Supporting information for

Organic/Inorganic hydrogels by simultaneous self-assembly and mineralization of aromatic short-peptides

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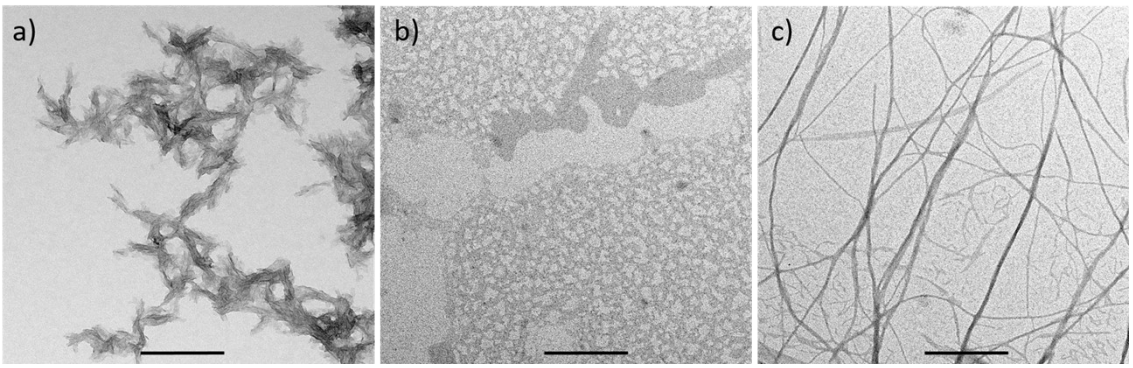

Figure S1. TEM images of HA (a), Fmoc-AA (b) and Fmoc-FF(c) samples. Scale bar= 200 nm.

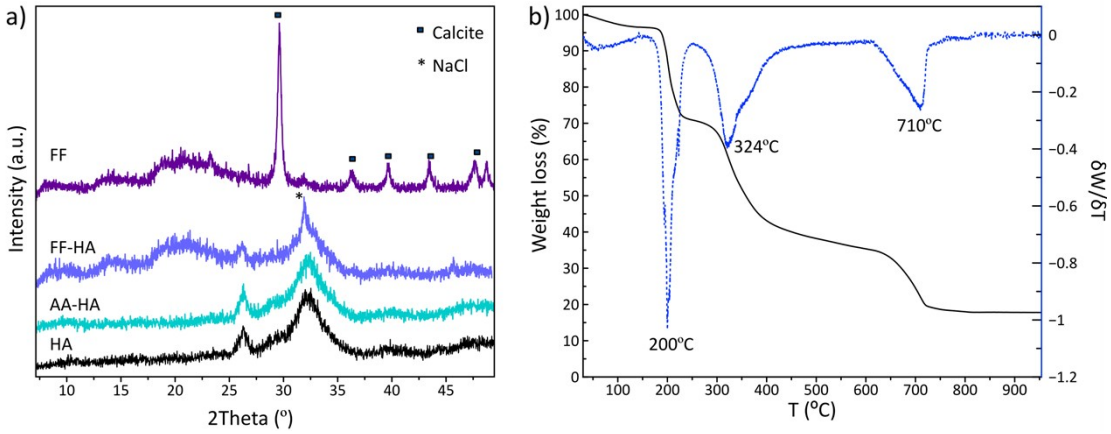

Figure S2. (a) XRD patterns of FF, FF-HA, AA-HA and HA samples. (b) TGA (black line) and DTG curve (blue line) curve of control FF xerogel. XRD patterns of HA, FF-HA and AA-HA samples display two broad Bragg peaks at around 26º and 32º (2θ) ascribed to poor crystalline hydroxyapatite (HA, ASTM card file No 09-432). XRD pattern of control FF xerogel confirmed the presence of calcite ($CaCO_3$, ASTM card file No. 5-586) which corresponds with the 17% of weight remained in TGA curve after heating at 900 ºC.

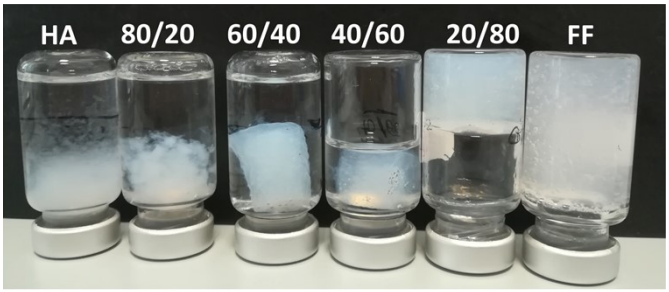

Figure S3. Pictures of inverted vials of hybrid hydrogels at several nominal HA/FF weight ratios (i.e., 80/20, 60/40, 40/60 and 20/80), Fmoc-FF hydrogel and HA suspension.

