Supplementary Information (SI) for Soft Matter.

Supporting Information:

Adhesion of the mucilage envelope of *Ocimum basilicum* seeds probed by sum frequency generation spectroscopy

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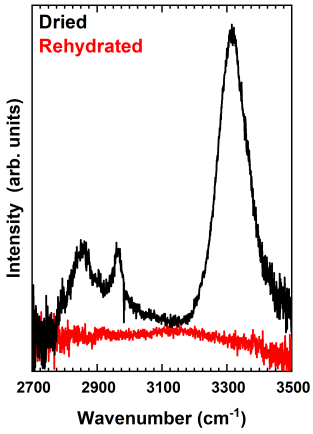

Figure S1: SFG spectra for the mucilage envelope from the Ocimum Basilicum (OC) adhering to the CaF2 interface in the dried state (Black) and in the rehydrated state (Red).

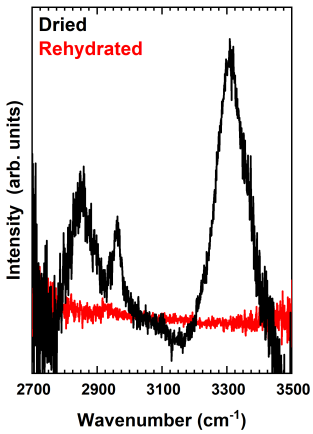

Figure S2: SFG spectra for the mucilage envelope from the Ocimum Basilicum (OC) adhering to the PS interface in the dried state (Black) and in the rehydrated state (Red).

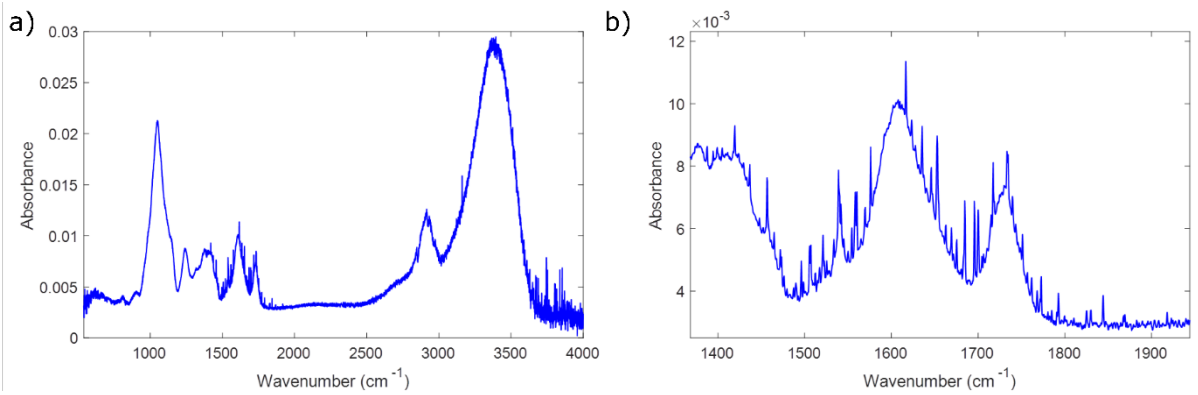

Figure S3: ATR-FTIR spectra of hydrated Ocimum Basilicum seeds. The sample was measured by dropcasting 50 µL of Milli-Q water onto 10 seeds on the ATR crystal of the spectrometer and letting it dry for 3 hours. The sharp bands are from residual water which has not been completely purged. (a) Overview spectrum. (b) Detailed spectrum of the C=O region.

Table 1:

The Fresnel factors are calculated based on the data in the table. The calculated local field corrections are $F_{SSP,PS}$ = 0.7557 and the $F_{SSP,CaF2}$ = 0.6066. The Fresnel factors are calculated assuming the beams are transmitted through the PS or the CaF_2. The local field correction is calculated assuming an interfacial refractive index as an average between the cellulose and the PS or CaF_2 interface. The incoming angle for the visible beam is 30° and the angle for the incoming IR beam is 40°. The correction does not significantly change the results and does therefore not affect the main conclusion in the paper. The refractive indices are found in the following references for cellulose[1], PS[2] and CaF_2[3].

	ω_{SF}	ω_{VIS}	ω_{IR}
λ (nm)	648	804	3333
ω (cm^{-1})	15438	12438	3000
n_{PS}	1.5864	1.5766	1.5617
n_{CaF2}	1.4326	1.4305	1.4155
$n_{Cellulose}$	1.4613 (approximated)	1.4641	1.4378
$n'_{average\ PS\text{-}cellulose}$	1.5262	1.5204	1.5115
$n'_{average\ CaF2\text{-}cellulose}$	1.4493	1.4473	1.4384

Bibliography

1 N. Sultanova, S. Kasarova and I. Nikolov, *Acta Phys. Pol. A*, 2009, 116, 585–587.
2 X. Zhang, J. Qiu, J. Zhao, X. Li and L. Liu, *Journal of Quantitative Spectroscopy and Radiative Transfer*, 2020, 252, 107063.
3 H. H. Li, *Journal of Physical and Chemical Reference Data*, 1980, 9, 161–290.