Electronic Supplementary Material (ESI) for Nanoscale.

Online Supporting Information

Electrostatic-Driven Self-Sorting and Nanostructure Speciation in Self-Assembling Tetrapeptides

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Chemical Characterization and Supporting Data

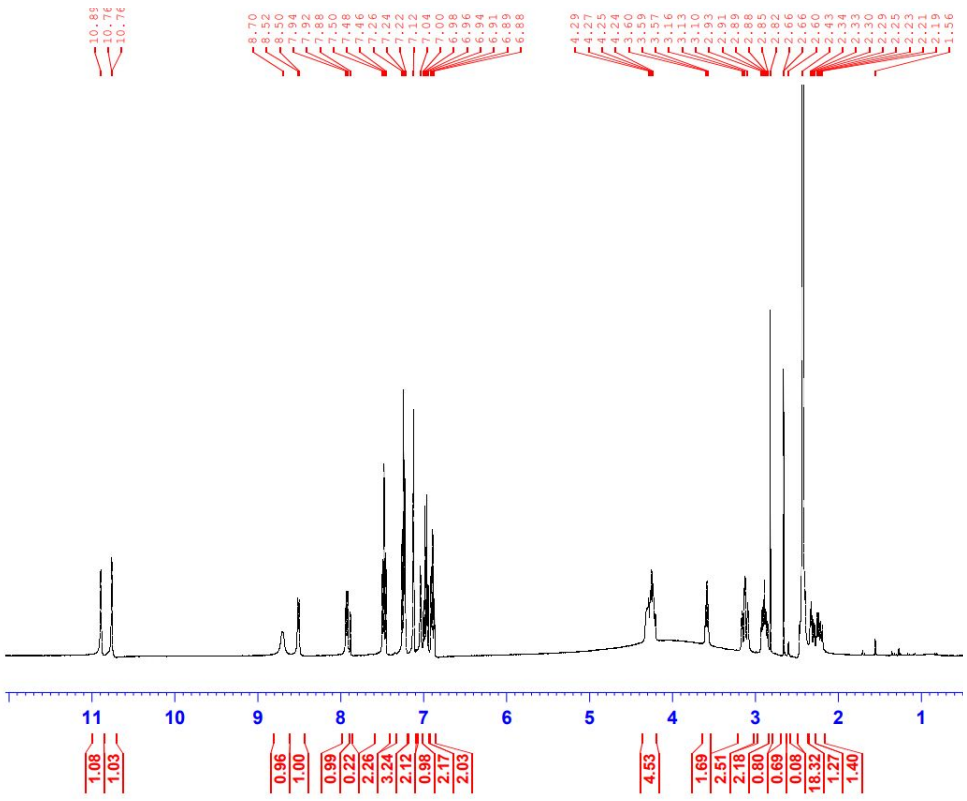

