

## SUPPORTING INFORMATION

# Biodegradable copolyesters based on a “soft” isohexide building block with tunable viscoelasticity and self-adhesiveness

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### Contents:

**Figure S1.** Plots of the transesterification rate vs. reaction time at different reaction temperatures.

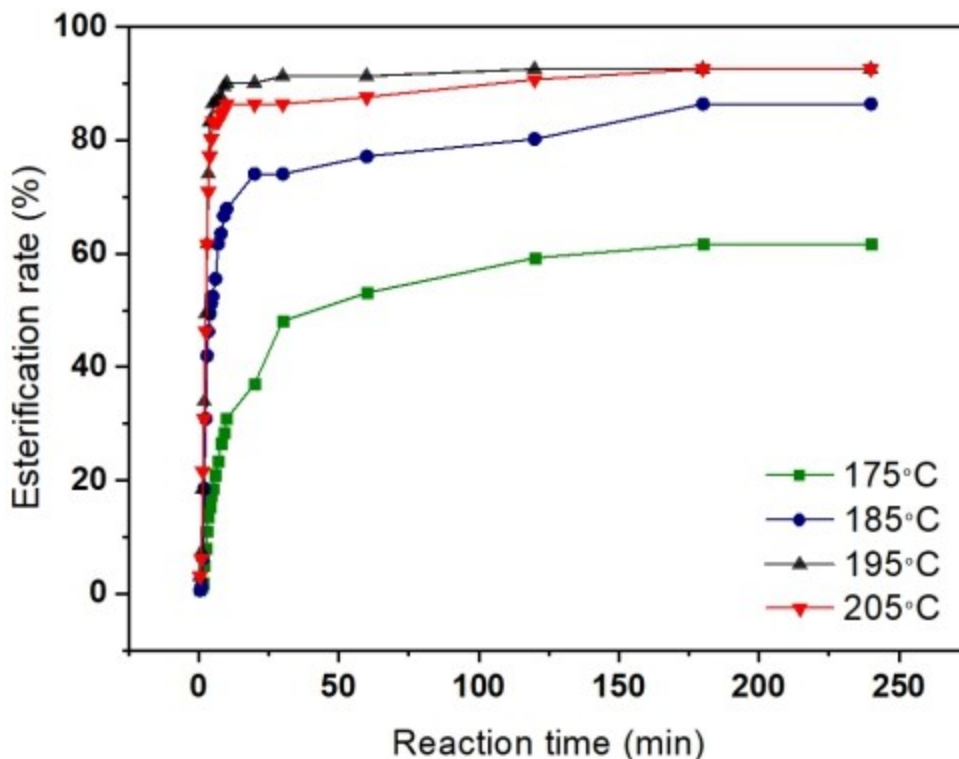
**Figure S2.** Size exclusion chromatography (SEC) reports of PBIA copolyesters.

**Figure S3.** The second heating (a) and the first cooling (b) DSC curves of PBIA copolyesters measured from -60~160 °C at heating/cooling rates of 10 °C·min<sup>-1</sup>.

**Figure S4.** <sup>1</sup>H NMR spectra of the degradation product of PBIA-10 copolyester.

**Figure S5.** Crystallinity curve of PBIA-10 copolyester under different degradation conditions.

**Figure S6.** Curve of the molar content of IIDMC in PBIA-10 varied with the incubation time in pH 7.2 and pH 2.4 buffer solutions.



**Figure S1.** Plots of the transesterification rate vs. reaction time at different reaction temperatures.

Reaction conditions: molar ratio of the reactants in feed: DMA:1,4-BDO=1:1.1, titanium (IV) butoxide (0.5% molar relative to DMA) was used as the catalyst, Irganox1010 (0.1 wt% total reactant mass) was used as the heat stabilizers.

Esterification rates in this figure were obtained as follow: during transesterification, the condensate liquid was separated through a Vigreux column equipped on the flask and collected in a receiving flask. By weighing the volume of the condensate, the weight and thus the molar amount of the generated methanol can be calculated. The transesterification rate ( $X$ ) was then calculated based on below equation.

$$X = \frac{n_{\text{methanol},t}}{n_{\text{methanol},T}}$$

Where  $n_{\text{methanol},t}$  is the molar mass of methanol between the start of the test and time  $t$ , and  $n_{\text{methanol},T}$  is the molar mass of methanol by theoretical calculation.

