Electronic Supplementary Material (ESI) for Organic & Biomolecular Chemistry.

Supporting Information

Linear and orthogonal peptide templating of silicified protein fibres

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Abbreviations – DIPEA – diisopropylethylamine; Fmoc – 9-fluorenylmethoxycarbonyl; HBTU – *O*-benzotriazole-*N,N,N',N'*-tetramethyl-uronium-hexafluoro-phosphate; tetraethyl orthosilicate – TEOS; RP-HPLC – reversed phase high pressure liquid chromatography; MALDI-ToF – matrix-assisted laser desorption/ionization time of flight; MOPS – 3-(*N*-morpholino) propanesulfonic acid; TIS – triisopropyl silane; TFA – trifluoroacetic acid; XPS – X-ray Photoelectron Spectroscopy.

Figures

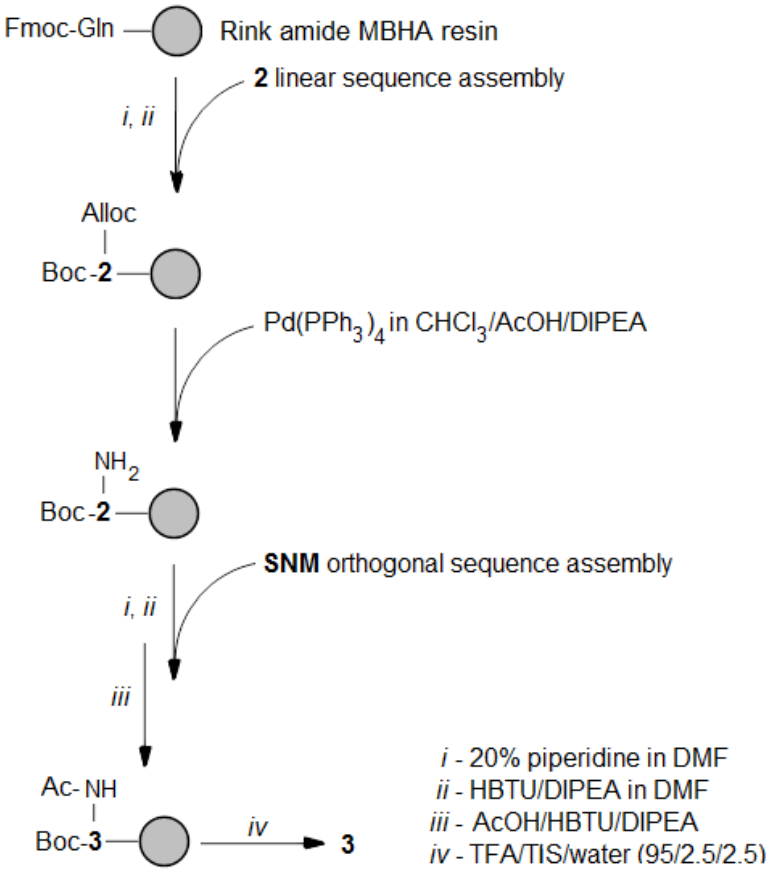

Figure S1. Schematic representation of the solid-phase synthesis of **3**. Note: the last residue is Boc-protected, -Lys(Alloc)- was used for the orthogonal assembly of the SNM sequence preceded by a three-βalanyl linker.

