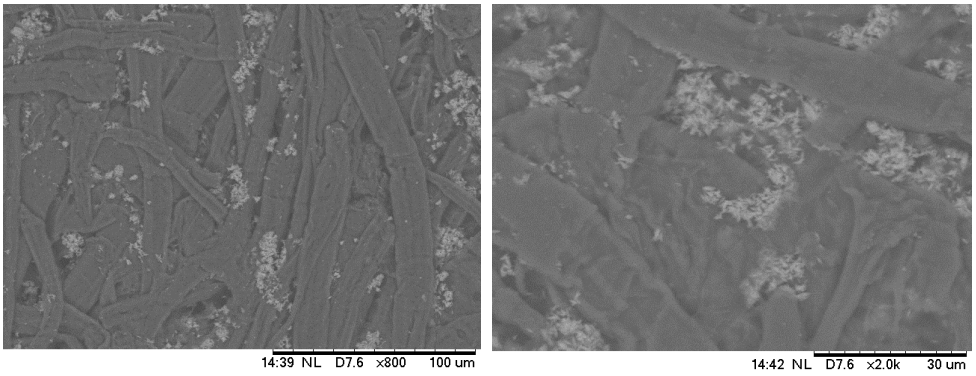
Supplementary Materials



(**a**) (**b**)

Figure S1. Reference SEM image of uncoated paper (**a**) and the same magnifications of the coated paper (**b**) samples.

Table S1. Raman shift assignment for SMI/oil coatings on paper.

Wavenumber/cm^{-1}	Cellulose	Styrene	Imide	Oil
3500–3200	OH stretching	–	–	–
3300	–	–	NH	–
3060, 2916	–	–	CH	–
3010	–	–	–	=CH
2909	–	–	–	C–H
2898	CH, CH_2 stretch	–	–	–
2885	–	–	–	C–H
2880	–	–	–	C–H_2, C–H_3
1765	–	–	imide I (C=O)	–
1750	–	–	–	C=O stretching
1655	–	–	–	C=C stretching
1602	–	aromatic	–	–
1583	–	aromatic	–	–
1470	H–C–H and C–O–H	–	–	–
1452	–	aromatic	–	–
1442	–	–	–	–CH_2
1378	H–C–C and C–O–H	–	–	–
1336	CH_2	–	–	–
1329	–	–	imide II	–
1305	–	–	–	–CH_2 in phase twisting
1266	–	–	–	=C–H in-plane bending in unconjugated cis double bond
1182	–	aromatic	–	–
1152	C–O, C–C	–	–	–
1120	C–O–C	–	–	–
1100–1000	–	–	–	–$(CH_2)_n$–deformation
1095	C–O–C	–	–	–
1032	–	phenyl ring C–H	–	–
1000	–	phenyl ring	–	–
900	C–O–C	–	–	–
900–800	–	–	–	CH_2 twisting and rocking
620	–	C–H	–	–
520–380	C–O–C, C–C–C, O–C–C, O–C–O	–	–	–

