SUPPORTING INFORMATION

Isomorphic polyoxyalkylenes copolyethers obtained by copolymerization of aliphatic diols

Andere Basterretxea[1,3], Elena Gabirondo[1], Irma Flores[1], Agustin Etxeberria[1], Alba Gonzalez[1], Alejandro J. Müller[1,2], David Mecerreyes[1,2], Olivier Coulembier[3], Haritz Sardon[1]**

[1]POLYMAT and Polymer Science and Technology Department, Faculty of Chemistry, University of the Basque Country UPV/EHU, Paseo Manuel de Lardizabal, 3, 20018 Donostia-San Sebastián, Spain

[2]Ikerbasque, Basque Foundation for Science, E-48011 Bilbao, Spain

[3]Center of Innovation and Research in Materials and Polymers (CIRMAP), Laboratory of Polymeric and Composite Materials, University of Mons, Place du Parc 23, 7000 Mons, Belgium

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1. SUPPORTING DATA

^{1}H NMR SPECTROSCOPY

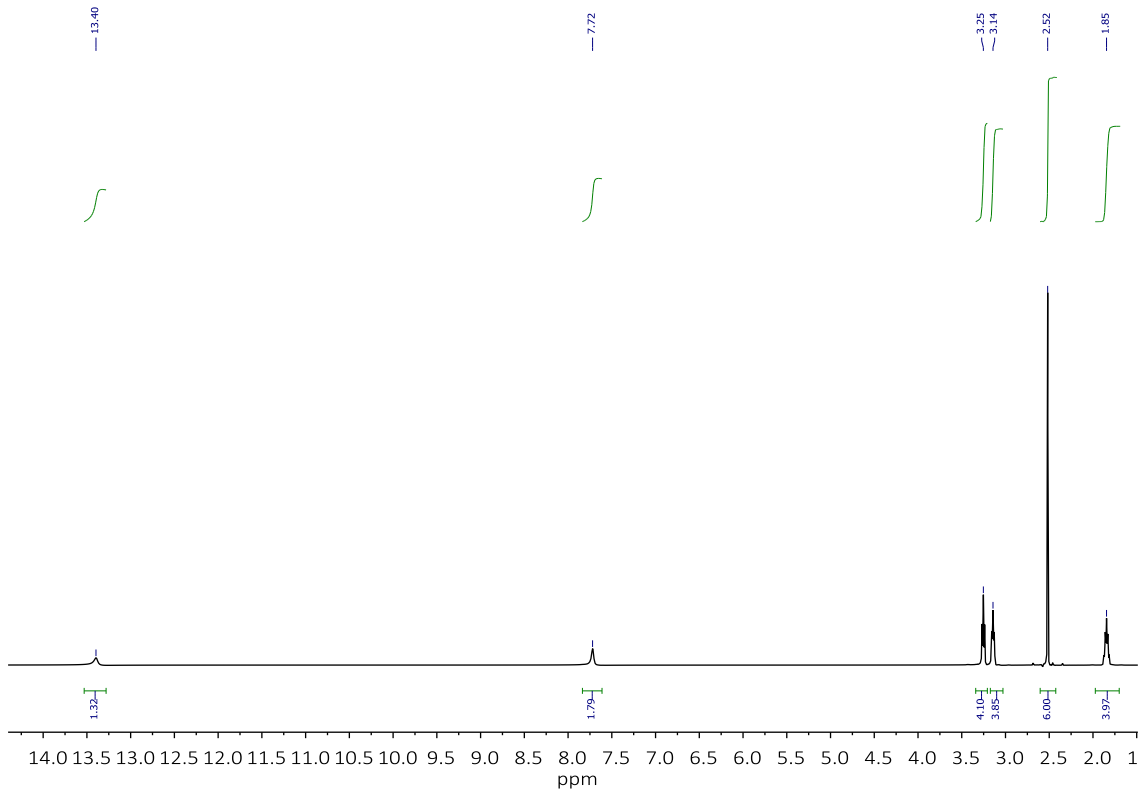
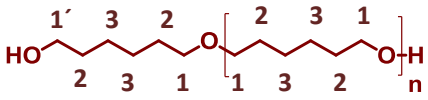


