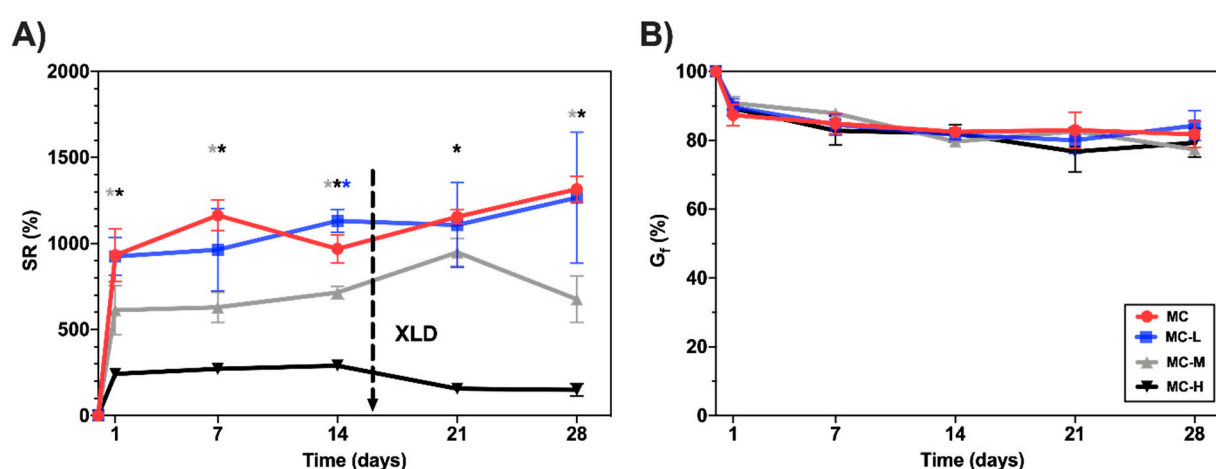


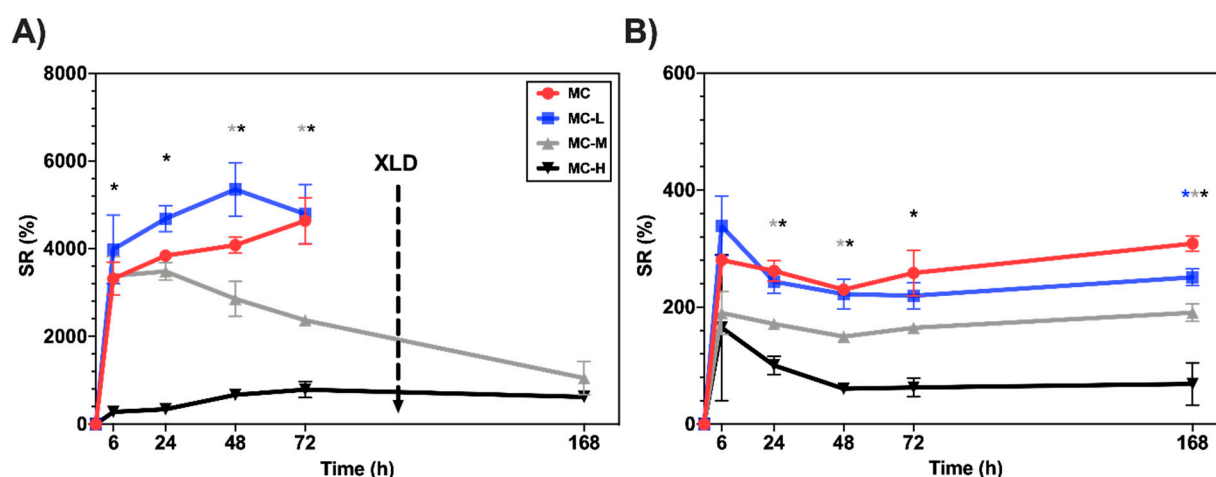
# Smart Methylcellulose Hydrogels for pH-Triggered Delivery of Silver Nanoparticles

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## Supplementary Materials S1: Swelling and gel fraction



**Figure S1.** (A) Swelling ratio (SR %) vs. time of MC hydrogels in NSS at T = 37 °C and pH = 7. (B) Gel fraction (Gf %) vs. time curves of MC hydrogels samples in NSS at T = 37 °C and pH = 7. \* =  $p < 0.05$  compared to MC control (\* = MC vs. MC-L, \* = MC vs. MC-M, \* = MC vs. MC-H).



