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Surface nanobubble nucleation dynamics during water-ethanol exchange CHON U CHAN, CLAUS-DIETER OHL, Nanyang Technological University, Singapore — Water-ethanol exchange has been a promising nucleation method for surface attached nanobubbles since their discovery. In this process, water and ethanol displace each other sequentially on a substrate. As the gas solubility is 36 times higher in ethanol than water, it was suggested that the exchange process leads to transient supersaturation and is responsible for the nanobubble nucleation. In this work, we visualize the nucleation dynamics by controllably mixing water and ethanol. It depicts the temporal evolution of the conventional exchange in a single field of view, detailing the conditions for surface nanobubble nucleation and the flow field that influences their spatial organization. This technique can also pattern surface nanobubbles with variable size distribution.

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