

Supplementary Materials

# New Functional Bionanocomposites by Combining Hybrid Host-Guest Systems with a Fully Biobased Poly(lactic Acid)/Poly(butylene Succinate-Co-Adipate) (PLA/PBSA) Binary Blend

Francesca Cicogna <sup>1,\*</sup>, Elisa Passaglia <sup>1</sup>, Alice Telleschi <sup>1</sup>, Werner Oberhauser <sup>2</sup>, Maria-Beatrice Coltelli <sup>3</sup>, Luca Panariello <sup>3</sup>, Vito Gigante <sup>3</sup> and Serena Coiai <sup>1,\*</sup>

<sup>1</sup> National Research Council-Institute for the Chemistry of OrganoMetallic Compounds (CNR-ICCOM), SS Pisa, Via Moruzzi 1, 56124 Pisa, Italy; elisa.passaglia@pi.iccom.cnr.it (E.P.); alitelleschi@gmail.com (A.T.)

<sup>2</sup> National Research Council-Institute for the Chemistry of OrganoMetallic Compounds (CNR-ICCOM), Via Madonna del Piano 10, 50019 Sesto Fiorentino, Italy; woberhauser@iccom.cnr.it (W.O.)

<sup>3</sup> Department of Civil and Industrial Engineering, University of Pisa, Largo L. Lazzarino 1, 56122 Pisa, Italy; maria.beatrice.coltelli@unipi.it (M.-B.C.); luca.panariello@ing.unipi.it (L.P.); vito.gigante@di.unipi.it (V.G.)

\* Correspondence: francesca.cicogna@pi.iccom.cnr.it (F.C.); serena.coiai@pi.iccom.cnr.it (S.C.); Tel.: +39-050-3153393 (F.C.); +39-050-3152556 (S.C.)

**Citation:** Cicogna, F.; Passaglia, E.; Telleschi, A.; Oberhauser, W.; Coltelli, M.-B.; Panariello, L.; Gigante, V.; Coiai, S. New Functional Bionanocomposites by Combining Hybrid Host-Guest Systems with a Fully Biobased Poly(lactic acid)/Poly(butylene succinate-co-adipate) (PLA/PBSA) Binary Blend. *J. Funct. Biomater.* **2023**, *14*, 549. <https://doi.org/10.3390/jfb14110549>

