

Supporting information for

# Influence of metal salts on the hydrogelation properties of ultrashort aliphatic peptides

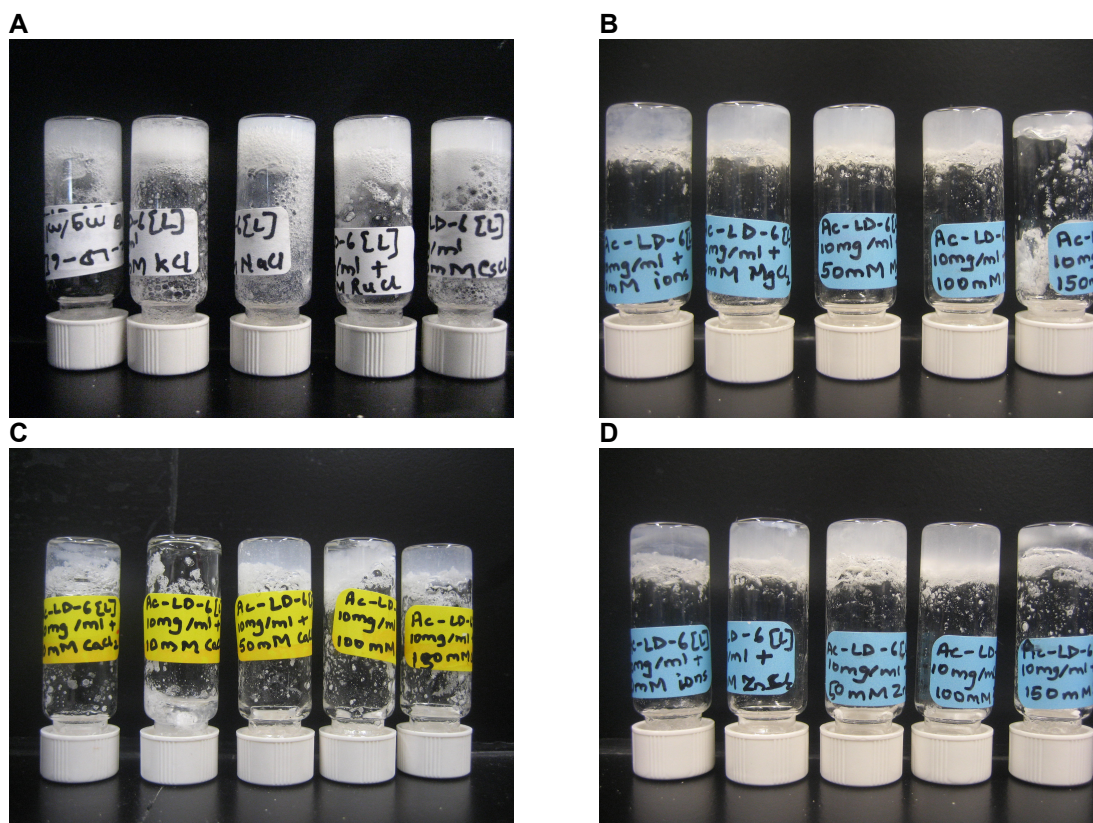
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Figure S1. Ac-LIVAGD formed hydrogels in the presence of monovalent (A) and divalent (B – D) metal chloride salts, but precipitated with trivalent analogs (E) and 450 mM of HCl (F).



