

Abstract Submitted
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Direct measurements of the pressure distribution along the contact area during droplet impact THANH-VINH NGUYEN, The University of Tokyo, KIYOSHI MATSUMOTO, Toyo University, ISAO SHIMOYAMA, The University of Tokyo — We report direct measurements of the pressure distribution on the contact area during the impact of a droplet on a micropillar array. The measurements were realized using an array of MEMS-based force sensors fabricated underneath the micropillars. We show that immediately after the droplet hits the surface, the pressure becomes maximum at the center of the contact area and this maximum pressure value is more than 10 times larger than the dynamic pressure. This result emphasizes the effect of water-hammer-type pressure during the early stage of the impact. Furthermore, our measurement results demonstrate that the critical pressure associated with Cassie-Wenzel transition agrees well with the maximum capillary pressure of the micropillar array.

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