Supplementary material

Spectroscopic and thermal characterization of extra virgin olive oil adulterated with edible oils

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Sample preparation

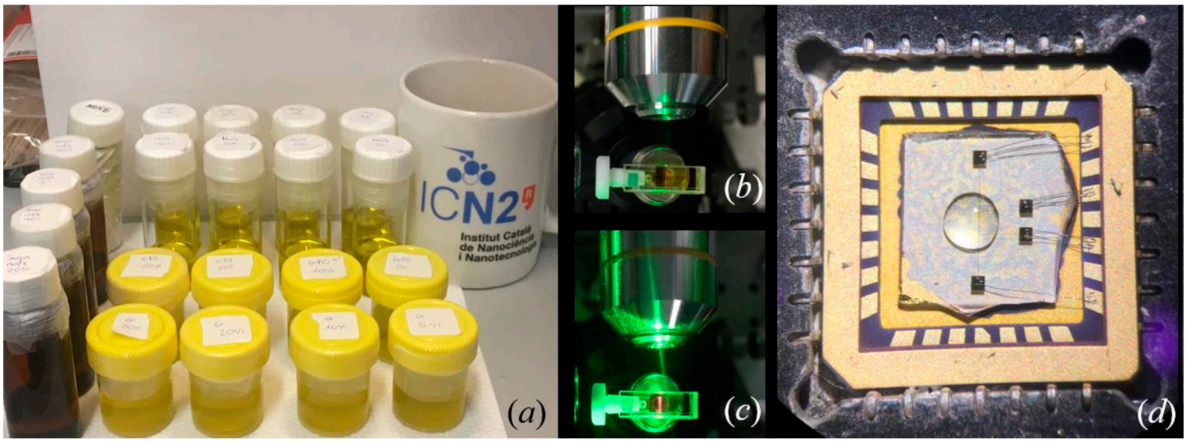

Figure S1. (a) All the samples used in this study, (b) and (c) quartz cuvette for Raman spectroscopy and photoluminescence showing the luminescence created by the green laser. (d) three-omega chip for thermal characterization.