Figure S1: ^{1}H-NMR spectrum for DWDW

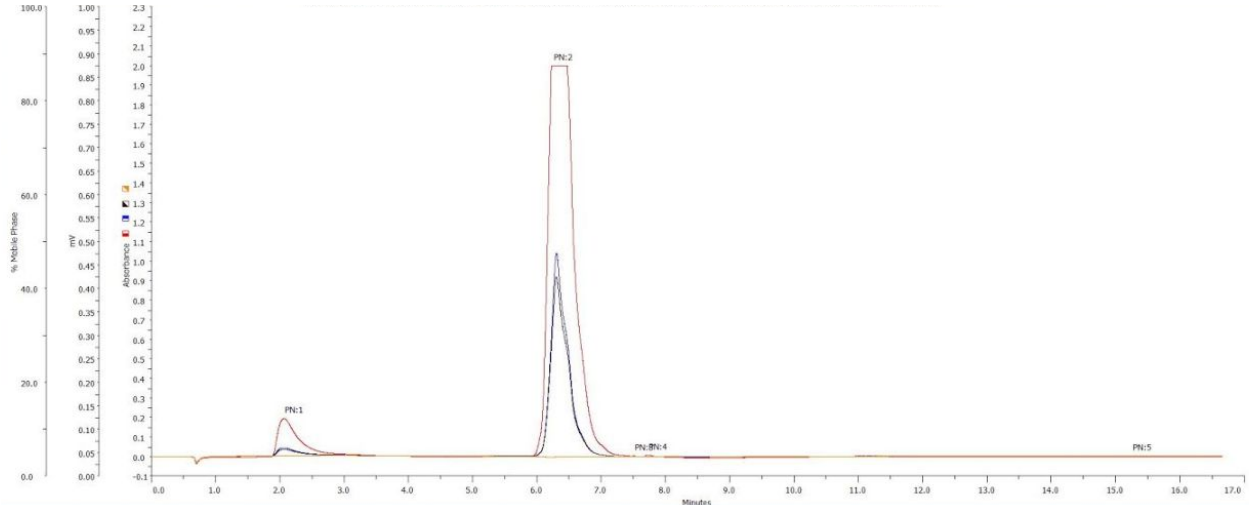

Figure S2: Analytical HPLC trace of DWDW with 4-wavelength uv-detection monitoring absorbance at 220, 260, 280, and 350 (flat baseline)

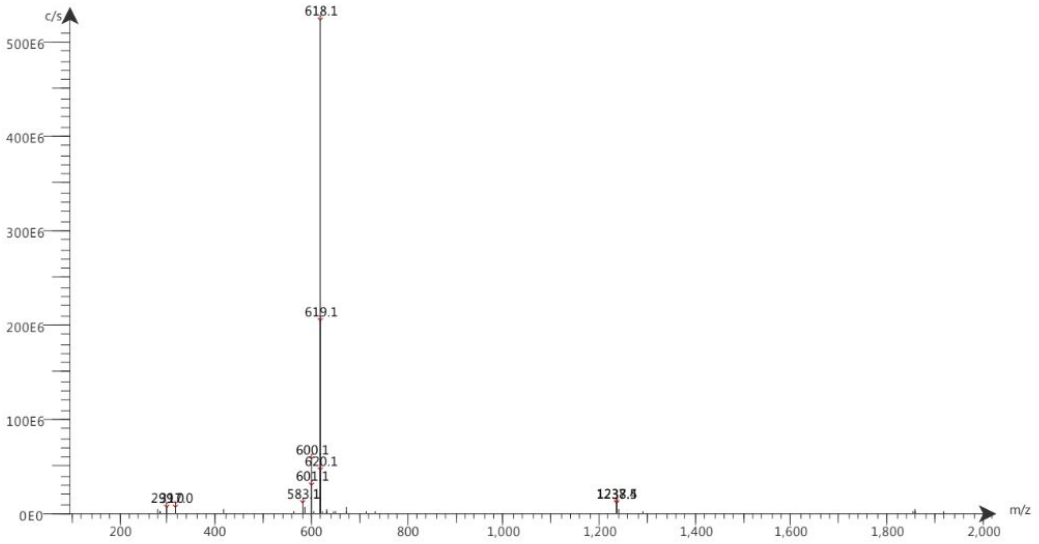

Figure S3: Mass spectroscopy (negative mode) of DWDW. Calculated 619.2, Observed 619.1

