

This Supporting Information contains representative macroscopic photographs of the as-produced PLA and PLA/biochar films, particle-size distribution curves of the biochars, photographs of the ground biochars, ATR-FTIR spectra of the as-produced films, supplementary SEM micrographs of PLA/2B700 films after thermophilic composting, and the sensitivity analysis of the DSC-derived degree of crystallinity.

Supplementary Information Legends

Supplementary Fig. S1. Structure of walnut shells after pyrolysis at 400 °C

Supplementary Fig. S2. Structure of walnut shells after pyrolysis at 700 °C

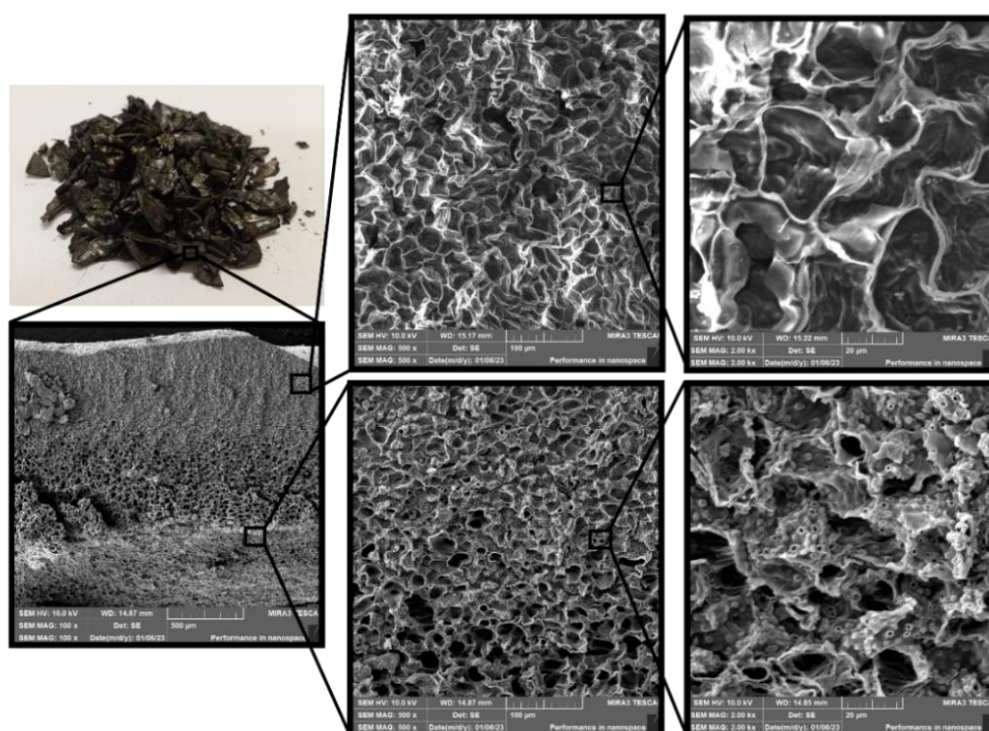
Supplementary Fig. S3. Particle-size distribution of ground walnut-shell biochar produced at 400 °C (B400).

Supplementary Fig. S4. Particle-size distribution of ground walnut-shell biochar produced at 700 °C (B700)

