

## SUPPORTING INFORMATION

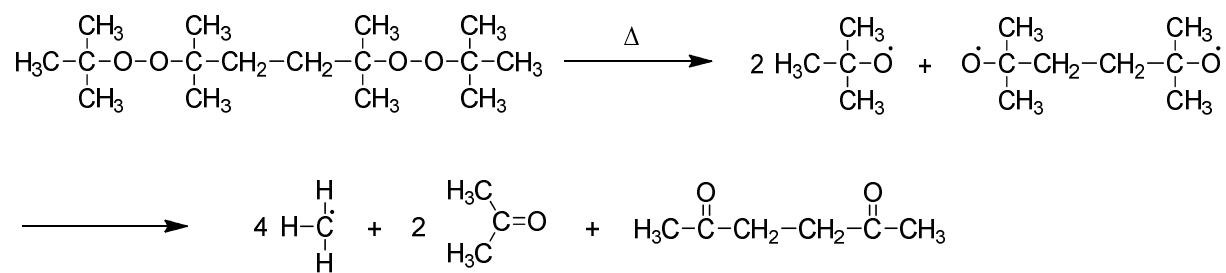
### **Solid-Liquid Europium ions extraction Via Phosphonic acid-functionalized Polyvinylidene fluoride siloxanes.**

Mohammad Wehbi,<sup>\*a,b,#</sup> Ahmad Mehdi,<sup>a</sup> Ali Alaaeddine,<sup>b</sup> Nada Jaber<sup>b</sup> and Bruno Ameduri<sup>\*,a</sup>

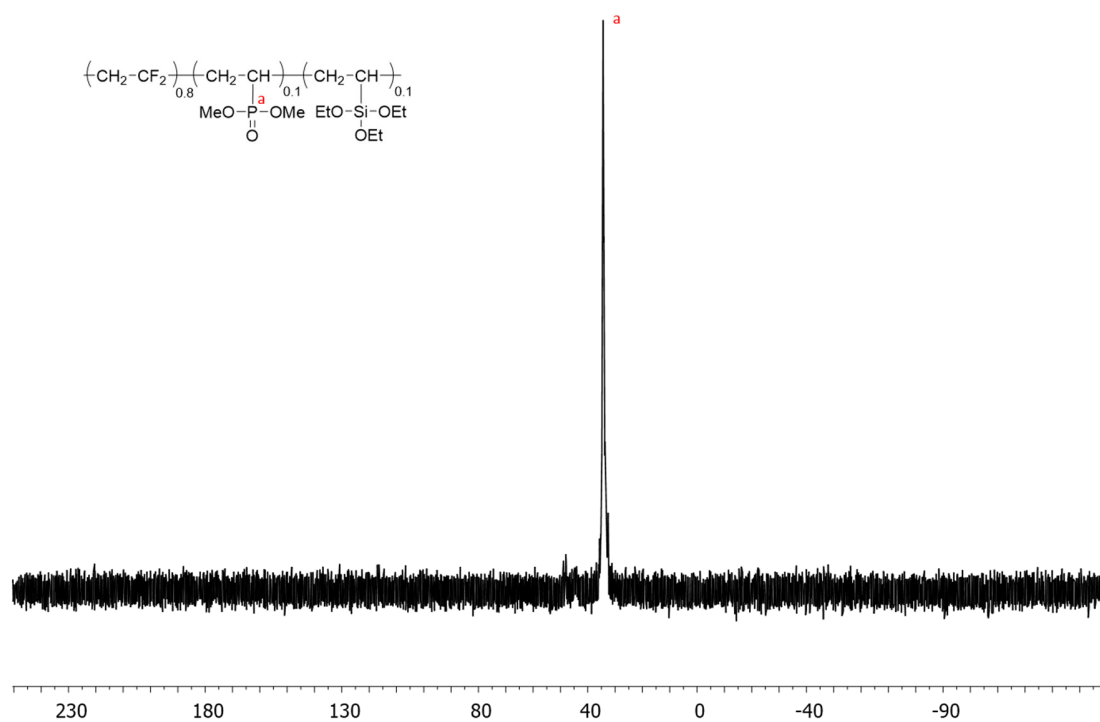
<sup>a</sup>ICGM, Univ. Montpellier, CNRS, ENSCM, Montpellier, France.