It should be noted that the transesterification rate can be overestimated given that tetrahydrofuran (THF), a typical by-product when polymerization 1,4-BDO, is likely to exist in the condensate. The amount of THF is usually less than 6%, which is also likely to increase when the polymerization is

performed at higher temperature (200°C, the amount of THF is 8.4%)<sup>[1]</sup>. To precisely quantify the amount of methanol condensate, the composition of the condensate should be analyzed by refractive index <sup>[1]</sup>method or by gas chromatography(GC)<sup>[2]</sup> method as demonstrated in literature.

[1] Qu D Z. Study on synthesis and properties of degradable isosorbide based multicomponent copolyesters[D]. Harbin Institute of Technology, 2019.

[2] Devroede J. Study of the THF formation during the TPA-based synthesis of PBT[J]. Reactivity of Solids, 2007.

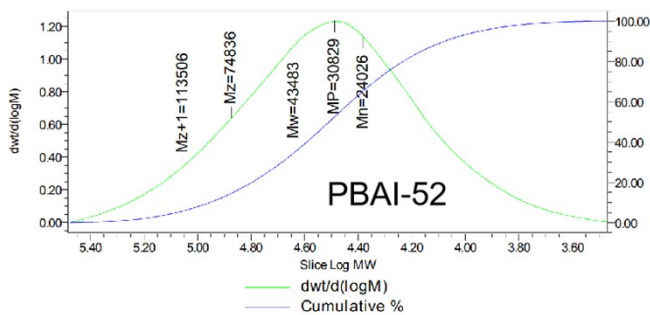
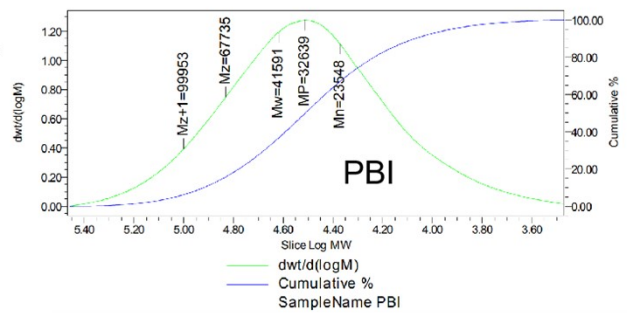