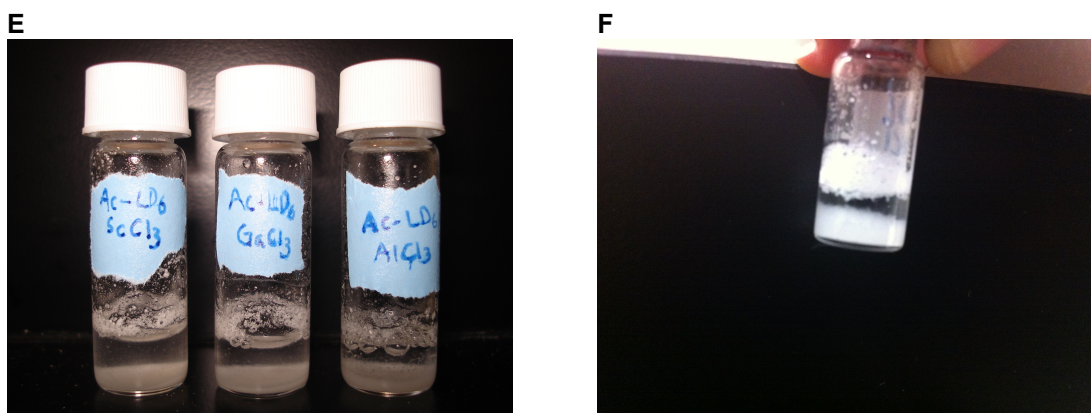


Figure S2-1. Illustration of the effect of metal chloride salts (50 mM) on the morphology of Ac-LIVAGD hydrogels at 16 mM: electron micrographs (at 80000x) of (A) KCl; (B) MgCl<sub>2</sub>; (C) CaCl<sub>2</sub>; (D) FeCl<sub>3</sub>.