<sup>b</sup>Department of Chemistry and Biochemistry, Faculty of Sciences 1, Lebanese University, Rafic Hariri Campus – Hadath, Beirut, Lebanon.

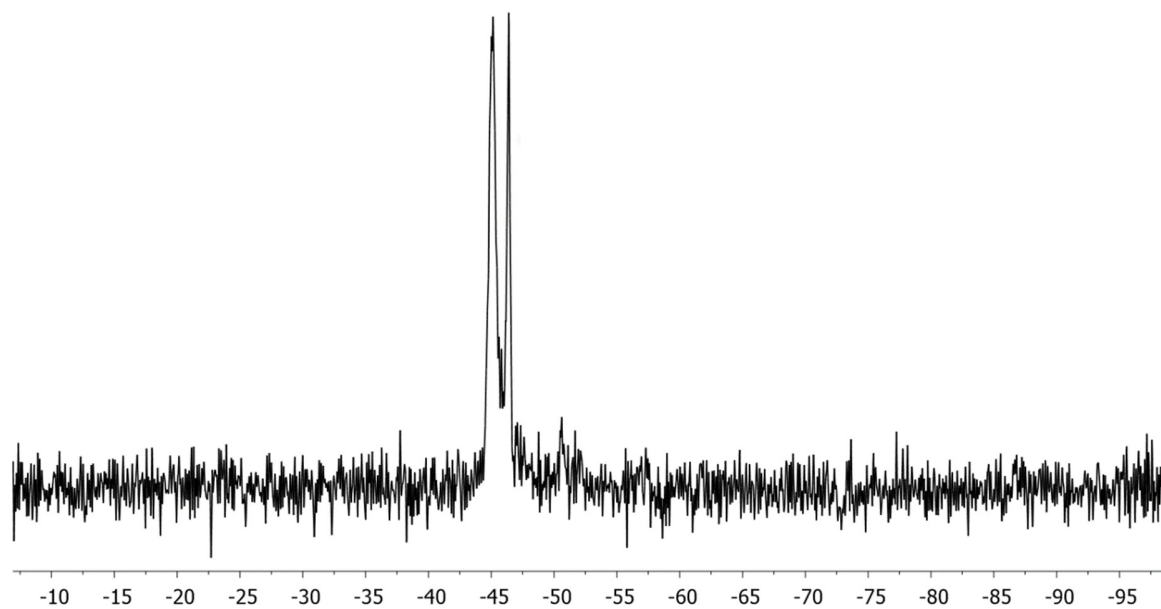
<sup>#</sup>Present address: Laboratoire de Chimie Moléculaire et Thio-organique, École nationale supérieure d'ingénieurs de Caen, 6 Boulevard Maréchal Juin, 14000 Caen, France.