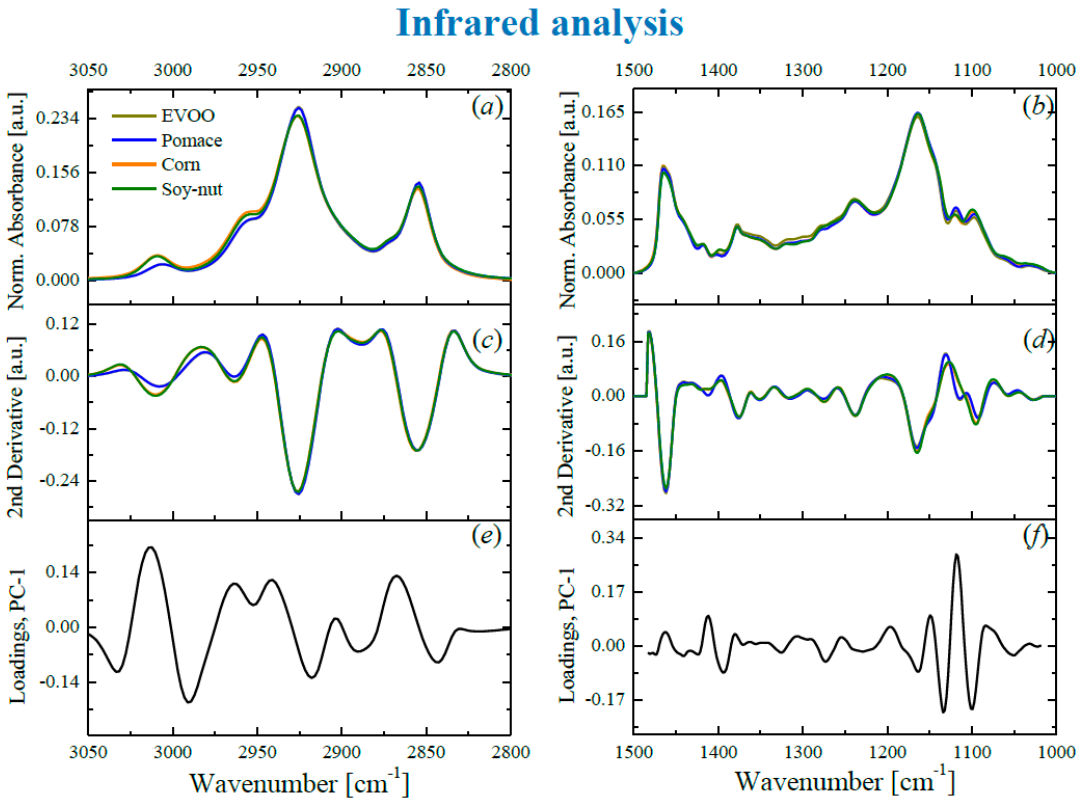

Figure S2. IR spectra second derivative and pc loading of EVOO, pomace, corn, and soy-nut oils.