Figure S1. ^{1}H NMR spectroscopy in DMSO-d6 of the catalyst MSA:TBD (3:1). δ (ppm) 13.14, (s, 2H, OH, MSA), 7.72, (s, 2H, N-H-O), 3.25 (t, 4H, CH2, TBD), 3.14 (t, 4H, CH2, TBD), 2.52 (s, 9H, CH_3, MSA). 1.85 (q, 4H, CH_2, TBD).



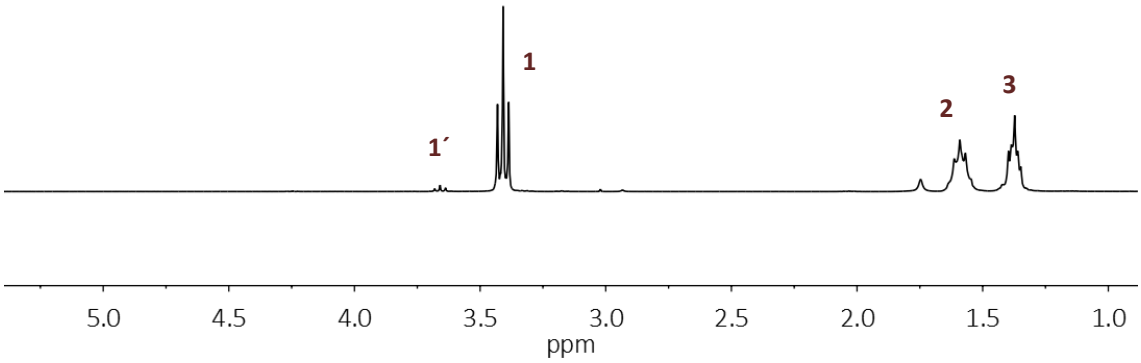


Figure S2. ^{1}H NMR spectroscopy in d-$CDCl_3$ of the poly(oxyhexamethylene).

