

*Supplementary Materials for:*

# **Lactide and Ethylene Brassylate-Based Thermoplastic Elastomers and Their Nanocomposites with Carbon Nanotubes: Synthesis, Mechanical Properties and Interaction with Astrocytes**

**Carlos Bello-Álvarez <sup>1</sup>, Agustin Etxeberria <sup>2</sup>, Yurena Polo <sup>3</sup>, Jose-Ramon Sarasua <sup>1</sup>, Ester Zuza <sup>1,\*</sup> and Aitor Larrañaga <sup>1,\*</sup>**

<sup>1</sup> Department of Mining-Metallurgy Engineering and Materials Science, POLYMAT, Faculty of Engineering in Bilbao, University of the Basque Country (UPV/EHU), Plaza Ingeniero Torres Quevedo 1, 48013 Bilbao, Spain

<sup>2</sup> Advanced Polymers and Materials: Physics, Chemistry and Technology Department, POLYMAT, University of the Basque Country (UPV/EHU), 20018 Donostia-San Sebastián, Spain

<sup>3</sup> Polimerbio SL, 20014 Donostia-San Sebastian, Spain

\* Correspondence: ester.zuza@ehu.eus (E.Z.); aitor.larranagae@ehu.eus (A.L.); Tel.: +34-946013925 (E.Z.); +34-946013935 (A.L.)

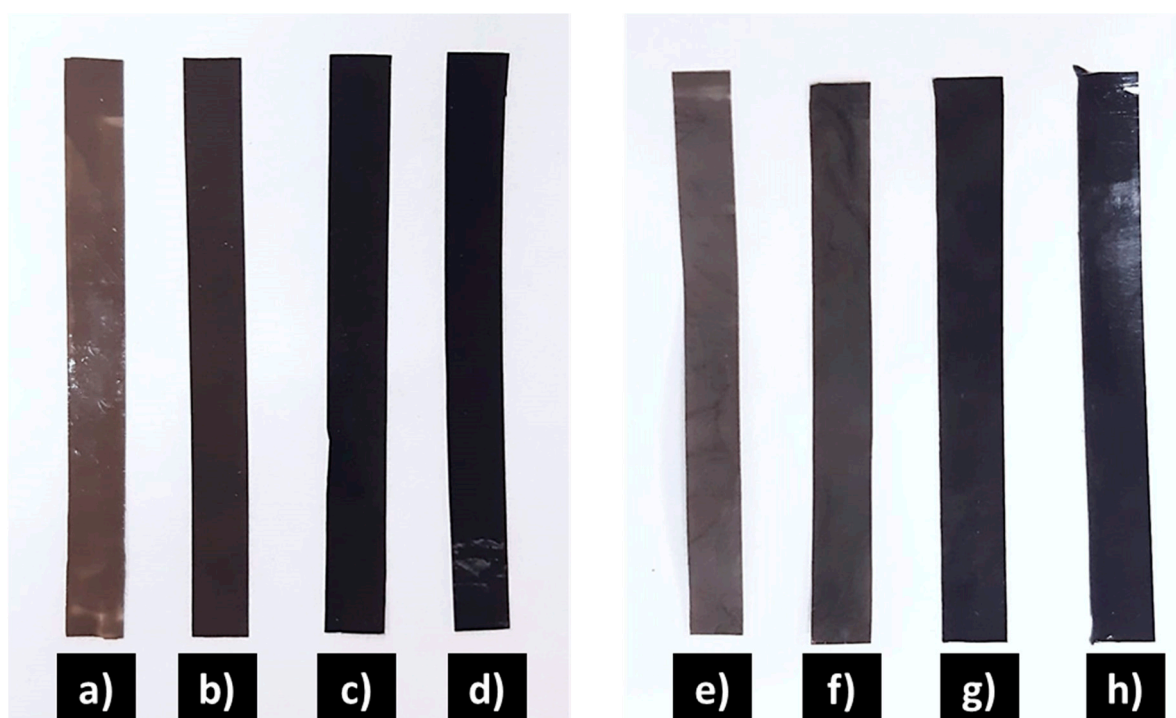


Figure S1. DL:EB samples for tensile testing with different amounts of CNT: a) 0%CNT; b) 0.1%CNT; c) 0.5%CNT and d) 1%CNT.

L:EB samples for tensile testing with different amounts of CNT: e) 0%CNT; f) 0.1%CNT; g) 0.5%CNT and h) 1%CNT.

