

Supporting Information

Fluorinated Hydrogel Nanoparticles with Regulable Fluorine Contents and  $T_2$  Relaxation Times as  $^{19}\text{F}$  MRI Contrast Agents

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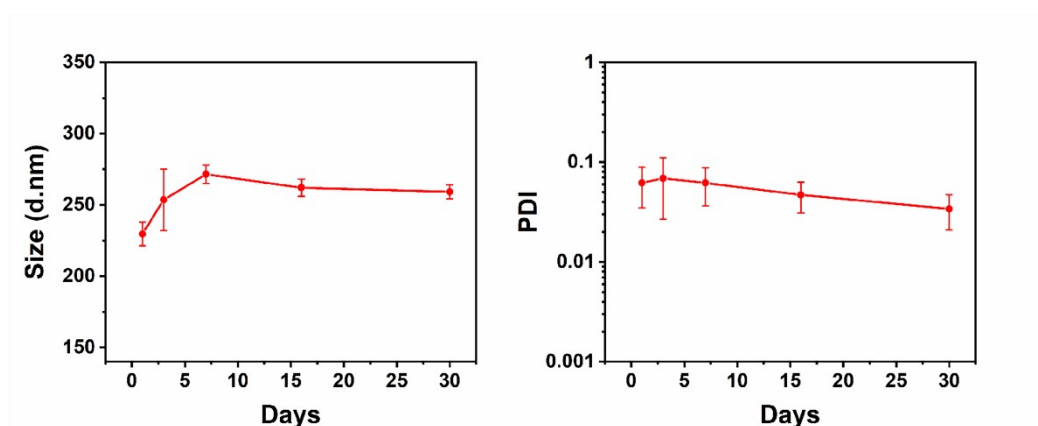
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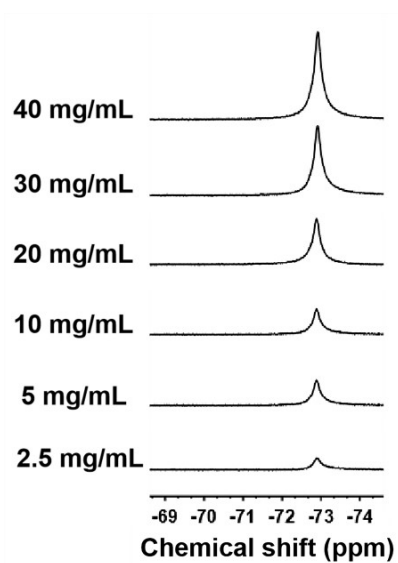
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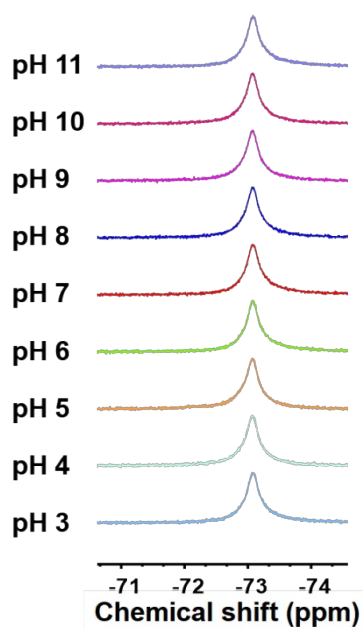
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**Figure S1.** The diameter values of  $^{19}\text{F}$  MRI HNCAs-1 in PBS solution at different time measured by DLS.



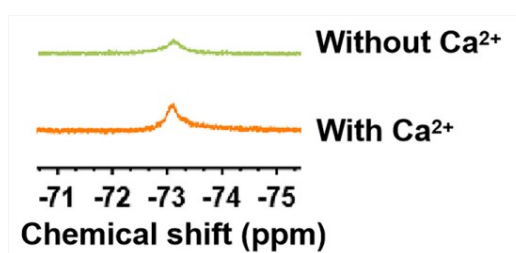
**Figure S2.**  $^{19}\text{F}$  NMR intensity of  $^{19}\text{F}$  MRI HNCAs-1 in aqueous solution ( $\text{D}_2\text{O}/\text{H}_2\text{O}=10/90$ , v/v) at concentration from 2.5 mg/mL to 40 mg/mL.