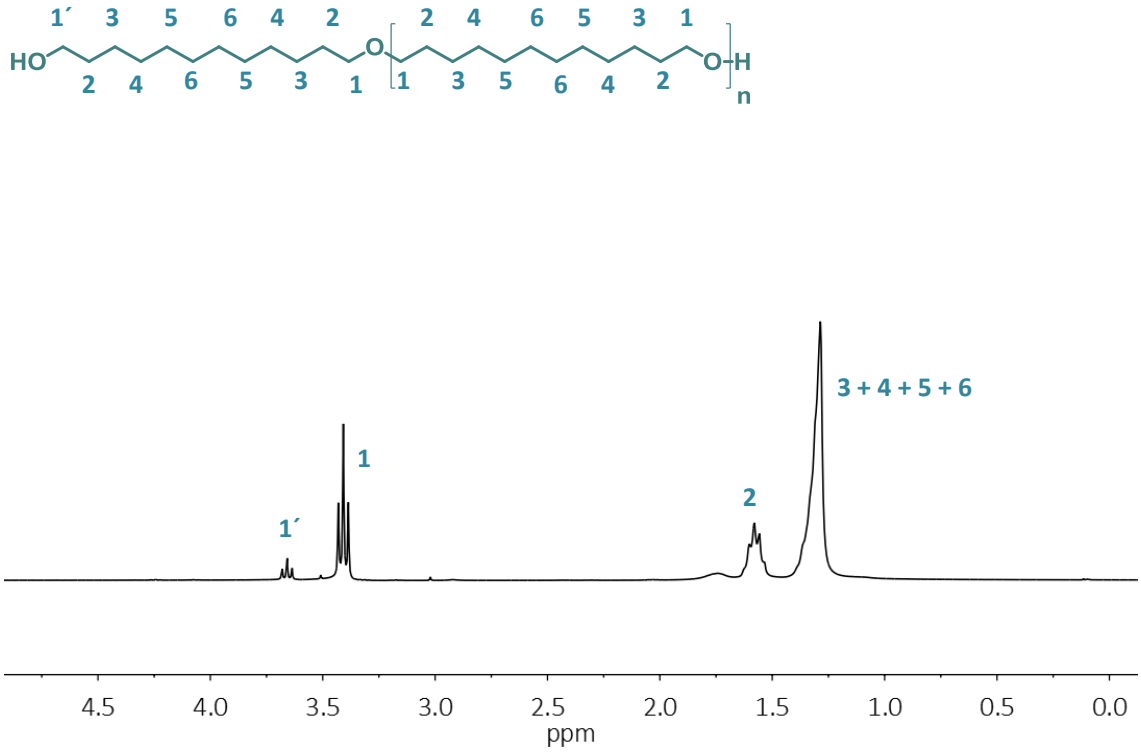


Figure S3. ^{1}H NMR spectroscopy in d-$CDCl_3$ of the poly(oxydodecamethylene).

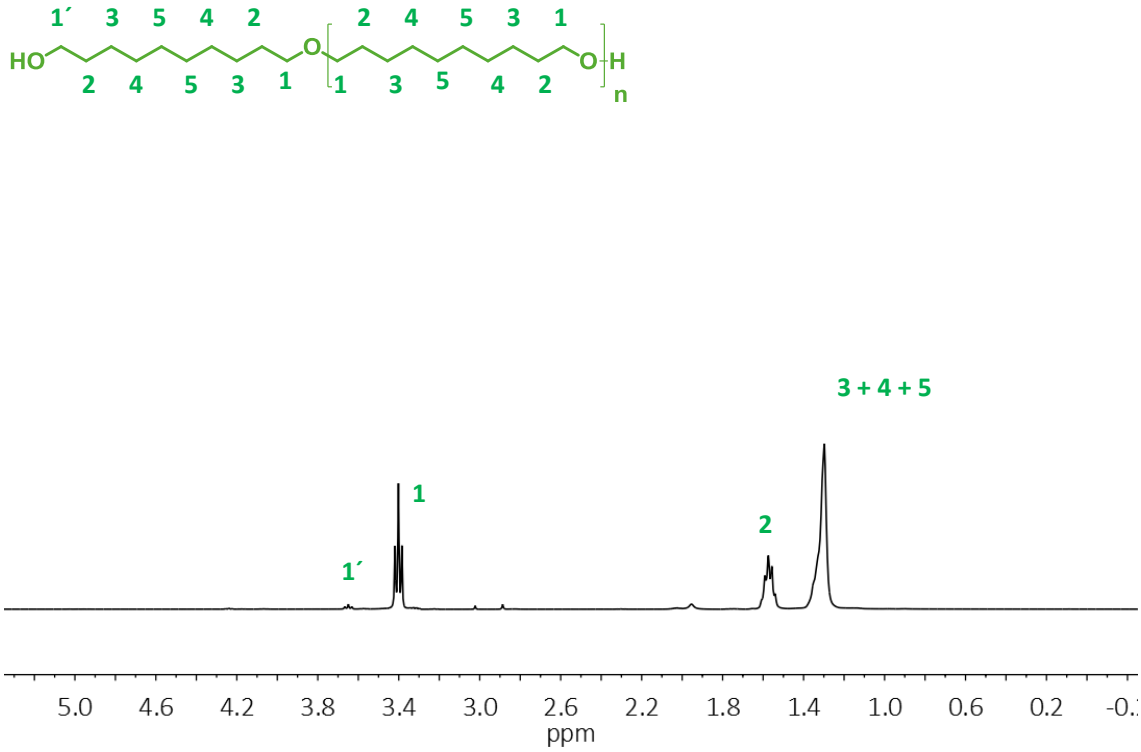


Figure S4. ^{1}H NMR spectroscopy in d-$CDCl_3$ of the poly(oxydecamethylene).