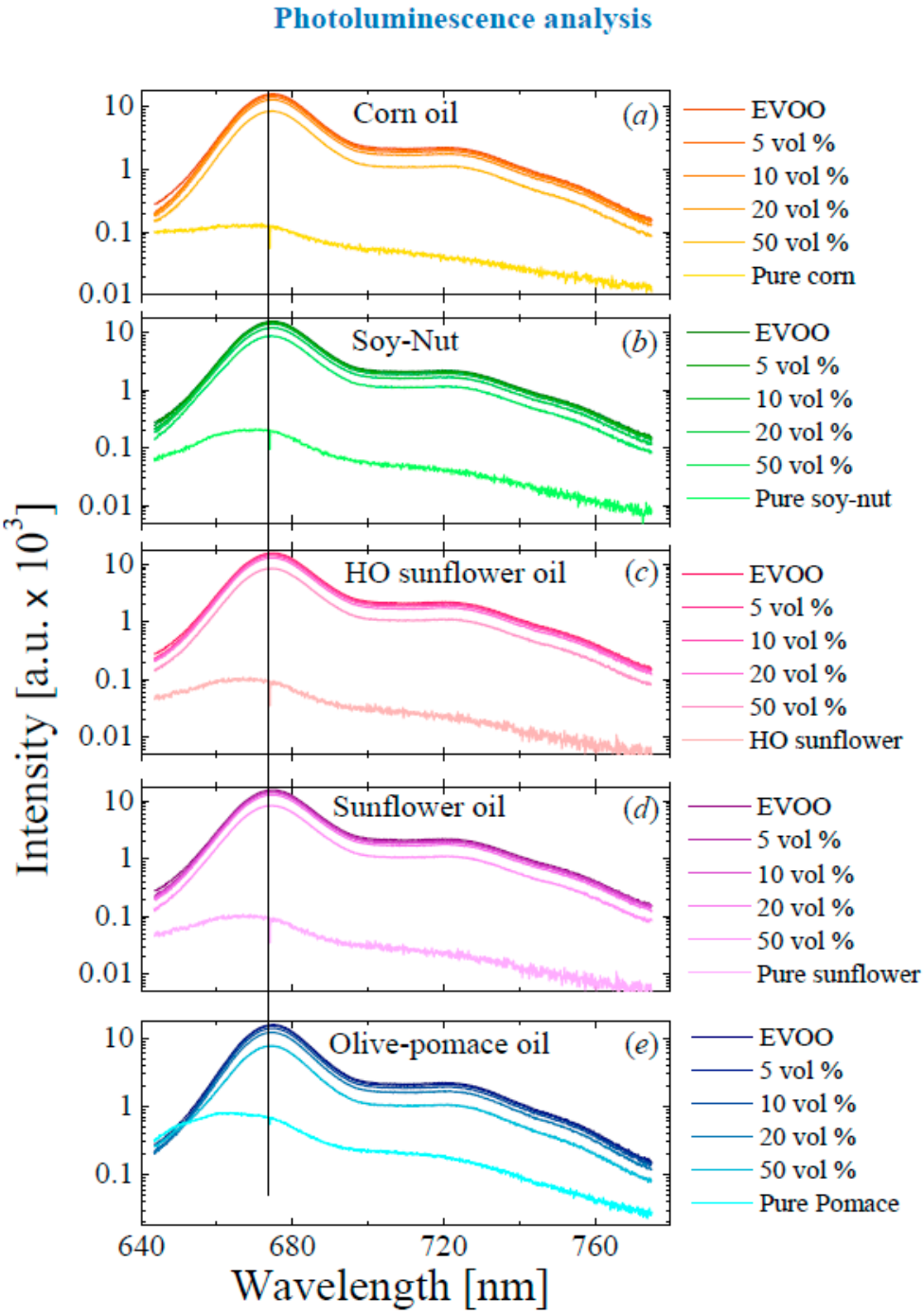

Figure S3. Photoluminescence of EVOO adulterated with different concentrations of: (a) corn, (b) soy-nut blend, (c) high oleic sunflower, (d) sunflower oils, and (e) olive-pomace oils.

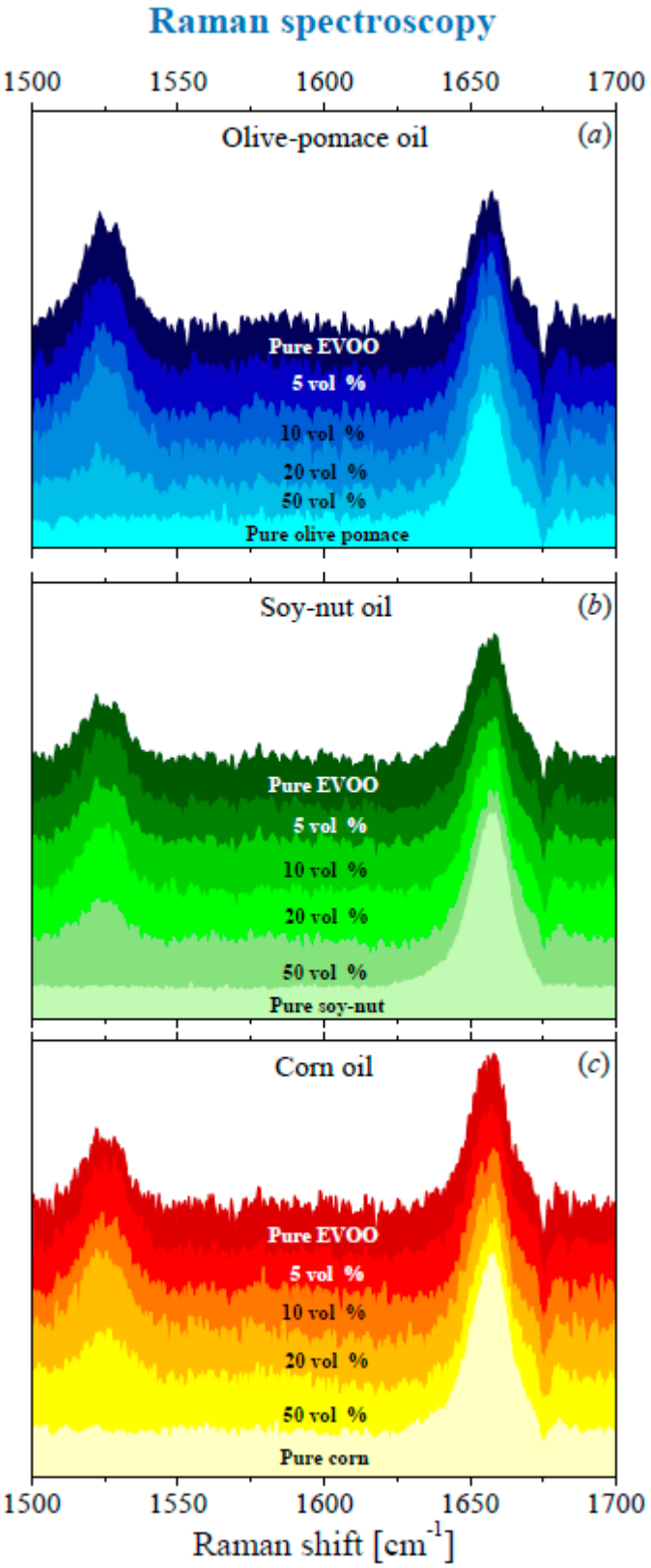

Figure S4. Normalized Raman spectra of EVOO adulterated with different concentrations of: (a) olive-pomace, (b) soy-nut blend, and (c) corn oils.

