

Supplementary Materials

Synthesis and Properties of Modified Biodegradable Polymers Based on Caprolactone

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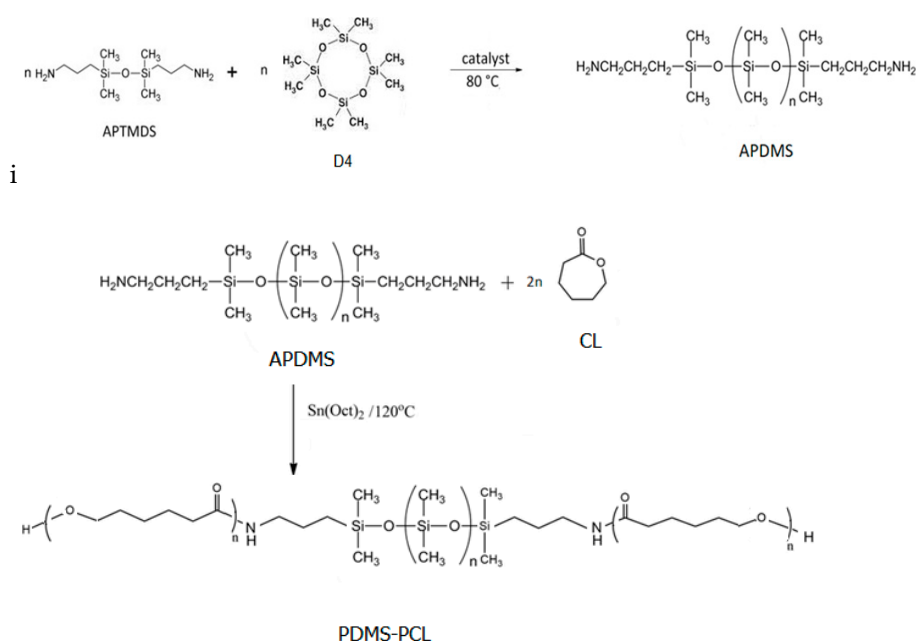
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S1. Preparation of the aminopropyl-terminated polydimethylsiloxane-poly(ϵ -caprolactone) copolymers: PDMS-PCL-1 and PDMS-PCL-2

The copolymers were synthesized via the ring-opening polymerization of poly- ϵ -caprolactone (PCL) in the presence of aminopropyl-terminated polydimethylsiloxane (APDMS) with $\text{Sn}(\text{Oct})_2$ as the catalyst, as shown in Scheme 1.

Thus, ϵ -caprolactone (3 g), aminopropyl terminated polydimethylsiloxane (1.6 g), stannous octoate catalyst (0.023 g), and 10 g of xylene were added to a 50 mL three-neck flask at 120 °C and stirred under nitrogen for 24 h when the copolymers were synthesized. The purification of the copolymers was performed by precipitating the reaction mixture in methanol. The precipitated products obtained were dried in a vacuum drying oven at 30–40 °C.

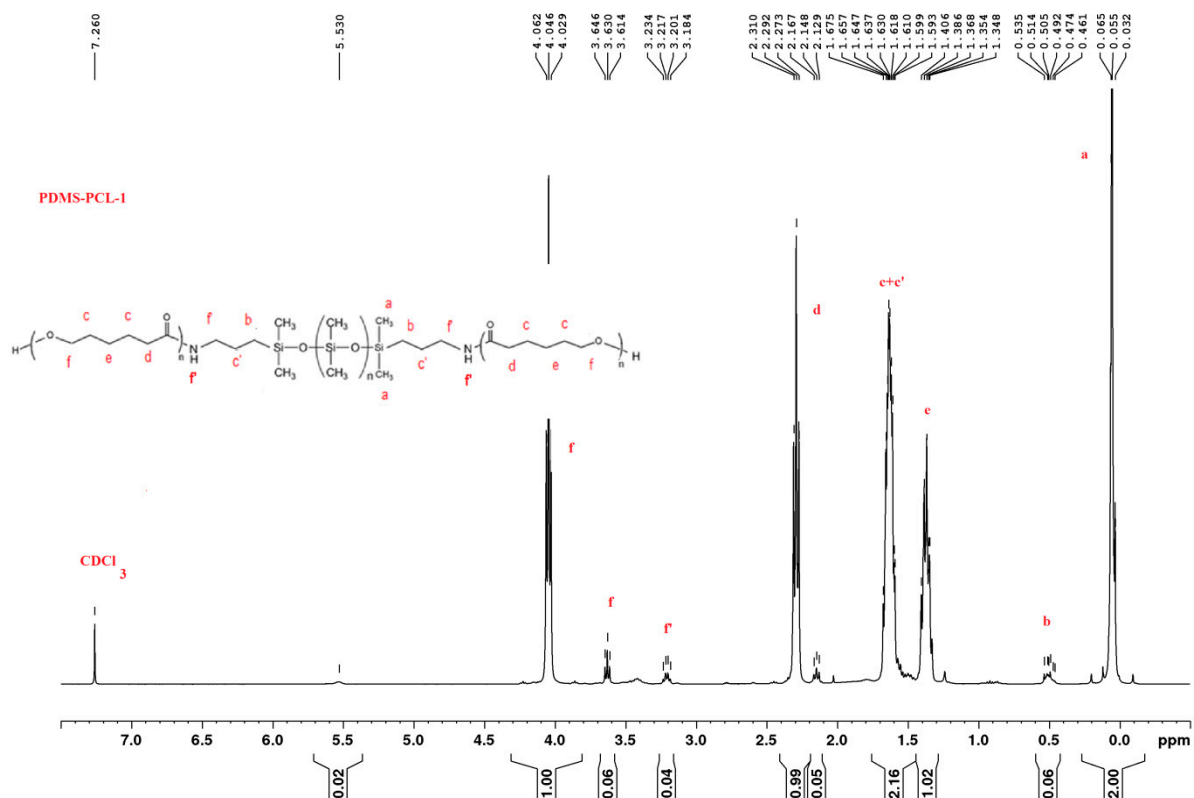
The aminopropyl-terminated polydimethylsiloxane-poly(ϵ -caprolactone) copolymers (PDMS-PCL) were obtained.