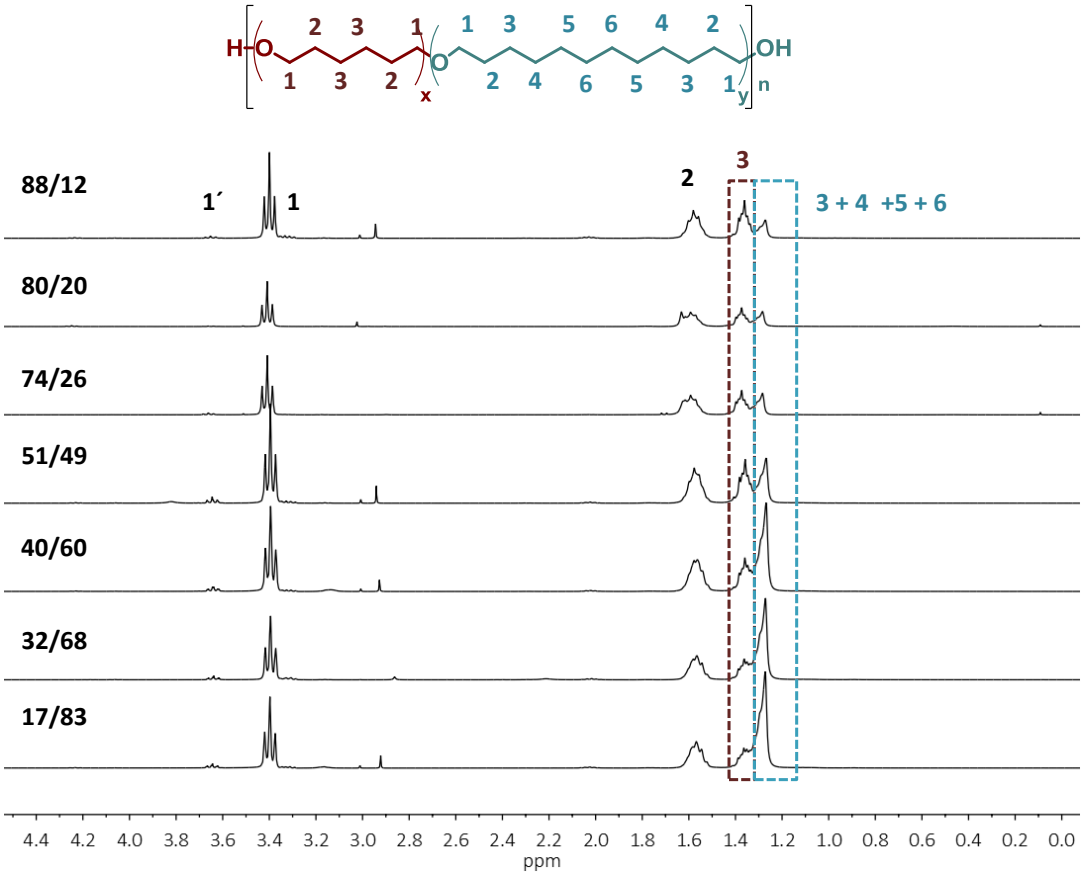
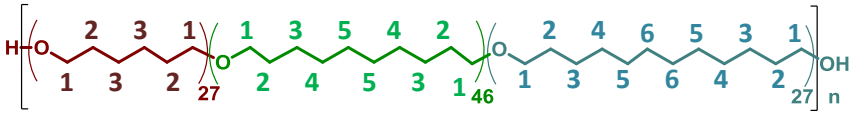


