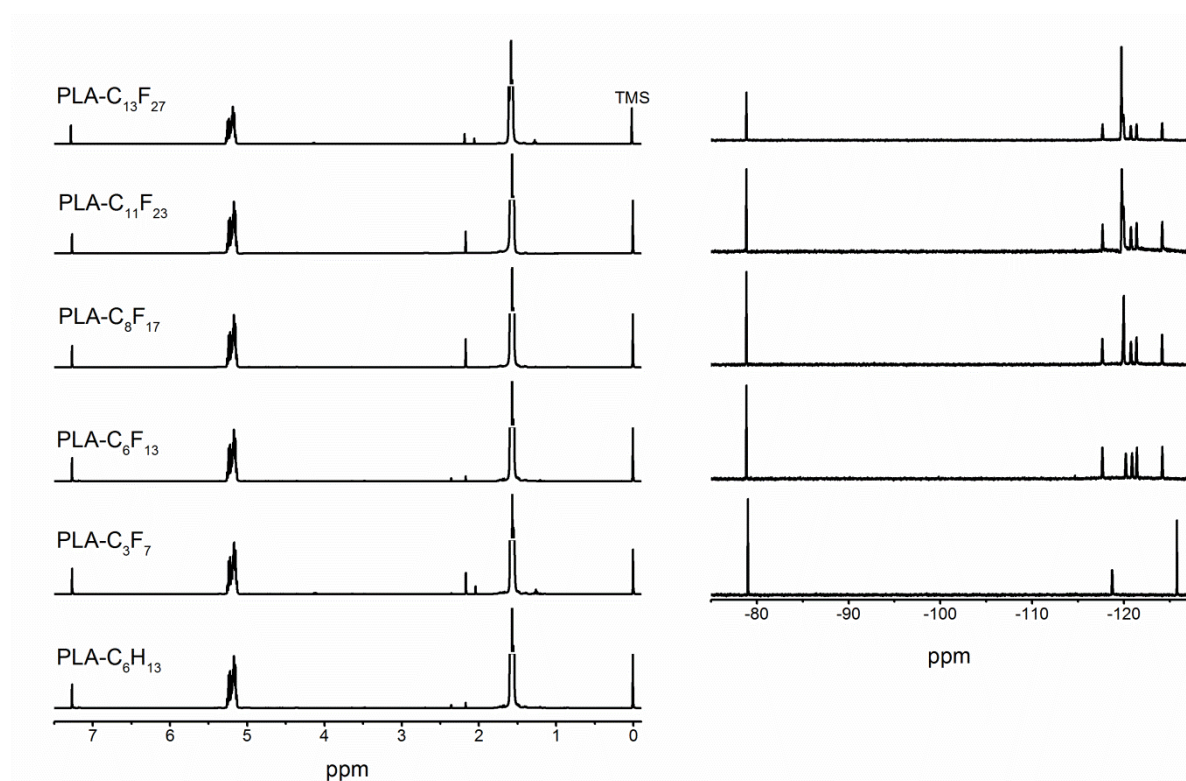


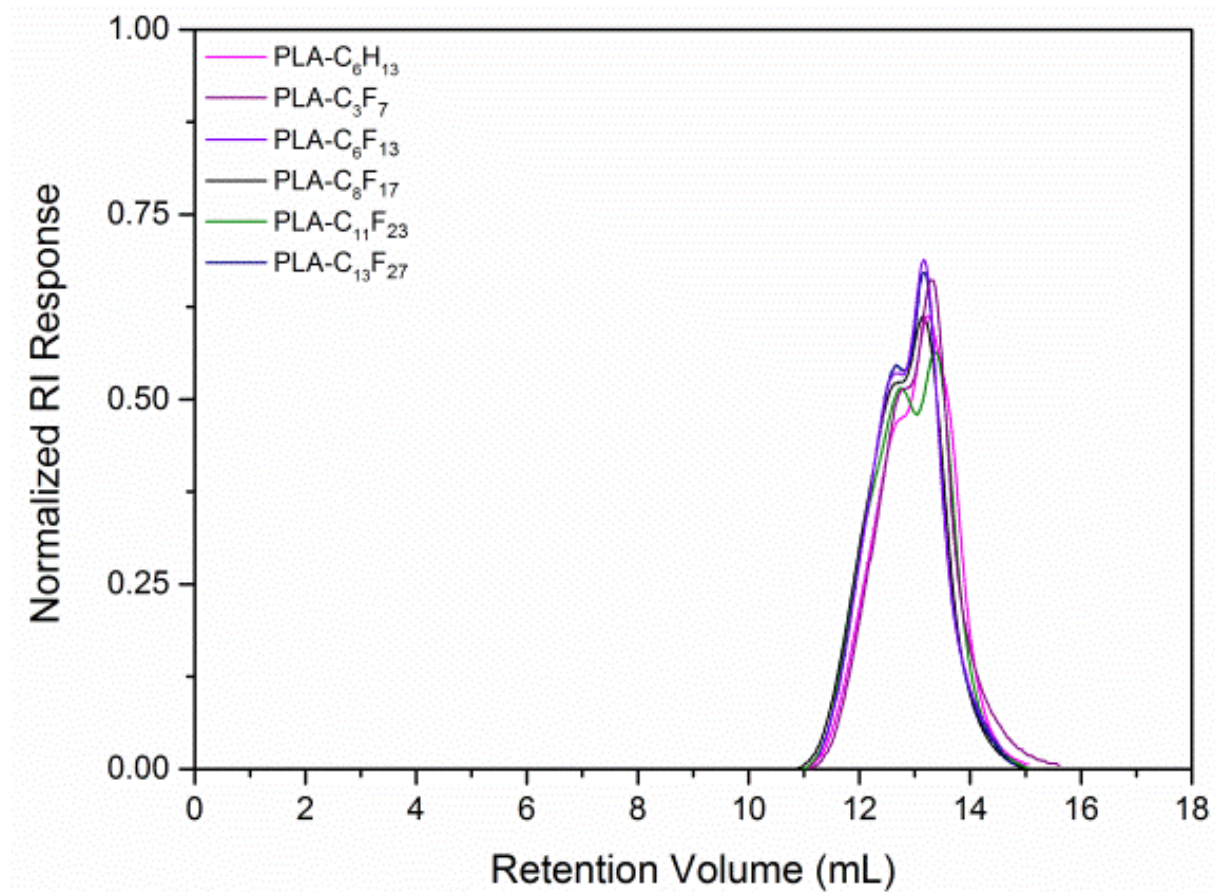
## Supporting Information

### Impact of polylactide fluorinated-end group length and their dynamics on perfluohexane microcapsules morphology

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**Figure S1.** <sup>1</sup>H (left) and <sup>19</sup>F-NMR spectra (right) of all synthesized polymers. All samples were dissolved in CDCl<sub>3</sub>.



**Figure S2.** SEC chromatogram of all fluorinated and non-fluorinated polymers. All analysis were performed in chloroform at 30°C.

**Table S1.** Number-average molar masses ( $M_n$ ) obtained by SEC/ $^1\text{H-NMR}$ , dispersity and glass-transition temperature ( $T_g$ ) of all synthesized polymers.

Polymer	$M_n^{SEC}$ (g.mol $^{-1}$ )	Dispersity ( $\mathcal{D}$ )	$M_n^{NMR}$ (g.mol $^{-1}$ )	$T_g$ ( $^{\circ}\text{C}$ )
PLA-C $_6$ H $_{13}$	21 000	1.3	20 700	52
PLA-C $_3$ F $_7$	22 000	1.4	15 000	52
PLA-C $_6$ F $_{13}$	24 000	1.4	16 600	50
PLA-C $_8$ F $_{17}$	24 000	1.4	19 600	53
PLA-C $_{11}$ F $_{23}$	21 000	1.3	18 100	52
PLA-C $_{13}$ F $_{27}$	22 000	1.4	18 300	53

**Table S2.** Spin-lattice relaxation ( $T_1$ ) values of correspondent  $^{19}\text{F}$  resonances for samples dissolved in  $\text{CDCl}_3$  and  $\text{CD}_2\text{Cl}_2$  with and without perfluorohexane. All results are expressed in seconds  $\pm$  standard deviation. The correspondent  $r^2$  value for monoexponential curve fitting is displayed. Experiments were performed in duplicates ( $n=2$ ).

