CLAIMS

What is claimed is:

1. A surgical implant modular assembly comprising:

a first scaffold and a second scaffold, the first scaffold is structurally identical to the second scaffold, each of the first and the second scaffold has a first section and a second section, wherein for each of the first and the second scaffold, the first section is integrated to the second section,

wherein the first section of each scaffold is positioned above the second section of the same scaffold;

the second section of the first scaffold has a first opening;

the second section of the second scaffold has a second opening;

the surgical implant modular assembly having a cylindrical shape,

wherein each of the first opening and the second opening is a sideway opening in a range from 60^{o} to 120^{o}, the second opening configured to complement the first section of the first scaffold such that when the second scaffold is stacked above the first scaffold, the first section of the first scaffold fits into the second opening thereby forming said surgical implant modular assembly.

2. The surgical implant modular assembly of claim 1, wherein the first scaffold further comprises a first pin disposed on top of the first section of the first scaffold and a first slot disposed on bottom of the second section of the first scaffold.

3. The surgical implant modular assembly of claim 1, wherein the second scaffold further comprises a second pin disposed on top of the first section of the second scaffold and a second slot disposed on bottom of the second section of the second scaffold.

4. The surgical implant modular assembly of claim 2, further comprising an alternate scaffold having a third slot such that when the alternate scaffold is stacked above the second section of the second scaffold, the first pin of the first scaffold is fitted into the third slot of the alternate scaffold.

5. The surgical implant modular assembly of claim 3, further comprising a second alternate scaffold having a third pin such that when the second alternate scaffold is stacked below the second scaffold, the third pin of the second alternate scaffold is fitted into the second slot of the second scaffold.

6. The surgical implant modular assembly of claim 1, wherein: the first scaffold further comprises a first pin disposed on top of the first section of the first scaffold and a first slot disposed on bottom of the second section of the first scaffold; the second scaffold further comprises a second pin disposed on top of the first section of the second scaffold and a second slot disposed on bottom of the second section of the second scaffold; the surgical implant modular assembly further comprises an alternate scaffold having a third slot, wherein the alternate scaffold is stacked above the second section of the second scaffold such that the first pin of the first scaffold is fitted into the third slot of the alternate scaffold; and the surgical implant modular assembly further comprises a second alternate scaffold having a third pin, wherein the second alternate scaffold is stacked below the second scaffold such that the third pin of the second alternate scaffold is fitted into the second slot of the second scaffold.

7. The surgical implant modular assembly of claim 6, wherein the first pin, the second pin, the third pin, the first slot, the second slot and the third slot, each is of rectangular shape.

8. The surgical implant modular assembly of any one of the preceding claims, wherein the surgical implant modular assembly comprises a bioresorbable material.

9. The surgical implant modular assembly of claim 8, wherein the bioresorbable material is a porous bioresorbable material having a pore size of 0.4 mm to 4 mm.

10. The surgical implant modular assembly of claim 8 or 9, wherein the bioresorbable material is a polymer, a salt or a composite.

11. The surgical implant modular assembly of claim10, wherein the polymer or the composite comprises a polycaprolactone (PCL)-based polymer.

12. The surgical implant modular assembly of claim 11, wherein the composite is doped with one or more metals.

13. The surgical implant modular assembly of any one of claims 1 to 12, for use in treating a long bone defect in a subject.

14. The surgical implant modular assembly of claim 13, wherein the long bone defect is selected from the group consisting of femur, tibia and humerus.

15. The surgical implant modular assembly of claim 13, wherein size of each of the first scaffold, the second scaffold, the alternate scaffold and the second alternate scaffold is customized to individual subject.

16. The surgical implant modular assembly of claim 15, wherein the size of each of the first scaffold, the second scaffold, the alternate scaffold and the second alternate scaffold is determined from a Computed tomography (CT) scan.

17. The surgical implant modular assembly of claim 15, wherein the customized scaffold is prepared via an additive manufacturing.

18. A method for manufacturing the surgical implant modular assembly claimed in claim 1, the method comprising:

determining a suitable size of the surgical implant;

mixing one or more reagents to form each of the first and second scaffold; and

stacking the second scaffold above the first scaffold, thereby forming the surgical implant modular assembly.