Supplementary Information for:

Hydrophobic and water resistant fish leather: a fully sustainable combination of discarded biomass and by-products of the food industry

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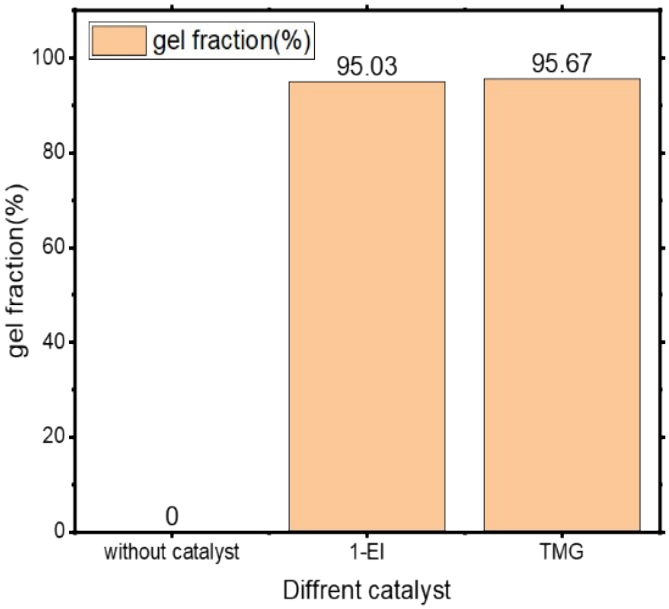

Figure S1. Gel fraction of PESO cured with the addition of 2% of catalyst. Two catalysts were tested: N,N-1,1,3,3-tetramethylguanidine (TMG) and 1-Ethylimidazole (1-EL). The curing was performed at 80 °C for 48 hours. As can be seen a gel fraction higher than 95% was achieved for both catalysts, showing how the curing time could be reduced.

