

# Studying the bulk and contour ice nucleation of water droplets via quartz crystal microbalances

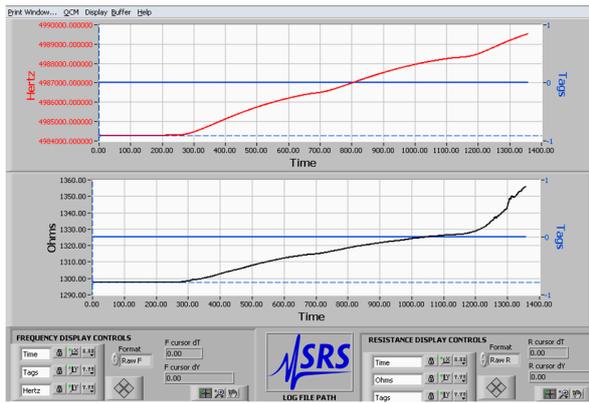
*Supporting information*

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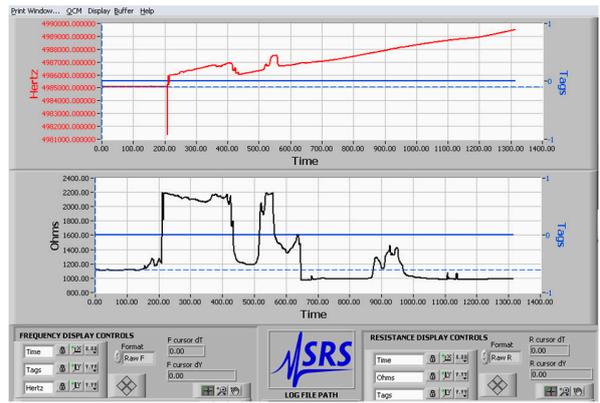
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<sup>2</sup> Department of Distributed Information and Control Systems, Institute of Information and Communication Technologies, Bulgarian Academy of Sciences, Acad. G. Bonchev Street, Bl.2, Sofia, Bulgaria

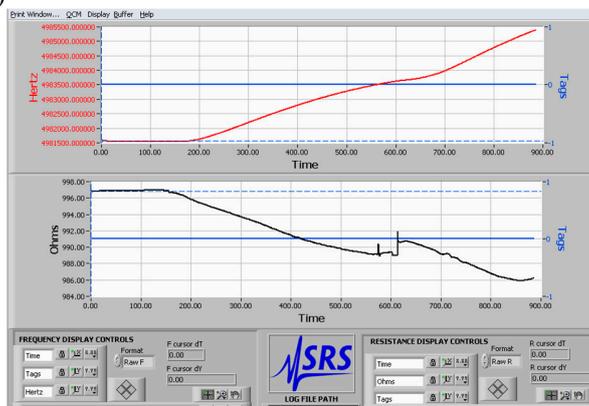
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a)

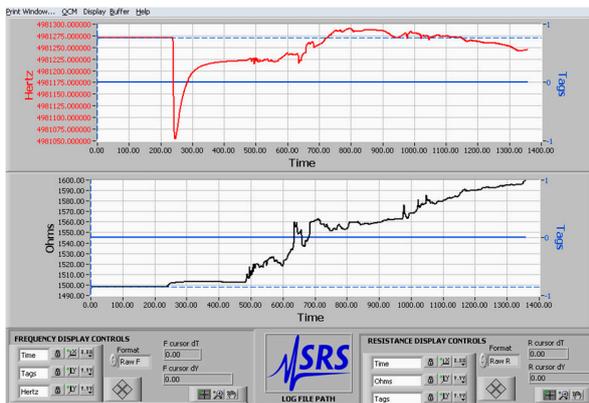


b)

