

Supplementary information

for

Artificial polyhydroxyalkanoate poly[2-hydroxybutyrate-block-3-hydroxybutyrate] elastomer-like material

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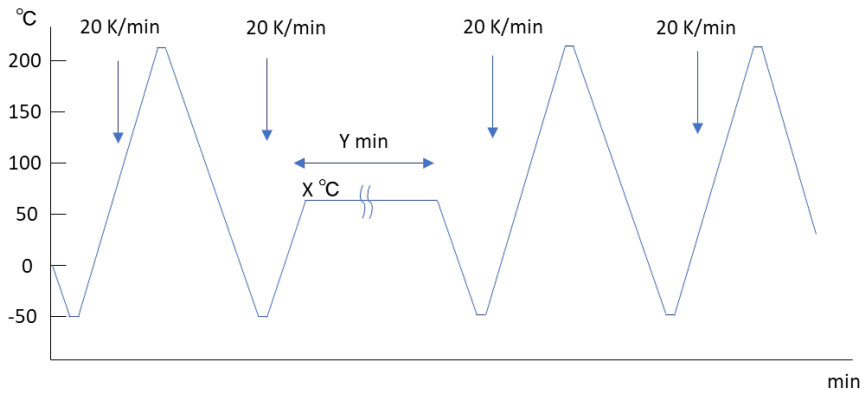


Figure S1. Heating and cooling cycles for annealing of the films, where $X = 50$ or 70 and $Y = 720$.

