

RESEARCH ARTICLE

Development and biological validation of a dexamethasone-loaded, polylactic acid-based 3D-printable composite filament for bone tissue engineering

Supplementary File

Table S1. Fourier-transform infrared spectroscopy peak assignment

Wavenumber (cm ⁻¹)	Functional group and excitation
3,000	Asymmetric CH stretching of CH ₃
2,950	Symmetric CH stretching of CH ₃
2,910	CH stretching vibration
2,850	Symmetric C–H stretching
1,750	Ester carbonyl (C=O) stretching
1,460	Asymmetric CH ₃ bending (deformation)
1,390	Symmetric CH ₃ bending (deformation)
1,360	CH bending/CH ₃ deformation
1,260	C–O stretching and C–O–C asymmetric stretching (ester group)
1,190	C–O–C asymmetric stretching
1,120	C–O stretching of ester group
1,090	C–O stretching
1,040	C–O stretching and CH deformation
960	Amorphous polylactic acid skeletal vibration
920	C–COO stretching/backbone vibration
870	CH ₃ rocking
760	Crystalline-phase related skeletal vibration
700	Backbone deformation vibration

Note: Based on Refs.¹⁻³

References

1. Socrates G. *Infrared and Raman Characteristic Group Frequencies: Tables and Charts*. 3rd ed. John Wiley & Sons; 2004.
2. Ruz-Cruz MA, Herrera-Franco PJ, Flores-Johnson EA, Moreno-Chulim MV, Galera-Manzano LM, Valadez-Gonzalez A. Thermal and mechanical properties of PLA-based multiscale cellulosic biocomposites. *J Mater Res Technol*. 2022;18:485-495.
doi: 10.1016/j.jmrt.2022.02.072
3. Grigora ME, Terzopoulou Z, Tsongas K, et al. Influence of reactive chain extension on the properties of 3D printed poly(lactic acid) constructs. *Polymers (Basel)*. 2021;13(9):1381.
doi: 10.3390/polym13091381