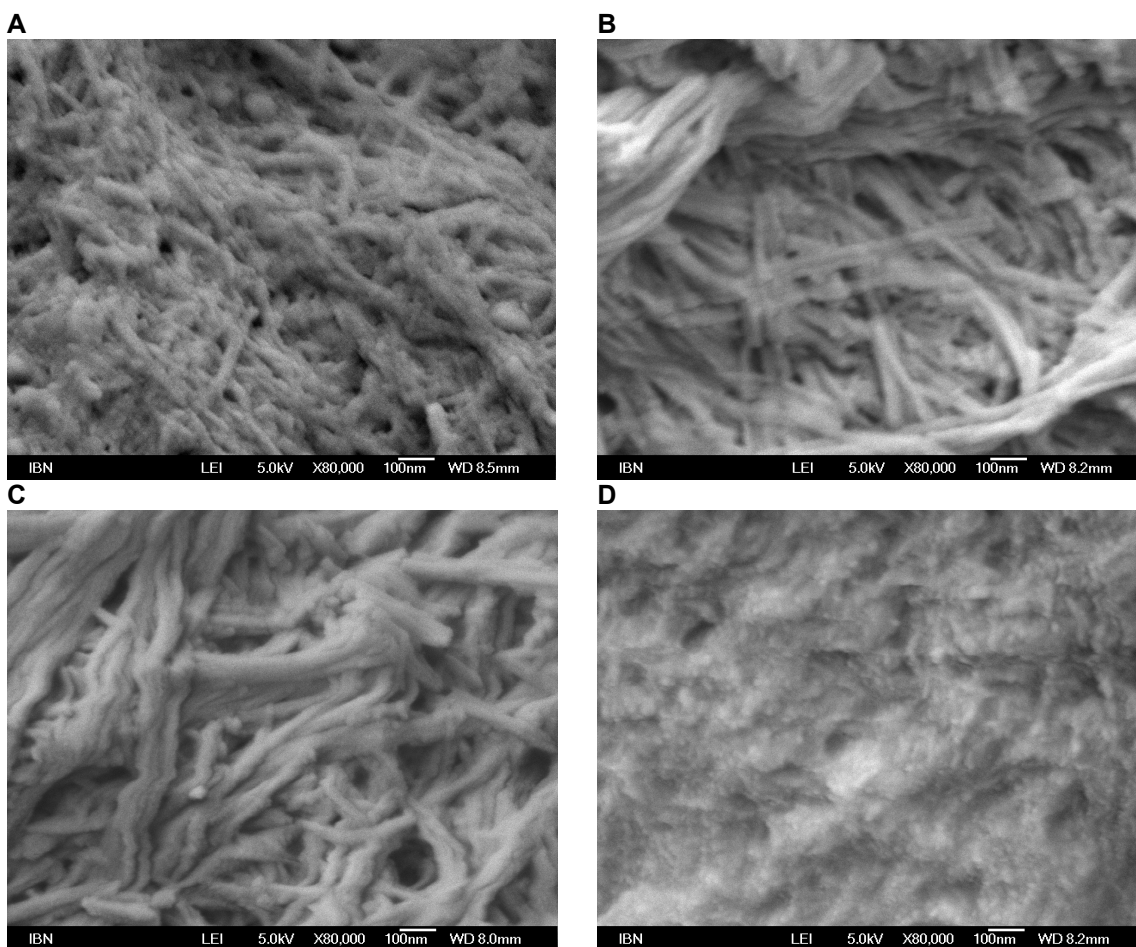


Figure S2-2. Illustration of the effect of metal chloride salts (50 mM) on the morphology of Ac-IVD hydrogels at 40 mM: electron micrographs (at 80000x) of (A) KCl; (B)  $\text{MgCl}_2$ ; (C)  $\text{CaCl}_2$ ; (D)  $\text{FeCl}_3$ .

