

Impact of biopolymer matrices on relaxometric properties of contrast agents

Supplementary Material

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I. SELF-DIFFUSION COEFFICIENTS: SUPPORTING DATA

Table S1. Water self-diffusion coefficient measured at different Pulse Gradient Amplitudes for 0.25 and 5 % w/v HA hydrogel solution at varying crosslinking degrees (different DVS concentrations). Diffusion coefficients have been measured 8 and 24 hours after crosslinking reaction.

HA (% w/v)	DVS (μL)	D after 8h (* $10^{-9} \text{ m}^2\text{s}^{-1}$)	D after 24h (* $10^{-9} \text{ m}^2\text{s}^{-1}$)
0	0	3.19 ± 0.01	3.19 ± 0.01
0.25	0	3.05 ± 0.01	3.06 ± 0.02
0.25	5	3.01 ± 0.02	3.02 ± 0.01
0.25	10	2.97 ± 0.03	2.98 ± 0.02
0.25	15	2.95 ± 0.03	2.96 ± 0.02
0.25	20	2.92 ± 0.02	2.94 ± 0.02
0.25	25	2.90 ± 0.02	2.92 ± 0.03
5	10	2.88 ± 0.02	2.87 ± 0.01
5	20	2.85 ± 0.01	2.85 ± 0.02
5	30	2.83 ± 0.02	2.85 ± 0.01
5	40	2.84 ± 0.01	2.84 ± 0.02

Table S2. Range of water self-diffusion coefficient measured for Gd-DTPA solutions at different Gd-DTPA concentrations.

Gd-DTPA (μ M)	D (* 10^{-9} m 2 s $^{-1}$)
0	3.19 ± 0.01
50	3.12 ± 0.02
100	3.14 ± 0.02
150	3.09 ± 0.02
200	3.18 ± 0.01
500	3.11 ± 0.02
1000	3.13 ± 0.03

II. ISOTHERMAL TITRATION CALORIMETRY: SUPPLEMENTARY FIGURES

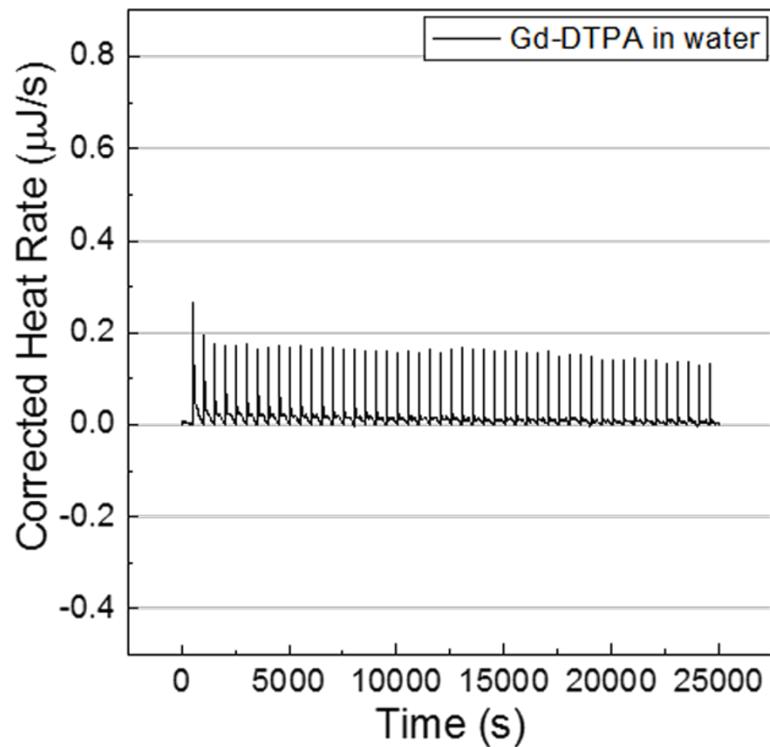


Figure S1. Titration curves of Gd-DTPA in water at 25 °C and 200 rpm.