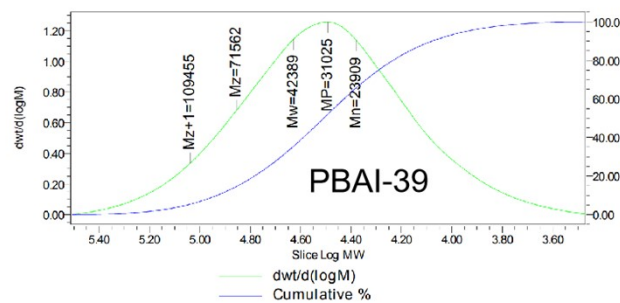
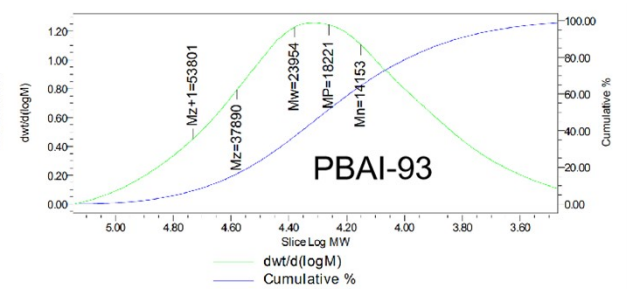
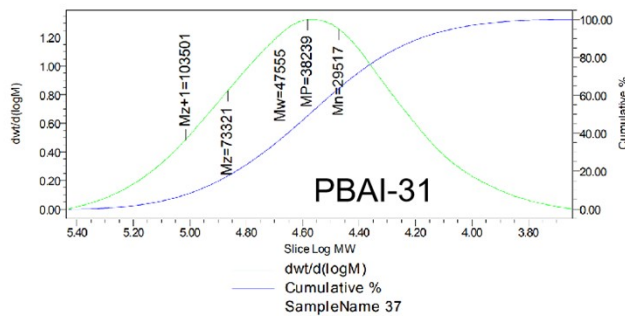
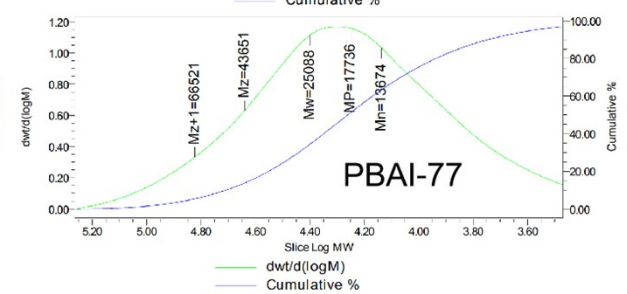
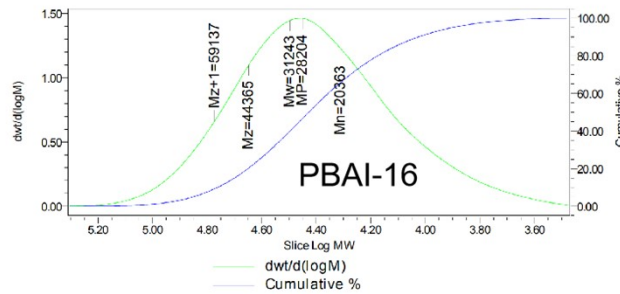
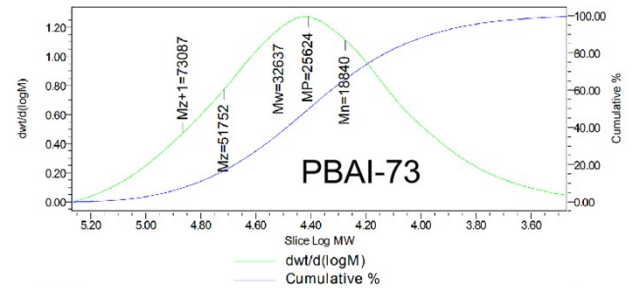
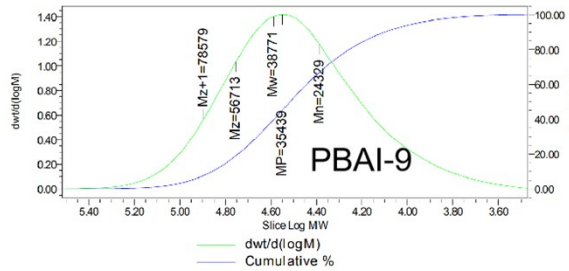
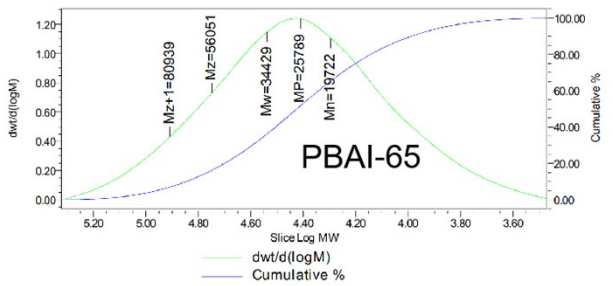
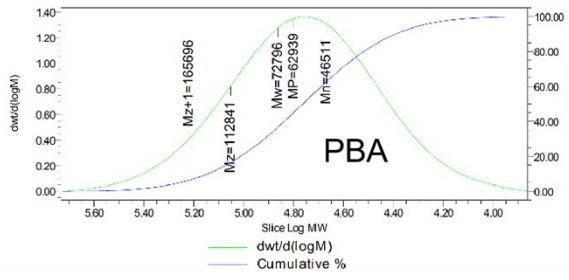
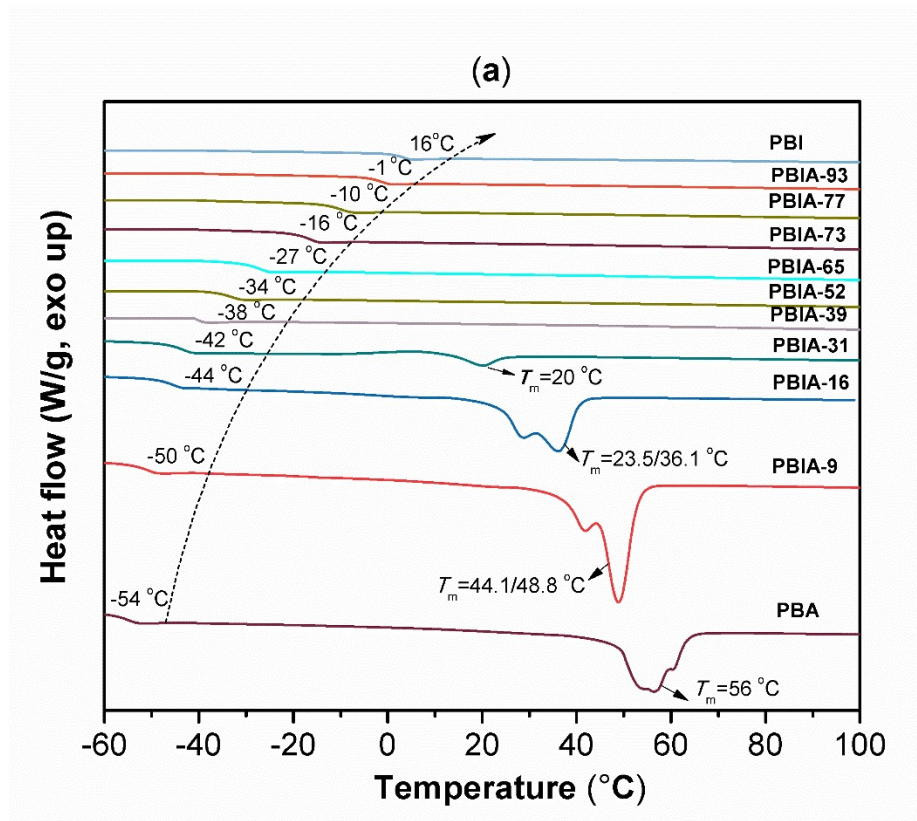
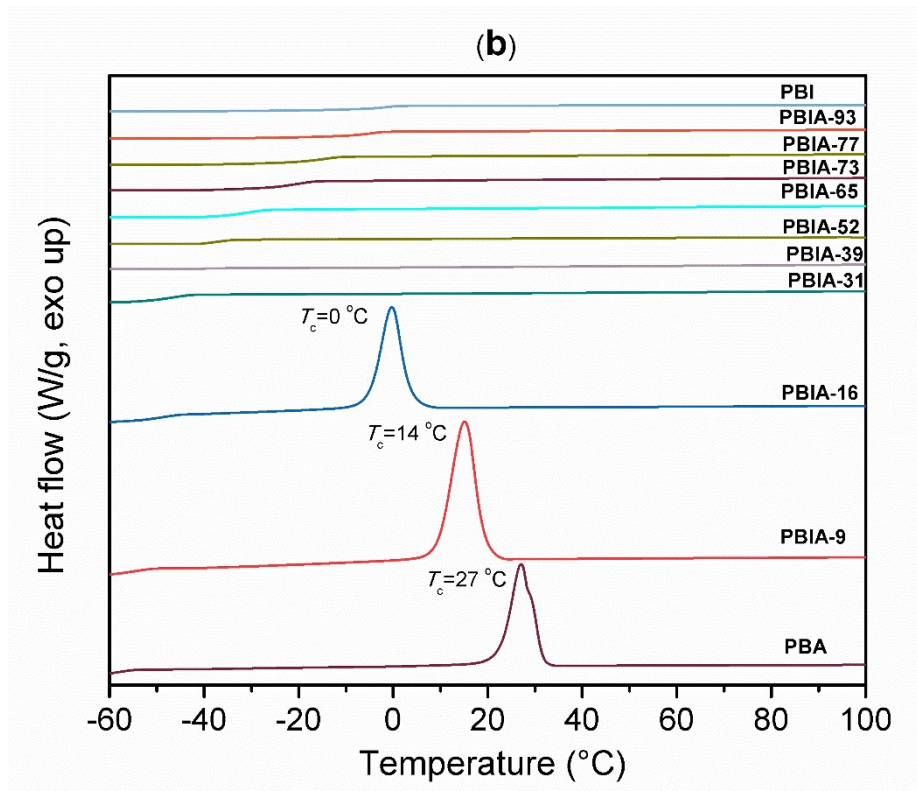
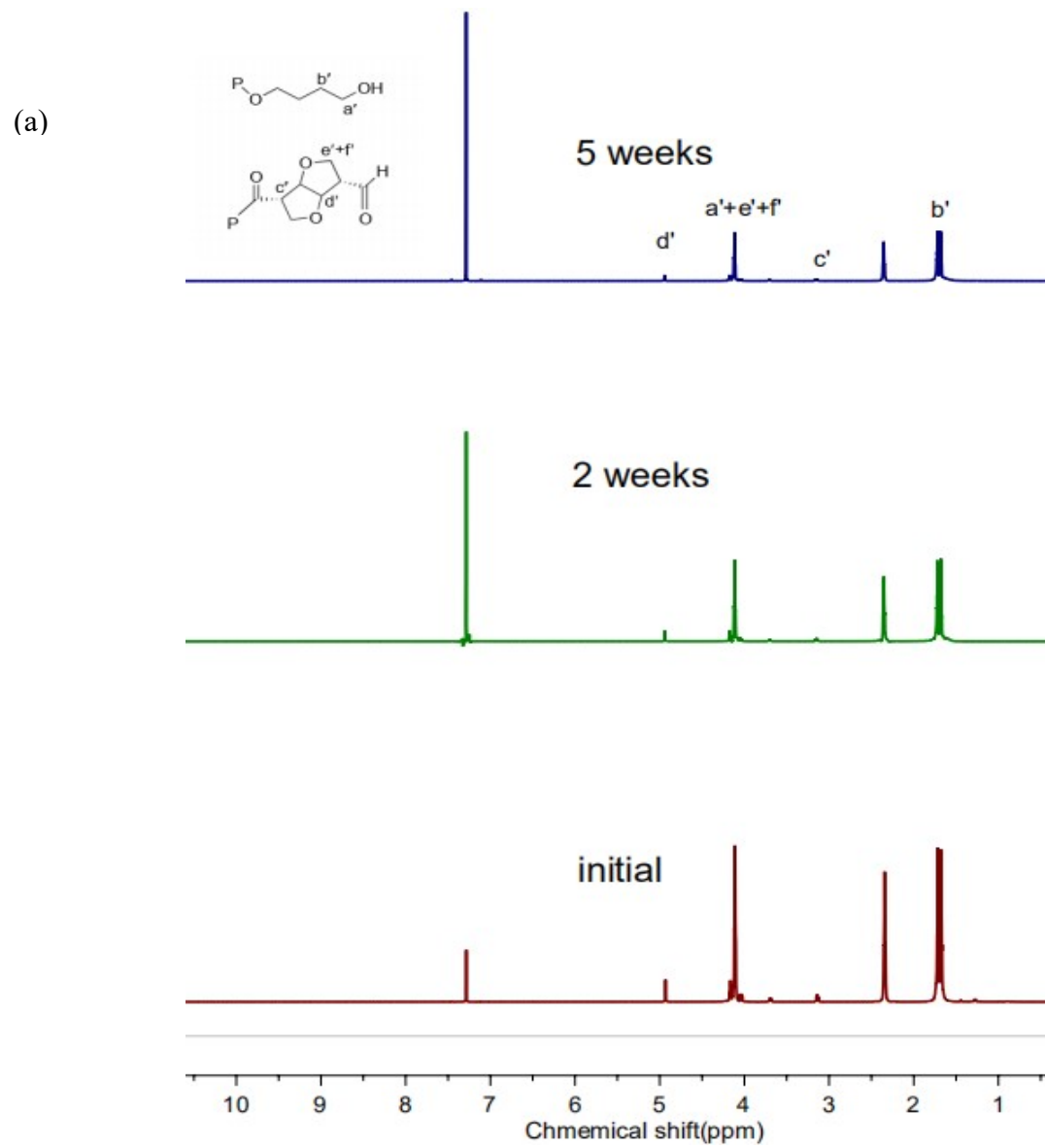


