

Ultrashort Cationic Peptide Fmoc-FFK as Hydrogel Building Block for Potential Biomedical Applications

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Supplementary Materials

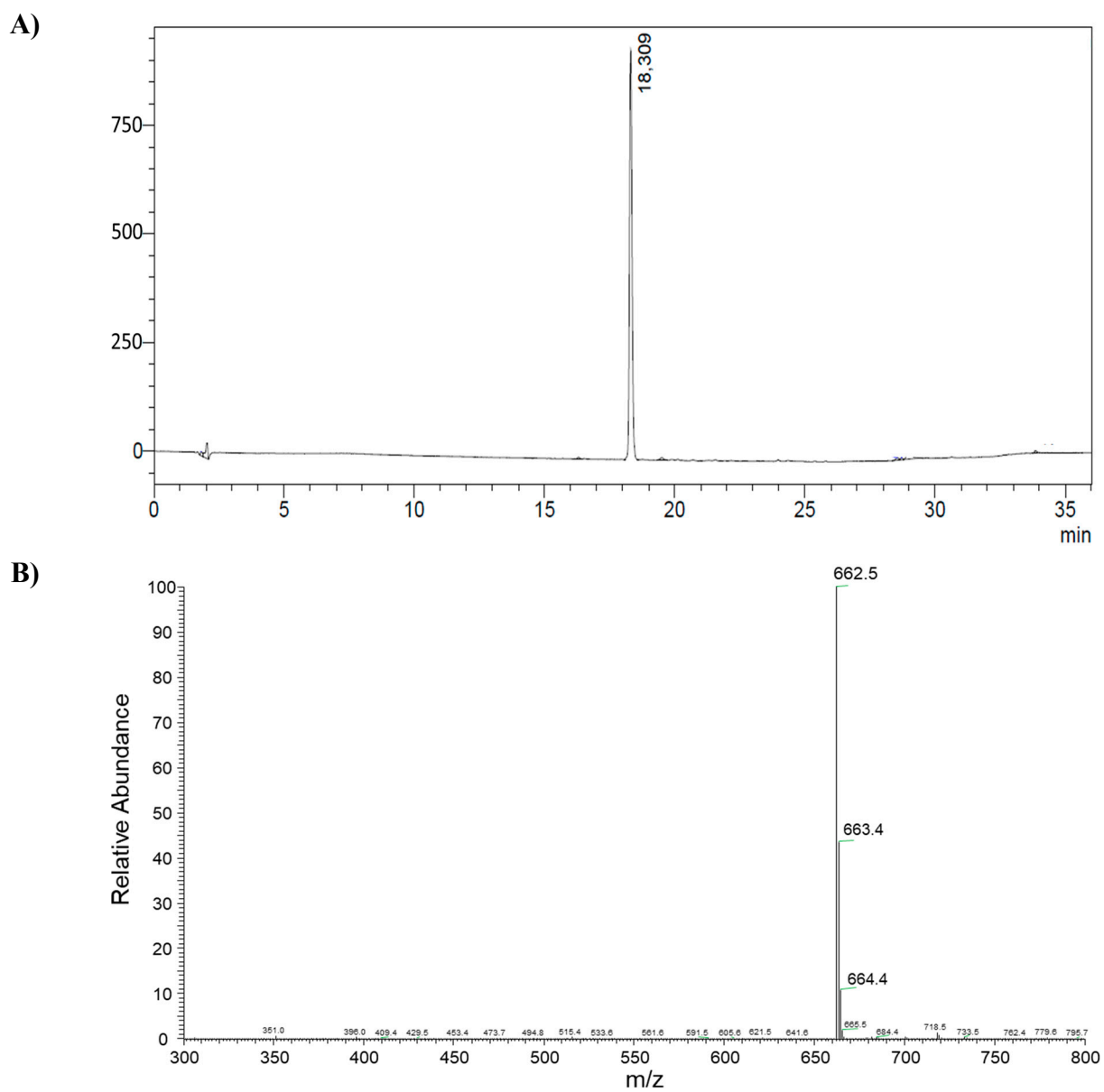


Figure S1: Physicochemical characterization of Fmoc-FFK peptide: A) RP-HPLC chromatography and B) ESI mass spectrum