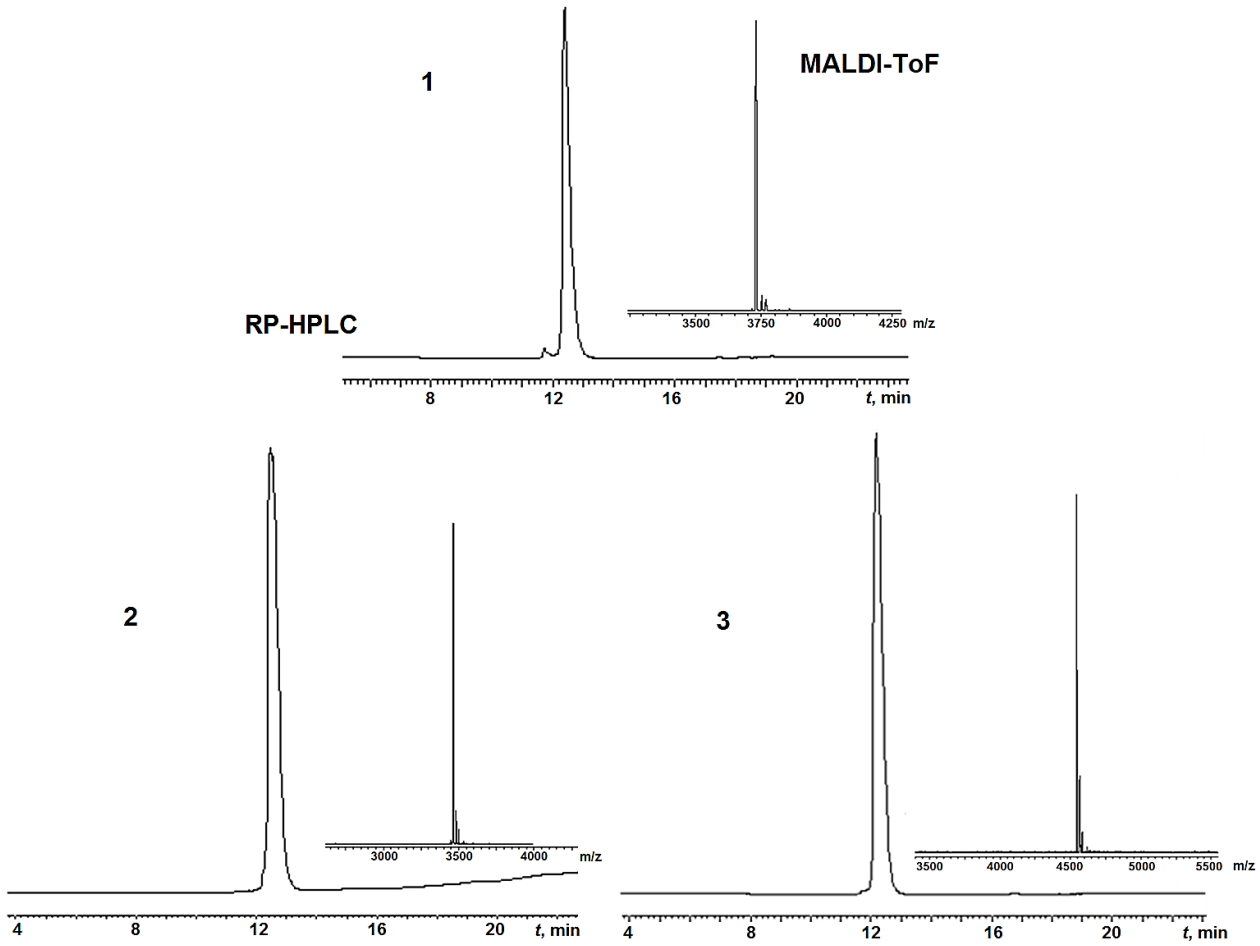

Figure S2. RP-HPLC traces and MALDI-ToF spectra for purified peptides used in the study.

