

## Supplementary Information

### **First report on phosphonate-based homopolymer combining both gadolinium chelating and thermosensitive properties: synthesis and evaluation**

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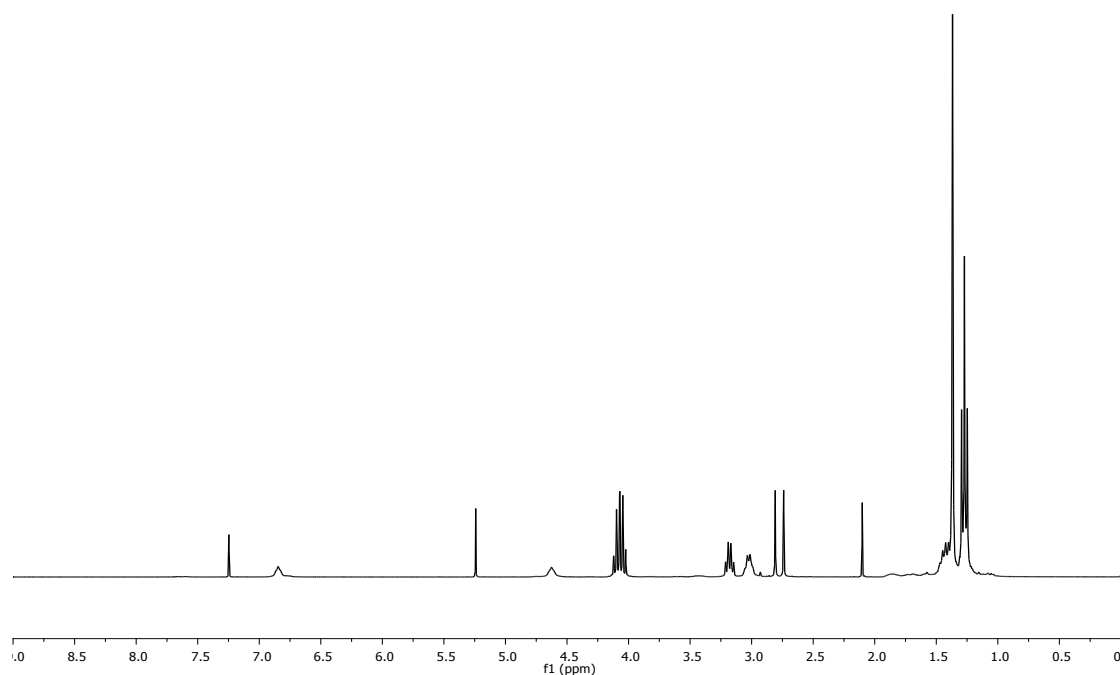
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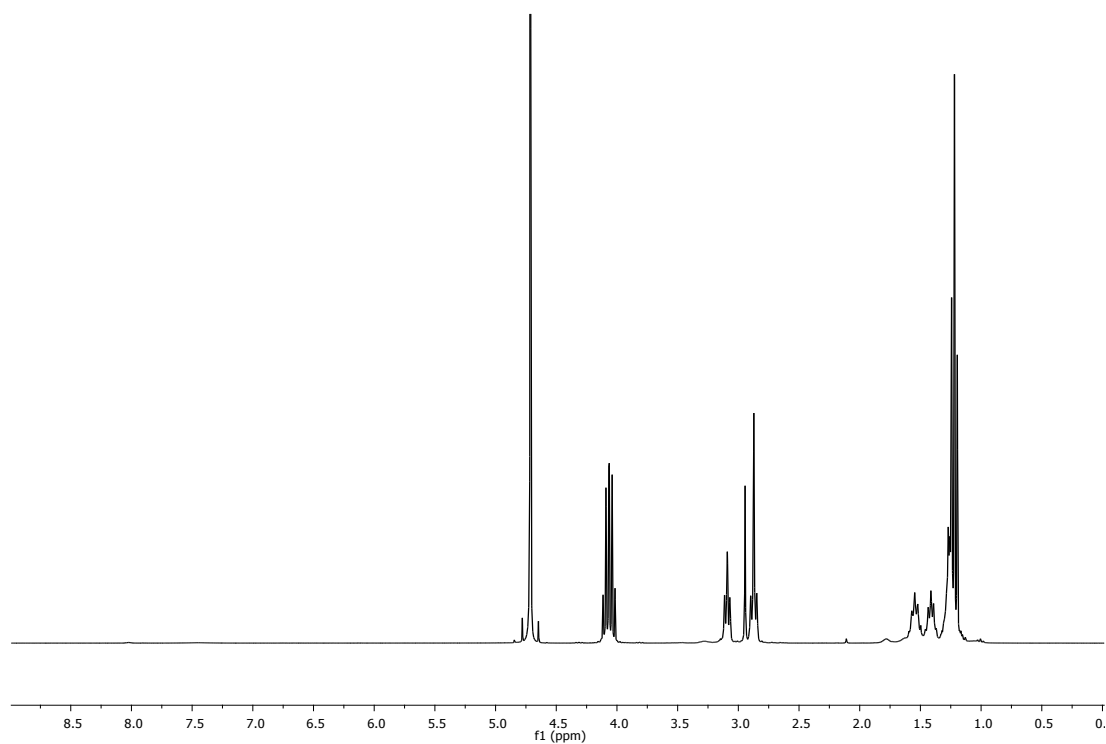
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## CHARACTERIZATION BY $^1\text{H}$ NMR OF THE MONOMER SYNTHESIS