Morphological analysis

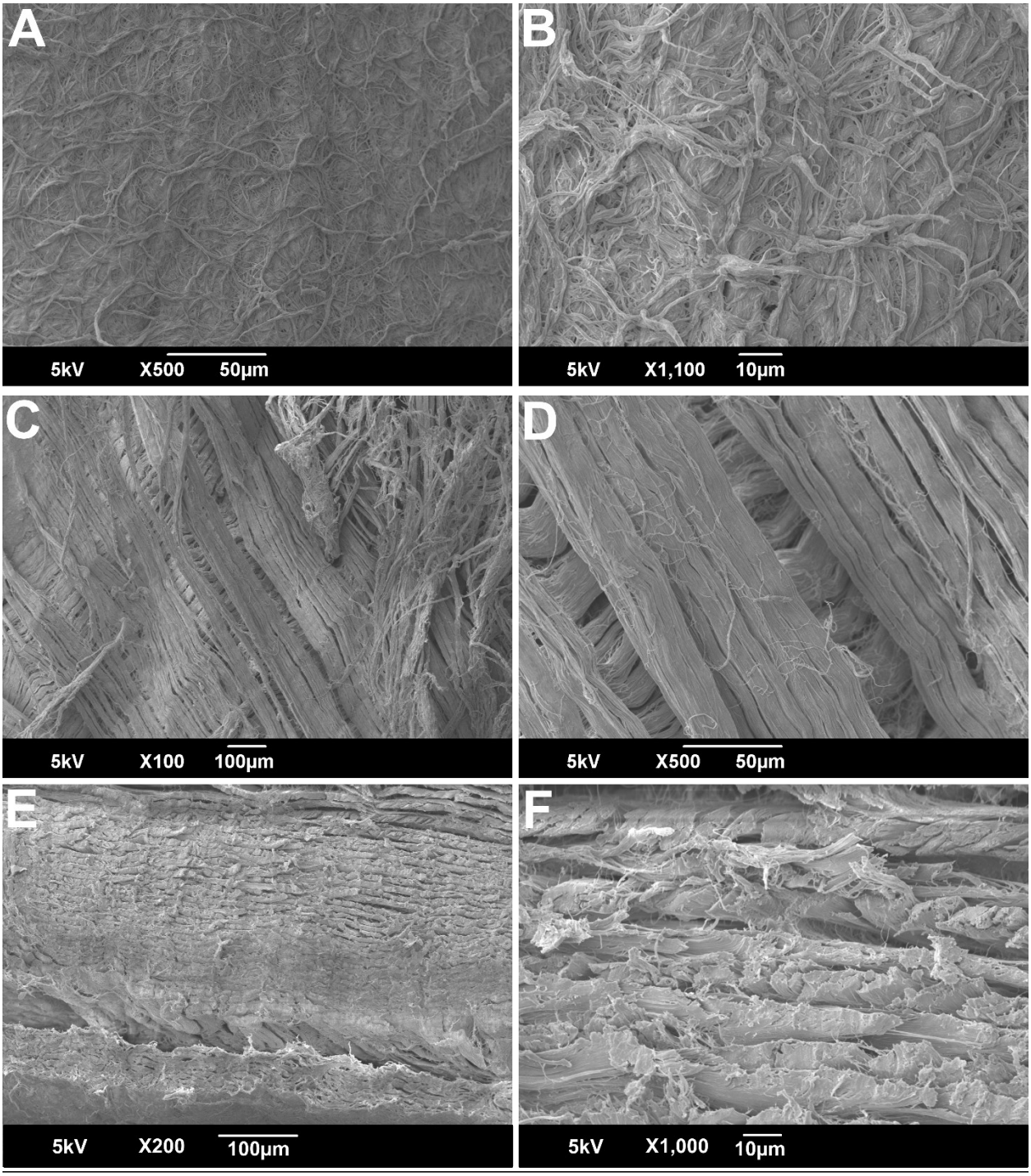

Figura S2. (A-B) SEM images of the top view of the front part of the FL sample. (C-D) SEM images of the top view of the back part of the FL sample. (E-F) SEM images of the cross section of the FL sample.

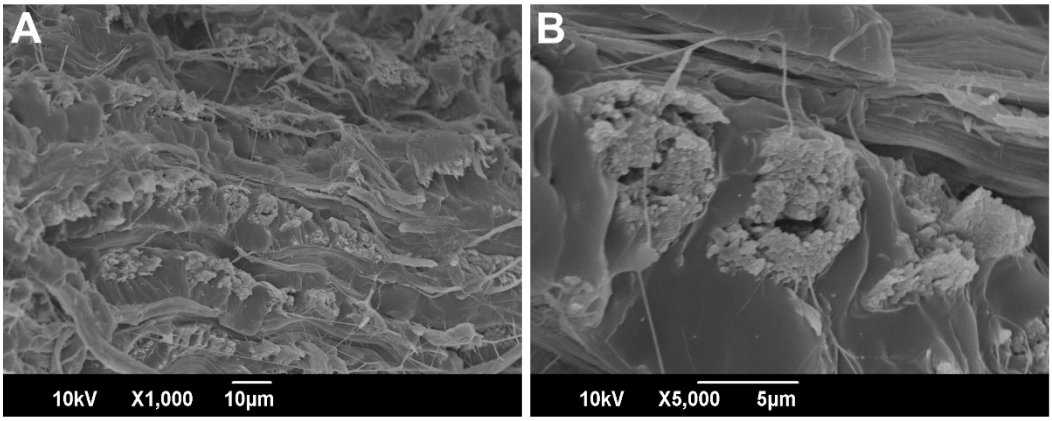

Figure S3. (A) SEM image of the cross section of 50 %wt PESO coated FL with X1000 magnification. (B) SEM image of the cross section of 50 %wt PESO coated FL with X5000 magnification.