Academic Editor: Piotr Kurcok

Received: 29 September 2023

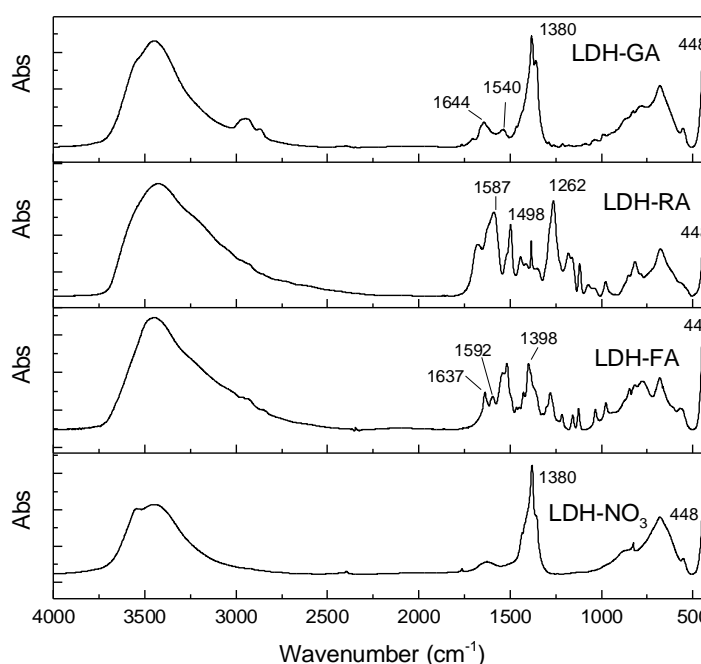
Revised: 25 October 2023

Accepted: 7 November 2023

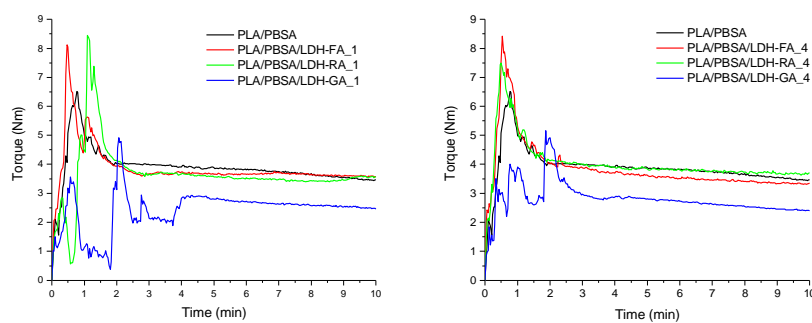
Published: 15 November 2023



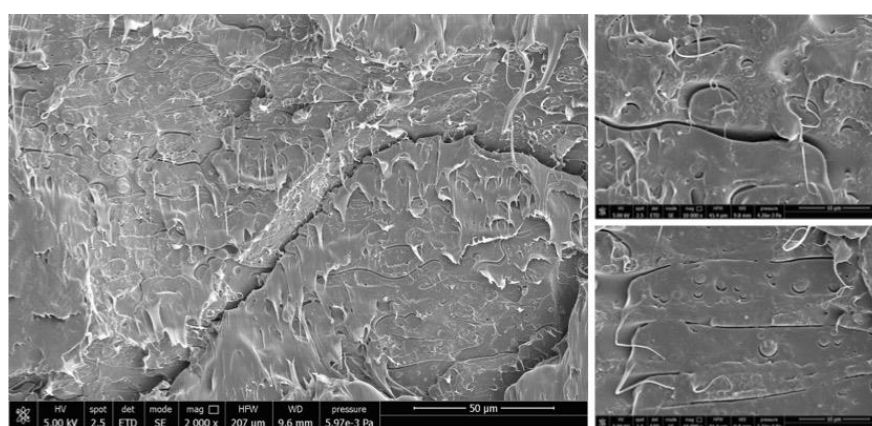
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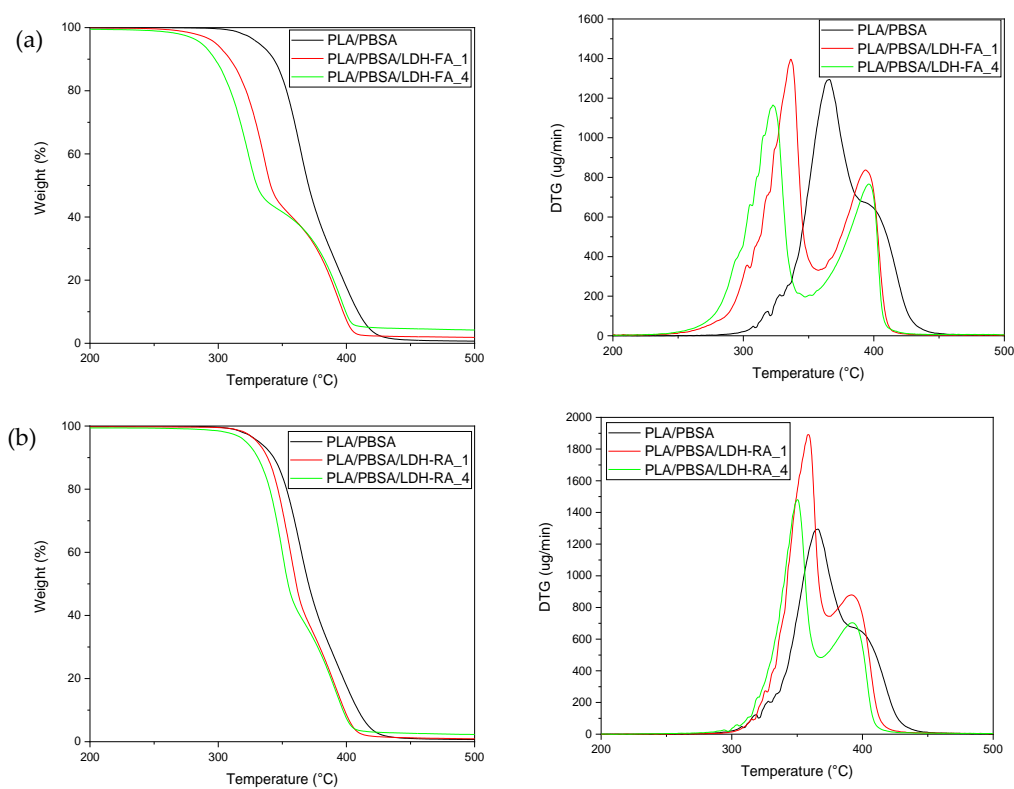
**Figure S1.** FT-IR spectra of LDH-NO<sub>3</sub>, LDH-FA, LDH-RA, and LDH-GA.