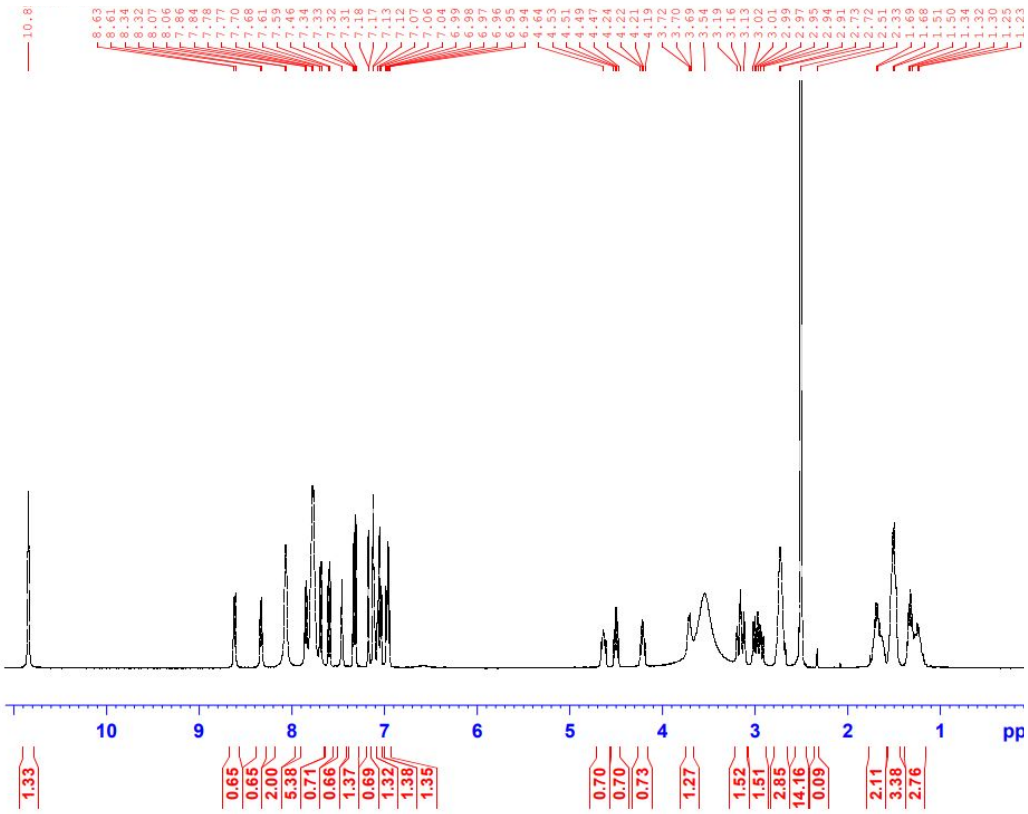

Figure S4: ^{1}H-NMR spectrum for KWKW

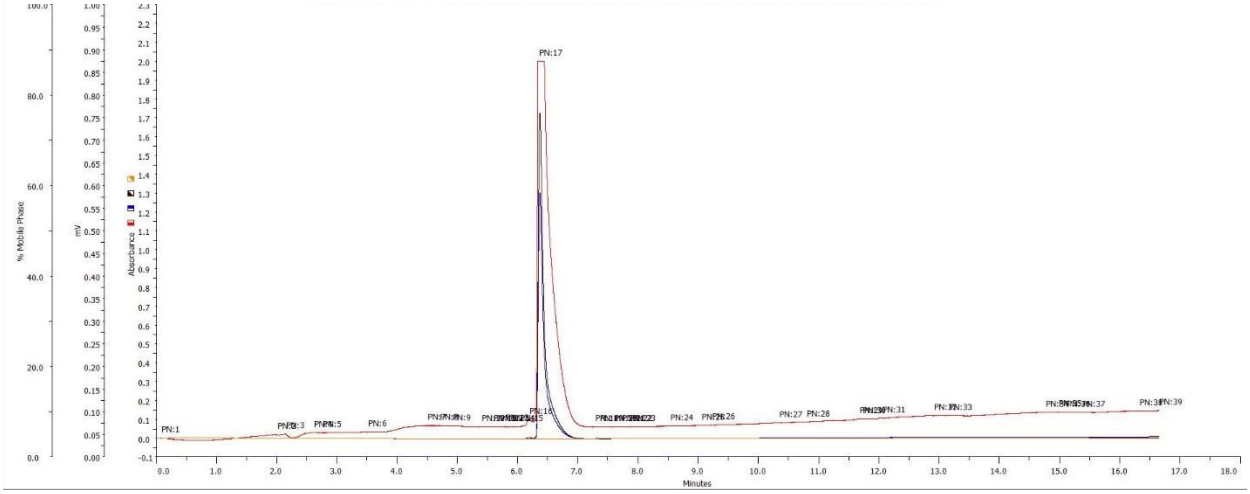

Figure S5: Analytical HPLC trace of KWKW with 4-wavelength uv-detection monitoring absorbance at 220, 260, 280, and 350 (flat baseline)

