What is claimed is:

1. A medical implant comprising absorbable structural material, comprising a reinforcement filler, wherein strength and stiffness properties are anisotropic; wherein said absorbable structural material comprises a biodegradable polymer; wherein an average density of the absorbable structural material is in the range of 1.3 – 3.0 g/cm^3; wherein said reinforcing filler comprises a plurality of reinforcing fibers and wherein a weight ratio of reinforcing fibers to said biodegradable polymer is in the range of 1:2 to 2:1; wherein a plurality of said reinforcement fibers are arranged in parallel.
2. The implant of claim 1, wherein said biodegradable polymer comprises a homopolymer or a copolymer; wherein said copolymer comprises a random copolymer, block copolymer, or graft copolymer; and wherein said polymer comprises a linear polymer, a branched polymer, or a dendrimer, of natural or synthetic origin; wherein said polymer comprises lactide, glycolide, caprolactone, valerolactone, carbonates (e.g., trimethylene carbonate, tetramethylene carbonate, and the like), dioxanones (e.g., 1,4-dioxanone), δ-valerolactone, 1,dioxepanones)e.g., 1,4-dioxepan-2-one and 1,5-dioxepan-2-one), ethylene glycol, ethylene oxide, esteramides, γ-ydroxyvalerate, β-hydroxypropionate, alpha-hydroxy acid, hydroxybuterates, poly (ortho esters), hydroxy alkanoates, tyrosine carbonates, polyimide carbonates, polyimino carbonates such as poly (bisphenol A-iminocarbonate) and poly (hydroquinone-iminocarbonate,(polyurethanes, polyanhydrides, polymer drugs (e.g., polydiflunisol, polyaspirin, and protein therapeutics), sugars; starch, cellulose and cellulose derivatives, polysaccharides, collagen, chitosan, fibrin, hyaluronic acid, polypeptides, proteins, poly (amino acids), polylactides (PLA), poly-L-lactide (PLLA), poly-DL-lactide (PDLLA); polyglycolide (PGA); copolymers of glycolide, glycolide/trimethylene carbonate copolymers (PGA/TMC); other copolymers of PLA, such as lactide/tetramethylglycolide copolymers, lactide/trimethylene carbonate copolymers, lactide/d-valerolactone copolymers, lactide/ε-caprolactone copolymers, L-lactide/DL-lactide copolymers, glycolide/L-lactide copolymers (PGA/PLLA),

polylactide-co-glycolide; terpolymers of PLA, such as lactide/glycolide/trimethylene carbonate terpolymers, lactide/glycolide/ ε -caprolactone terpolymers, PLA/polyethylene oxide copolymers; polydepsipeptides; unsymmetrically – 3,6-substituted poly-1 ,4-dioxane-2,5-diones; polyhydroxyalkanoates; such as polyhydroxybutyrates (PHB); PHB/b-hydroxyvalerate copolymers (PHB/PHV); poly-b-hydroxypropionate (PHPA); poly-p-dioxanone (PDS); poly-d-valerolactone - poly-ε-capralactone, poly(ε-caprolactone-DL-lactide) copolymers; methylmethacrylate-N-vinyl pyrrolidone copolymers; polyesteramides; polyesters of oxalic acid; polydihydropyrans; polyalkyl-2-cyanoacrylates; polyurethanes (PU); polyvinylalcohol (PVA); polypeptides; poly-b-malic acid (PMLA): poly-b-alkanbic acids; polycarbonates; polyorthoesters; polyphosphates; poly(ester anhydrides); and mixtures thereof; and derivatives, copolymers and mixtures thereof.

3. The implant of claims 1 or 2, wherein the fibers are embedded in a polymer matrix comprising one or more bioabsorbable polymers.
4. The implant of any of the above claims wherein a fiber diameter is in a range of 2-40 um.
5. The implant of claim 4, wherein a fiber diameter is in a range of 8-20 um (microns).
6. The implant of claim 5, wherein a fiber diameter is in a range of 12-18 um (microns).
7. The implant of any of the above claims wherein at least 45% of strength is retained following exposure to simulated body fluid (SBF) at 37°C for 3 days.
8. The implant of claim 7, wherein at least 60% of strength is retained.
9. The implant of any of the above claims wherein at least 50% of elastic modulus is retained following exposure to simulated body fluid (SBF) at 37°C for 3 days.
10. The implant of claim 9, wherein at least 70% of elastic modulus is retained.
11. The implant of any of the above claims, wherein the flexural modulus exceeds 15 GPa and flexural strength exceeds 150 MPa following 3 months of in vivo implantation.
12. The implant of any of the above claims wherein implant is selected from the group consisting of bone fixation plates, intramedullary nails, joint (hip, knee, elbow)

implants, spine implants, and other devices for such applications such as for fracture fixation, tendon reattachment, spinal fixation, and spinal cages.

13. A biocomposite material comprising a biocompatible polymer and a plurality of reinforcing fibers, wherein said reinforcing fibers are in a parallel orientation, wherein the average density of the biocomposite material is in the range of 1.1 – 3.0 g/cm^3.
14. The biocomposite material of claim 13, wherein average density of the biocomposite material is in the range of 1.2 – 2.0 g/cm^3.