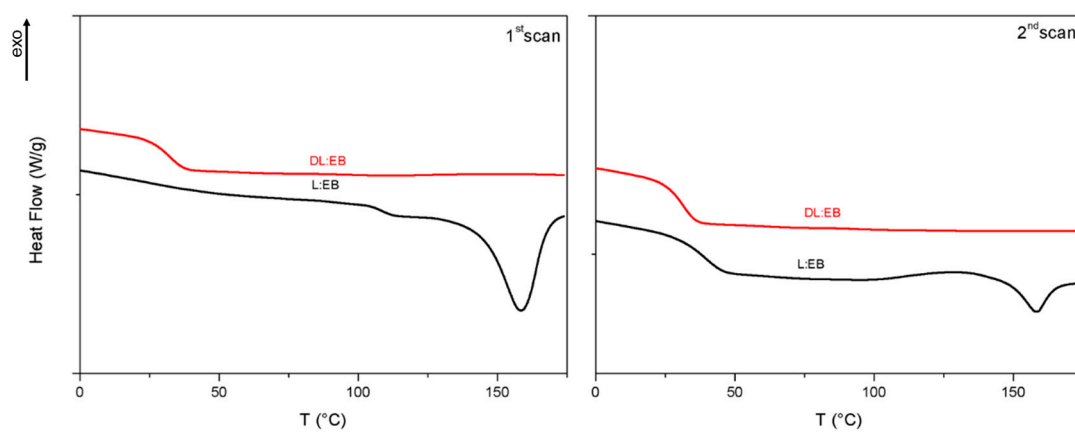


Figure S2. DSC thermograms of the synthesized copolymers.