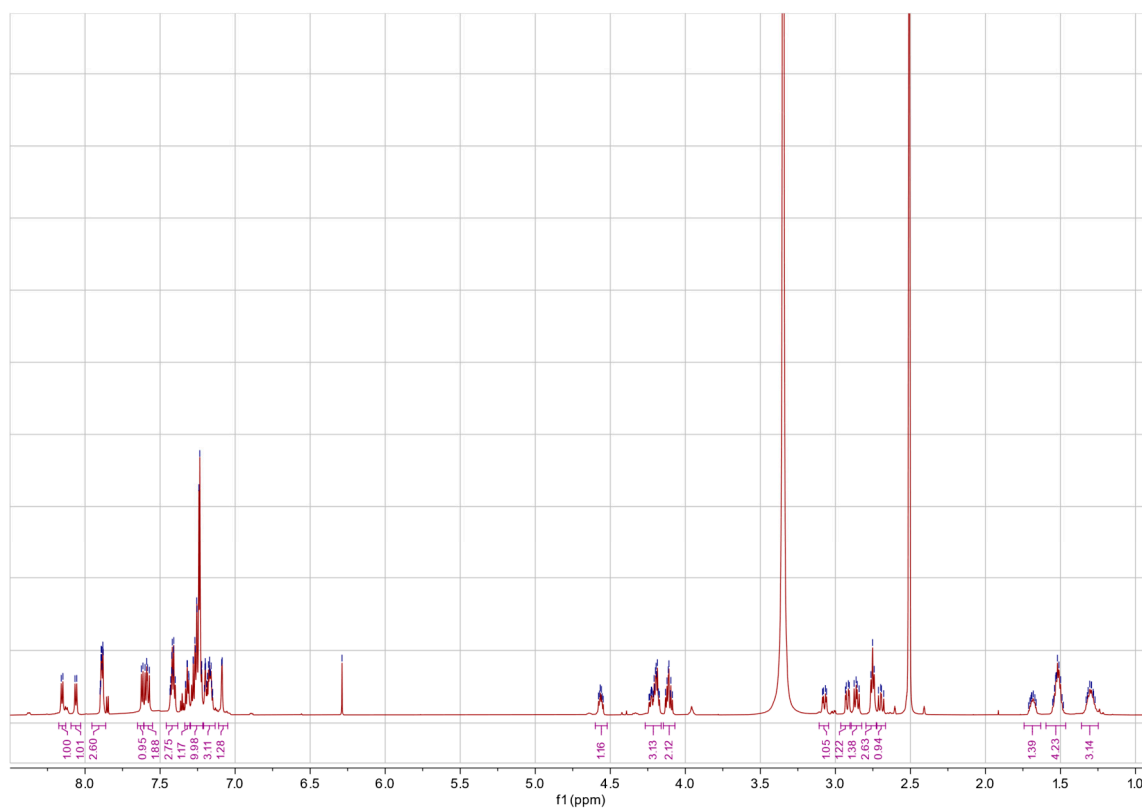


Figure S2: ^1H NMR spectrum of Fmoc-FFK.