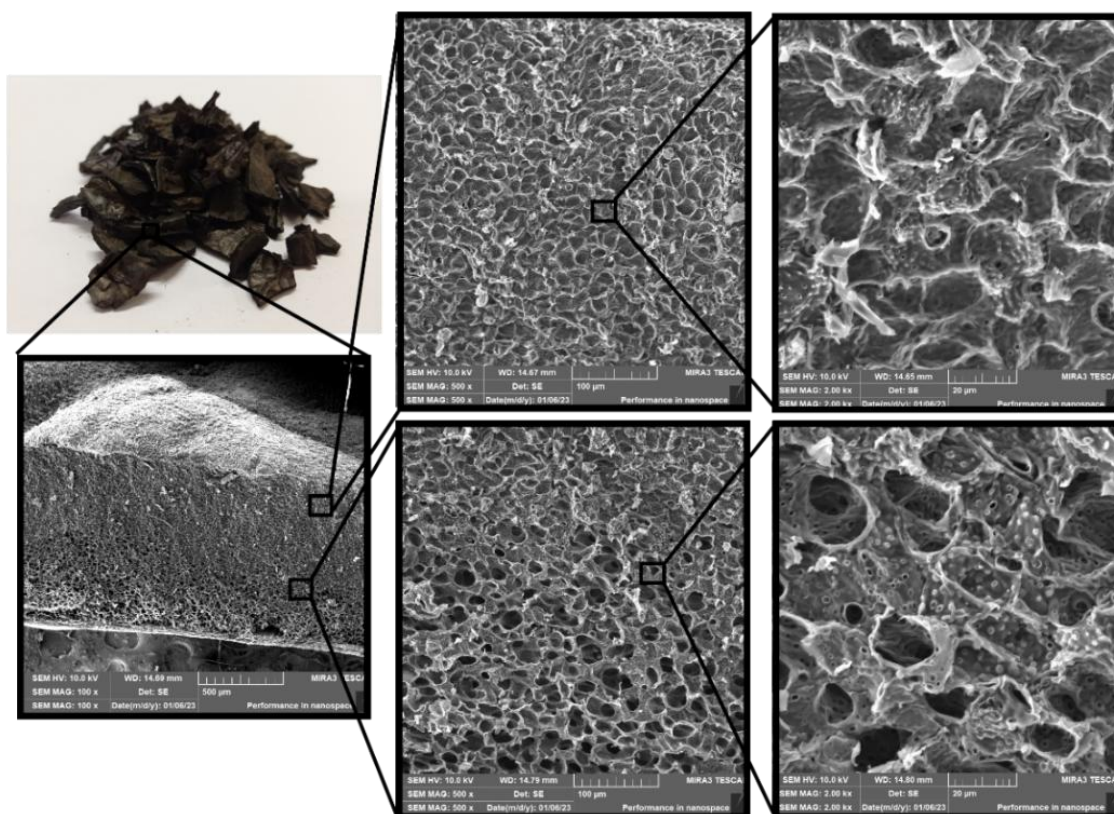
Supplementary Fig. S5 FT-IR spectra of PLA films before and after thermophilic composting exposure

Supplementary Fig. S6 SEM micrographs of PLA films containing 2 wt.% biochar pyrolyzed at 700 °C: a) as-produced, b) after 30 days of thermophilic composting, c) after 45 days of thermophilic composting