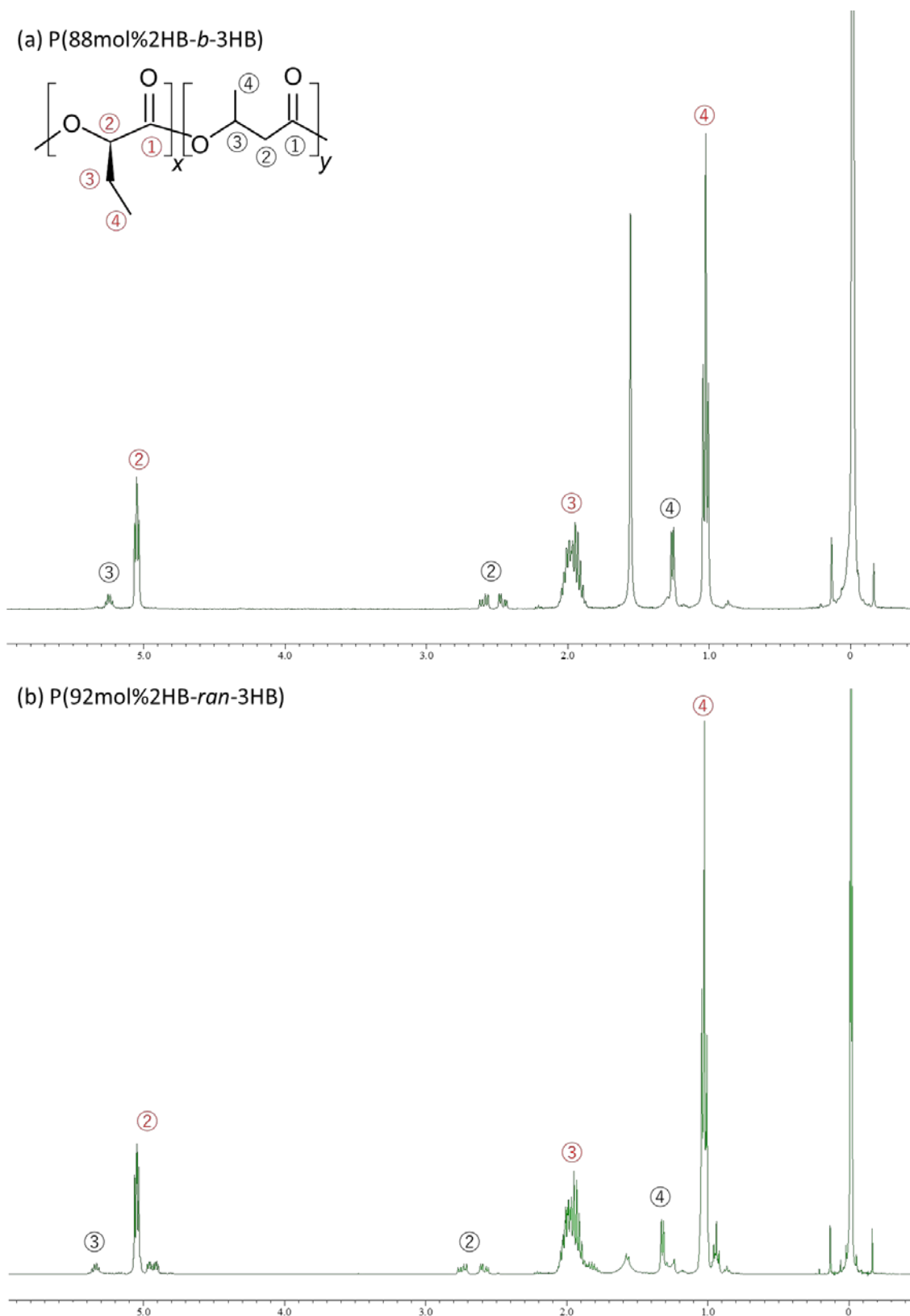


Figure S2. ^1H NMR spectra of the P(2HB-*co*-3HB) polymers synthesized in *E. coli*. (a) P(88 mol% 2HB-*b*-3HB) synthesized using PhaC_{AR} and (b) P(92 mol% 2HB-*ran*-3HB) synthesized using PhaC1_{Ps}STQK.