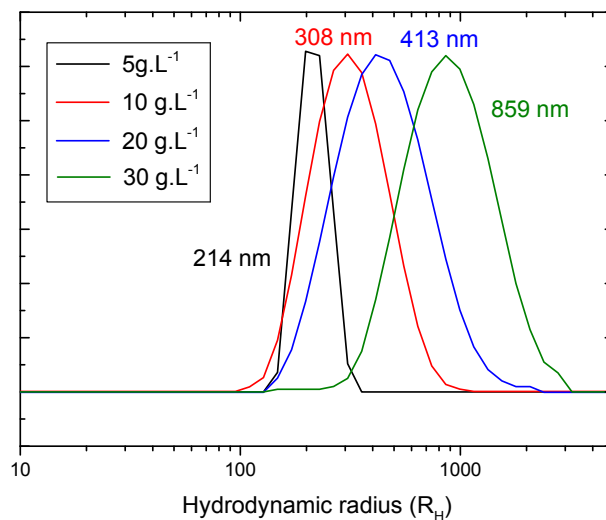


**Fig. S1**  $^1\text{H}$  NMR spectrum in deuterated chloroform of diethyl-6-(tert-butoxycarbonylamino)hexyl carbamoylmethylphosphonate (**2**).

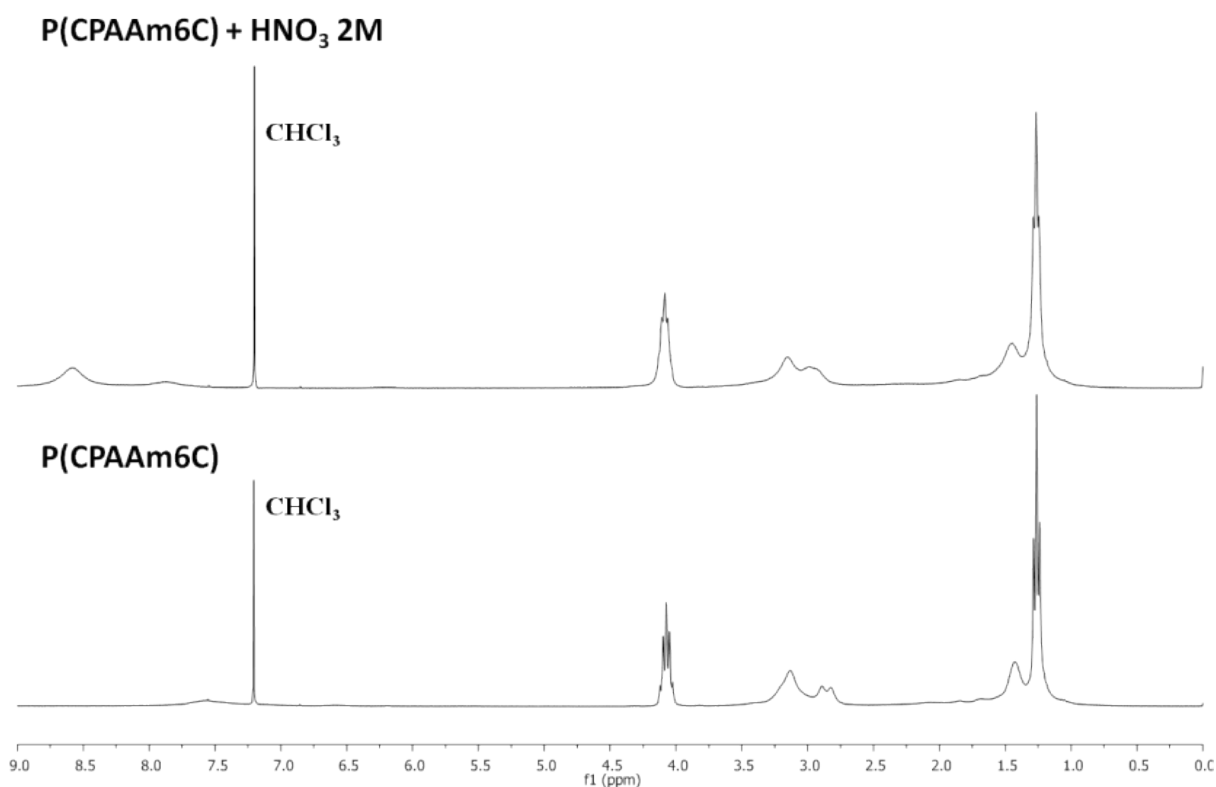


**Fig. S2**  $^1\text{H}$  NMR spectrum in deuterated water of hexyl-6-(diethylcarbamoylphosphonate)-1-amonium trifluoroacetate salt (**3**).

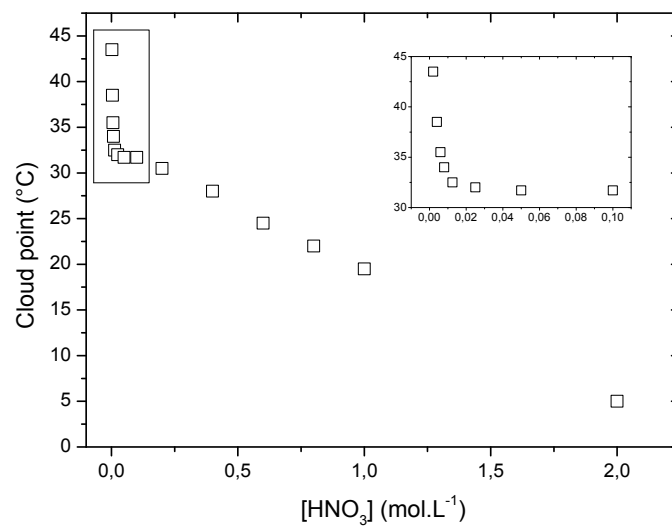
## EVALUATION OF THE THERMOSENSITIVITY PROPERTY OF P(CPAAm6C)



**Fig. S3** Hydrodynamic radii ( $R_H$ ) distributions of P(CPAAm6C) solutions 5 °C above the cloud point at different polymer concentrations (5, 10, 20, and 30 g.L<sup>-1</sup>).



**Fig. S4** <sup>1</sup>H NMR spectrum in deuterated chloroform of P(CPAAm6C) before (below) and after (above) being mixed with nitric acid.



**Fig. S5** Cloud point of P(CPAAm6C) as a function of the nitric acid concentration. The inset represents a zoom at the acid nitric concentration ranging from 0 to 0.1 mol.L<sup>-1</sup> [P(CPAAm6C)] = 5 g.L<sup>-1</sup>.