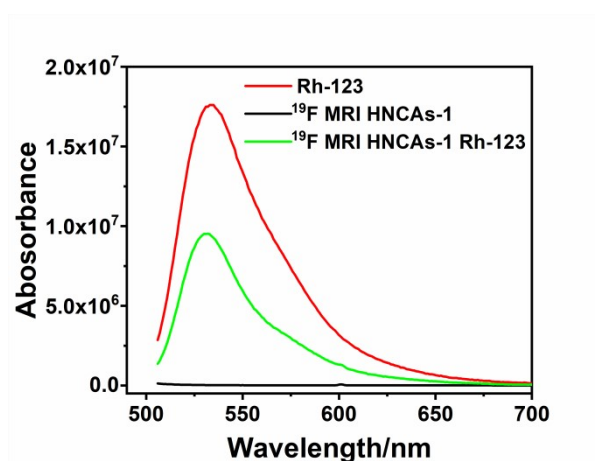
**Figure S3.**  $^{19}\text{F}$  NMR intensity of  $^{19}\text{F}$  MRI HNCAs-1 in aqueous solution ( $\text{D}_2\text{O}/\text{H}_2\text{O}=10/90$ , v/v) at variable pH values (3-11) at the same concentration of nanoobjects (5 mg/mL).

**Table S1.** The constitution and characteristics of  $^{19}\text{F}$  MRI HNCAs

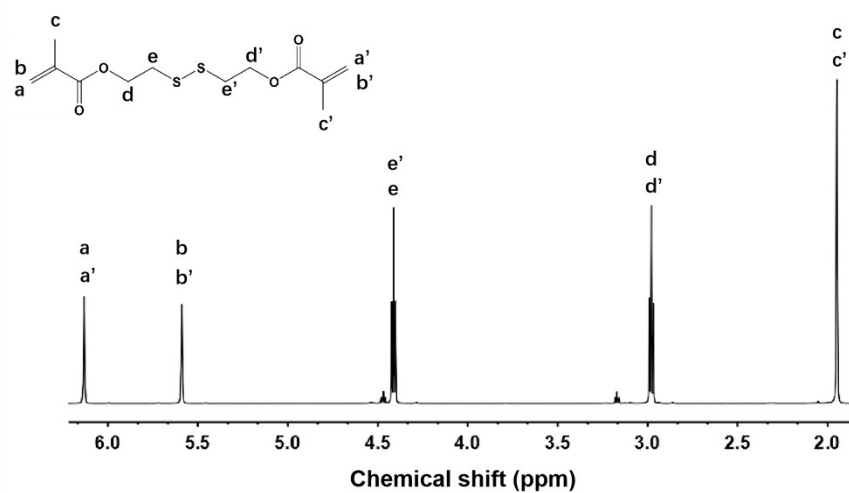
Name	Monomer feed ratio		Diameter (nm)	PDI	Zeta potential (mV)
	TBA (mL)	TFMA (mL)			
$^{19}\text{F}$ MRI HNCAs-1	9	1	230.4±73.2	0.059	-22.4±0.4
$^{19}\text{F}$ MRI HNCAs-2	8	2	226±74.12	0.115	-13.8±0.8
$^{19}\text{F}$ MRI HNCAs-3	7	3	189.3±69.3	0.119	-19.3±0.1
$^{19}\text{F}$ MRI HNCAs-4	6	4	211.5±67.7	0.083	-16.9±0.3
$^{19}\text{F}$ MRI HNCAs-5	5	5	242.7±64.5	0.108	-20.6±1



**Figure S4.** The  $^{19}\text{F}$  NMR intensity comparison of  $^{19}\text{F}$  MRI HNCAs-1 in aqueous solution. (upper: without  $\text{Ca}^{2+}$ , below: with 6 mg/mL  $\text{Ca}^{2+}$ ).



**Figure S5.** Fluorescence spectrum of Rhodamine-123 modified  $^{19}\text{F}$  MRI HNCAs-1 ( $^{19}\text{F}$  MRI HNCAs-1 Rh-123) aqueous solution.



**Figure S6.** <sup>1</sup>H NMR spectrum of disulphide dimethacrylate.