Appendix 1: Detailed Calculations of Monomer, Catalyst and Initiator Concentration

For a goal of MW = 10000
Degree of Polymerization = 10000/144.13 = 69.382, where 144.13 is the molecular weight of the repeating units of PLA. (a)

Also the theoretical degree of Polym = [Monomer]/ [Initiator] in living polymerization. (b)
For experiments in this paper:
[Monomer] = 20 grams (weight of Lactide taken for synthesis)/144.13(Molecular weight of Lactide) = 138.764 mmol

From (a) and (b):
[Initiator] = 138.764/69.382 => 2 mmol is the amount of initiator needed for MW = 10000.
In this paper, initiator is palmityl alcohol

Mass of palmityl alcohol = 0.2 mmol x 243.44 g/mol = 484.88 mg

Also moles of catalyst = moles of initiator
[Monomer]/[Initiator] = [Monomer]/[Catalyst]

The concentration of catalyst (triethylaluminum) is 1.9 M in Toluene, then 1.9*y =0.002, where y is the volume of catalyst. Therefore, y = 1.05 ml.

Appendix 2: Additional Sorption Data

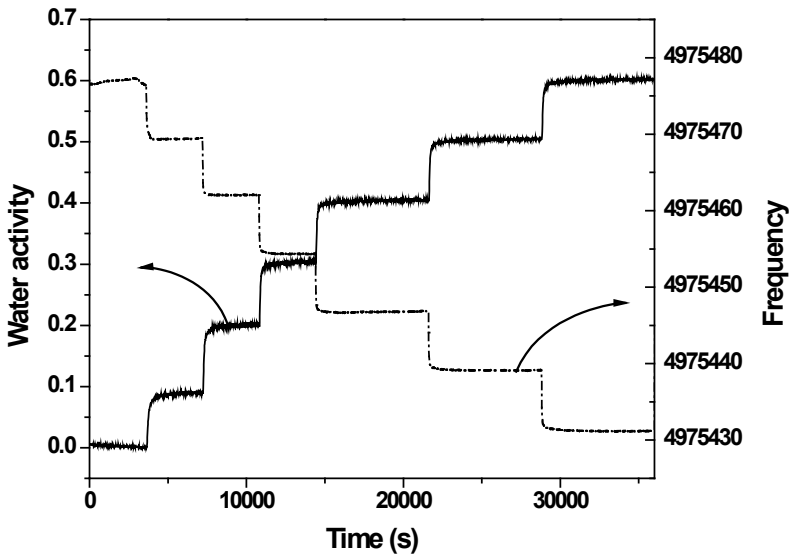

Figure S.1. Water activity and frequency changes generated concurrently by QCM/HCC. P-PLLA10k-A was heat-treated at 120 ºC for 5min and cooled down in ambient temperature.

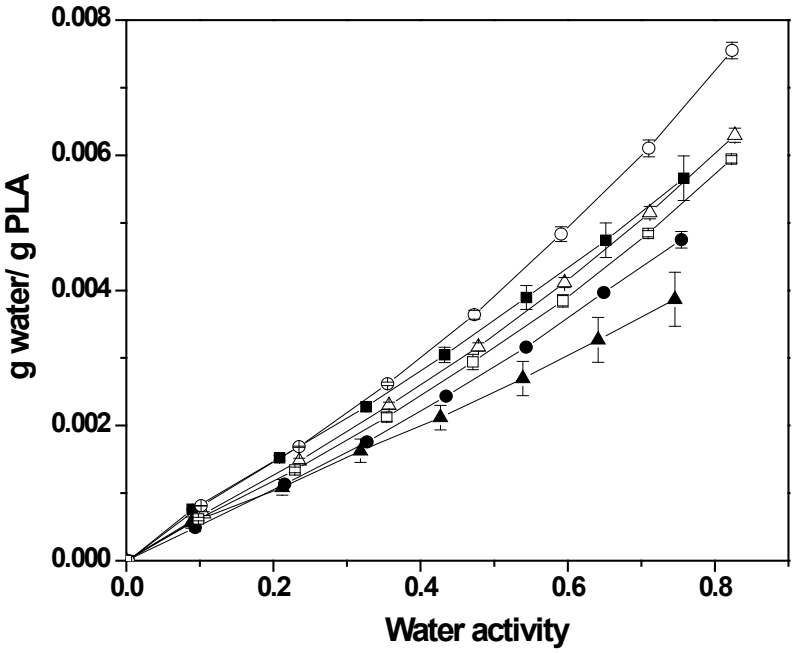

Figure S.2. Sorption isotherm of P-PLA10k series at 35 ºC. Heat treatment was performed at 160 ºC for 5min. □: P-PDLLA10k-P, Δ: P-PDLLA10k-A, ○: P-PDLLA10k-OH, ▲: P-PLLA10k-A, ●: P-PLLA10k-OH and ■: P-PLLA10k-P