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Analytical consideration of droplet impingement behavior on solid surfaces YUKIHIRO YONEMOTO, Kumamoto University, TOMOAKI KUNUGI, Kyoto University — Current knowledge of the detailed behaviour of droplet impingement has improved gradually with advancements in experimental technology. On the other hand, theoretical approaches employ models that attempt to predict maximum spreading diameter of droplet based on energy balance, momentum balance, and empirical considerations. However, most models have an applicability limit with respect to impingement velocity for predicting the spreading diameter of the droplet. In this study, analytical model is developed on the basis of an energy balance approach to predict the maximum spreading diameter. In the model, the adhesion energy at the contact line in the vertical direction in addition to the horizontal direction are considered. The developed equation can quantitatively predict the maximum spreading diameter in a wide range of the impingement velocity without the use of arbitrary fitting parameters.

Yukihiro Yonemoto
Kumamoto University

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