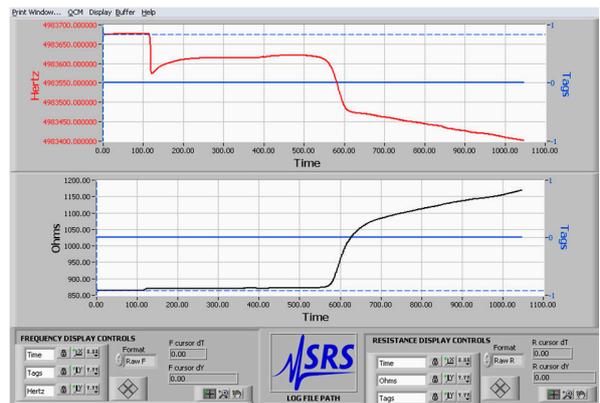


c)

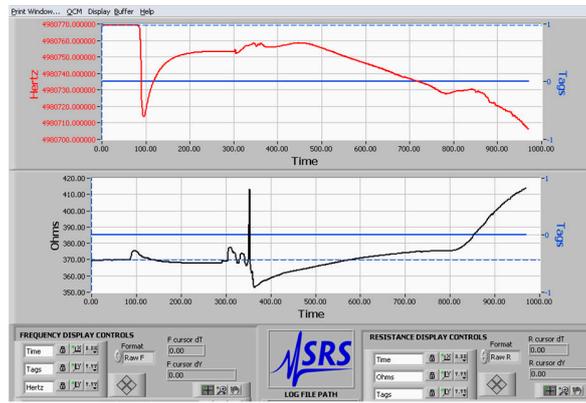
**Figure S1.** Reproducibility of the sensor response induced by thermal fluctuations (cooling of the system) during the bulk mode nucleation assays. The observed fluctuations in Figure S1b are attributed to temperature-induced mechanical stresses in the soot coating.



a)

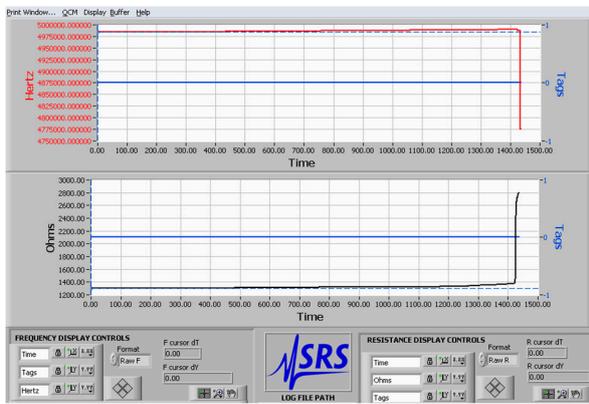


b)

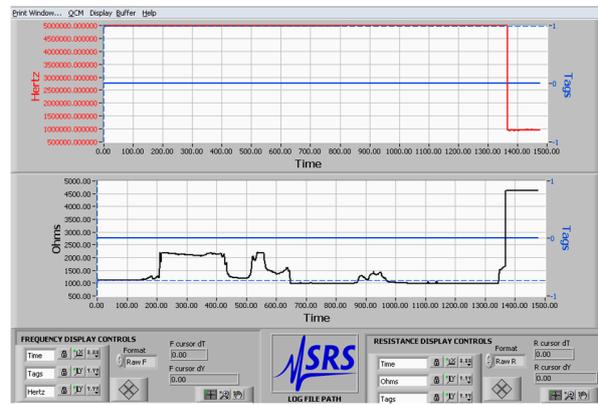


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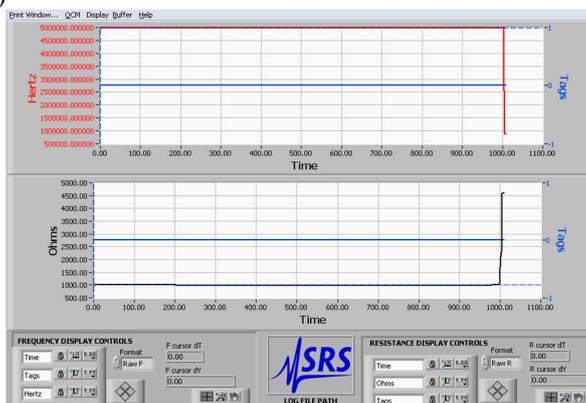
**Figure S2.** Reproducibility of the sensor response induced by thermal fluctuations (cooling of the system) during the contour mode nucleation assays. The observed fluctuations in both resonance frequency and series resistance are attributed to the mismatch between the elastic properties of water and the soot coating.