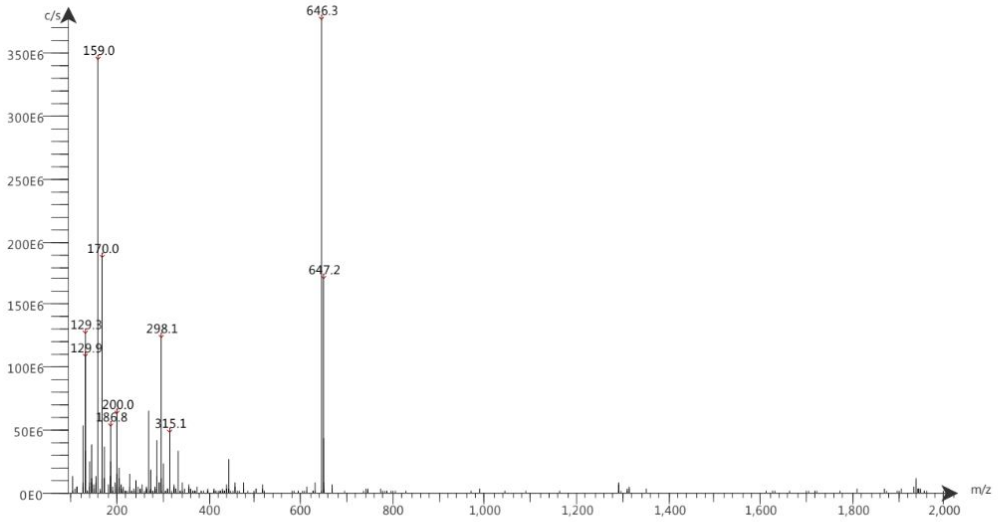

Figure S6: Mass spectroscopy (positive mode) of KWKW. Calculated 645.4, Observed 645.3

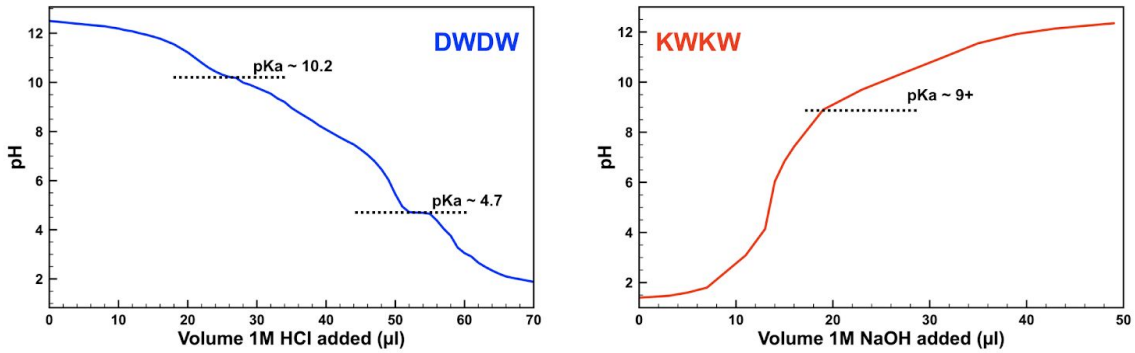

Figure S7: pH titration curves for DWDW (left) and KWKW (right).