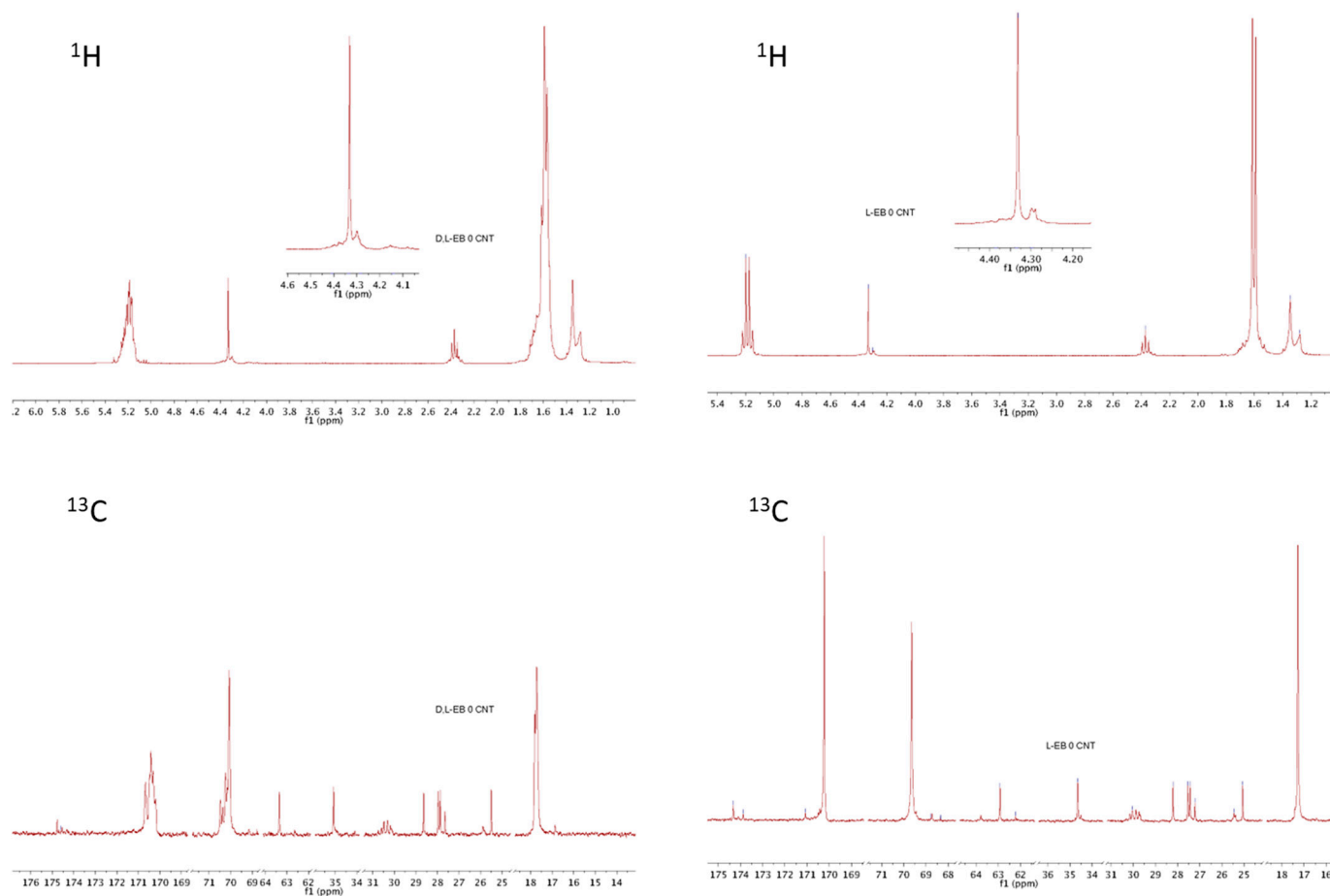


Figure S3.  $^1\text{H}$  and  $^{13}\text{C}$  NMR of synthetic (co)polymers.

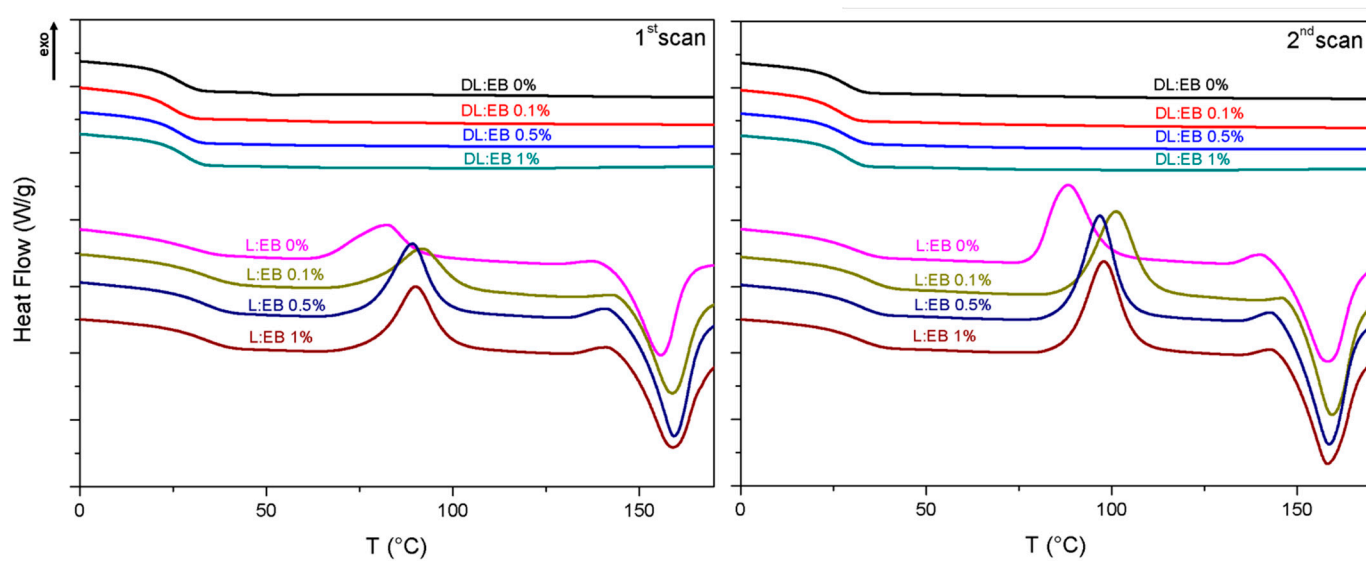
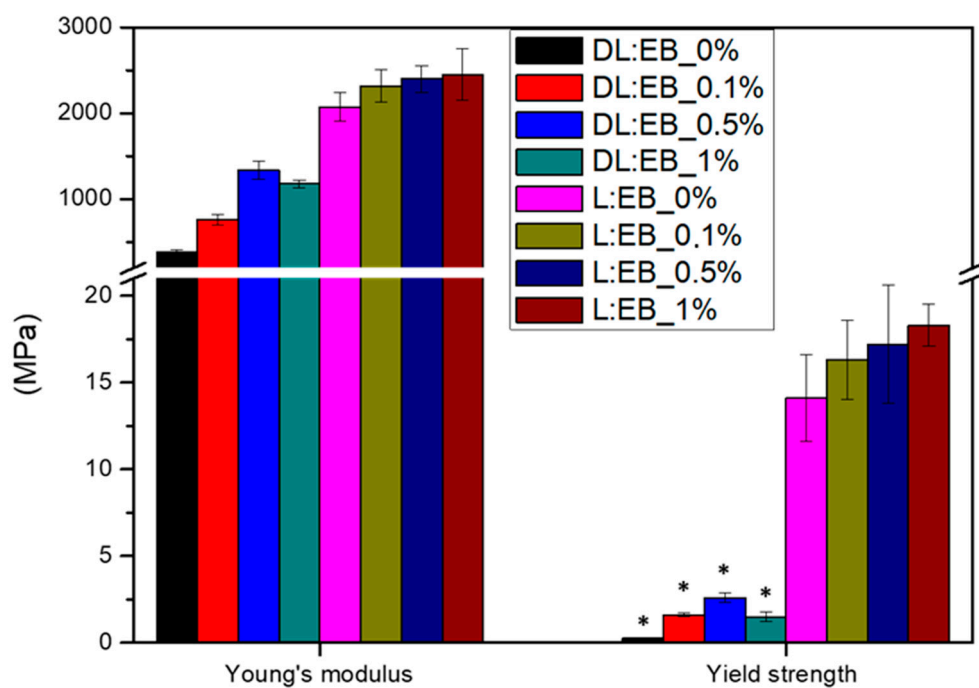


