucleation, growth and departure of droplets at the pillars' tops in a DWC fashion is observed. We propose a simple resistance based heat transfer model to support the greater heat transfer performance of the simultaneous DWC/FWC when compared to solely FWC. In addition we propose rational guidelines for the design of an optimum configuration that maximizes the heat transfer performance in the simultaneous DWC/FWC mode. The authors acknowledge the support of WPI-I2CNER and KAKENHI JSPS.

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