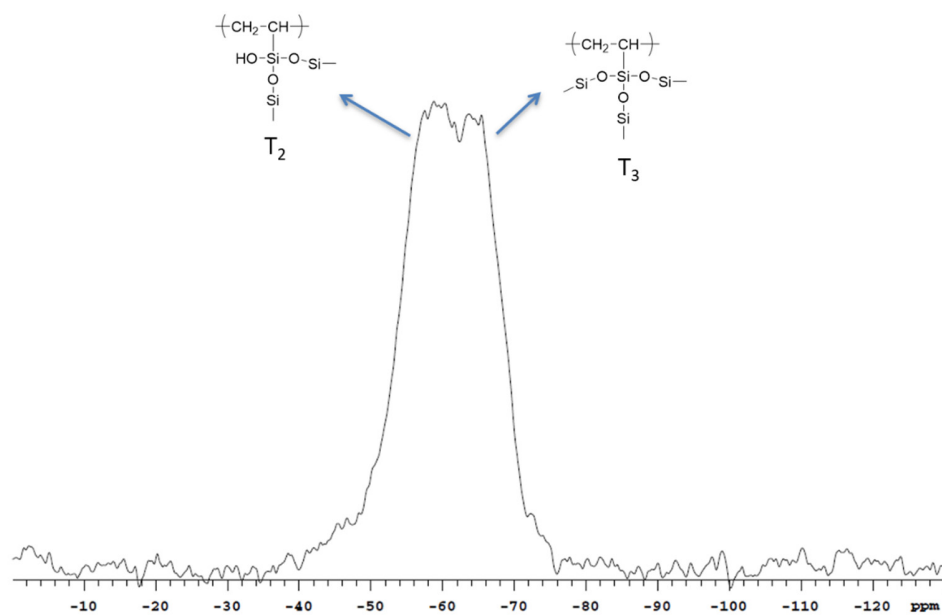
**Scheme S1.** Mechanism of dissociation of 2,5-dimethyl-2,5-di(*tert*-butylperoxy) hexane (DTBPH) to release various radicals.



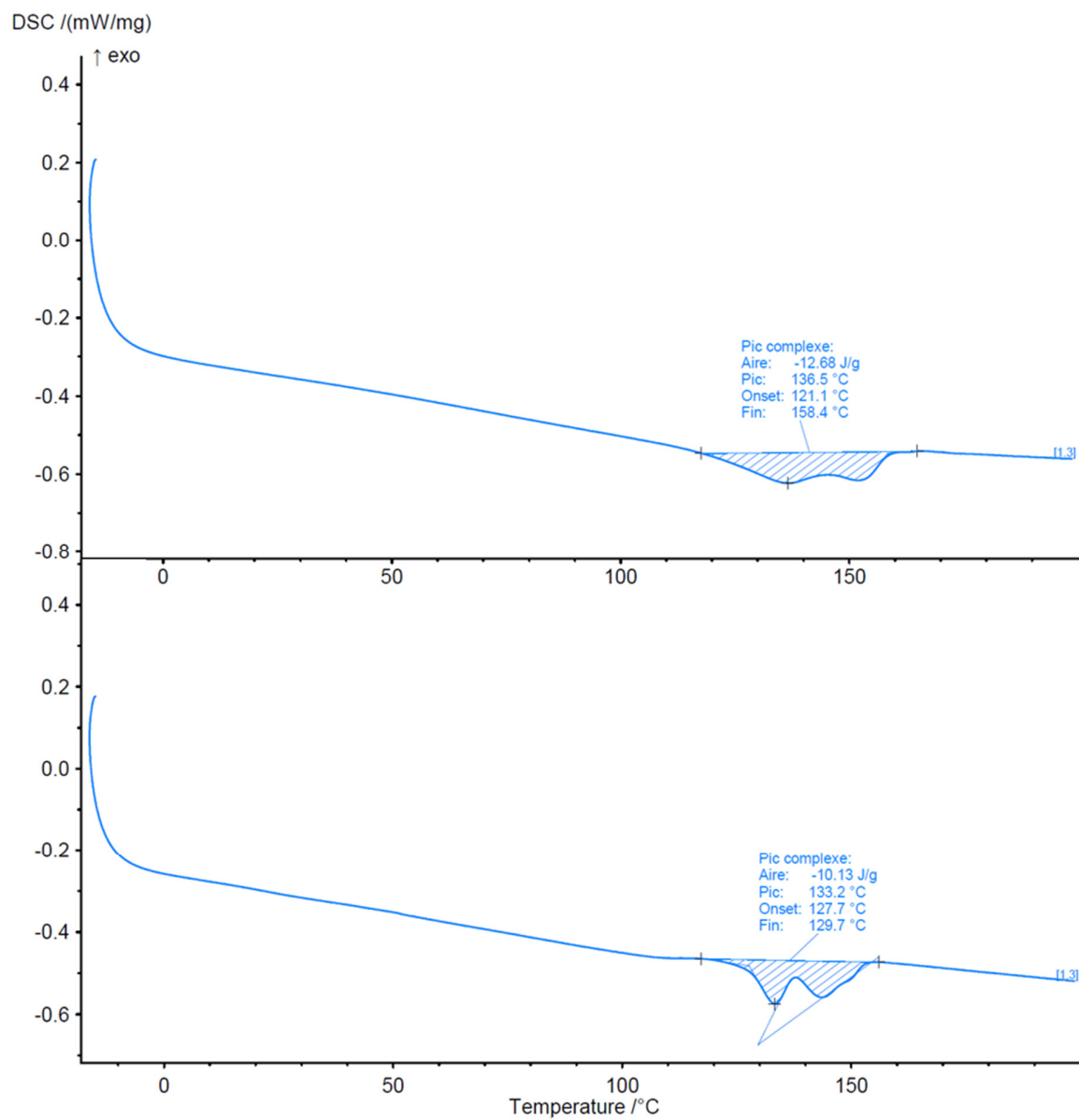
**Figure S1.**  $^{31}\text{P}$  NMR spectrum of poly(VDF-*ter*-VDMP-*ter*-VTEOS) terpolymer (**P<sub>20</sub>**, Table 1), recorded in DMF-*d*<sub>7</sub> at 20 °C.