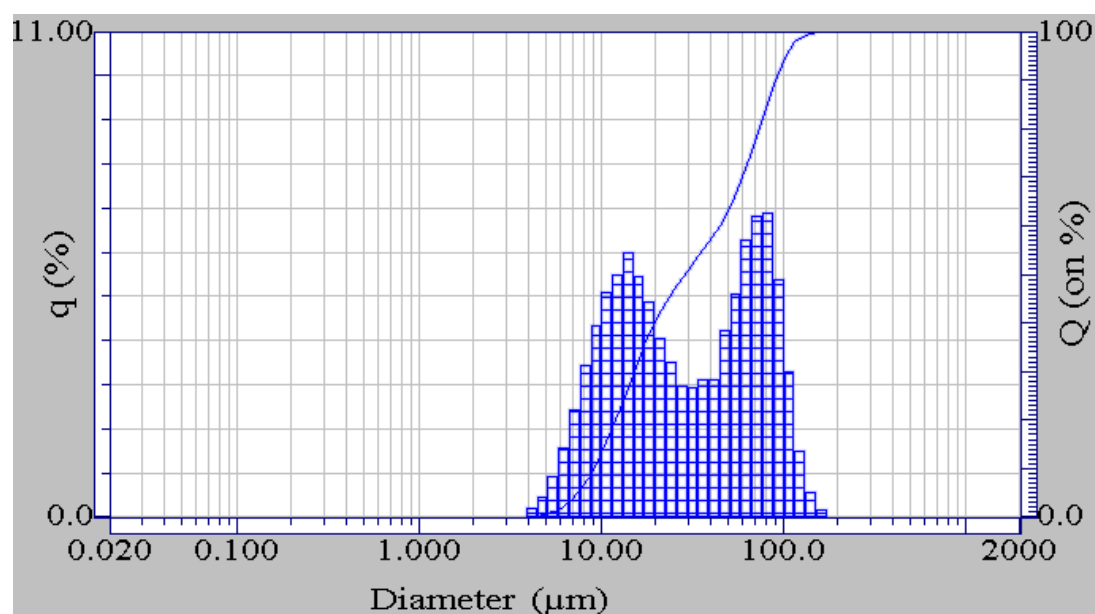
Supplementary Fig. S7. Representative macroscopic photographs of the as-produced neat PLA (A) and PLA/biochar films containing: (B) 2 wt.% of walnut-shell biochar produced at 400 °C, (C) (B) 10 wt.% of walnut-shell biochar produced at 400 °C, (D) 2 wt.% of walnut-shell biochar produced at 700 °C, (E) 10 wt.% of walnut-shell biochar produced at 700 °C.



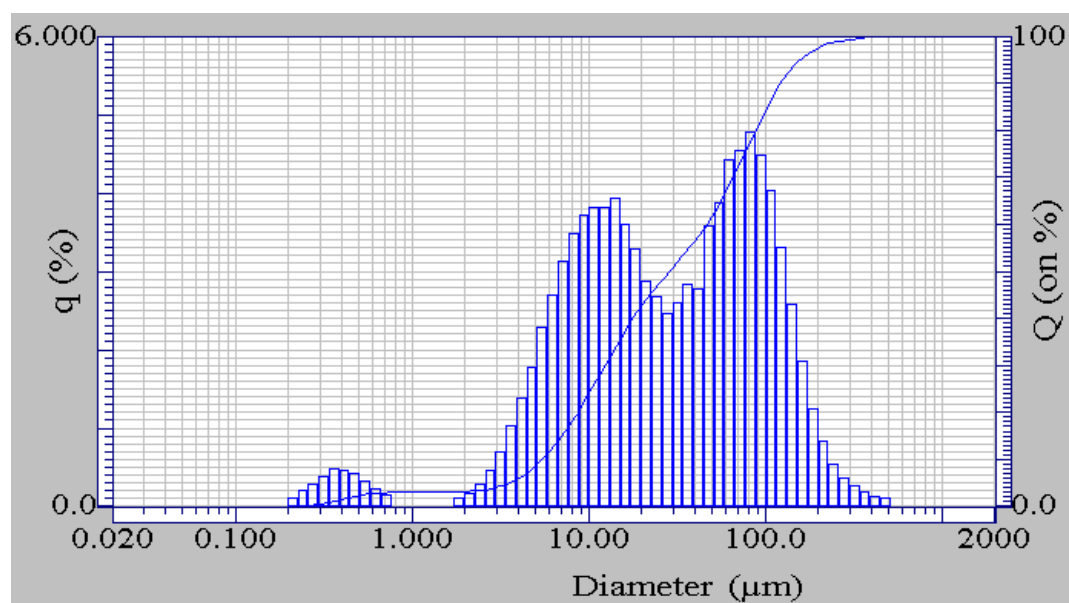
Supplementary Fig. S1. Structure of walnut shells after pyrolysis at 400 °C