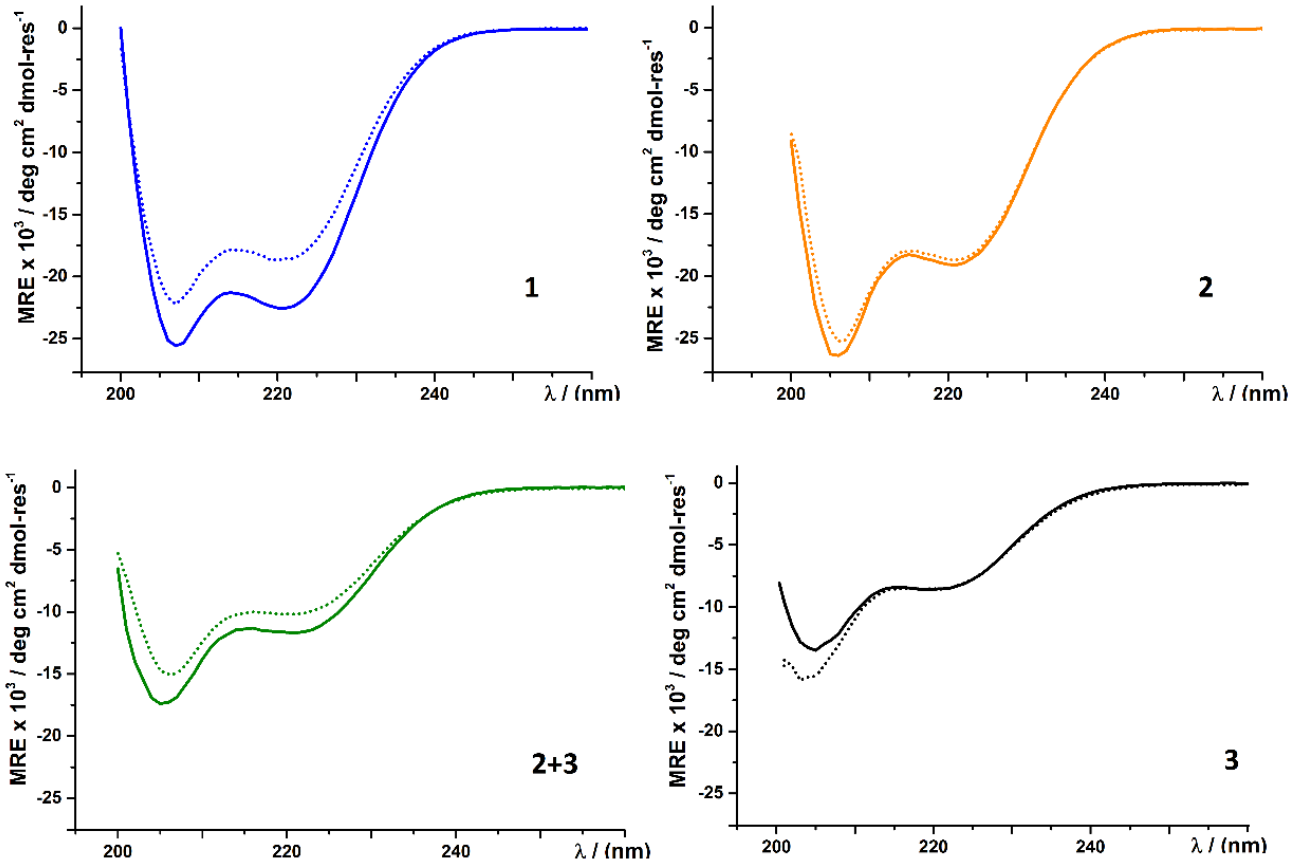

Figure S3. CD spectra for the peptide templates before (solid lines) and after (dotted lines) the melt. Folding conditions: 100 μM total peptide in 10 mM MOPS, pH 7.4, rt, overnight.