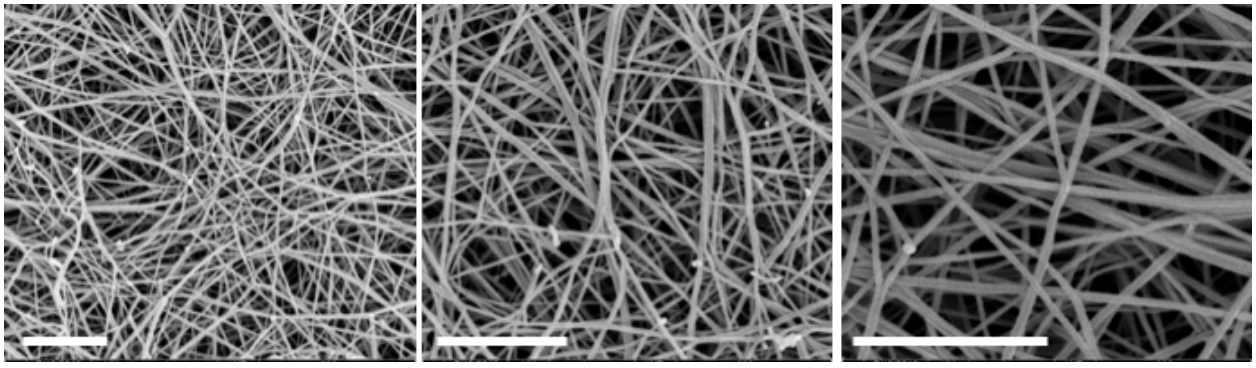

Figure S8: SEM images of DWDW at pH 6. and Scale bars: 500 nm

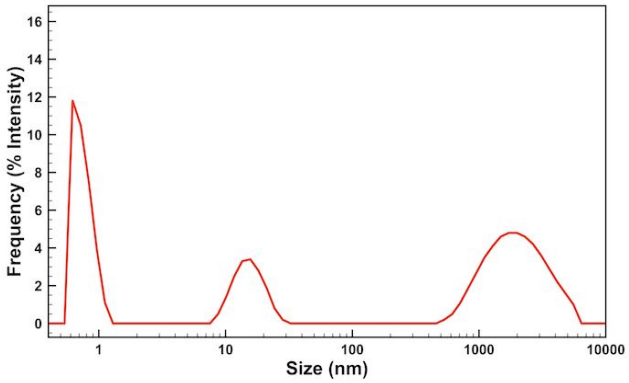

Figure S9: DLS data on 20 mM solutions of KWKW at pH 6, showing a complex mixture consisting of monomers or oligomers, 10-15 nm spheres, and very large aggregated structure.

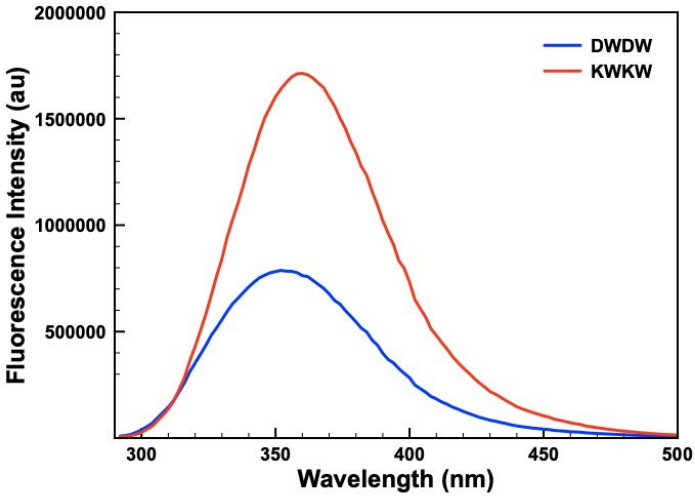

Figure S10: Fluorescence spectra of DWDW and KWKW at 20 mM and pH 6 with excitation at 280 nm.