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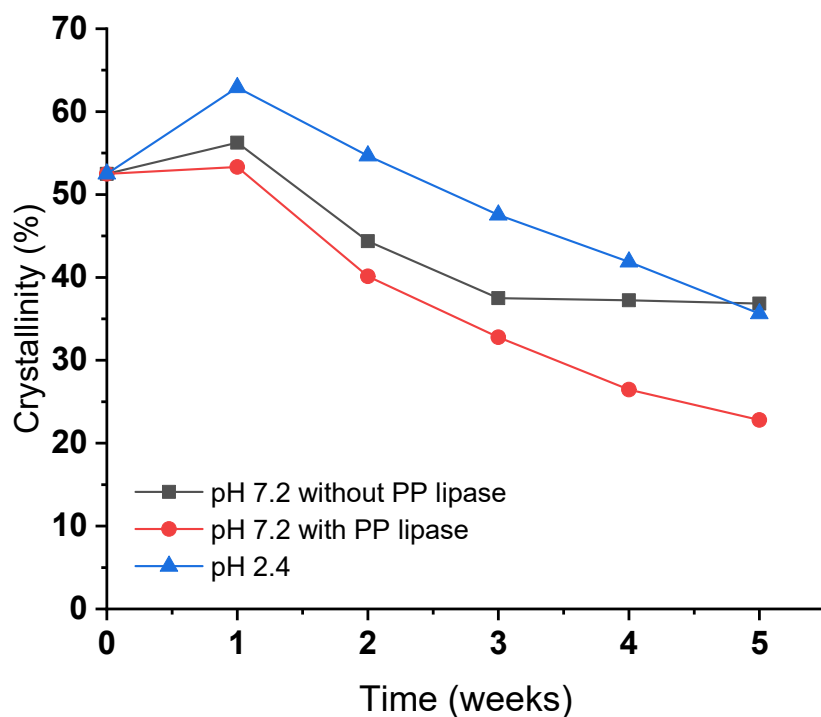