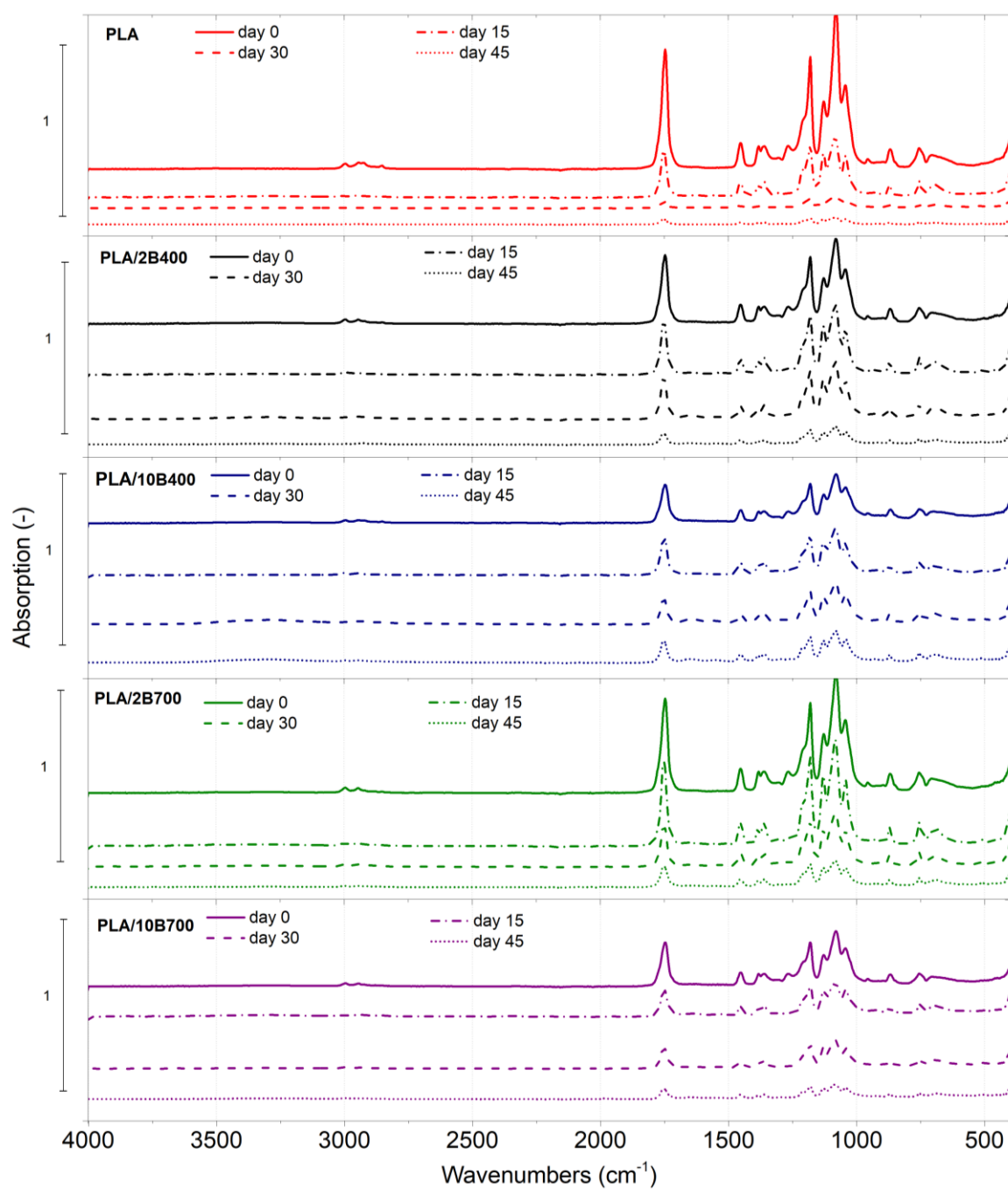
Supplementary Fig. S2. Structure of walnut shells after pyrolysis at 700 °C



