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POS-41 Characterizing dynamic wetting behaviour on randomly roughened surfaces

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Surface wettability describes the behavior of liquids on substrates and their ability to remain in contact with it. Quantification of wettability is often reduced to a measurement of the contact angle that a liquid droplet makes on the surface. Although this practice has become ubiquitous in the literature, a growing number of researchers have voiced concerns that static contact angles alone cannot fully describe surface wetting properties. Our research findings fall in line with this sentiment and highlight the importance of reporting data from dynamic droplets. Wetting dynamics of more than 300 droplets were studied on randomly roughened surfaces to demonstrate the range over which advancing and receding contact angles can vary. Factors such as droplet size, rate of volume change, and shape fitting algorithms affected measured contact angles, and approximately 60% of all measurements were not representative of the droplet's dynamics. These results demonstrate that static contact angles alone are not enough to characterize a surface, and that more information related to dynamic wetting behavior, such as sliding angles and hysteresis, is essential.

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