

Influence of surface chemistry on the charging of water drops moving on hydrophobic silicate substrates

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In the last few years a lot of studies have shown that by contact/slide electrification between water droplets and hydrophobic surfaces, it is possible to generate electricity in an environmentally friendly way. In the first applications LEDs could operate in this way[1] The physical processes are still being discussed today. To extend the understanding Stetten et al.[2] have established an experimental setup that allows to study the drop charge of individual drops. In the work presented here we have studied with this setup the influence of the surface chemistry to the charge of moving water droplets at hydrophobic silicate substrates. We were able to show here that the chemistry of the substrate plays a central role and that the origin of the charge of the droplets is caused by hydration of the surface.

References:

[1] C. Wu, A. C. Wang, W. Ding, H. Guo, Z. L. Wang, *Advanced Energy Materials* 2019, 9, 1802906.

[2] A. Z. Stetten, D. S. Golovko, S. A. Weber, H.-J. Butt, *Soft Matter* 2019, 15, 8667-8679.

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