**Supporting Information**

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**Figure S1.** IR spectra of synthesized pre-polymers.

The spectrum of Figure S1a shows the pre-polymerization product of lactic acid in order to obtain lactide isomer. In this spectrum, there are characteristic bands from lactic acid, as follows: Around 3500 to 3200 cm-1, the O-H tension of the acid component is observed. At 1730 cm-1, a peak related to the carboxylic acid group is observed. Also, between 1200-950 cm-1, the voltage vibrations C-C and C-O [46] are observed. However, besides around 1260 cm-1, a shoulder or bump related to the asymmetric vibration C-O-C in the lactonic ring is observed, suggesting lactide formation during pre-polymerization of lactic acid [47]. Figure S1b shows the result of the pre-polymerization of acrylic acid, showing the characteristic band of the C-OH tension of the acrylic polyacid around 1707 cm-1, suggesting that in this process, the partial polymerization of acrylic acid occurred [48]. Finally, the spectrum of the pre-polymerization product of lactic acid and acrylic acid is shown in Figure S1c. The plausible mechanism of free radical polymerization between lactic acid and acrylic acid has been previously reported [49]. The peak around 1710 cm-1 is related to the tension –C = O characteristic of this polymerization, and the visible shoulder close to this contribution is related to free acids [50].