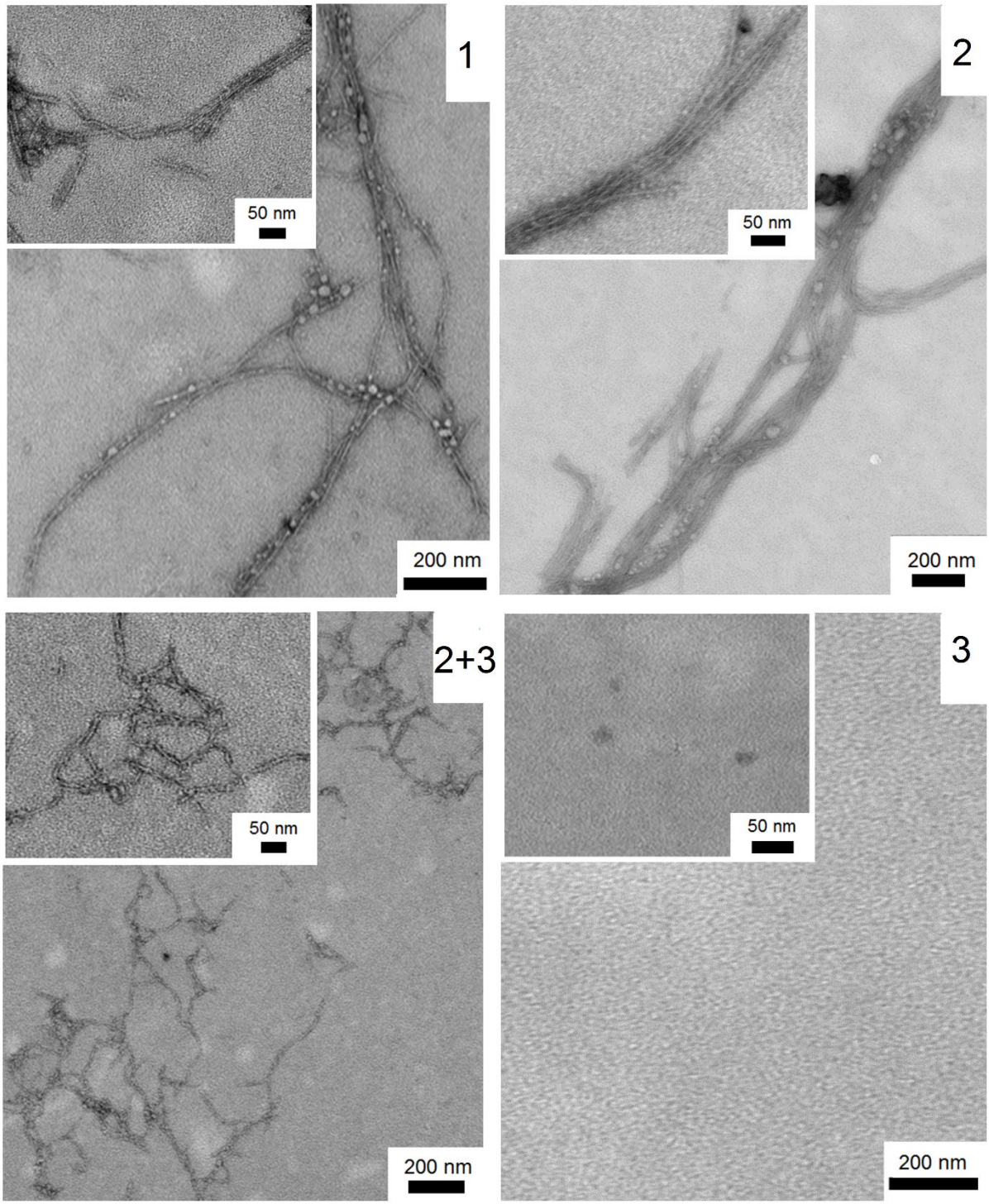

Figure S4. Electron micrographs of peptide templates with (**1**, **2** and **2**+**3**) and without (**3**) fibre formation. Assembly conditions: 100 μM total peptide in 10 mM MOPS, pH 7.4, rt, overnight.