Figure S5. ^{1}H NMR spectroscopy in d-$CDCl_3$ of the copolymers



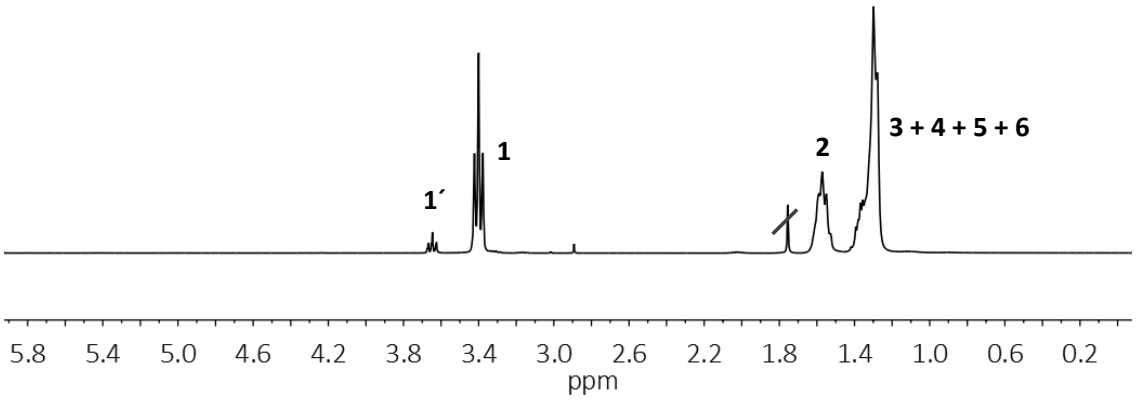


Figure S6. ^{1}H NMR spectroscopy in d-$CDCl_3$ of the terpolymer.