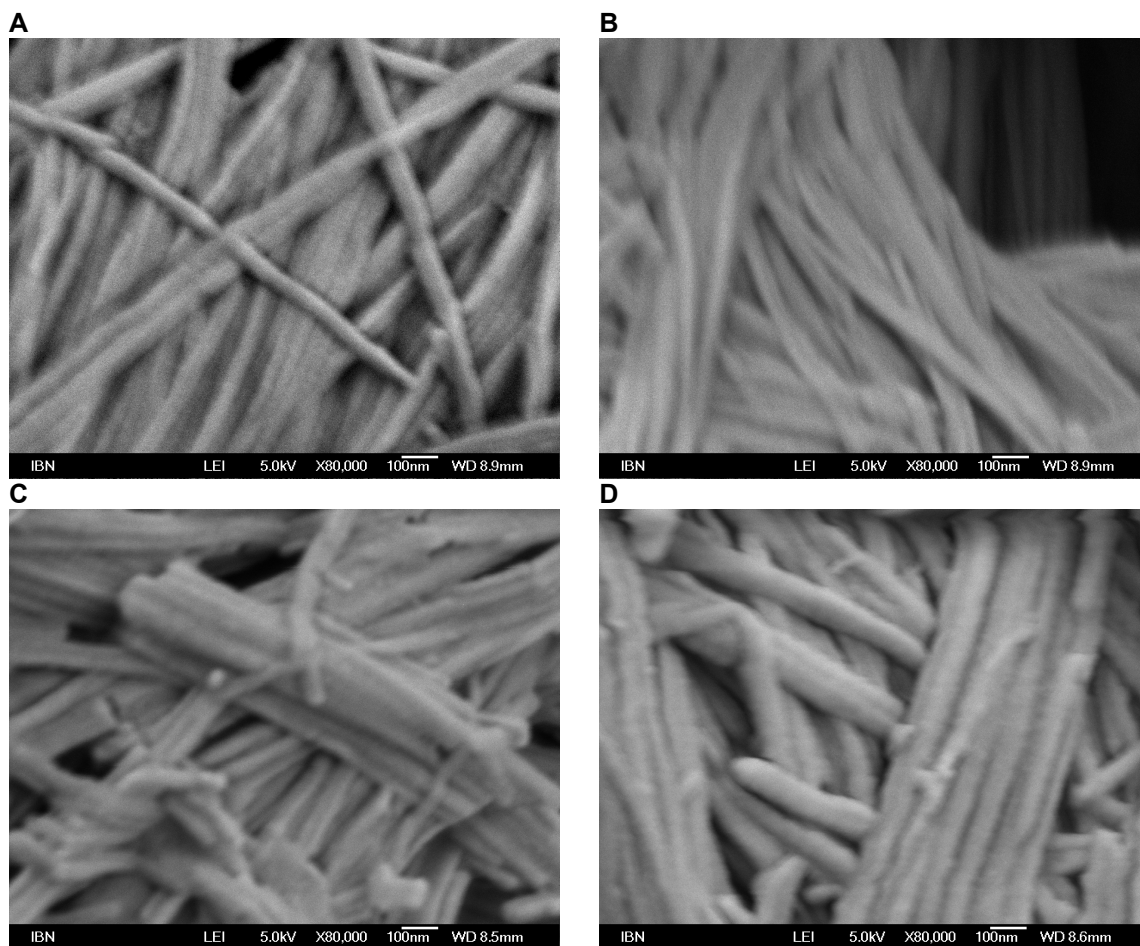
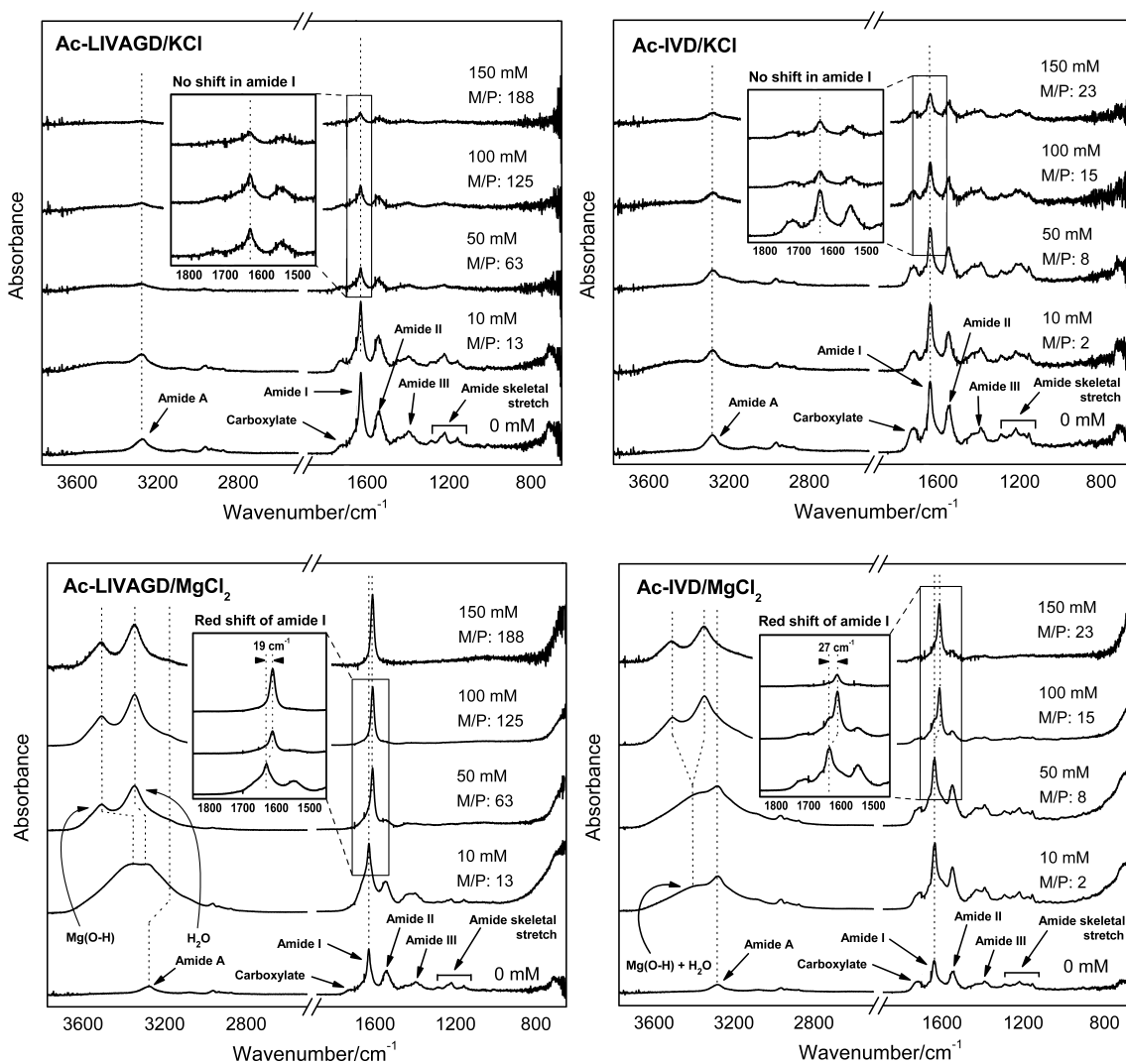