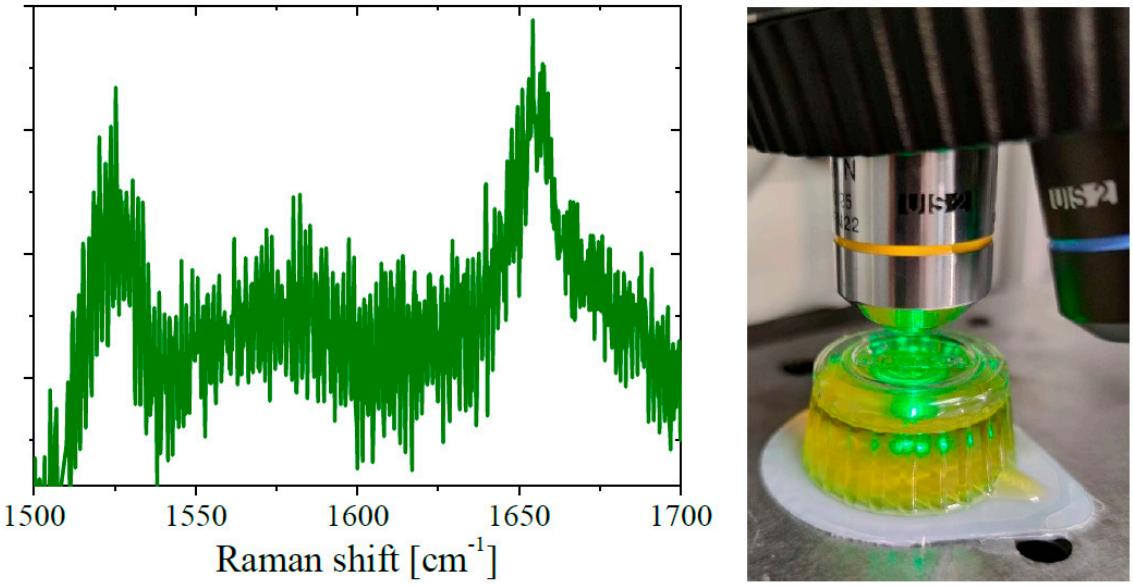

Figure S5. Normalized Raman spectra of EVOO measured directly from its package.