^{13}C NMR SPECTROSCOPY

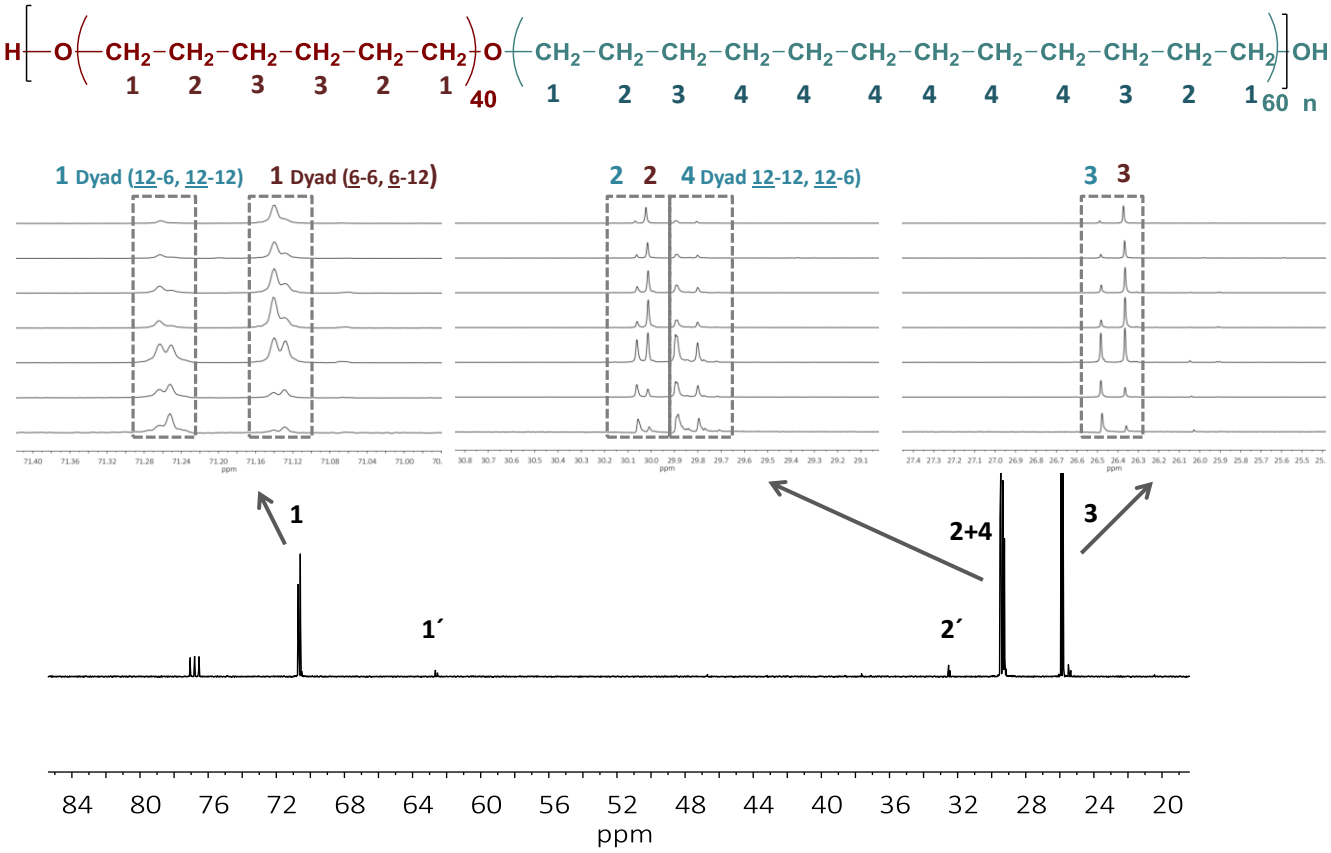


Figure S7. ^{13}C NMR spectroscopy in d-$CDCl_3$ of the copolyethers. Signals 1´and 2´make reference to the corresponding carbons of the ending group.

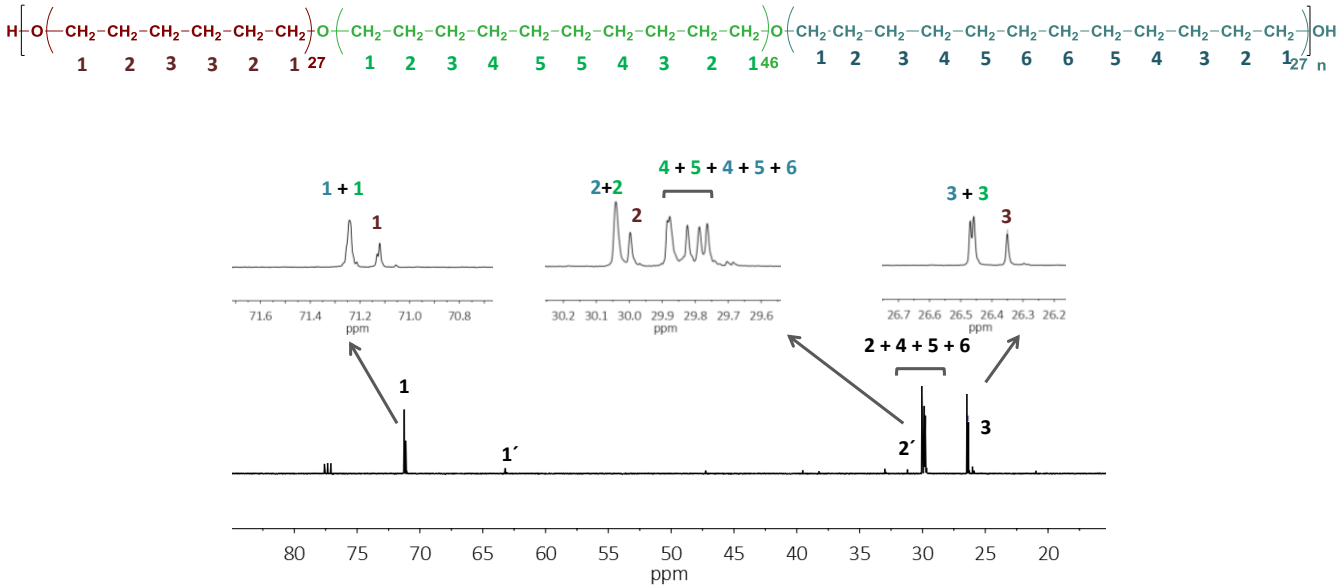


Figure S8. ^{13}C NMR spectroscopy in d-$CDCl_3$ of the terpolymer. Signals 1´and 2´make reference to the corresponding carbons of the ending group.