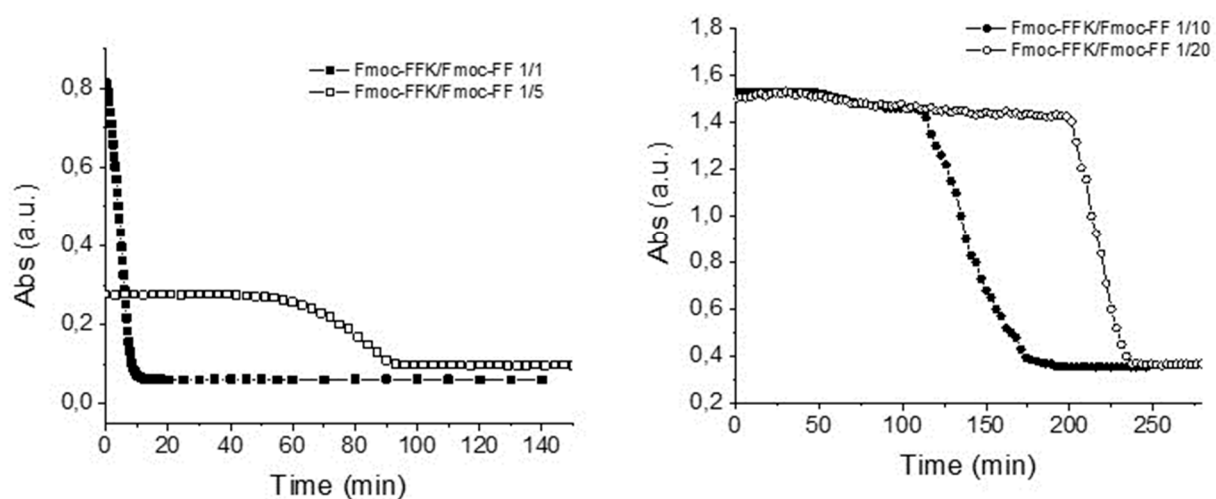


Figure S3: UV-Vis profiles of mixed hydrogels (at different molar ratios) in the long range as function of the time.

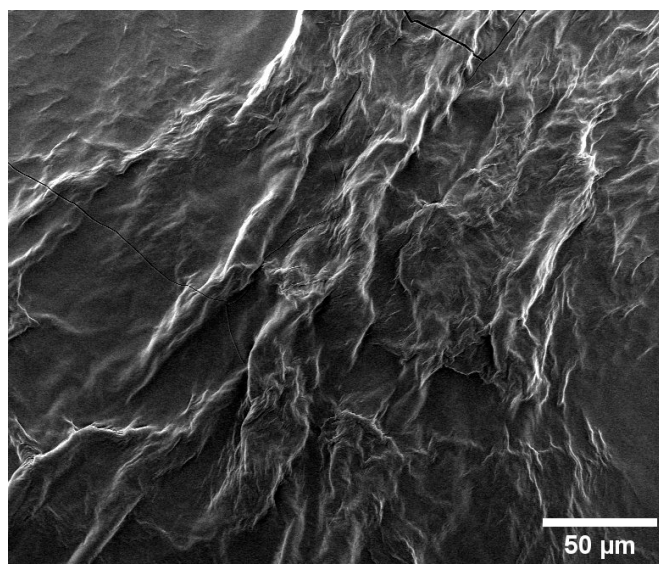


Figure S4: Microphotos of pure xerogels of Fmoc-FFK 2.0 wt %. Scale bar 50 μm.