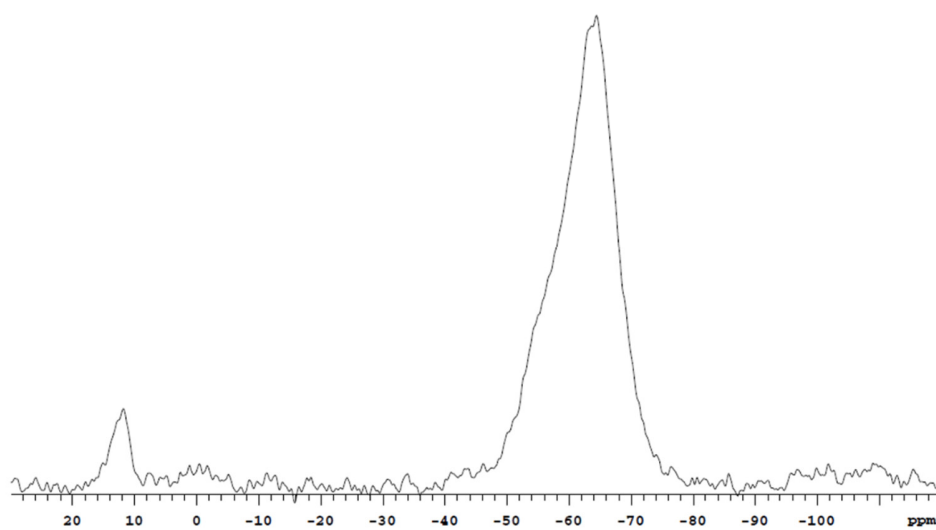
**Figure S2.**  $^{29}\text{Si}$  NMR spectrum of poly(VDF-*ter*-VDMP-*ter*-VTEOS) terpolymer (**P<sub>20</sub>**, Table 1), recorded in DMF- $d_7$  at 20 °C.



**Figure S3.** OP-MAS solid state  $^{29}\text{Si}$  NMR of poly(VDF-*ter*-VDMP-*ter*-VTEOS) terpolymer after crosslinking ( $\text{CP}_{20}$ ).



**Figure S4.** DSC thermograms of poly(VDF-*ter*-VDMP-*ter*-VTEOS) terpolymer (P<sub>20</sub>, Table 1) before (down) and after crosslinking (top).



**Figure S5.** Solid state  $^{29}\text{Si}$  NMR spectrum of hydrolyzed crosslinked poly(VDF-*ter*-VPA-*ter*-VTEOS) terpolymer (**HCP<sub>20</sub>**).