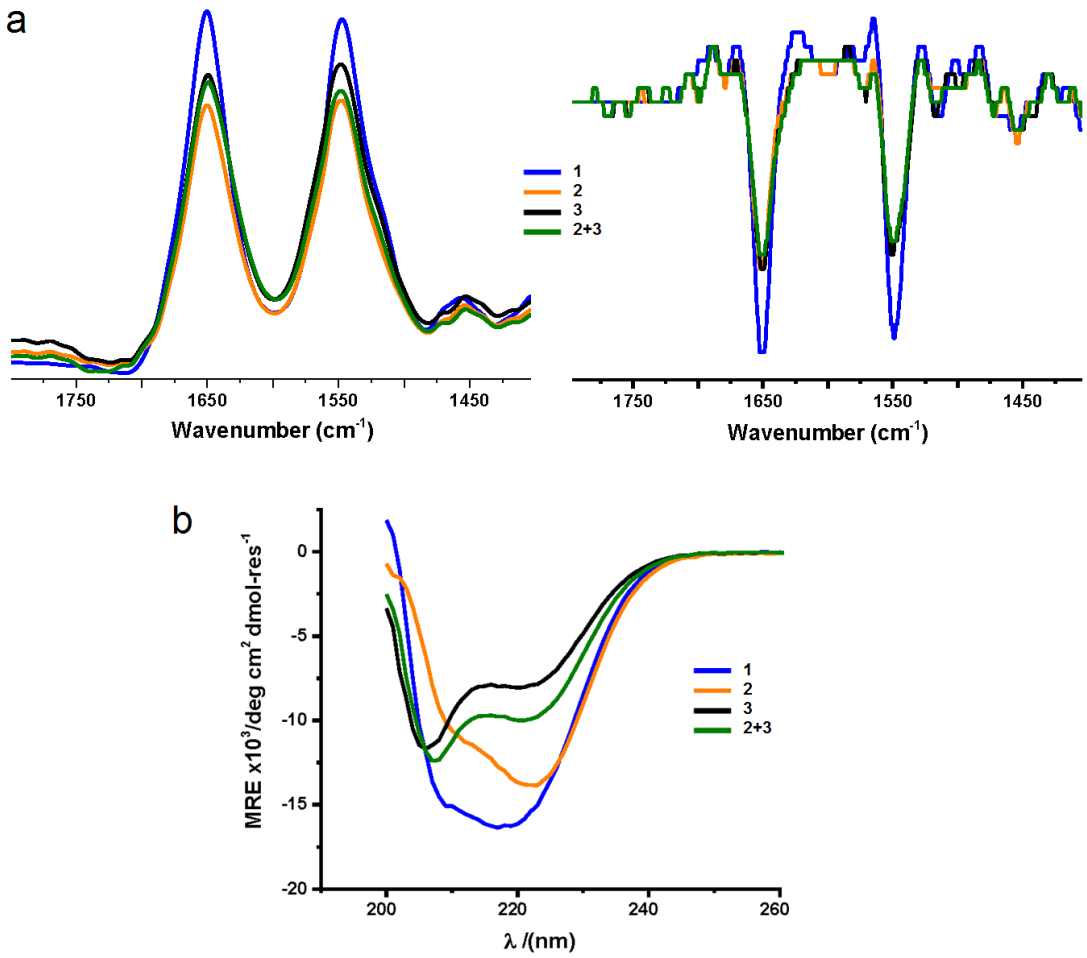

Figure S5. Peptide folding. (a) FT-IR spectra (left) and their second derivatives (right) for **1**, **2**, **3** and **2+3** preparations before silicification. (b) CD spectra for **1**, **2, 3** and **2+3** preparations after silicification. Assembly conditions: 100 μM total peptide in 10 mM MOPS, pH 7.4, rt, overnight.

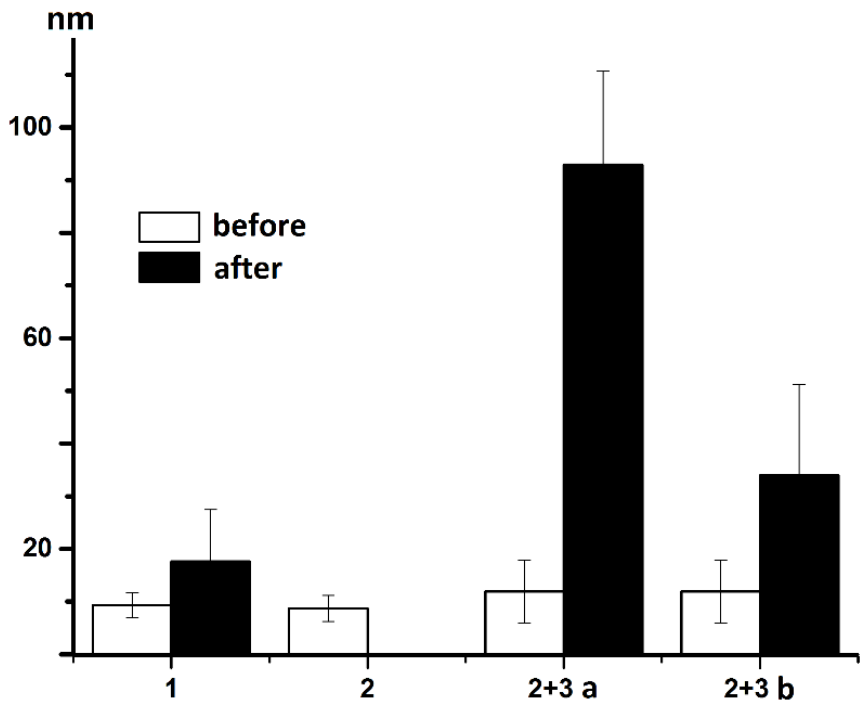

Figure S6. Diameter distributions for fibres before and after silicification, in each case measured over 50 individual structures. Two dominating size populations for **2+3** templates are shown separately as **a** and **b**.