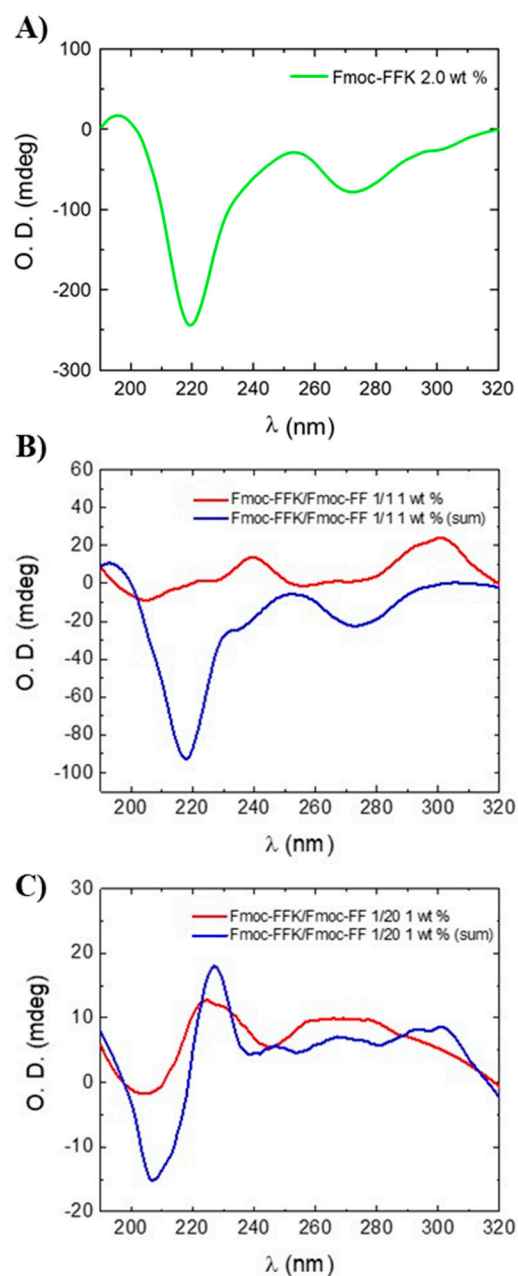


Figure S5: CD spectra in optical density of: A) Fmoc-FFK 2.0 wt%, B) mixed Fmoc-FFK/Fmoc-FF 1/1 at 1.0 wt%, and C) mixed Fmoc-FFK/Fmoc-FF 1/20 at 1.0 wt% (red lines). These spectra of the two mixed hydrogels are reported in comparison to the CD sum of Fmoc-FFK/Fmoc-FF 1/1 and 1/20 (blue lines).

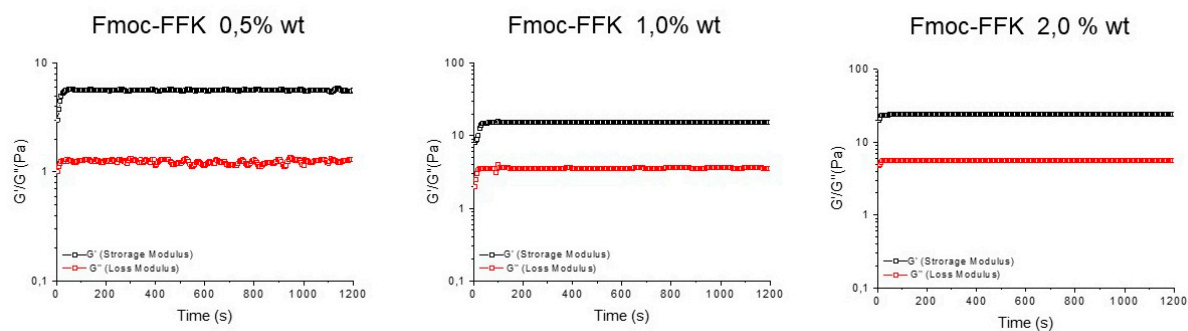


Figure S6: Time sweep (20 minutes) for pure Fmoc-FFK hydrogels at three different concentrations 0.5, 1.0 and 2.0 wt %. Rheological analysis is reported in terms of G' (Storage modulus) and G'' (Loss modulus).

