

The Claim:

1. A synthetic composite for a bone graft comprising: bio inert polymers comprising poly lactic acid, poly D, L-Lactic acid; bio active polymer consisting of polypropylene fumarate or a diester of fumaric acid and propylene diol (1,2-Diol); and a bioactive inorganic component consisting of a metal fluorophosphates glass powder wherein the bioactive inorganic metal fluorophosphates glass powder is upto 30% (w/w) of the composite.
2. The composite as claimed in claim 1, wherein the metal fluorophosphate glass is selected from one of zinc fluorophosphate, magnesium fluorophosphate or silver fluorophosphate.
3. The composite as claimed in claim 1, wherein the polylactic acid is in the range of 54% (w/w) to 68% (w/w).
4. The composite as claimed in claim 1, wherein the 1,2 diol is in the range of 3% (w/w) to 10% (w/w).
5. The composite as claimed in claim 1, wherein the poly D, L-lactic acid is in the range of 10% (w/w) to 28% (w/w).
6. The composite as claimed in claim 1, wherein the polypropylene fumarate is in the range of 3% (w/w) to 10% (w/w).
7. The composite as claimed in claim 1, wherein the metal fluorophosphate in the composite is in the range of 10% (w/w) to 30% (w/w).
8. The composite as claimed in claim 1, comprises of polylactic acid, 1,2 diol, and zinc fluorophosphate.
9. The composite as claimed in claim 1, comprises of polylactic acid, poly D, L-Lactic acid, 1,2 diol and zinc fluorophosphate.
10. The composite as claimed in claim 1, comprises of polylactic acid, poly propylene fumarate and zinc fluorophosphate.
11. The composite as claimed in claim 1, comprises of polylactic acid, poly D, L-Lactic acid, poly propylene fumarate and zinc fluorophosphate.

12. The composite as claimed in claim 1, comprises of polylactic acid, 1, 2 diol and magnesium fluorophosphate.
13. The composite as claimed in claim 1, comprises of polylactic acid, poly D, L-Lactic acid, 1,2 diol and magnesium fluorophosphate.
14. The composite as claimed in claim 1, comprises of polylactic acid, poly propylene fumarate and magnesium fluorophosphate.
15. The composite as claimed in claim 1, comprises of polylactic acid, poly D, L-lactic acid, poly propylene fumarate and magnesium fluorophosphate.
16. The composite as claimed in claim 1, comprises of polylactic acid, 1, 2 diol and silver fluorophosphate.
17. The composite as claimed in claim 1, comprises of polylactic acid, poly D, L-Lactic acid, 1,2 diol and silver fluorophosphate.
18. The composite as claimed in claim 1, comprises of polylactic acid, poly propylene fumarate and silver fluorophosphate.
19. The composite as claimed in claim 1, comprises of polylactic acid, poly D, L-lactic acid, poly propylene fumarate and silver fluorophosphate.
20. The composite as claimed in claim 1, is one of a powder, or a scaffold.
21. The composite as claimed in claim 20, wherein the scaffold is a strip or a cylinder or a tube and the like.
22. A method of preparing the synthetic composite as claimed in claim 20, comprising the steps of:
 - mixing the composite of claim 1 in a solvent with the magnetic stirrer or sonicated to obtain a homogenous mixture;
 - casting the mixture over hot glass plate and bringing the solution to boil;
 - evaporation of the solvent by continuous boiling; and
 - obtaining an interconnected porous scaffold with the homogenous distribution of the components of the composite.

23. The method as claimed in claim 20, wherein the solvent is one of dichloromethane, acetone, toluene or chloroform.
24. The method as claimed in claim 20, wherein the porosity of the scaffold ranges from 20%-40%.
25. The composite as claimed in claim 1, wherein the scaffold is made by a custom made 3D printer such as herein described by the direct ink printing technique comprising the following steps:
homogenisation of the components and cooling the same to 10 to 30 degrees;
loading of the ink into a pressure-controlled extruder which is non adhesive to the ink;
programming of the shape, thickness, porosity, and layers required is fed by a computer;
obtaining the desired scaffold.