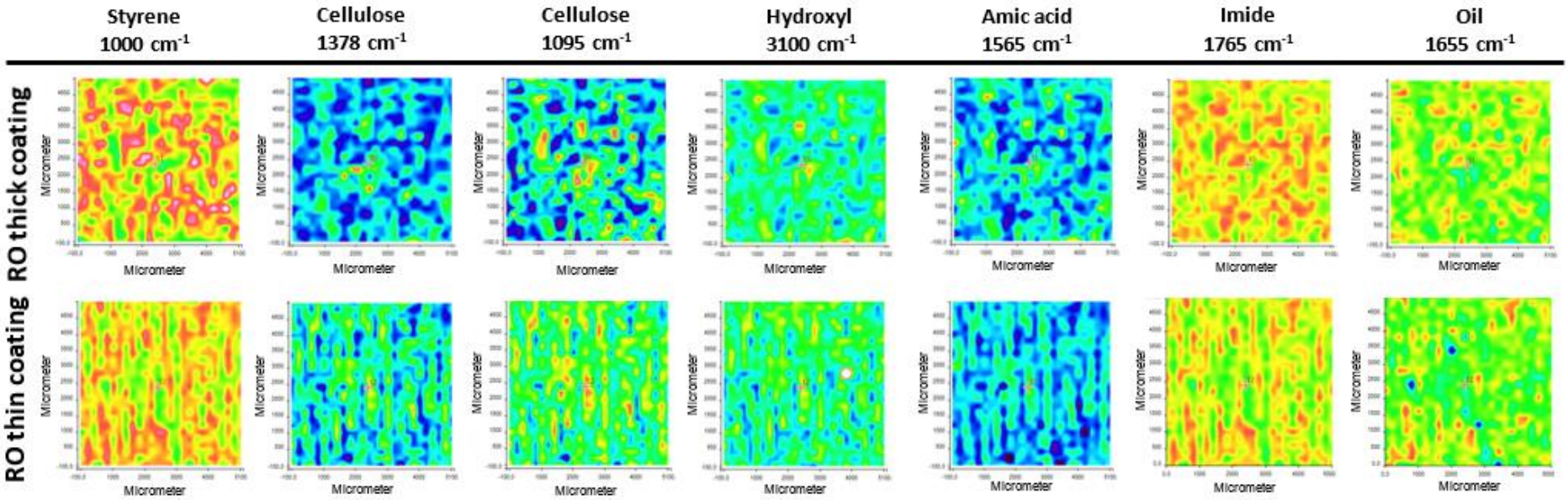


Figure S2. Raman maps (5 × 5 mm²) with single wavenumbers representing different coating and substrate components at the surface for SMI/RO paper coatings.

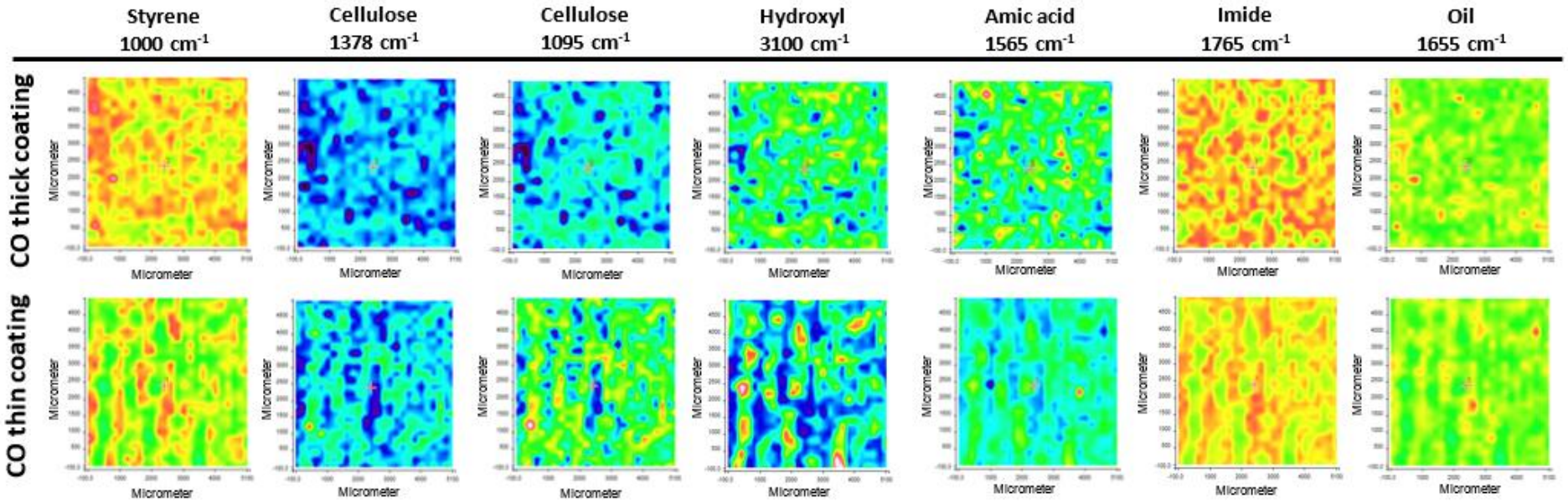


Figure S3. Raman maps (5 × 5 mm²) with single wavenumbers representing different coating and substrate components at the surface for SMI/CO paper coatings.

