Correction to Asymmetric Wettability of Nanostructures Directs Leidenfrost Droplets

Rebecca L. Agapov, Jonathan B. Boreyko,
Dayrl P. Briggs, Bernadeta R. Srijanto, Scott T. Retterer,
C. Patrick Collier, and Nickolay V. Lavrik*

Our further work with the high-speed camera revealed that a setting in the software (EPIX X-Cap LTD V3.7) caused only 1 out of every 4 frames to be saved. This was not previously identified because the frame rate information contained in the saved .avi files corresponded to the expected capture rate of 1019 frames per second. The time between two successive frames was used for the calculation of horizontal droplet velocities as well as the impact velocities used to calculate the Weber numbers. Therefore, all reported horizontal and impact velocities in the text should be divided by a factor of 4. All reported Weber numbers should be divided by 16 due to the fact that velocity is squared in the calculation. The time label in Figure 3b should have a time stamp of 3.92 ms rather than 0.98 ms. Figures 4 and 5 are shown below with corrected axes (velocity and/or Weber number). This correction does not change any other aspects in the interpretation of data, analysis, or the article's conclusions. The authors apologize for this unintended systematic error.
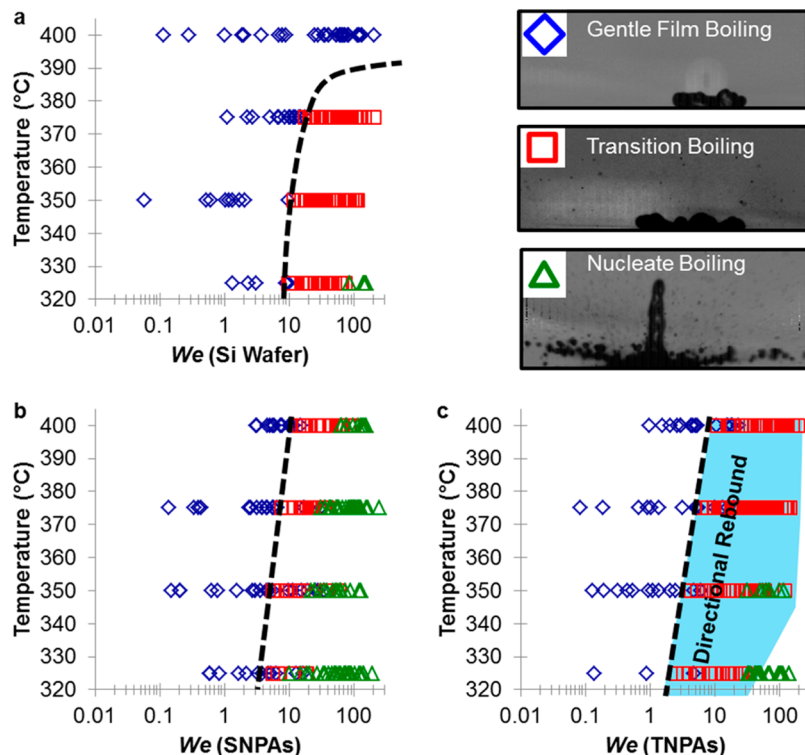

Figure 4. Phase diagram for droplet impact at different *We* on heated substrates of a (a) smooth Si wafer, (b) straight nanopillar array (SNPA), and (c) tilted nanopillar array (TNPA). The blue diamonds indicate gentle film boiling, the red squares indicate transition boiling where droplet spraying was observed, and the green triangles indicate nucleate boiling where the droplets boiled so quickly that the vapor pressure increased abruptly, causing violent, explosive ejection of tiny droplets due to the venting of vapor bubbles. The dotted black lines are a guide to the eye for the onset of transition boiling. The shaded region in (c) illustrates the transition boiling region where directional rebound is observed after droplet impact onto the TNPAs.
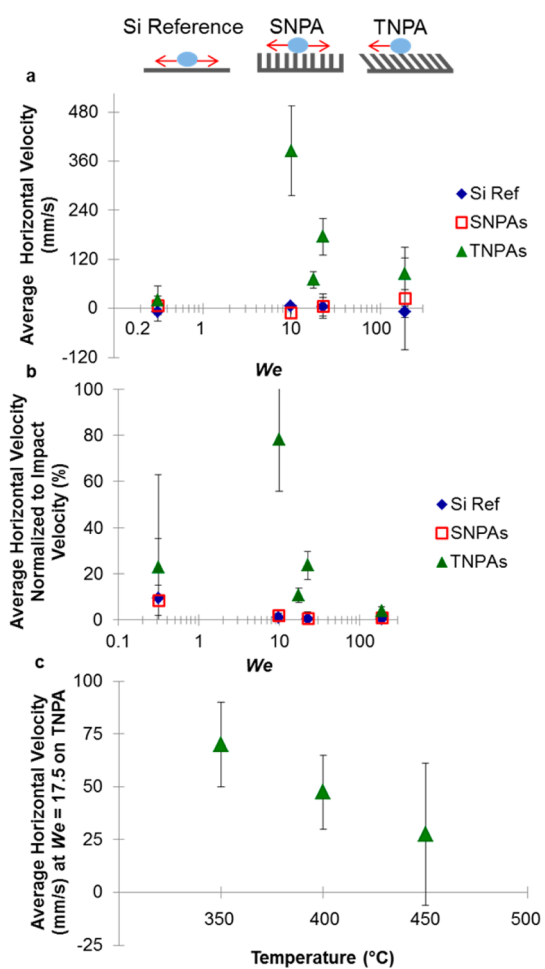
Figure 5. (a) Average horizontal velocity as a function of *We* on a smooth Si wafer (blue diamonds), straight nanopillar arrays (SNPAs) (red squares), and tilted nanopillar arrays (TNPAs) (green triangles) all at a surface temperature of 350 °C. The trajectory for the TNPAs was in the direction of the pillar tilt while the trajectories for the Si reference wafer and the SNPAs were random, as shown in the schematic, averaging to no net horizontal velocity. (b) Average horizontal velocity normalized to impact velocity as a function of *We*. (c) Average horizontal velocity on TNPAs at *We* = 17.5 as a function of temperature.