**Figure S2.** Swelling ratio (SR %) vs. time of MC hydrogels in NSS (A) at T = 25 °C and pH = 7, and (B) at T = 50 °C and pH = 7. \* =  $p < 0.05$  compared to MC control. \* =  $p < 0.05$  compared to MC control (\* = MC vs. MC-L, \* = MC vs. MC-M, \* = MC vs. MC-H).

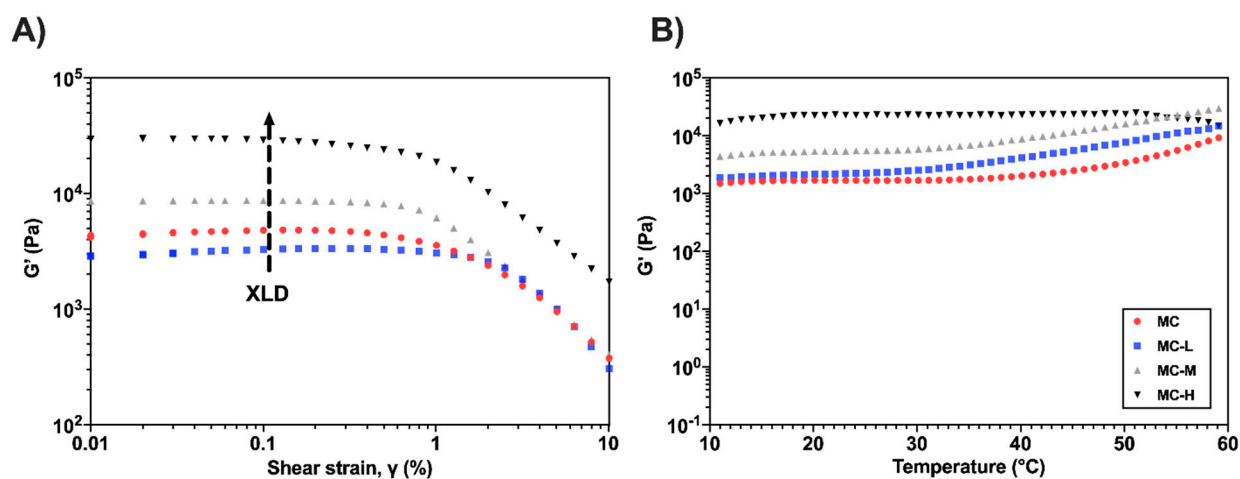
### Supplementary Materials S2: Flory-Rehner model

Table S1 reports the theoretical physical parameters calculated for MC-H samples at the different pH levels (4, 7, 12), at 37 °C.