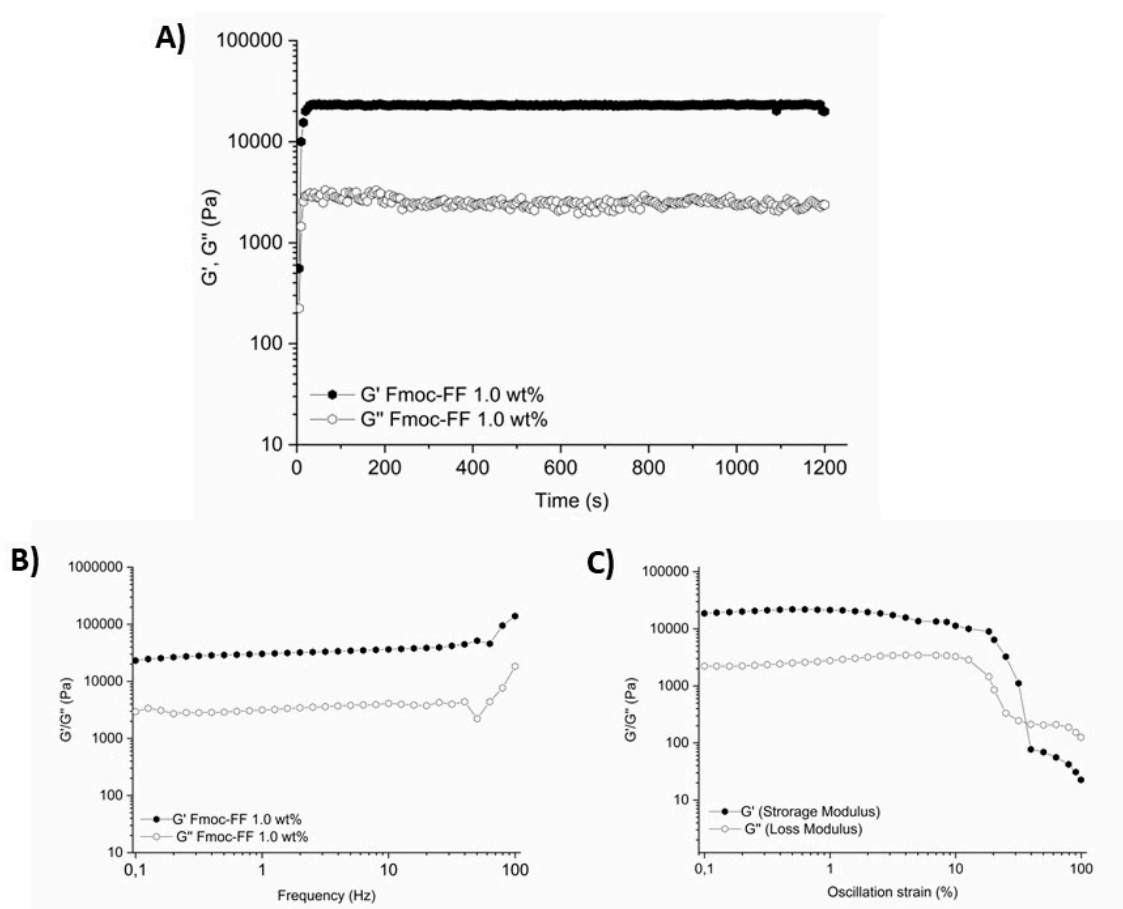


Figure S7: Rheological characterization of self-assembled Fmoc-FF hydrogel: A) time sweep (20 minutes) reported in terms of G' (Storage modulus) and G'' (Loss modulus), B) frequency and C) oscillation strain.

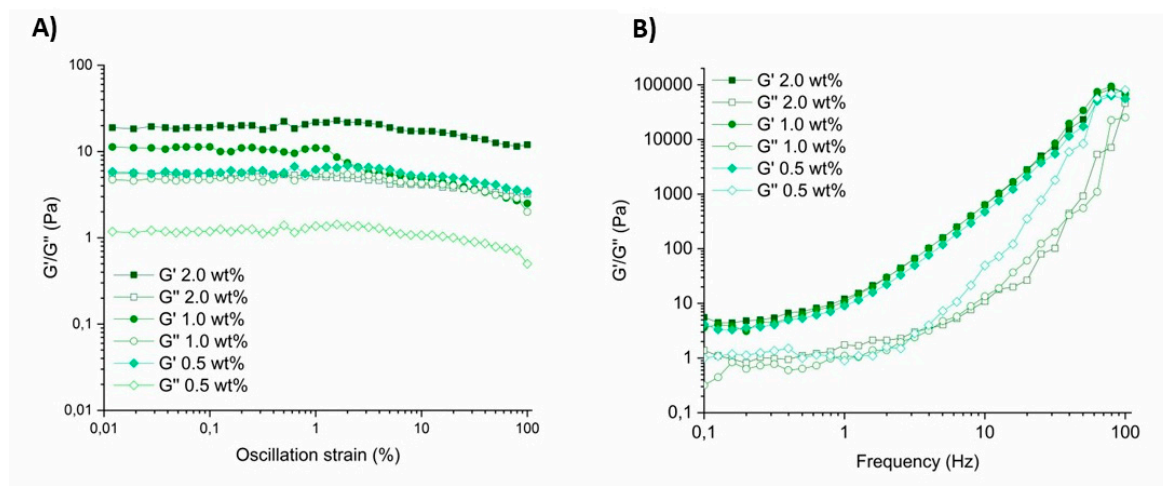


Figure S8: Rheological characterization of self-assembled Fmoc-FFK hydrogels at 0.5wt%, 1.0wt% and 2.0 wt%: A) frequency and B) oscillation strain.