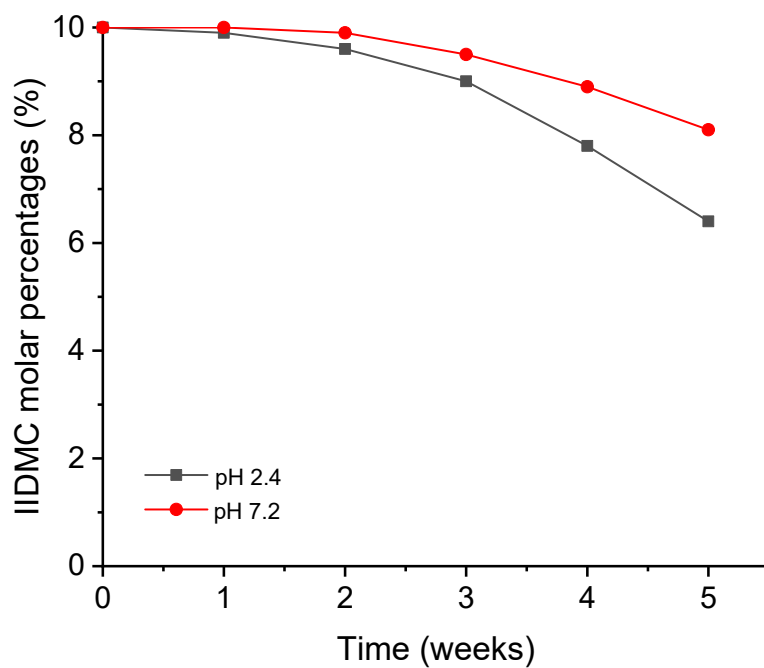
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