a)

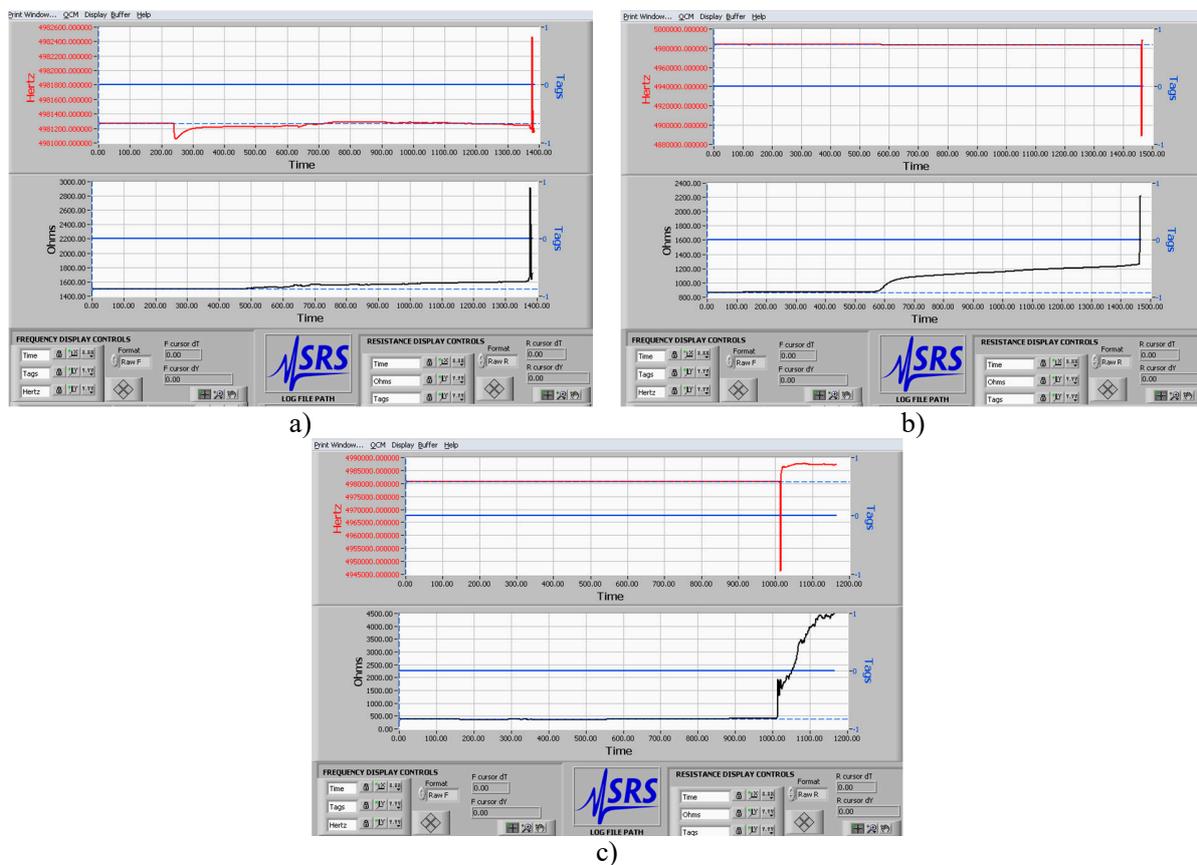


b)



c)

**Figure S3.** Reproducibility of the sensor response induced by the recalcitrant freezing of the water droplet during the bulk mode nucleation assays. Once the solid-liquid interface freezes (within 1-2 s), the QCM gets out-of-resonance.



**Figure S4.** Reproducibility of the sensor response induced by the recalcitrant freezing of the water droplet during the contour mode nucleation assays. Once the solid-liquid interface and the droplet's entire outer shell freeze, the QCM is still capable of generating oscillations for a certain time range (62-149 s) prior to getting out-of-resonance (see the main article).