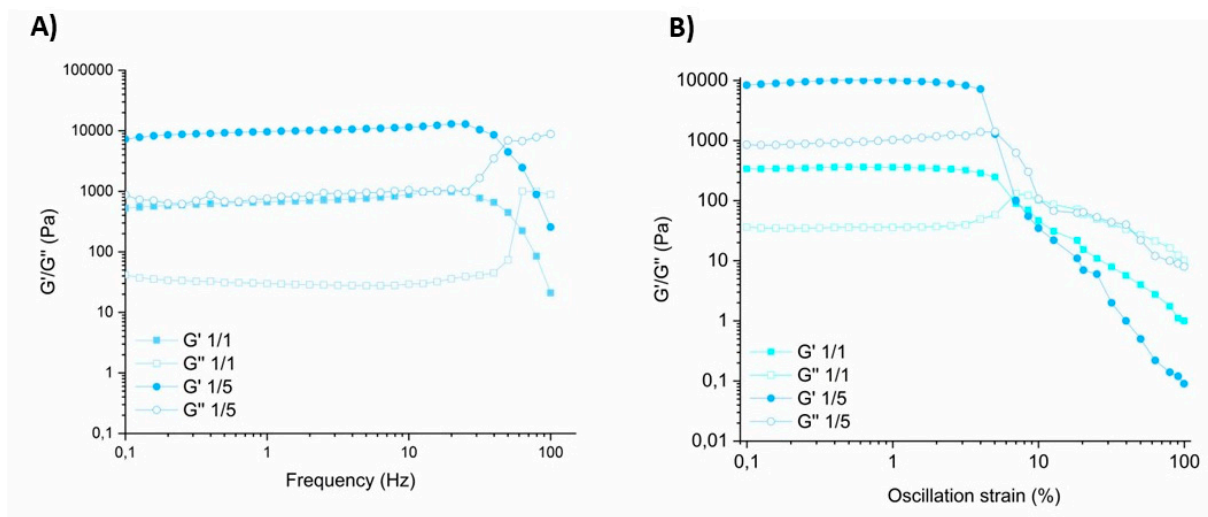


Figure S9: Rheological characterization of mixed Fmoc-FF/Fmoc-FFK hydrogels at 1/1 and 1/5 w/w ratio: A) frequency and B) oscillation strain.

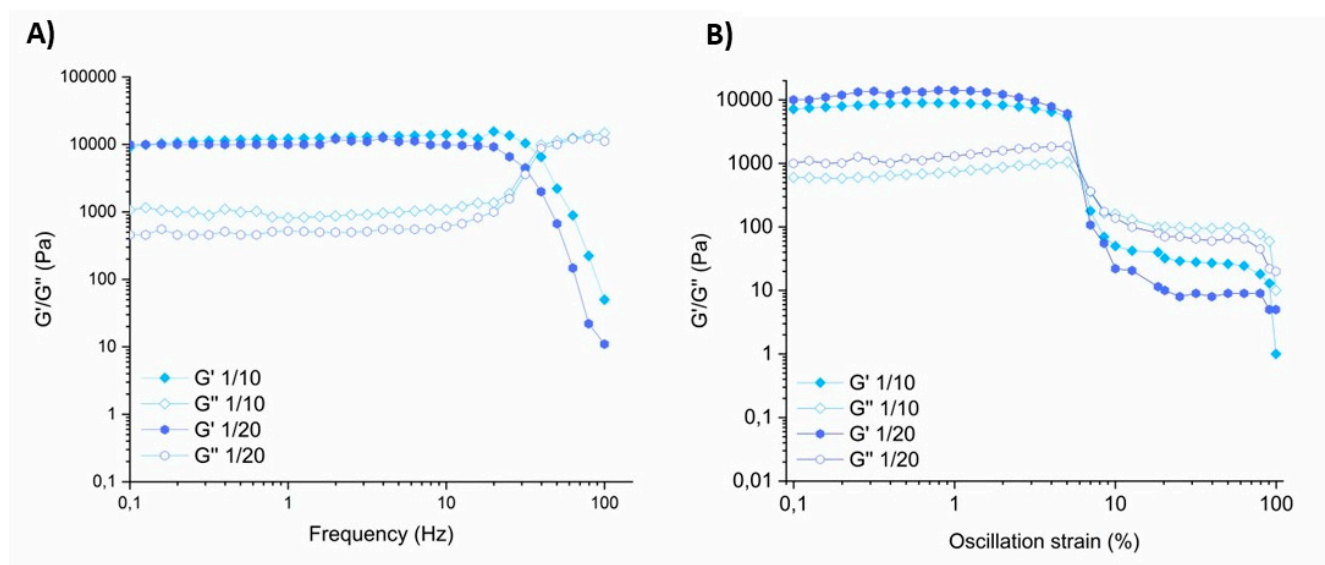


Figure S10: Rheological characterization of mixed Fmoc-FF/Fmoc-FFK hydrogels at 1/10 and 1/20 w/w ratio: A) frequency and B) oscillation strain.