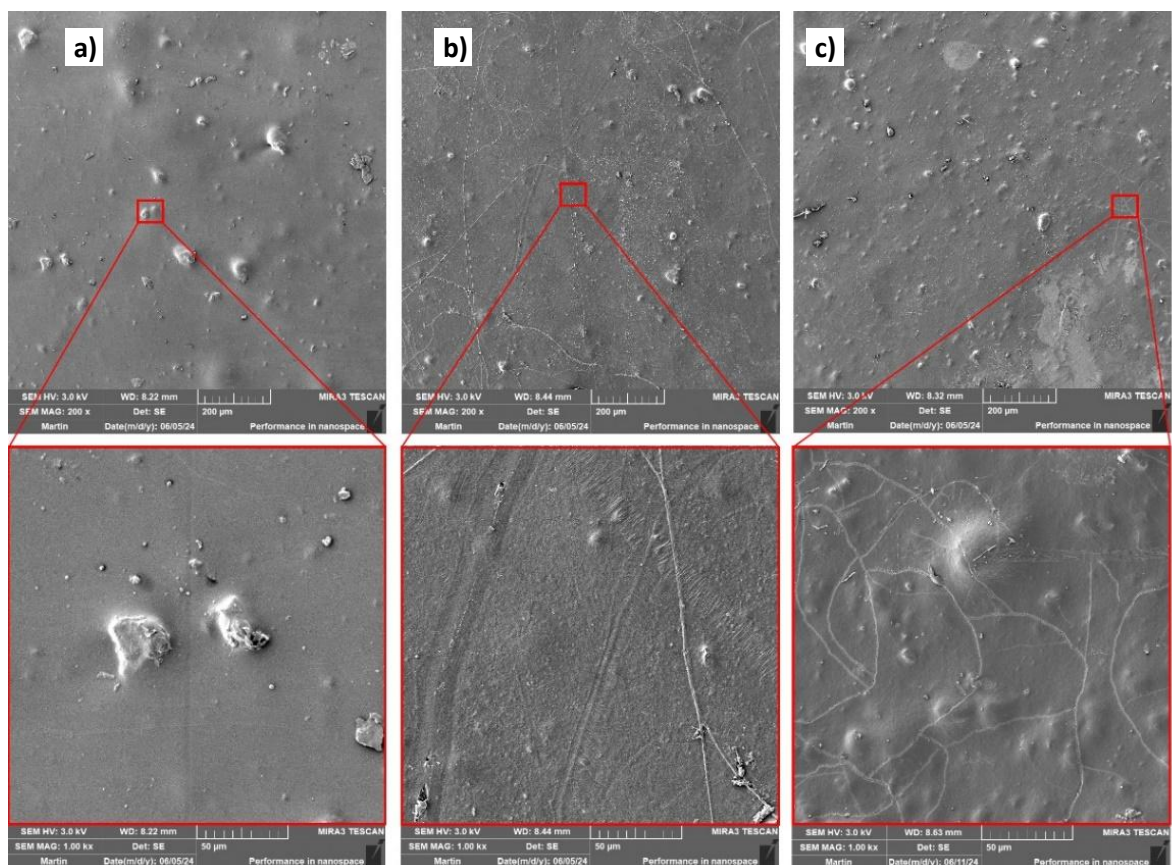
Supplementary Fig. S3. Particle-size distribution of ground walnut-shell biochar produced at 400 °C (B400).



