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Investigation of water droplet geometry evolution under uniform electrical field on rose petal and surface modified by pulse laser ablation

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The study of droplet evaporation from various surfaces is an active problem that is widely investigated and has many technical applications (intensification of heat transfer, deposition of colloidal solutions). Biomimetic surfaces, which repeat the properties of some natural surfaces, are particular interesting. In this work biphilic surfaces — superhydrophobic surfaces with superhydrophilic areas, on which the droplets were placed, which were made by pulse laser ablation. Such surfaces have great potential in various applications, as they can be used for controlled movement of liquids, controlled deposition and heat transfer intensification. Also, of great interest are the studies of droplet geometry changes in the electric field. In the present work, the evolution of the geometry of water droplets on a biphilic surface and a rose petal in a constant electric field of different strength. The data were obtained on the dynamics of droplet geometry as a function of field strength for the surfaces used. It is found that the droplet height grows nonlinearly with increasing field strength. The results of this work will allow us to expand our understanding of the kinetics of evaporation, the dynamics of droplet geometry and the field strength for the surfaces used.

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