Figure S4. DSC thermograms of the final films.



\* Offset Yield strength was calculated at a 10% of strain using the secant modulus at 2% as elastic modulus (E)

Figure S5. Young's modulus (MPa) and Yield strength (MPa) of DL:EB and L:EB copolymers with different % of CNTs at ambient temperature ( $T_a$ ).

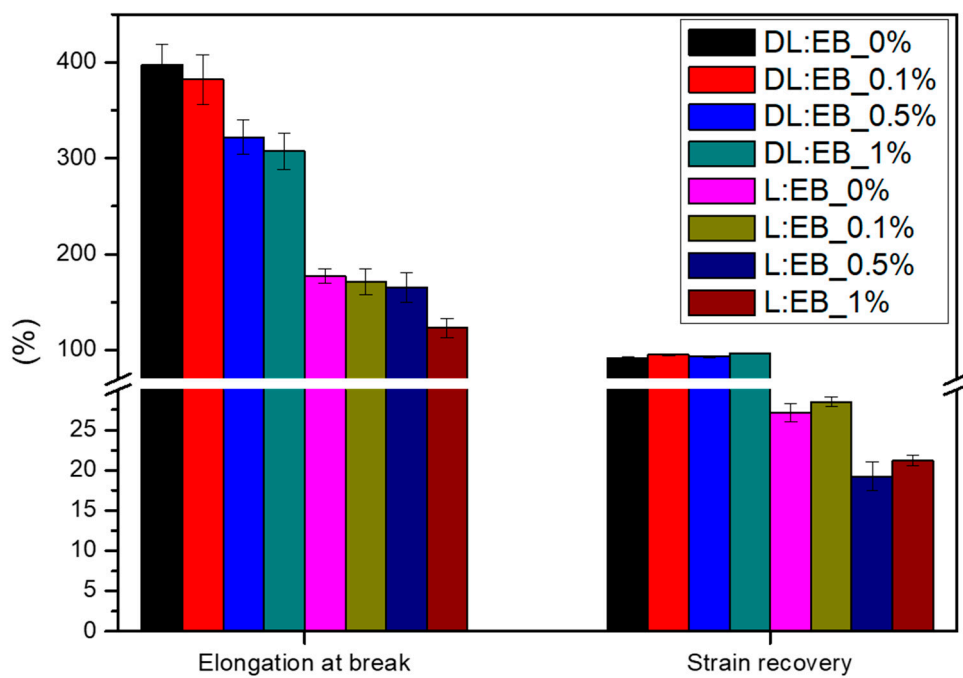


Figure S6. Elongation at break (%) and Strain recovery (%) of DL:EB and L:EB copolymers with different % of CNTs at ambient temperature ( $T_a$ ).

Table S1. Crystallinity of L:EB films after 48 h at 37 °C submerged in culture media.