Sample	Resonance	$T_1$ (s)							
		$\text{CDCl}_3$	$r^2$	$\text{CDCl}_3+\text{PFH}$	$r^2$	$\text{CD}_2\text{Cl}_2$	$r^2$	$\text{CD}_2\text{Cl}_2+\text{PFH}$	$r^2$
PLA-C $_3$ F $_7$	$^a\text{CF}_2$	1.29 $\pm$ 0.03	0.998	1.31 $\pm$ 0.05	0.998	1.91 $\pm$ 0.1	0.990	1.54 $\pm$ 0.01	0.999
	$^e\text{CF}_2$	1.68 $\pm$ 0.03	0.999	2.35 $\pm$ 0.10	0.998	2.55 $\pm$ 0.07	0.992	1.86 $\pm$ 0.01	0.999
	$\text{CF}_3$	2.08 $\pm$ 0.10	0.998	3.00 $\pm$ 0.06	0.998	3.47 $\pm$ 0.1	0.994	2.13 $\pm$ 0.01	0.998
PLA- C $_8$ F $_{17}$	$^a\text{CF}_2$	0.63 $\pm$ 0.11	0.993	1.68 $\pm$ 0.17	0.989	0.70 $\pm$ 0.02	0.999	0.80 $\pm$ 0.02	0.999
	$^b\text{CF}_2$	0.86 $\pm$ 0.06	0.996	2.65 $\pm$ 0.10	0.989	1.08 $\pm$ 0.03	0.998	1.58 $\pm$ 0.03	0.996
	$^c\text{CF}_2$	0.61 $\pm$ 0.08	0.996	2.44 $\pm$ 0.14	0.998	0.79 $\pm$ 0.02	0.996	0.84 $\pm$ 0.06	0.997
	$^d\text{CF}_2$	0.70 $\pm$ 0.02	0.999	1.05 $\pm$ 0.07	0.993	0.82 $\pm$ 0.02	0.999	0.94 $\pm$ 0.05	0.998
	$^e\text{CF}_2$	1.21 $\pm$ 0.03	0.999	-----	-----	1.32 $\pm$ 0.03	0.998	-----	-----
	$\text{CF}_3$	1.83 $\pm$ 0.03	0.999	-----	-----	2.05 $\pm$ 0.01	0.999	-----	-----
PLA- C $_{13}$ F $_{27}$	$^a\text{CF}_2$	0.46 $\pm$ 0.17	0.989	1.07 $\pm$ 0.12	0.989	0.48 $\pm$ 0.05	0.991	0.53 $\pm$ 0.05	0.988
	$^b\text{CF}_2$	1.10 $\pm$ 0.11	0.988	2.67 $\pm$ 0.13	0.998	0.99 $\pm$ 0.03	0.998	1.14 $\pm$ 0.01	0.998
	$^c\text{CF}_2$	0.73 $\pm$ 0.13	0.987	2.70 $\pm$ 0.23	0.998	0.81 $\pm$ 0.03	0.952	0.57 $\pm$ 0.01	0.994
	$^d\text{CF}_2$	0.83 $\pm$ 0.12	0.991	1.17 $\pm$ 0.13	0.985	0.61 $\pm$ 0.02	0.996	0.66 $\pm$ 0.03	0.997
	$^e\text{CF}_2$	1.23 $\pm$ 0.15	0.980	-----	-----	1.27 $\pm$ 0.02	0.999	-----	-----
	$\text{CF}_3$	1.74 $\pm$ 0.08	0.996	-----	-----	2.43 $\pm$ 0.02	0.999	-----	-----