Supplementary Information

Sono-Assembly of the [Arg-Phe]⁴ Octapeptide into Biofunctional Nanoparticles

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1. Molecular Structure of [RF]4 Octapeptide



Figure S1. Chemical structure of a [RF]4 octapeptide.

2. FTIR Analysis of the [RF]4 Octapeptides

Table S1. Characteristic FTIR bands of the [RF]4-octapeptide	e [1]
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Approximate frequency (cm ⁻¹)	Description
3410, 3291	Amide A; NH stretching
2941	Amide B; NH stretching
1670 %- 1622	Amide I; C=O stretching, Characteristic peak for β -sheet secondary
1670 & 1655	structure
1480 1575	Amide II; CN stretching, NH bending, 1439; aromatic ring
1460-1575	vibration.
1204, 1384	Amide III; CN stretching, NH bending
1134	CN stretching
840	COO ⁻ rocking
698	C-H bending of aromatic ring



Figure S2. FTIR spectrum of the [RF]⁴ octapeptide.



3. Potentiometric Titration

Figure S3. Titration curve of the [RF]₄-NPs after dissolution showing changes in pH in function of OH⁻ content in aqueous solution.

4. Dynamic Light Scattering Analysis

Table S2. Hydrodynami	c diameter of	[RF]4-NPs in PBS	solution over time
5 5			

Measurement Day	1	2	3	4
Hydrodynamic Diameter	250 ± 8	256 ± 3	254 ± 6	256 ± 8

5. Absorbance Spectra



Figure S4. The absorption spectra of the [RF]₄ solution, acquired as a function of sonication time.



6. Size-Exclusion Chromatographic Analysis

Figure S5. SEC curve of the sonicated [RF]4 octapeptide as a function of sonication time.

7. ¹H NMR Analysis



Figure S6. ¹H NMR plot of (a) [RF]⁴ peptide, and (b) sonicated [RF]⁴ peptide.



Figure S7. ¹H NMR chemical shifts in the aromatic region for (a) [RF]₄ octapeptide, and (b) [RF]₄-NPs.



8. PEGylated [RF]₄-NPs

Figure S8. (a) SEM image, and (b) particle size distribution curve for the PEGylated [RF]4-NPs

9. Dissolution Kinetics



Figure S9. Dissolution kinetics of [RF]₄-NPs at 37 °C at different pH values as a function of time suggesting slow dissolution of [RF]₄-NPs at pH 5.0 and pH 7.4.

References

1. Adochitei, A.; Drochioiu, G. Rapid characterization of peptide secondary structure by ft-ir spectroscopy. *Rev. Roum. Chim* **2011**, *56*, 783-791.



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