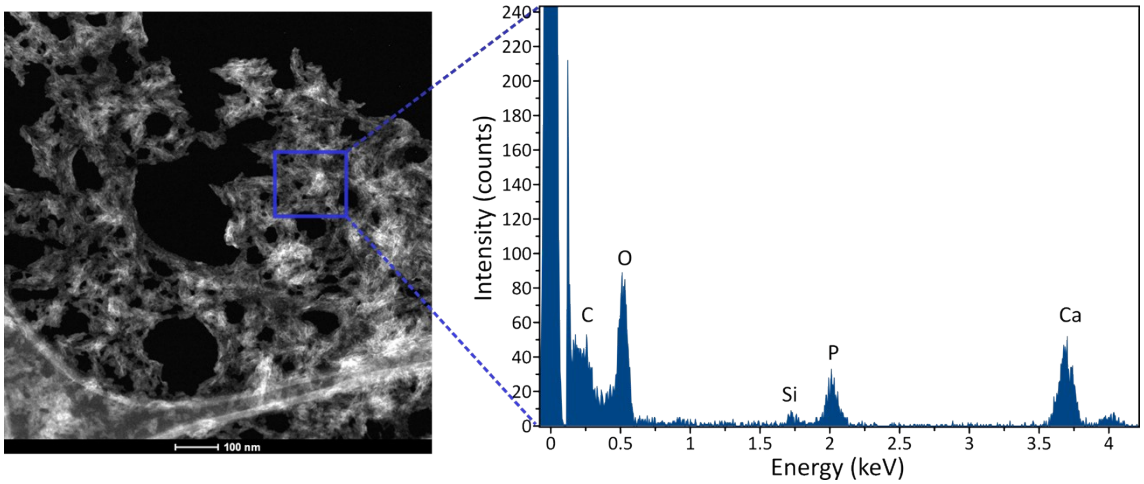

Figure S4. HAADF-STEM image and energy-dispersive X-ray (XED) spectrum of selected area of nominal 40/60 hybrid hydrogels.

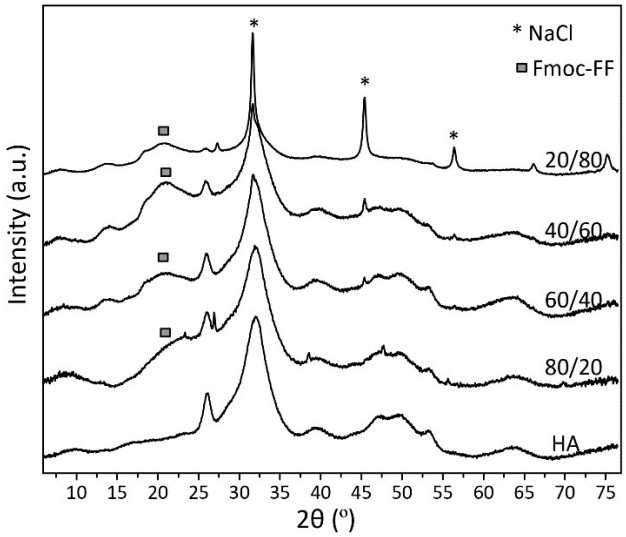

Figure S5. XRD patterns of HA and hybrid xerogels synthesized at nominal HA/FF weight ratios: 20/80, 40/60, 60/40 and 80/20. Broad peaks at *ca.* 26º and 32º (2θ) are ascribed to poor crystalline hydroxyapatite (HA, ASTM card file No 09-432).