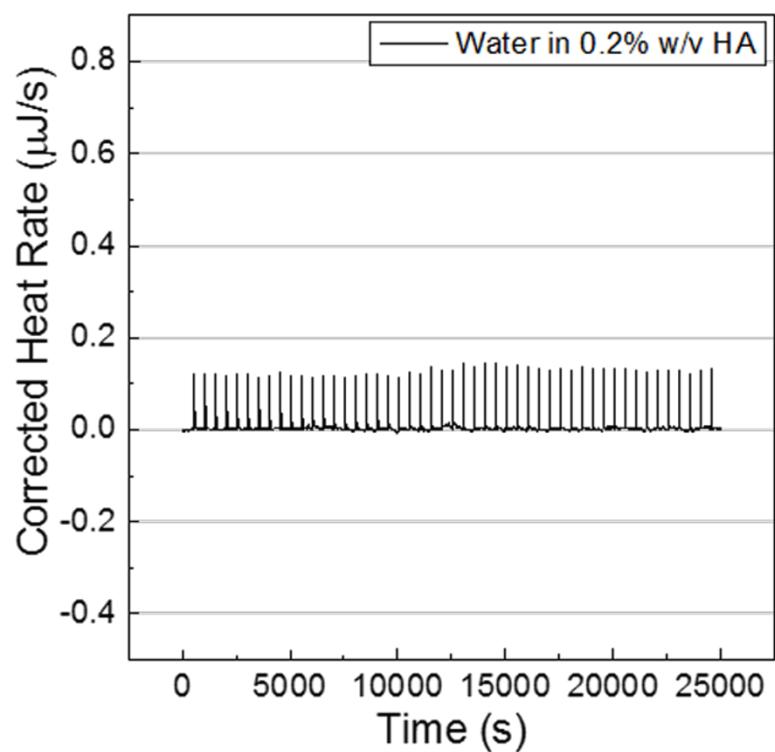


Figure S2. Titration curves of water into 0.2% w/v HA solutions at 25 °C and 200 rpm.

III. LONGITUDINAL RELAXATION TIMES: SUPPORTING DATA

Table S3. Relaxation rates ($1/T_1$) and relaxivity values for: (Sample 1) Gd-DTPA in water; (Sample 2) Gd-DTPA in 0.3% w/v HA solution; (Sample 3) Gd-DTPA in 0.3% w/v HA solution crosslinked with 2.4% w/v DVS; (Sample 4) Gd-DTPA in 0.5% w/v HA solution; (Sample 5) Gd-DTPA in 0.5% w/v HA solution crosslinked with 4% w/v DVS; (Sample 6) Gd-DTPA in 0.7% w/v HA solution; (Sample 7) Gd-DTPA in 0.7% w/v HA solution crosslinked with 5.6% w/v DVS

Gd-DTPA (mM)	Sample 1 (s ⁻¹)	Sample 2 (s ⁻¹)	Sample 3 (s ⁻¹)	Sample 4 (s ⁻¹)	Sample 5 (s ⁻¹)	Sample 6 (s ⁻¹)	Sample 7 (s ⁻¹)
0.000	0.265 ± 0.003	0.264 ± 0.001	0.273 ± 0.000	0.273 ± 0.001	0.331 ± 0.001	0.265 ± 0.003	0.301 ± 0.001
0.010	0.299 ± 0.000	0.309 ± 0.000	0.342 ± 0.001	0.315 ± 0.001	0.301 ± 0.001	0.309 ± 0.001	0.313 ± 0.001
0.020	0.330 ± 0.001	0.347 ± 0.001	0.348 ± 0.001	0.339 ± 0.001	0.360 ± 0.001	0.345 ± 0.000	0.342 ± 0.001
0.025	-	-	0.351 ± 0.001	-	-	-	-
0.030	0.361 ± 0.000	0.372 ± 0.001	0.381 ± 0.001	0.384 ± 0.001	0.382 ± 0.001	0.373 ± 0.001	0.403 ± 0.007
0.035	0.379 ± 0.001	0.388 ± 0.001	-	0.392 ± 0.001	-	-	-
0.040	0.397 ± 0.002	0.398 ± 0.002	0.449 ± 0.001	0.400 ± 0.005	0.445 ± 0.001	0.398 ± 0.003	0.402 ± 0.006
0.050	0.441 ± 0.003	0.434 ± 0.025	0.436 ± 0.001	0.450 ± 0.001	0.510 ± 0.002	0.445 ± 0.001	0.468 ± 0.001
0.060	0.450 ± 0.001	0.463 ± 0.001	0.510 ± 0.001	0.493 ± 0.001	0.485 ± 0.001	0.452 ± 0.001	0.549 ± 0.003
0.070	0.485 ± 0.001	0.496 ± 0.001	0.512 ± 0.001	0.505 ± 0.001	-	-	-
0.080	0.528 ± 0.001	0.562 ± 0.003	0.599 ± 0.004	0.503 ± 0.001	0.610 ± 0.015	0.548 ± 0.002	0.547 ± 0.001
0.100	-	0.588 ± 0.069	0.702 ± 0.002	0.599 ± 0.004	0.590 ± 0.001	0.594 ± 0.002	0.595 ± 0.007
0.130	-	0.685 ± 0.000	0.722 ± 0.002	0.678 ± 0.001	0.701 ± 0.001	0.675 ± 0.002	0.699 ± 0.001
0.150	-	0.754 ± 0.001	0.805 ± 0.002	0.757 ± 0.002	0.797 ± 0.001	0.755 ± 0.001	0.786 ± 0.002
0.180	-	-	-	-	-	0.845 ± 0.002	1.043 ± 0.003
0.200	0.880 ± 0.002	0.909 ± 0.003	1.075 ± 0.002	0.904 ± 0.008	1.098 ± 0.004	0.971 ± 0.002	0.896 ± 0.004
0.250	-	-	-	-	-	1.071 ± 0.003	1.126 ± 0.004
Relaxivity (mM⁻¹s⁻¹)	3.067 ± 0.044	3.185 ± 0.050	3.805 ± 0.164	3.114 ± 0.061	3.655 ± 0.225	3.256 ± 0.064	3.410 ± 0.205