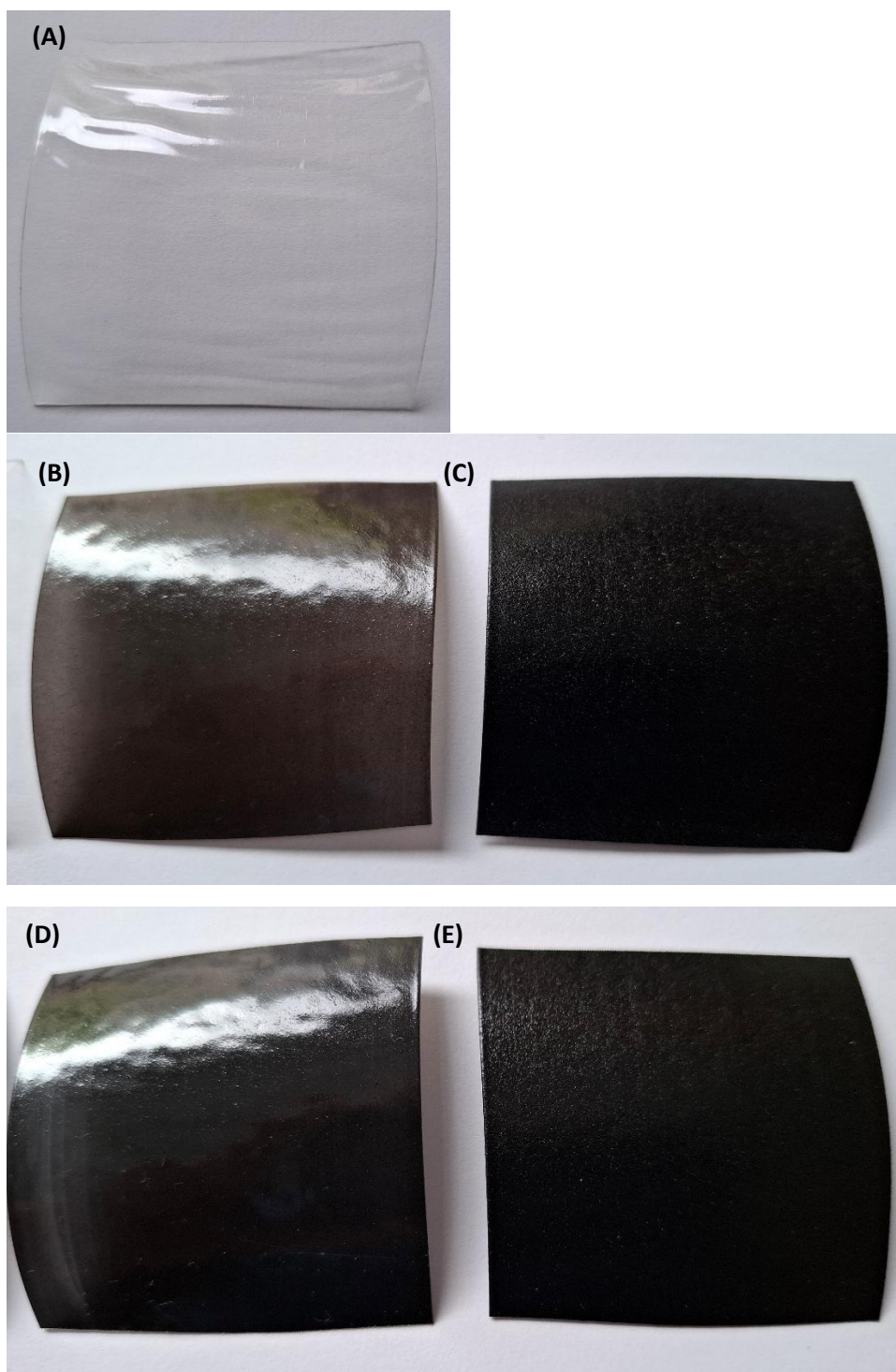
Supplementary Fig. S4. Particle-size distribution of ground walnut-shell biochar produced at 700 °C (B700)



Supplementary Fig. S5 FT-IR spectra of PLA films before and after thermophilic composting exposure



Supplementary Fig. S6 SEM micrographs of PLA films containing 2 wt.% biochar pyrolyzed at 700 °C: a) as-produced, b) after 30 days of thermophilic composting, c) after 45 days of thermophilic composting



Supplementary Fig. S7. Representative macroscopic photographs of the as-produced neat PLA (A) and PLA/biochar films containing: (B) 2 wt.% of walnut-shell biochar produced at 400 °C, (C) 10 wt.% of walnut-shell biochar produced at 400 °C, (D) 2 wt.% of walnut-shell biochar produced at 700 °C, (E) 10 wt.% of walnut-shell biochar produced at 700 °C.