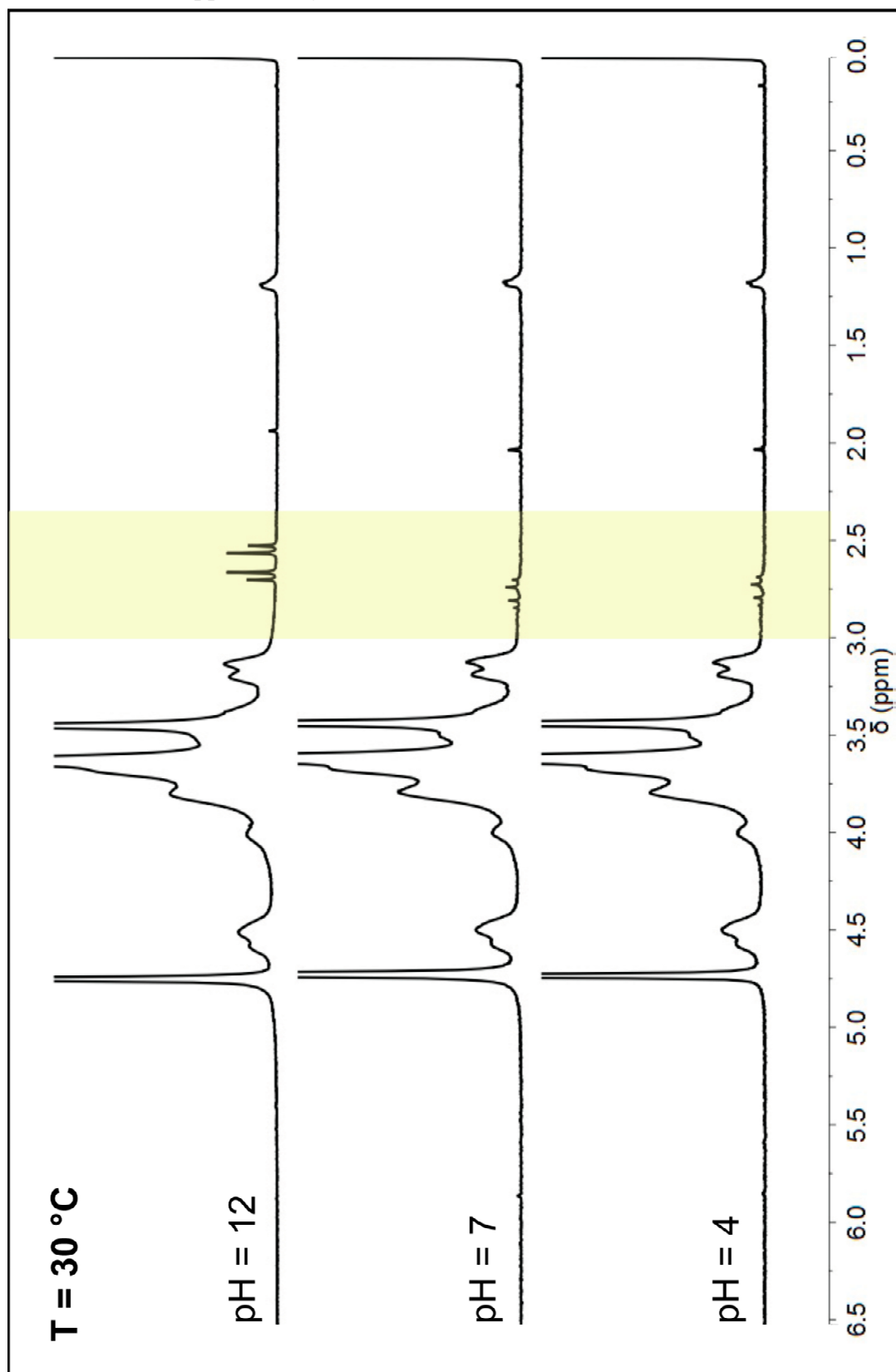
**Table S1.** – Theoretical physical parameters describing MC-H microstructure at the different pH levels (4, 7, 12) at 37 °C. The symbols indicate statistical differences ( $p < 0.05$ ) between the groups.

Parameter	pH = 4	pH = 7	pH = 12
$\overline{M}_c$ (g mol <sup>-1</sup> ) · 10 <sup>2</sup>	2.94 ± 0.06*	3.20 ± 0.15 <sup>#</sup>	26.6 ± 6.2* <sup>#</sup>
$\rho_c$ (mol cm <sup>-3</sup> ) · 10 <sup>-4</sup>	9.39 ± 0.20 <sup>†</sup>	8.65 ± 0.40 <sup>‡</sup>	1.07 ± 0.22 <sup>†‡</sup>
$\xi$ (nm)	4.09 ± 0.06 <sup>f</sup>	4.33 ± 0.14 <sup>€</sup>	19.05 ± 3.07 <sup>f€</sup>