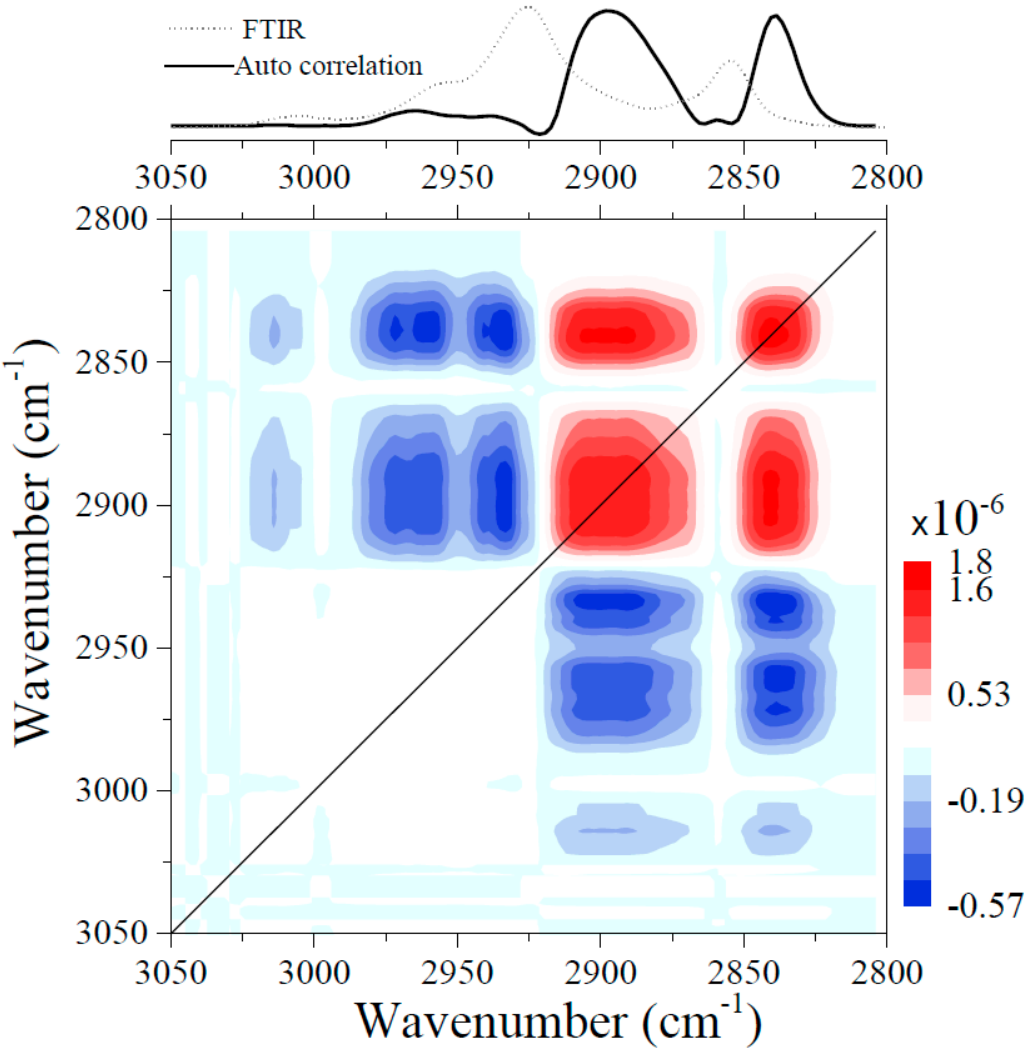

Figure S6. 2DCOS map of pure EVOO.

Table S1. schematic representation of FTIR dataset for principal component analysis.

Wavenumber (cm^{-1}) / Sample	3048	3047	3046	3045	3044	. . .
EVOO 1	$I_{1, 3048}$	$I_{1, 3047}$	$I_{1, 3046}$	$I_{1, 3045}$	$I_{1, 3044}$	. . .
EVOO 2	$I_{2, 3048}$	$I_{2, 3047}$	$I_{2, 3046}$	$I_{2, 3045}$	$I_{2, 3044}$	. . .
EVOO 3	$I_{3, 3048}$	$I_{3, 3047}$	$I_{3, 3046}$	$I_{3, 3045}$	$I_{3, 3044}$	. . .
.	.	.	.	.	.	
.	.	.	.	.	.	
.	.	.	.	.	.	
EVOO 49	$I_{49, 3048}$	$I_{49, 3047}$	$I_{49, 3046}$	$I_{49, 3045}$	$I_{49, 3044}$	. . .
EVOO 50	$I_{50, 3048}$	$I_{50, 3047}$	$I_{50, 3046}$	$I_{50, 3045}$	$I_{50, 3044}$	. . .

Table S2. Acid content of the studied edible oils [1].

Oils	Acid content			
	PA (C16:0)	OA (C18:1)	LA (C18:2)	ALA (C18:3)
Corn	8.6-16.5 %	20-42.2%	34.0-65.6 %	< 2 %
Soy	8-13.5 %	17-30 %	48-59 %	4.5-11 %
HO Sunflower	2.6-5 %	75-90.7 %	2.1-17 %	< 0.3 %
EVOO	7.5-20 %	55-83 %	3.5-21 %	< 1.5 %
Olive-Pomace	7.5-20 %	55-83 %	3.5-21 %	< 1.5 %

References

1. FAO. Codex standard for fats and oils from vegetable sources. (1999).