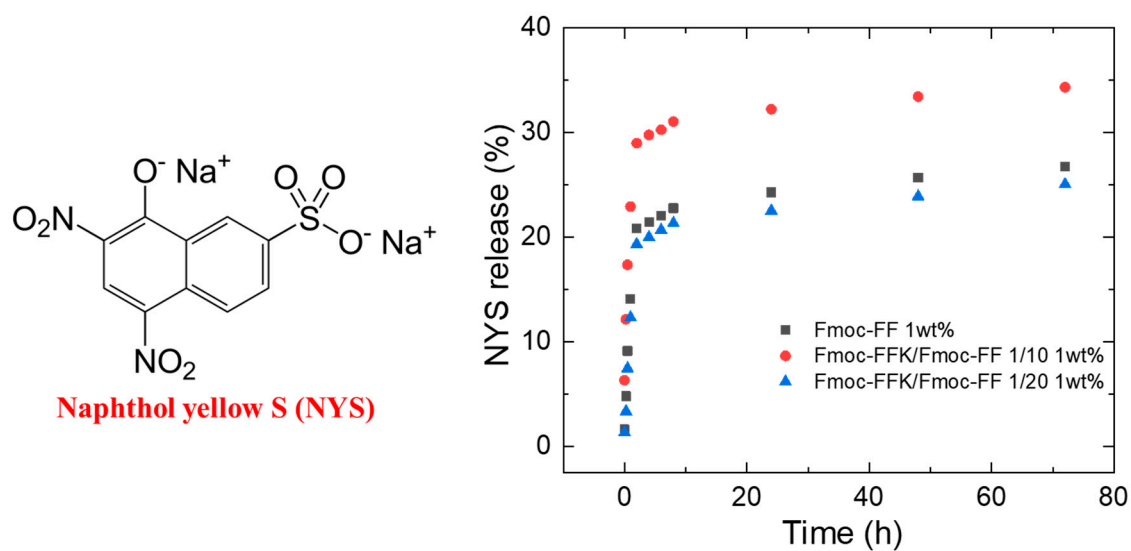


Figure S11: On the left: chemical structure of NYS; on the right: release kinetics of NYS from Fmoc-FF, Fmoc-FFK/Fmoc-FF 1/10 and 1/20 HGs.

Table S1: swelling test results for multicomponent hydrogel Fmoc-FFK/Fmoc-FF in comparison to the other mixed or pure hydrogels from the literature based on Fmoc-FF peptide.

<i>HGs sample</i>	<i>Concentration (wt%)</i>	<i>Ratio (w/w)</i>	<i>q %</i>
Fmoc-FF	1.0	-	29.0
Fmoc-FFK	0.5	-	32.4
	1.0	-	34.0
	2.0	-	37.5
Fmoc-FFK/Fmoc-FF	1.0	1/1	35.0
		1/5	35.1
		1/10	33.8
		1/20	33.7
Fmoc-FFC/Fmoc-FF	1.0	1/5	38.6
		1/10	36.2
		1/20	33.2
Fmoc-FFS/Fmoc-FF	1.0	1/5	34.0
		1/10	34.8
		1/20	36.0
Fmoc-FFT/Fmoc-FF	1.0	1/5	37.0
		1/10	37.9
		1/20	41.0

Table S2: Quantitative multivariate percentage analysis for secondary structure estimation (SEE) achieved *via* method of principal component regression (PCR) with Jasco SEE® dedicated software.

<i>HGs system</i>	<i>α-helix (%)</i>	<i>β-sheet (%)</i>	<i>β-turn (%)</i>	<i>Others (%)</i>
Fmoc-FFK 2.0 wt%	0	56	21	23
Fmoc-FF/ Fmoc-FFK 1/1	10	50	19	21
Fmoc-FF/ Fmoc-FFK 1/5	58	12	17	13
Fmoc-FF/ Fmoc-FFK 1/10	66	8	13	13
Fmoc-FF/ Fmoc-FFK 1/20	69	2	12	17