Scheme S1. PDMS-PCL copolymers synthesis.

S2. NMR spectra for PDMS-PCL-1 and PDMS-PCL-2 copolymers

The synthesis of the well-defined copolymer was confirmed by the NMR spectra (Figure S1).



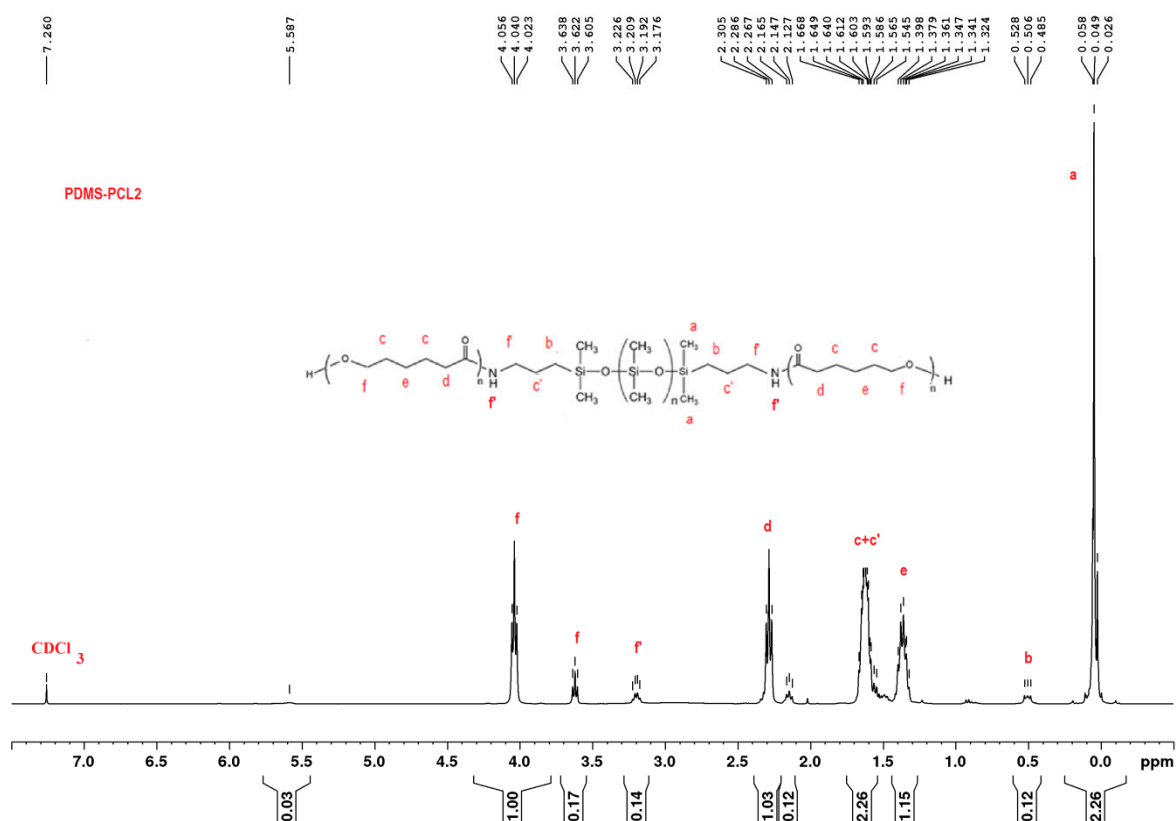


Figure S1. NMR spectra for PDMS-PCL-1 and PDMS-PCL-2 copolymers.

–CH₂–CH₂–CH₂–NH– (1.61 ppm); –CO–CH₂–CH₂–CH₂– (1.40 ppm); –CO–CH₂–CH₂– (1.60 ppm); –CO–CH₂– (2.31 ppm); –Si(CH₃)₂– (0.07 ppm); –Si–CH₂– (0.5 ppm); and –CH₂–CH₂–CH₂– (1.47); –NH– (3.2); –CH₂–H (3.6 ppm); –CH₂–NH– (4.05 ppm).

Table S1. The total chlorophyll content in the leaves of tomato plants 35 days after planting.

Samples	Chlorophyll content index, 1 CCI					
	Reference	APDMS-1	APDMS-2	PDMS-PCL-1	PDMS-PCL-2	PCL
10.4	10.4	7.2	7.4	8.7	8.8	9.9
10.4	10.4	7.1	7.5	8.6	8.9	9.9
10.3	10.3	7.3	7.4	8.8	8.7	9.9
10.5	10.5	7.2	7.3	8.7	8.8	9.9