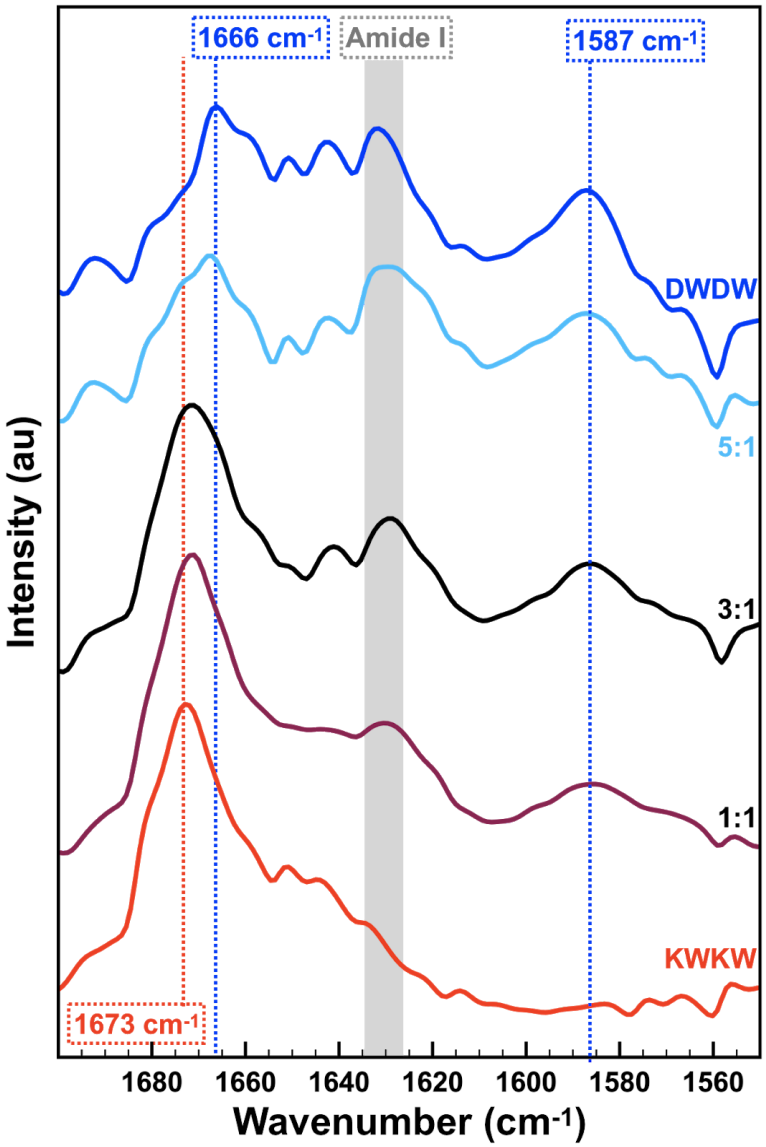

Figure S11: FTIR on 20 mM samples of pure KWKW and DWDW, as well as the various mixtures ratios studies here at pD 6 in D_2O. Highlighted peaks are stretches assigned to TFA counterions in KWKW (1673 cm^{-1}), β-sheet/amide stretches in DWDW (1666 cm^{-1} and ~1630 cm^{-1}), and carboxylates in DWDW (1587 cm^{-1}).