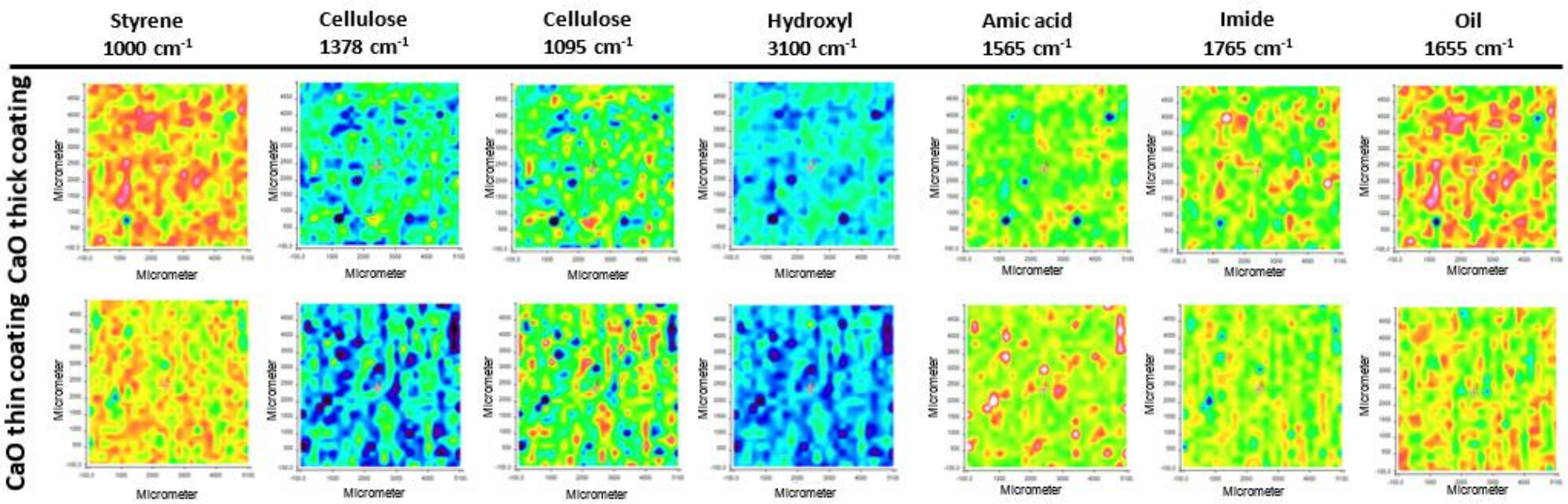


Figure S4. Raman maps (5 × 5 mm^2) with single wavenumbers representing different coating and substrate components at the surface for SMI/CaO paper coatings.

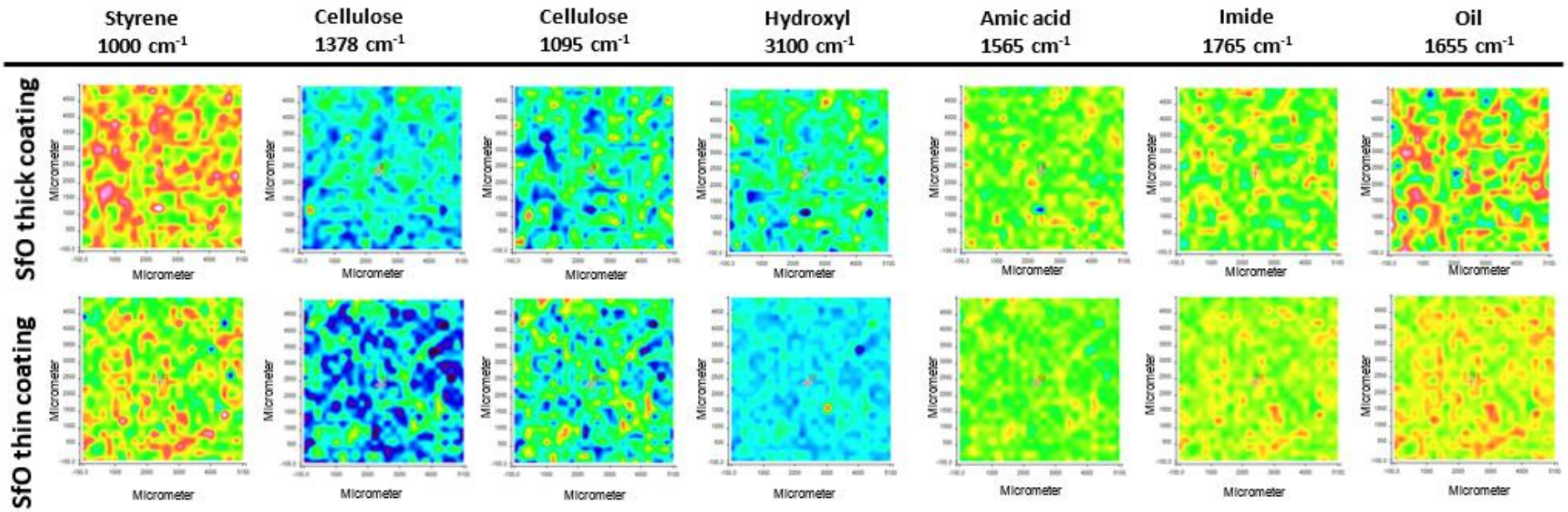


Figure S5. Raman maps (5 × 5 mm²) with single wavenumbers representing different coating and substrate components at the surface for SMI/SfO paper coatings.