

Supplementary materials for "Thermal infrared near-field optical spectroscopy"

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In addition to characterizing the TINS tip-sample distance dependence for PTFE we have also acquired corresponding data for SiC as shown in Figure S1 below. As expected from the spectral energy density $u[z, \omega, T]$, we observe an onset of signal increase associated with the SiC surface phonon polariton (SPhP) resonance located at $\omega \simeq 950 \text{ cm}^{-1}$ ($\lambda \simeq 10.5 \text{ }\mu\text{m}$) at a height of $z \simeq 1.5 \text{ }\mu\text{m}$ corresponding to a $\sim \lambda/2\pi$.

We observe a less pronounced enhancement than expected from the $u \propto z^{-3}$ scaling compared to PTFE. A possibility for this discrepancy is the differences in the visco-elastic damping of the cantilever in addition to variations in the heat transfer properties between the tip and surface.

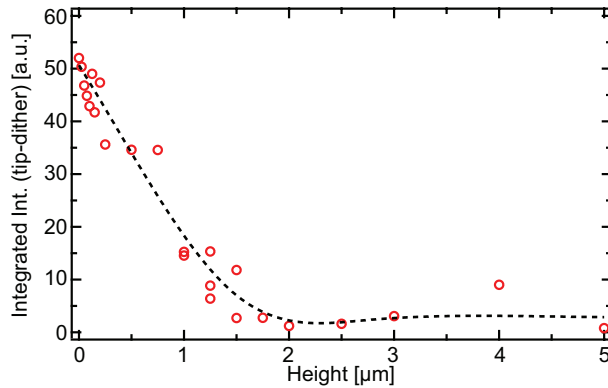


Figure S1: Distance dependence of the spectrally integrated resonant TINS signal ($925\text{-}975 \text{ cm}^{-1}$). Onset of the signal increase is seen at a height of $z \simeq 1.5 \text{ }\mu\text{m} \simeq \lambda/2\pi$ as expected. An interpolation (black dashed line) of the approach data is provided as a guide to the eye.

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