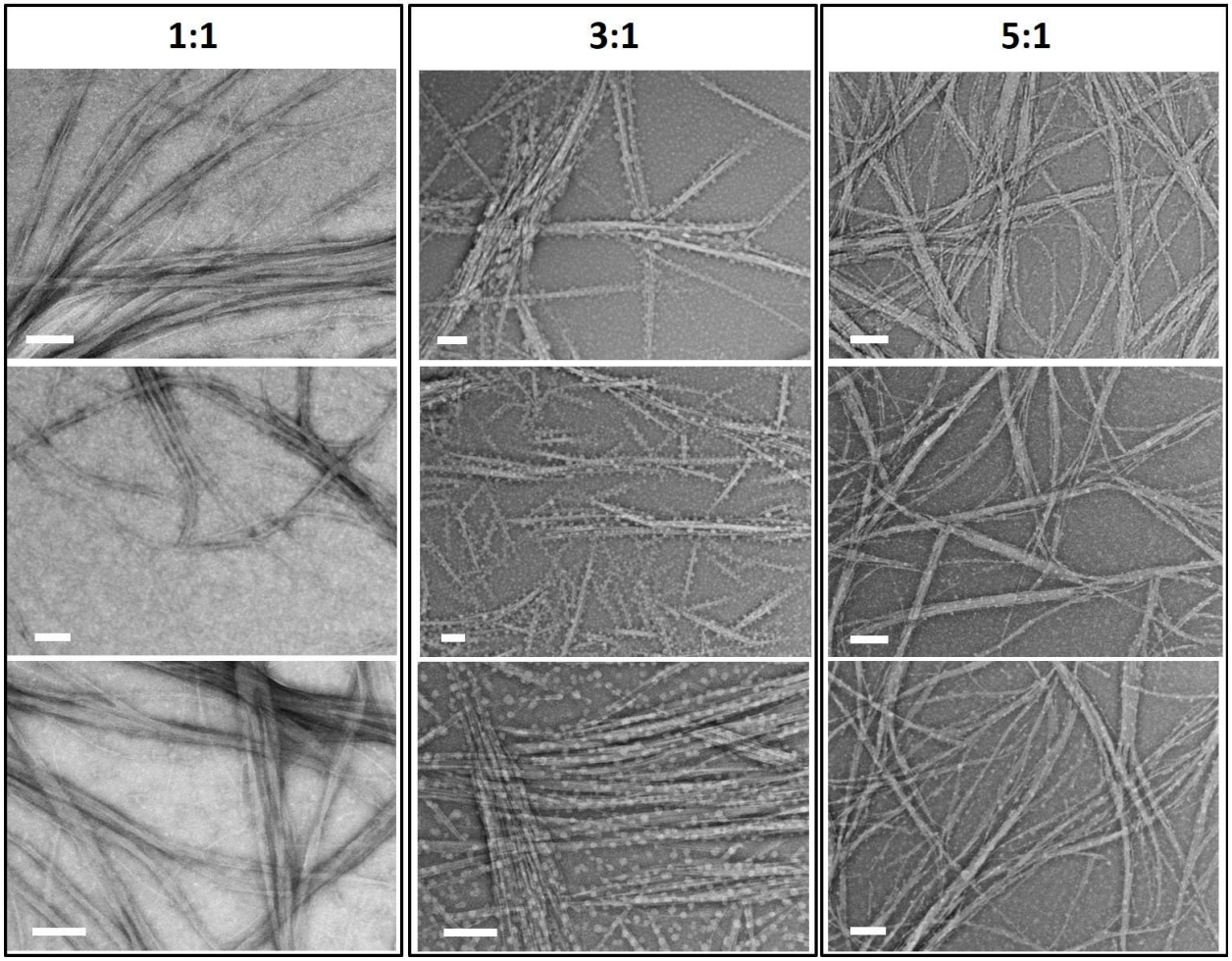

Figure S12: Additional TEM images of co-assembled tetrapeptide mixtures DWDW and KWKW at different stoichiometric ratio at pH 6 at 20 mM total concentration. Left panel-1:1; middle panel-3:1; right panel 5:1, Scale Bar- 100 nm.