Figure S3. Illustration of the effect of increasing concentrations of metal chloride salts on Ac-LIVAGD and Ac-IVD. Ac-LIVAGD and Ac-IVD were dissolved in water to 0.80 mM and 6.5 mM respectively before the concentrated metal salt solution (1 M) was added to 10 mM, 50 mM, 100 mM, and 150 mM. The corresponding metal/peptide ratios (M/P) for Ac-LIVAGD are 13, 63, 125, and 188; the M/P ratios for Ac-IVD are 2, 8, 15, and 23. The solution was allowed to stand for 15 hours prior to freeze-drying and analysis by attenuated total reflectance-Fourier transform infrared spectroscopy.



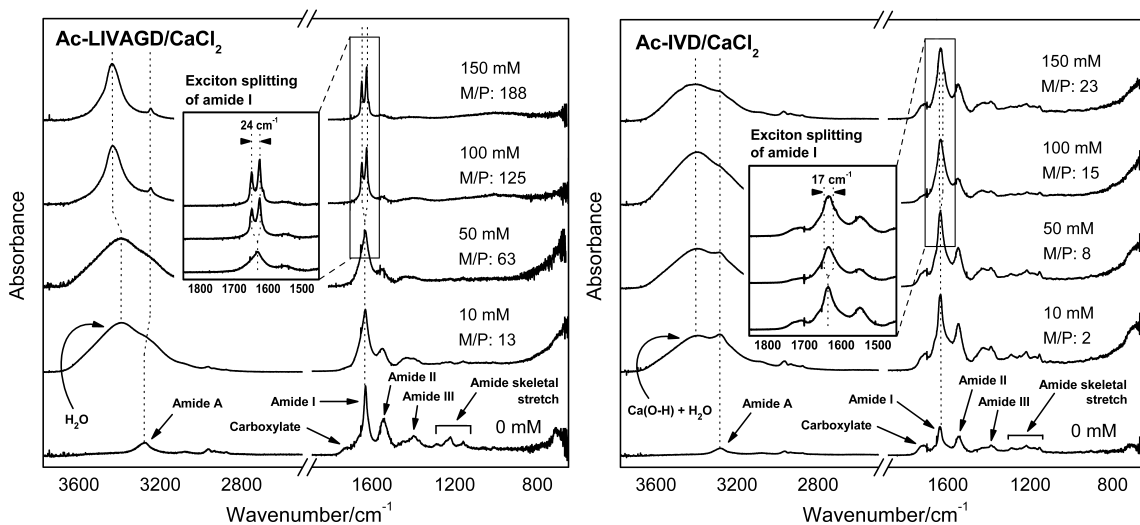


Figure S4. Comparison of the interaction of Ac-LIVAGD with representative metal chloride salts in solution: NaCl (monovalent, low charge density); LiCl (monovalent, medium charge density); CaCl<sub>2</sub> (divalent, medium charge density); ScCl<sub>3</sub> (trivalent, high charge density). The peptide was dissolved in water (2.4 mM) before the concentrated metal salt solution (1 M) was added to 150 mM (metal/peptide ratio = 63). The solution was allowed to stand for 15 h prior to analysis by <sup>1</sup>H NMR and <sup>13</sup>C attached proton test NMR spectroscopies. Both NMR stack plots show that NaCl essentially does not interact with Ac-LIVAGD. LiCl and CaCl<sub>2</sub> interact with the side-chain/terminal carboxylates of aspartate (Ac-LIVAGD); ScCl<sub>3</sub> interacts most strongly with Ac-LIVAGD, via both the carboxylates and some amide groups.