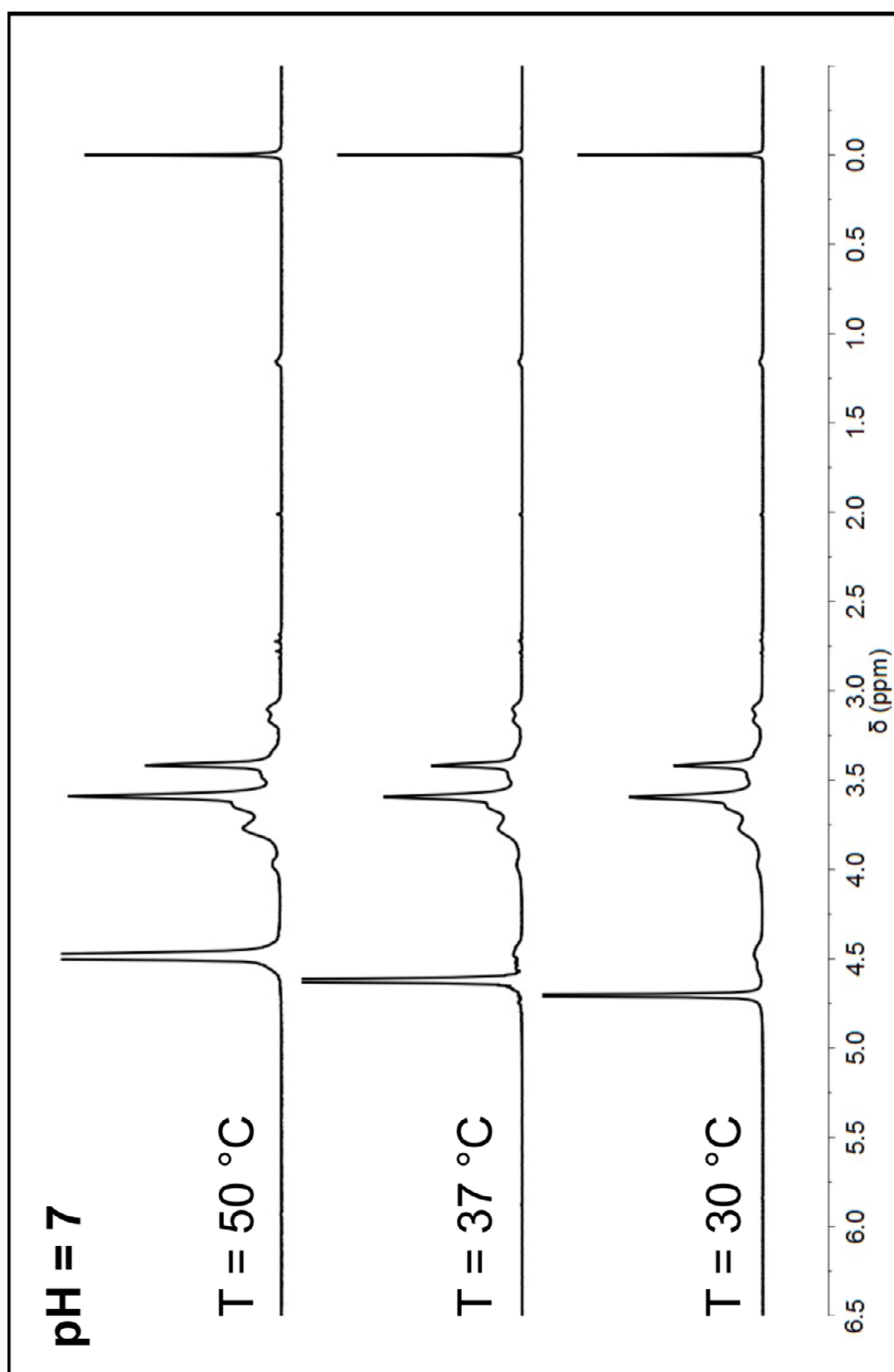
### Supplementary Materials S3: Rheology



**Figure S3.** (A) Representative  $G'$  vs.  $\gamma$  curves for strain sweep tests on MC samples at pH = 7. (B) Representative  $G'$  vs. T curves for temperature sweep tests on MC samples at pH = 7.

Supplementary Materials S4:  $^1\text{H}$ -NMR.

**Figure S4.**  $^1\text{H}$ -NMR spectrum of non-washed MC-H specimens swelled at different pH (4, 7, and 12). All the spectra were acquired at  $30\text{ }^\circ\text{C}$ . The yellow area highlights the  $-\text{CH}_2$  peaks of CA.



**Figure S5.**  $^1\text{H}$ -NMR spectrum of MC-H swelled at pH = 7 at different temperatures (30, 37, and 50 °C).