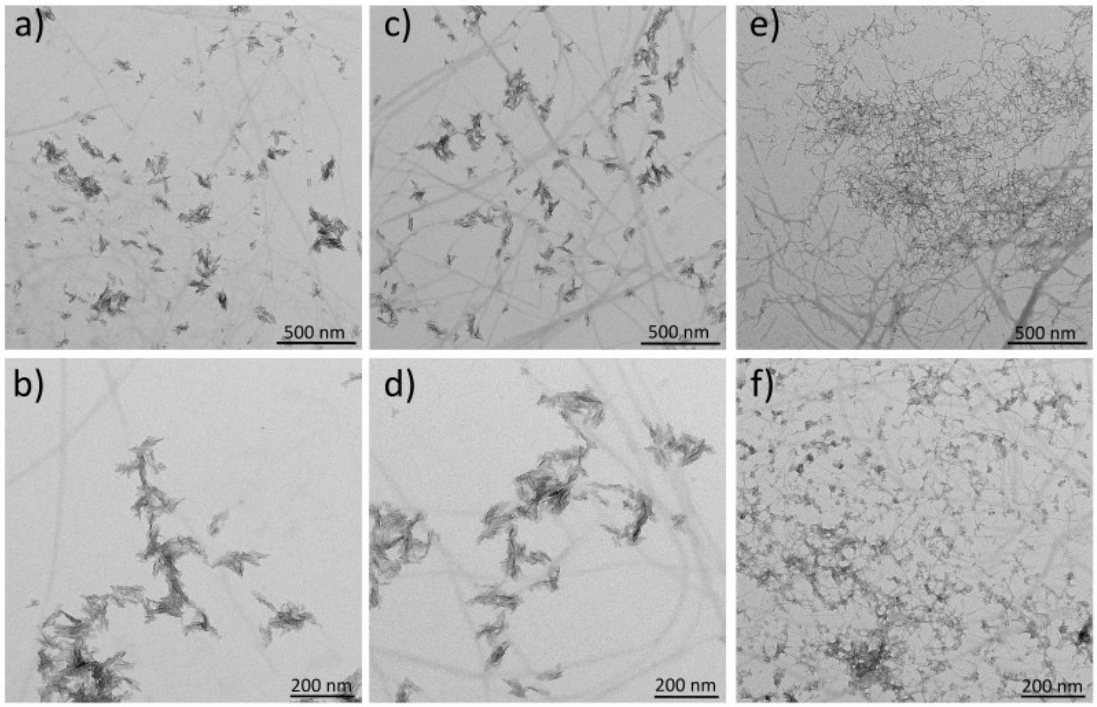

Figure S6. TEM images of Fmoc-FF hydrogels mineralized at increasing calcium concentrations (mM): 8.3 (a-b), 11.1 (c-d) and 33.3 (e-f).

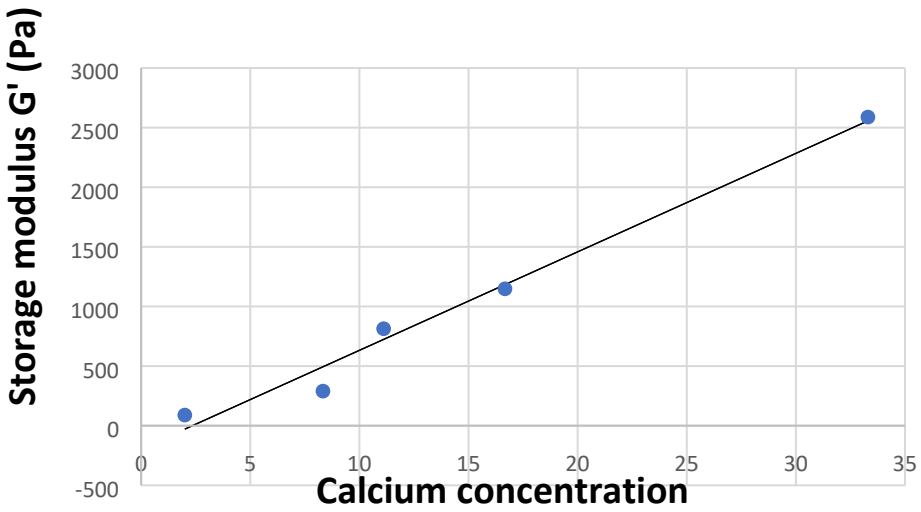

Figure S7. Linear fit of calcium concentration vs storage modulus.

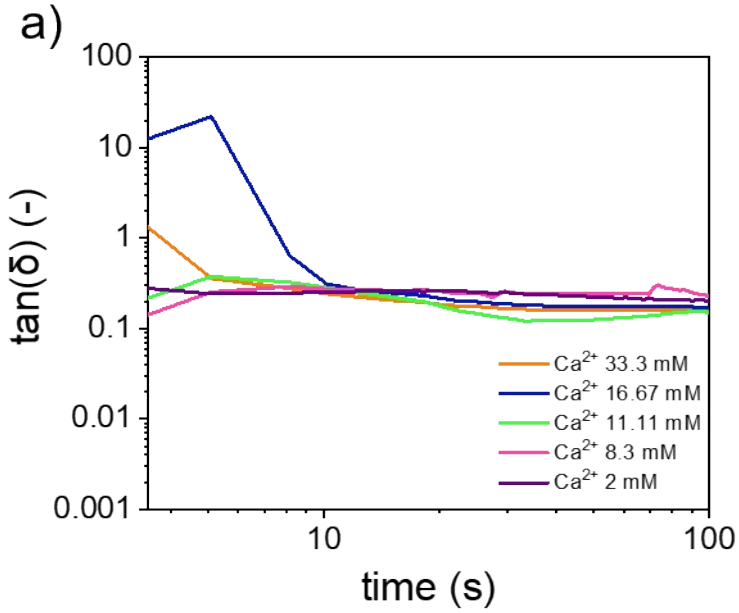

Figure S8. (a) Gelation kinetics of hybrid peptide hydrogel based on different Ca/P molar ratio.

Table S1. Comparison of values of G' corresponding to the LVR of the present work with these obtained in a previous work[1] for Fmoc-FF gels not containing HA.

Fmoc-FF concentration (present work)	Fmoc-FF concentration (previous work)*	Ratio of Fmoc-FF concentration (present work / previous work)	Ratio G' corresponding to LVR (present work / previous work)
2.08 mM	2.5 mM	0.83	2.74 ± 0.05
4.68 mM	5 mM	0.94	2.88 ± 0.05
12.47 mM	10 mM	1.25	1.25 ± 0.05

References

(1) Mañas-Torres, M. C.; Gila-Vilchez, C.; González-Vera, Juan A. Conejero-Lara, F.; Blanco, V.; Cuerva, J. M.; Lopez-Lopez, Modesto T. Orte, A.; Alvarez de Cienfuegos, L. In Situ Real-Time Monitoring the Mechanism of Self- Assembly of Short Peptide Supramolecular Polymers. *Mater. Chem. Front.* 2021, **5**, 5452-5462.