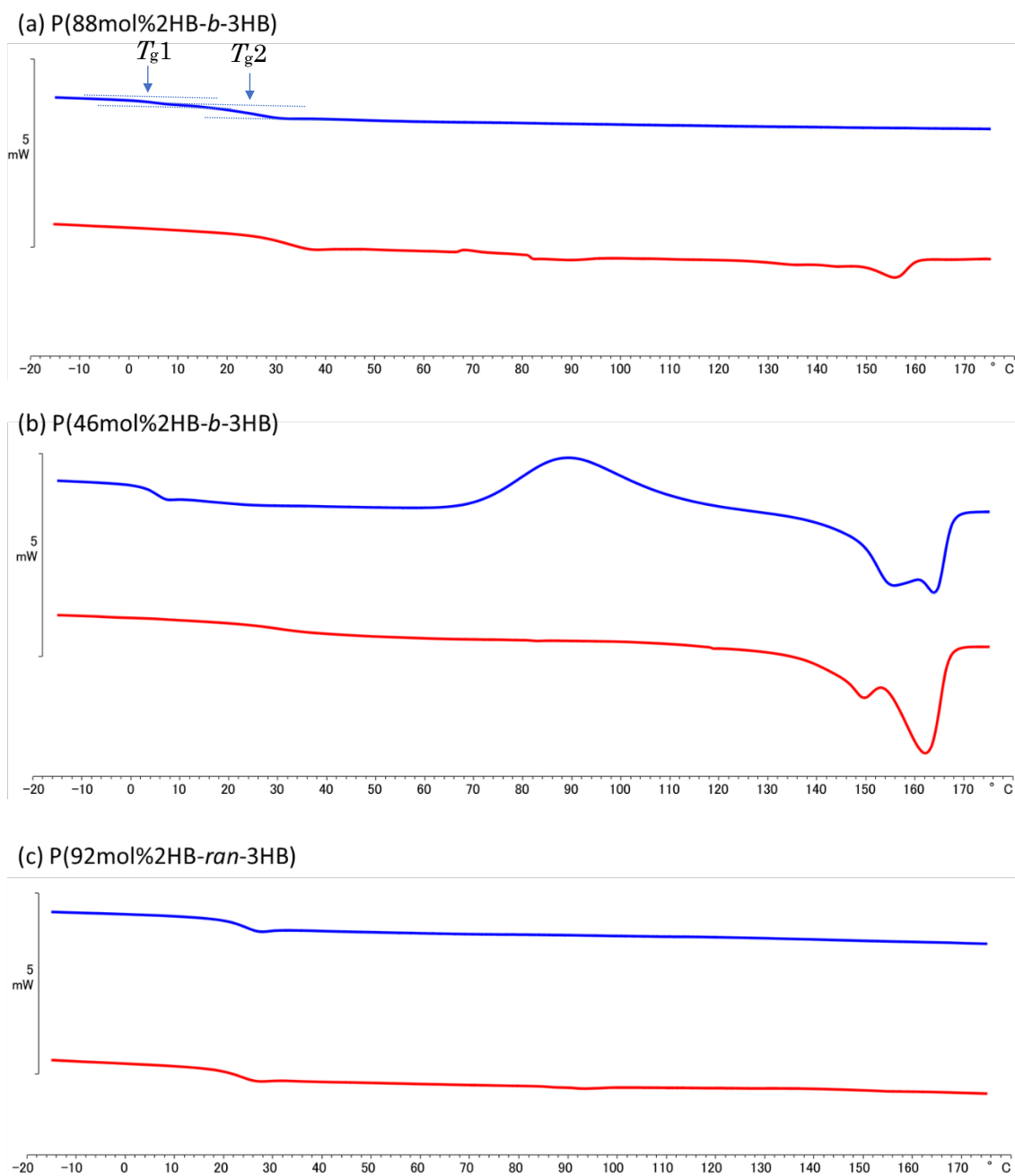


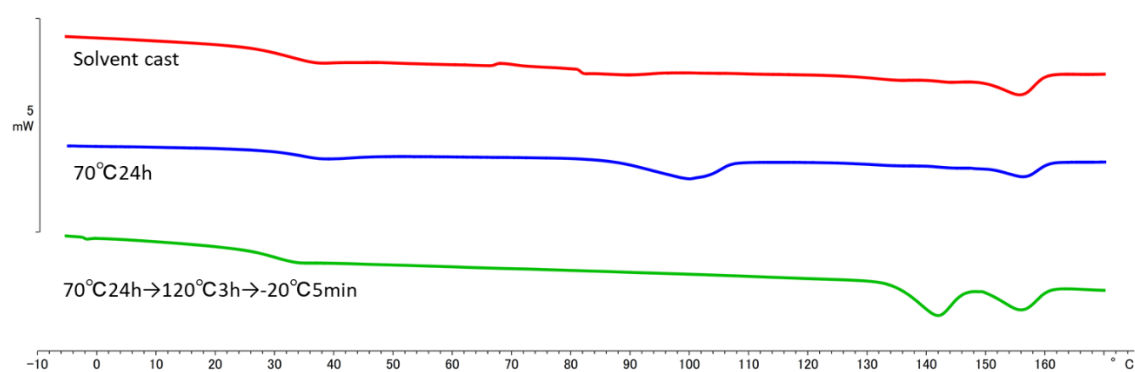
Figure S3. DSC thermograms of solvent-cast films of the P(2HB-*co*-3HB) polymers. First (red) and second (blue) heating scans were recorded for (a) P(88 mol% 2HB-*b*-3HB), (b) P(46 mol% 2HB-*b*-3HB), and (c) P(92 mol% 2HB-*ran*-3HB).

Table S1. Exploration of the annealing conditions of the P(88 mol% 2HB-*b*-3HB) film for promoting crystallization

Annealing temperature (°C)	Annealing time (h)	T_m (°C)		ΔH_m (J/g)	
		P(2HB)	P(3HB)	P(2HB)	P(3HB)
-	-	ND	155.5	ND	8.25
50	12	91.9	159.16	4.75	1.02
70	12	100.2	159.16	2.7	11.2
50	6	95.6	148.9	13.8	10.7
70	6				
70	6	100.2	149.8	2.58	11.7
70	24	100.5	148.8	3.04	11.6

Annealing was performed in a DSC machine.

(a) P(88 mol% 2HB-*b*-3HB)



(b) P(46 mol% 2HB-*b*-3HB)

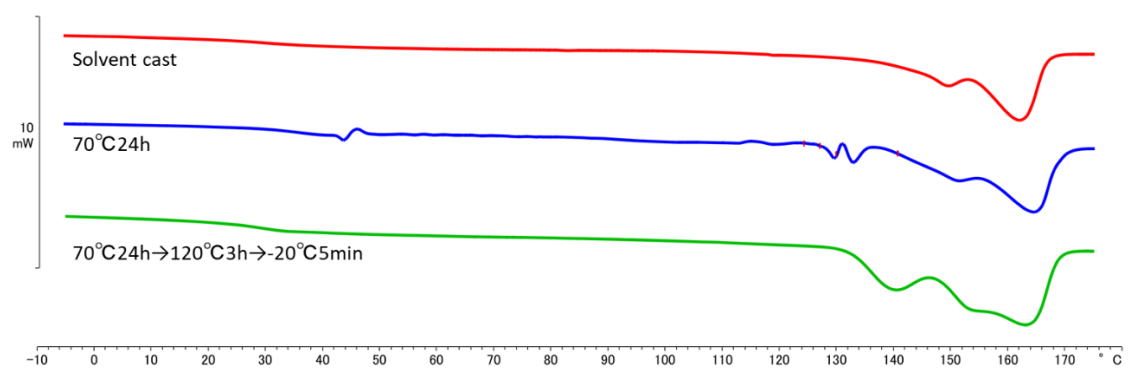


Figure S4. DSC thermograms of annealed P(88 mol% 2HB-*b*-3HB) (a) and P(46 mol% 2HB-*b*-3HB) (b) in a heat press machine.