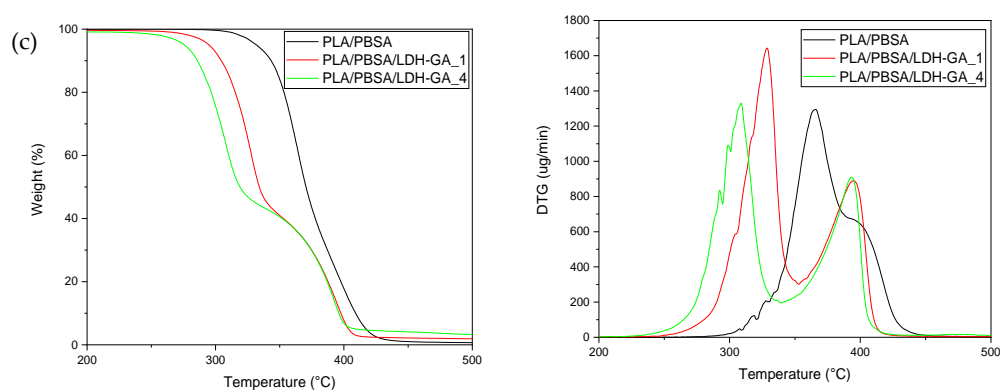


**Figure S2.** Torque curves versus time recorded during batch mixing for the preparation of PLA/PBSA blend and composites.