L:EB				
%CNTs	0%	0.1%	0.5%	1%
$\chi$ (%) 0 h	14.4	11.7	13.5	11.7
$\chi$ (%) 48 h at 37°C	30.4	31.1	31.3	31.7



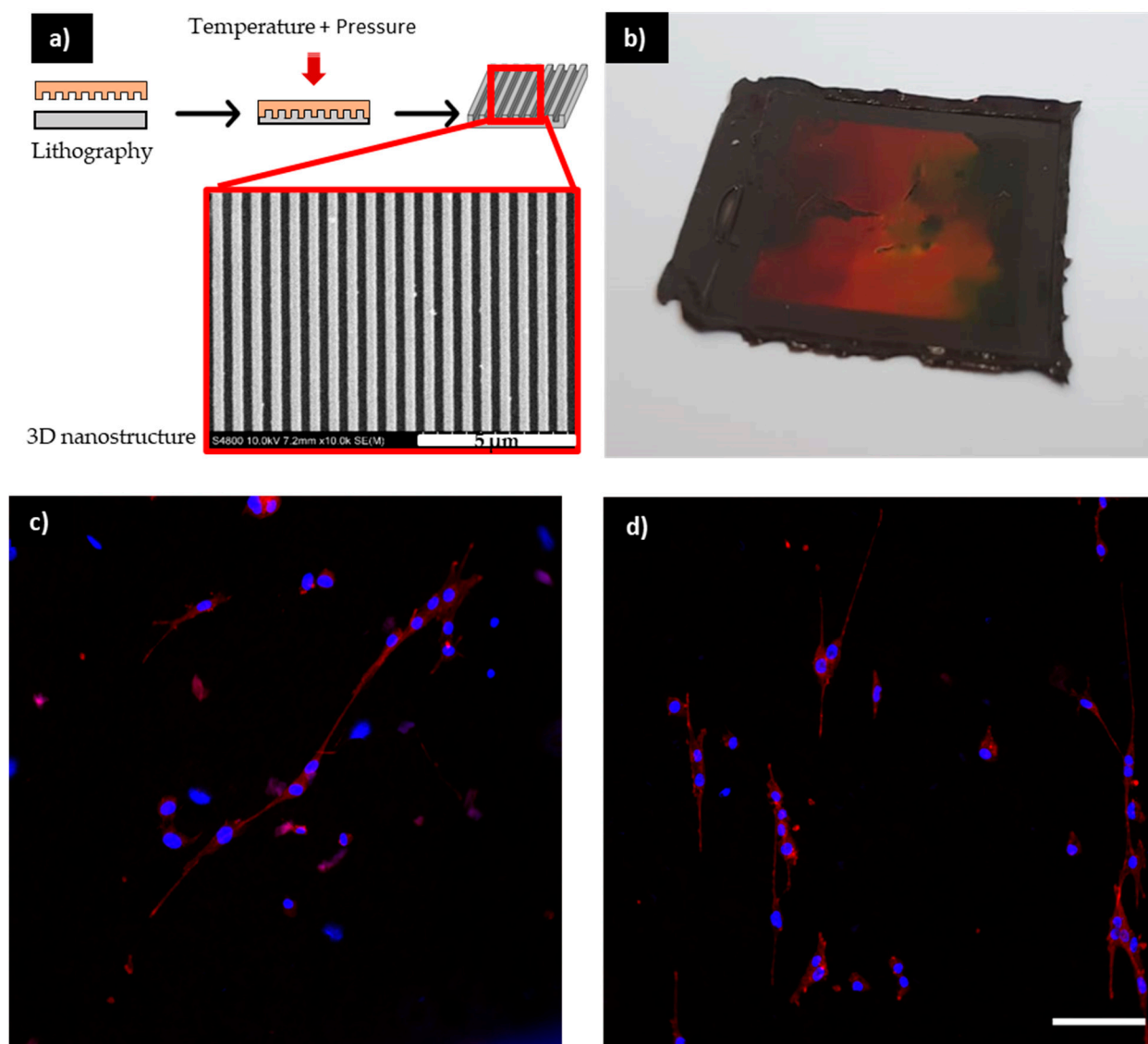


Figure S7. a) Schematic representation of the fabrication of the nanostructured film, b) SEM micrograph of the nanostructured film, c) C8-D1A seeded on nanostructured L:EB 0.5% CNTs film and d) C8-D1A seeded on nanostructured DL:EB 0.5% CNTs film. Scale bar 100 μm.