SEC

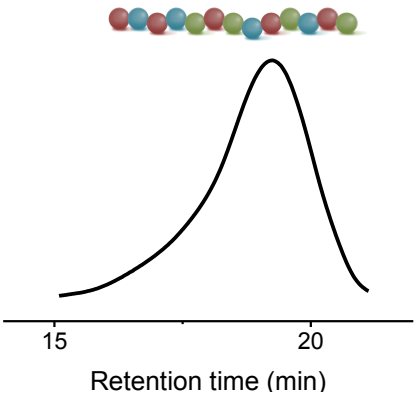


Figure S9. SEC trace of the terpolymer.

DSC

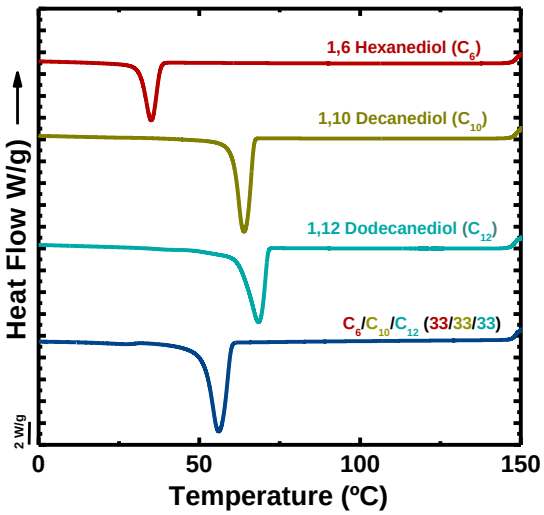


Figure S10. DSC cooling scans for the indicated polymers.

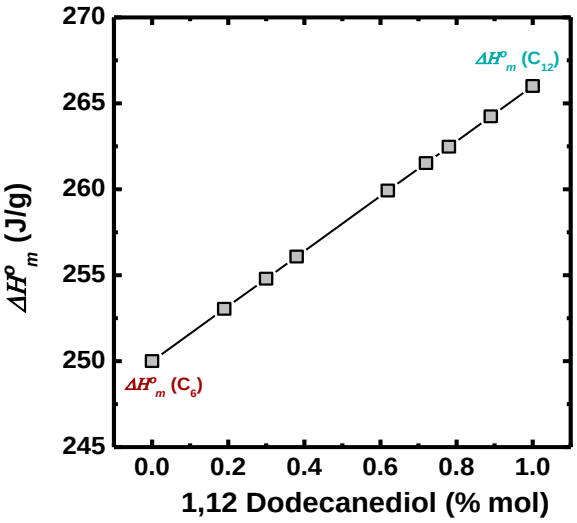


Figure S11. Values of $\Delta H_m{}^{\circ}$ depending on the composition C6/C12.

$$\Delta H^{\circ}{}_{m(C6/C12)} = \Delta H^{\circ}{}_{m(C6)} * X_{(C6)} + \Delta H^{\circ}{}_{m(C12)} * X_{(C12)} \qquad (1)$$

Where $\Delta H^{\circ}{}_{m(C6)}$ and $\Delta H^{\circ}{}_{m(C12)}$ is the enthalpy of homopolymers if they were 100% crystalline. $X_{(C6)}$ and $X_{(C12)}$ is the mass fraction of each homopolymer present in the copolymer.

$\Delta H^{\circ}{}_{m(C6)}$ and $\Delta H^{\circ}{}_{m(C12)}$ were calculated following the procedure reported in the literature. [1]

2. REFERENCES

(1) Van Krevelen, D. W.; Te Nijenhuis, K. Calorimetric Properties. In *Properties of Polymers*; Elsevier, 2009; pp 109–128. DOI:10.1016/B978-0-08-054819-7.00005-4.