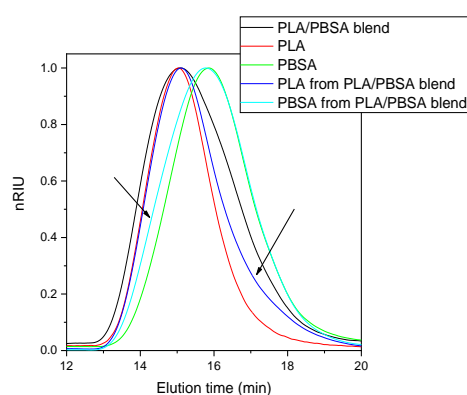


**Figure S3.** SEM micrograph of PLA/PBSA blend.

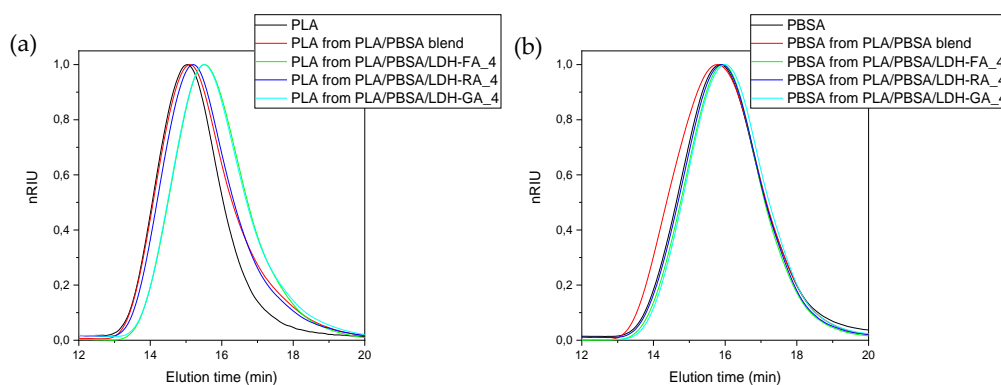




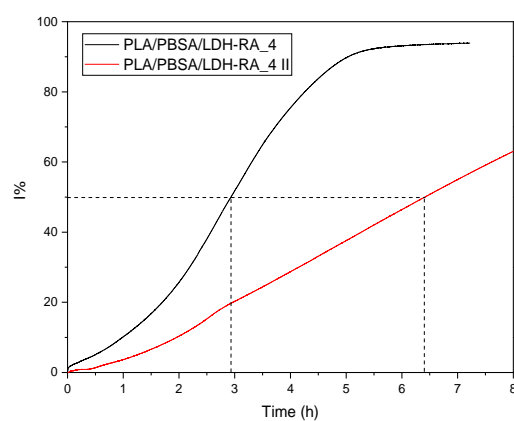
**Figure S4.** TGA and fist derivative (DTG) of PLA/PBSA and composites with 1 wt.% and 4 wt.% (a) LDH-FA, (b) LDH-RA, and (c) LDH-GA.



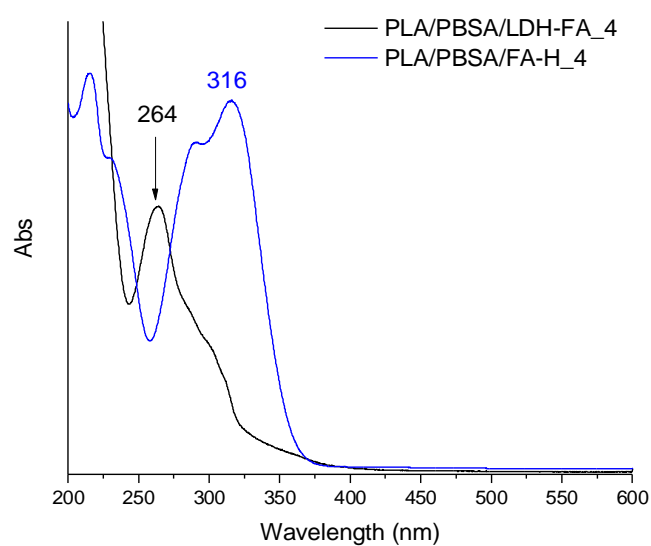
**Figure S5.** Comparison between the elution curves of PLA/PBSA, pure PLA, pure PBSA, and PLA and PBSA separated from PLA/PBSA blend. Curves are normalized.