Dynamic contact angle

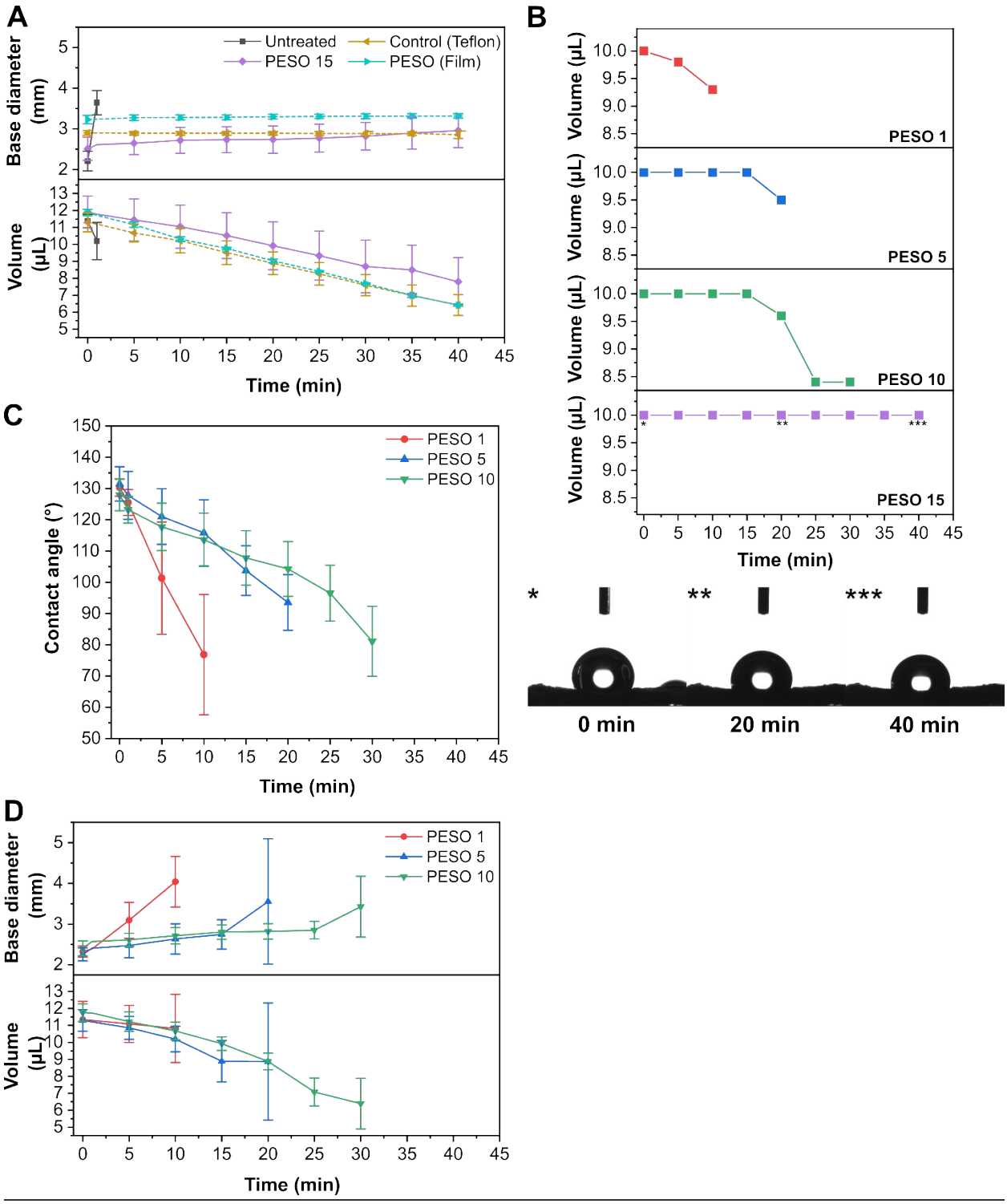

Figure S4. (A) Base diameter (mm) and volume (µL) of the water droplets on untreated FL, PESO 15, free standing film sample (Film) and control on Teflon. (B) Volume (µL) of water absorbed by (from the top)

PESO 1, PESO 5, PESO 10 and PESO 15, with the pictures of the droplet on PESO 15 at 0, 20 and 40 minutes. (C) Contact angle (°) vs time (min) of PESO 1, PESO 5, and PESO 10. (D) Base diameter (mm) and volume (μL) of the water droplets on PESO 1, PESO 5 and PESO 10.

Solvent resistance of the coating

Solvent	**Gel Fraction ± s.d. (%)**
Water	100.0 ± 0.1
Ethanol	100 ± 1
Acetone	98 ± 1
Ethyl acetate	96 ± 2

Table S1. Resistance of the coating material to common solvents. The coating material was immersed for 24 hours in each of the solvent and the gel fraction reported here is the mass retained after immersion, as reported in Section 2.4 of materials and methods.