**Response for the Reviewer #1.**

Dear Reviewer,

We appreciate Your valuable comments and efforts towards improving our manuscript. In response to your suggestions, we carefully revised our manuscript. Please find below a detailed response to all comments (reviewer comments in black, our replies in blue). We hope that You will find the revision adequately addressing the proposed suggestions.

Q: For example, the author does not clearly describe or elaborate on the specific methodology employed for the incorporation of Glycero-(9,10-trioxolane)-trioleate (OTOA) into polylactic acid/polycaprolactone (PLA/PCL) blend films. In addition, clarification on the blending process and any potential challenges encountered would enhance the reproducibility and reliability of the study.

All film materials used in this work were prepared by solvent evaporation from the corresponding chloroform solutions. Chloroform was used since all the film components (PLA, PCL, OTOA) have good solubility in it. For the reference film, PLA/PCL blend (80/20 w/w%, 1 g total) was dissolved in 50 ml of chloroform. For the PLA/PCL+OTOA films, the corresponding amounts of OTOA (1, 3, 5, 10, 20, 30, 40 wt %) were added to the PLA/PCL 80/20 w/w% blend, so that the total amount of solutes was 1 g, which was followed by dissolution in 50 ml of chloroform. Obtained solutions were continuously stirred for 12 hours, poured into the Petri dishes (10 cm diameter) and dried to constant weight at room temperature. All films were obtained in the same ambient conditions (T = 22 oC) in order to ensure the equal rate of chloroform evaporation. Films of pure PLA and PCL were obtained in the same manner as described above.

Similar procedure was used the previously published paper (Polymer Journal (2020) 52:755–763 https://doi.org/10.1038/s41428-020-0343-8) and in our previous work (Polymers 2022, 14, 3478. <https://doi.org/10.3390/polym14173478>) for incorporation of OTOA in PLA films. Since the process of film formation is determined by chloroform evaporation, it is important to obtain the films under the same temperature conditions.

Q: According to DSC and XRD data, the crystallinity degree of PLA/PCL+OTOA films tended to decrease with an increase in OTOA content, which its plasticizing effect could explain. Please add the quantitative data of the statement in the abstract.

We have modified the abstract in line with the reviewer’s comments.

Q:  Las three lines of the abstract should be removed because they are not the main results of the work.

We agree with the reviewer and deleted the corresponding lines from the abstract.

Q:  The keywords are so many that they should reduced.

We reduced and corrected the keywords section.

Q: Can the author provide additional details on how low molecular weight OTOA functions as a plasticizer in PLA film materials? A more in-depth explanation would aid in understanding the specific mechanisms involved.

In general, plasticizer occupies the intermolecular space between polymer chains, reducing the energy of molecular motion and the formation of hydrogen bonds between polymer chains, which in turn increases the free volume and molecular mobility of polymer chains. As the content of the OTOA in the PLA/PCL increases, the efficiency of the plasticizer in decreasing the Tg of PLA generally increases.

At the same time, a decrease in the melting enthalpy of PLA films observed upon OTOA addition evidence that along with the plasticizing effect, OTOA could impede PLA crystallization. Previously it was shown that OTOA could hinder cold crystallization for the electrospun PLA fibers during the second heating cycle (Polymers, 2021, 13, 2517). This effect could be attributed to the intermolecular interaction between the PLA terminal -OH groups and OTOA molecules observed by FTIR, leading to the decrease in the mobility of PLA polymer chains. This provides the physical hindrance for PLA crystallization and leads to the decrease in the crystallinity of PLA films after increase in OTOA content.

Q:  In Figure 5, enhancing the resolution or quality of the figure will improve clarity, facilitate a more detailed examination of the deconvoluted peaks, and contribute to a better interpretation of the data. It is hard to read the data that is put in the figure. I think the increased font size will improve the clarity.

Figure 5 was corrected in accordance with the reviewer’s suggestions. The font size of the caption in the figure was increased.

Q: in light of the observed decrease in film crystallinity with increasing OTOA mass fraction, are there similar findings reported in other studies exploring the influence of additives on polymer crystallinity? Understanding how this compares with existing literature would provide valuable context.

There are large number of works which describe the influence of various additives on the crystallinity of the PLA and PLA/PCL films. It should be noted that the direct comparison of the results from different works is complicated, since thermal properties and the crystallinity of the materials depends on the preparation methods and/or the thermal history of the samples.

For example, the Ref 44 from the article (*IOP Conf. Series Mater. Sci. Eng.* **2018**, 369, 012031 DOI:10.1088/1757-899X/369/1/012031) gives interesting results related to the influence of PLA plasticization and reinforcement on the thermal properties and crystallinity of PLA, showing increase in PLA crystallinity upon plasticization. The detailed mechanism of the crystallinity increase is given. We assume that similar mechanism could explain the results obtained in the present paper.

“Good vapor permeability of the resulting materials is able to create a moist environment on the surface of the wound by reducing the loss of water vapor from open tissues, for example, in shallow wounds.” it would be more appropriate to relocate the discussion on the excellent vapor permeability of the resulting materials to the introduction section? This would provide readers with a more precise context and rationale for exploring the moisture-retaining properties of the materials in wound care applications. These questions aim to guide the author in considering the appropriateness of discussing the vapor permeability aspect in the introduction, aligning the manuscript more effectively with the broader context of wound care research.

We thank the reviewer for the proposed suggestion to expand the introduction section and we have added some words about it in the corresponding part of the introduction. It should be noted that some quantitative approaches should be developed in future in order to determine the optimal range of water vapor permeability for the materials suitable for the wound care applications.