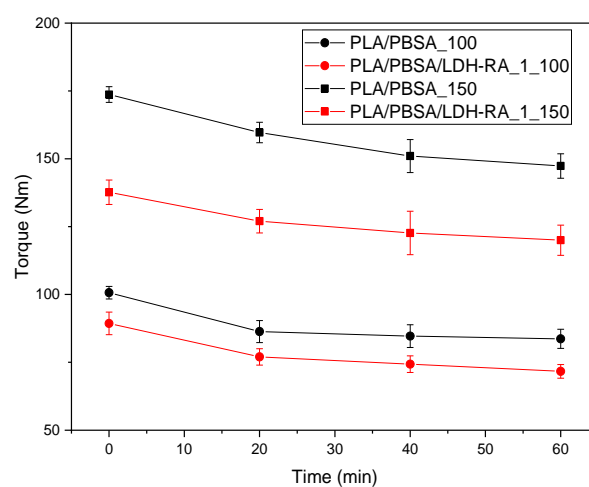
**Figure S6.** Comparison between the elution curves of (a) pure PLA and PLA separated from PLA/PBSA blend and from composites containing 4 wt.% of modified LDH. (b) pure PBSA and PBSA separated from PLA/PBSA blend and from composites containing 4wt.% of modified LDH. Curves are normalized.



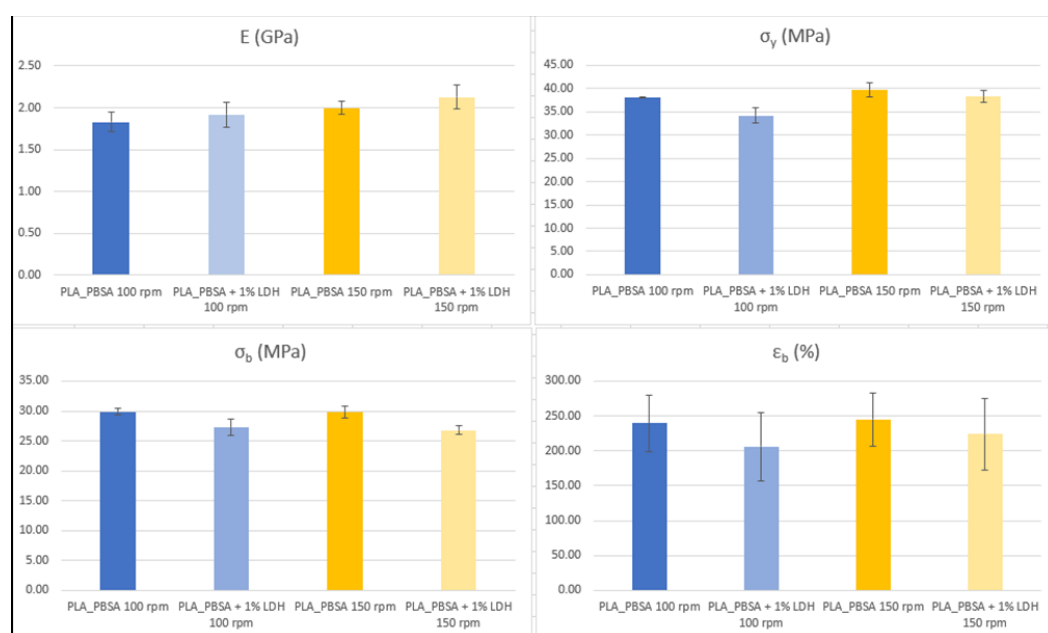
**Figure S7.** I% as a function of contact time of PLA/PBSA/LDH-RA\_4 with DPPH.



**Figure S8.** Comparison of UV-vis spectra between the extracting solution EtOH/H<sub>2</sub>O (50/50 v/v) in contact with films of PLA/PBSA/FA-H\_4 and PLA/PBSA/LDH-FA\_4.



**Figure S9.** Torque behavior as a function of time for the preparation of PLA/PBSA blend and composites containing 1 wt.% of LDH-RA.



**Figure S10.** Mechanical tests results.

**Table S1.** ANOVA statistical results.

Source	Degrees of Freedom (DF)	Sum of Squares (SS)	Mean Square (MS)	F-Stat	P-Value
Elastic Modulus	3	0.0868	0.0289	1.5255	0.2809
Yield Strength	3	48.3671	16.1224	9.5028	0.0052
Stress at break	3	23.1212	7.7071	12.6502	0.0021
Elongation at break	3	2594.352	864.7839	0.3418	0.7961