1. A peptide amphiphile comprising a non-peptide hydrophobic tail, a structural peptide segment, and a charged peptide segment, wherein one amino acid in the peptide amphiphile is a pentafluorophenylalanine (Z) residue.

2. The peptide amphiphile of claim 1, wherein the non-peptide hydrophobic tail comprises an acyl chain of 6 to 24 carbons in length.

3. The peptide amphiphile of claim 1, wherein the structural peptide segment is capable of forming hydrogen bonds and/or other stabilizing interactions with a structural peptide segment from an adjacent peptide amphiphile.

4. The peptide amphiphile of claim 3, wherein the hydrogen bonds and/or other stabilizing interactions result in structure formation that is detectable by circular dichroism and/or microscopy.

5. The peptide amphiphile of claim 3, wherein the structural peptide segment is a β-sheet-forming peptide segment.

6. The peptide amphiphile of claim 5, wherein the β-sheet-forming peptide segment comprises 3-9 histidine (H), isoleucine (I), leucine (L), phenylalanine (F), and/or alanine (A) amino acids, and 1 pentafluorophenylalanine amino acids.

7. The peptide amphiphile of claim 6, wherein the β-sheet-forming peptide segment comprises ZVVAAA (SEQ ID NO: 1), VZVAAA (SEQ ID NO: 2), VVZAAA (SEQ ID NO: 3), VVVZAA (SEQ ID NO: 4), VVVAZA (SEQ ID NO: 5), or VVVAAZ (SEQ IS NO: 6).

8. The peptide amphiphile of claim 1, wherein the charged peptide segment comprises acidic and/or basic amino acid residues.

9. The peptide amphiphile of one of claims 6-7, wherein the charged peptide segment comprises 2-6 acidic residues selected from glutamate (E) and aspartate (D).

10. The peptide amphiphile of claim 9, wherein the charged peptide segment comprises $(X^a)_{2-4}$, wherein each X^a is an acidic residue selected from E and D.

11. The peptide amphiphile of claim 10, wherein the charged peptide segment comprises EEE.

12. The peptide amphiphile of one of claims 6-7, wherein the charged peptide segment comprises 2-6 basic residues selected from histidine (H), arginine (R), and lysine (K).

13. The peptide amphiphile of claim 12, wherein the charged peptide segment comprises $(X^b)_{2-4}$, wherein each X^b is a basic amino acid residue selected from H, R, and K.

14. The peptide amphiphile of claim 1, wherein the charged peptide segment comprises 1-5 acidic residues selected from glutamate (E) and aspartate (D), and one pentafluorophenylalanine (Z).

15. The peptide amphiphile of claim 1, wherein the charged peptide segment comprises ZE (SEQ ID NO: 29), EZ (SEQ ID NO: 30), ZEE (SEQ ID NO: 31), EZE (SEQ ID NO: 32), or EEZ (SEQ ID NO: 33).

16. The peptide amphiphile of claim 14 or 15, wherein the β-sheet-forming peptide segment comprises 4-10 histidine (H), isoleucine (I), leucine (L), phenylalanine (F), and/or alanine (A) amino acids.

17. The peptide amphiphile of claim 16, wherein the β-sheet-forming peptide segment comprises VVVAAA (SEQ ID NO: 7) or VVAA (SEQ ID NO: 8).

18. The peptide amphiphile of claim 1, wherein the structural peptide segment and the charged peptide segment comprise ZVVAAAEEE (SEQ ID NO: 9), VZVAAAEEE (SEQ ID NO: 10), VVZAAAEEE (SEQ ID NO: 11), VVVZAAEEE (SEQ ID NO: 12),

VVVAZAEEE (SEQ ID NO: 13), VVVAAZEEE (SEQ ID NO: 14), VVVAAAZEE (SEQ ID NO: 15), VVVAAAEZE (SEQ ID NO: 16) , or VVVAAAEEZ (SEQ ID NO: 17).

19. A nanofiber comprising the peptide amphiphiles of one of claims 1-18.

20. An aqueous solution comprising the nanofibers of claim 19.

21. A supramolecular structure comprising a peptide amphiphile of one of Z1, Z2, and Z3 and a fatty acid of 8-16 carbons in length .

22. The supramolecular structure of claim 21, wherein the fatty acid is lauric acid

23. The supramolecular structure of claim 21, wherein the fatty acid and the non-peptide hydrophobic tail have equal number of carbons.

24. The supramolecular structure of one of claims 21to 23 for use in therapy; wherein the peptide amphiphile is Z1 or Z2.

25. Use of a supramolecular structure of one of claims 21 to 23 in the preparation of a medicament for inhibiting the growth of *S. aureus* , wherein the peptide amphiphile is Z1 or Z2, and wherein the supramolecular structure is to be administered to a subject.

26. The use of claim 25, wherein the *S. aureus* is antibiotic resistant.

27. The use of claim 25 or 26 wherein the supramolecular structure is to be administered with an antibiotic agent.