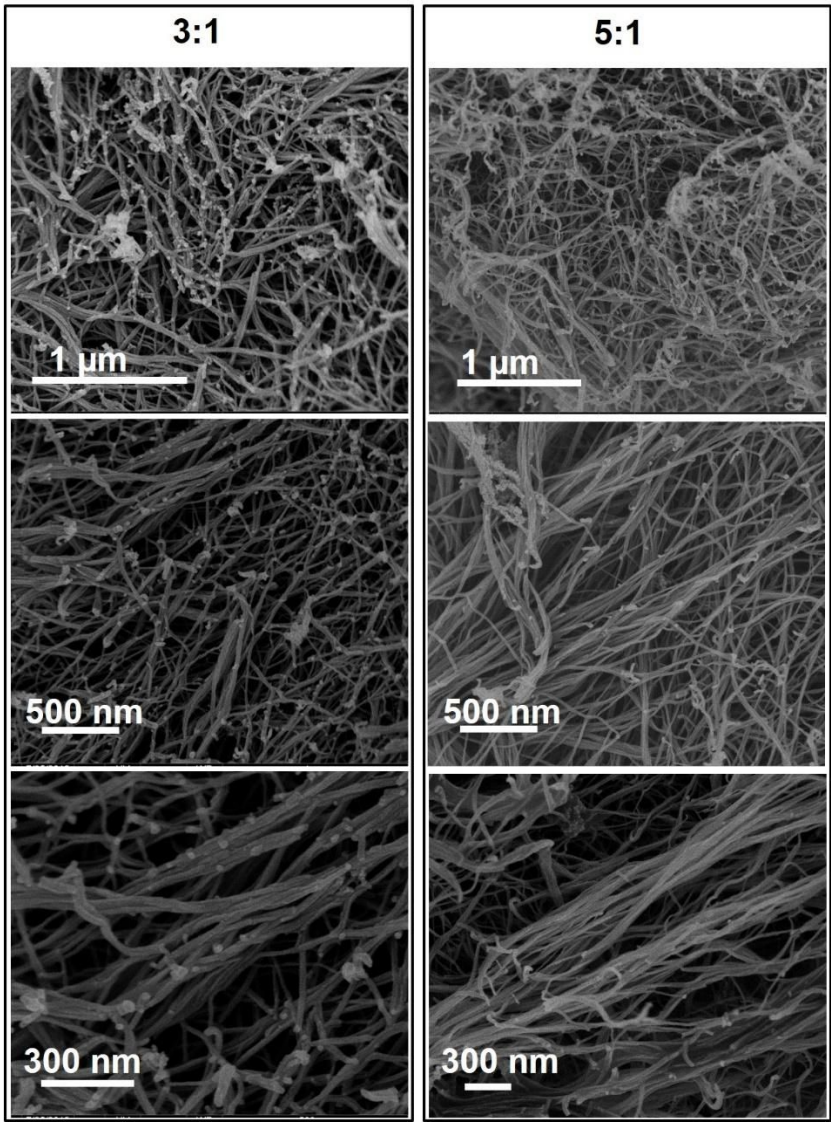

Figure S13: SEM images of co-assembled tetrapeptide mixtures DWDW and KWKW at different ratios at pH 6 at 20 mM total concentration.

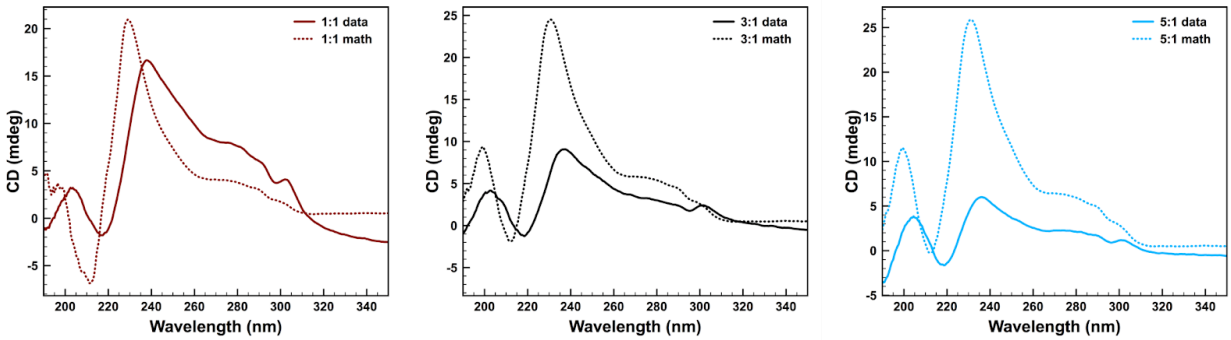

Figure S14: Near-UV circular dichroism for each peptide ratio (data) plotted alongside the arithmetic combination of the spectra for the two parent peptides (math) at each ratio.