CLAIMS

What is claimed is:

1. A thermoplastic elastomer composition comprising:

a ~~random~~ multigraft copolymer comprising a rubbery polymeric backbone, comprising a plurality of randomly spaced branch points; and a plurality of glassy or semi-crystalline polymeric grafts, wherein each of the plurality of glassy or semi-crystalline polymeric grafts is attached to the rubbery polymeric backbone at one of ~~a~~ the plurality of randomly spaced branch points.

2. The composition of claim 1, further comprising at least one additional component selected from an organic filler, an inorganic filler, a wax, a tackifier, a plasticizer, an anti-oxidant, a stabilizer, a decorative agent, a biocide, a flame retardant, an anti-static agent, a therapeutic agent or combinations thereof.

3. The composition of claim 2, wherein the decorative agent is a pigment or a dye.

4. The composition of claim 1, wherein the ~~random~~ multigraft copolymer has a residual strain of ~~about~~ 55% or less at an applied strain of ~~about~~ 500% or more.

5. The composition of claim 1, wherein the ~~random~~ multigraft copolymer has a residual strain of ~~about~~ 40% or less at an applied strain of ~~about~~ 300% or more.

6. The composition of claim 1, wherein the ~~random~~ multigraft copolymer has a strain at break of 1200% or greater.

7. The composition of claim 6, wherein the ~~random~~ multigraft copolymer has a strain at break of at least 1500%.

8. The composition of claim 1, wherein the ~~random~~ multigraft copolymer has a percent strain at break that increases linearly with the number of branch points.

9. The composition of claim 1, wherein the ~~random~~ multigraft copolymer comprises an architecture selected from a trifunctional comb architecture, a tetrafunctional centipede architecture, or a hexafunctional barbwire architecture.

10. The composition of claim 1, wherein the rubbery polymeric backbone comprises polyisoprene, hydrogenated polyisoprene, polybutadiene, hydrogenated polybutadiene, polyisobutylene, butyl rubber, poly(butadiene-co-acrylonitrile), a silicone rubber, acrylic rubber, polychloroprene, ethylene propylene copolymer, ethylene/acrylic elastomer, urethane rubber, or combinations thereof.

11. The composition of claim 1, wherein the glassy polymeric grafts comprise polystyrene, hydrogenated polystyrene, poly(α-methylstyrene) or another glassy styrenic polymer or hydrogenated derivative thereof, polyethylene, urethane hard domain, polyester, polymethylmethacrylate or another glassy acrylic polymer, polyvinyl chloride, poly(vinylpyridine), polycarbonate, nylon, polyethylene teraphthalate, polycyclohexadiene, hydrogenated polycyclohexadiene, or combinations thereof.

12. The composition of claim 1, wherein the rubbery polymeric material comprises polyisoprene and the glassy polymeric material comprises polystyrene.

13. The composition of claim 1, wherein the ~~random~~ multigraft copolymer has a volume fraction of glassy polymeric grafts of between ~~about~~ 10% and ~~about~~ 50%.

14. The composition of claim 13, wherein the volume fraction of glassy polymeric grafts is between ~~about~~ 14% and ~~about~~ 26%.

15. The composition of claim 1, wherein the ~~random~~ multigraft copolymer comprises at least three branch points.

16. The composition of claim 1, wherein the ~~random~~ multigraft copolymer has a weight average molecular weight of between ~~about~~ 400,000 Daltons and ~~about~~ 600,000 Daltons.

17. A fabricated article comprising the composition of claim 1.

18. The fabricated article of claim 17, prepared by injection molding, compression molding, extrusion, or calendering.

19. The article of claim 17, the article comprises automotive interior or exterior parts, shoe soles or other shoe parts, elastic waistbands, diaper backings or attachments, adhesive tapes, membranes, balloons, bags, tubing, roofing tiles, medical devices, electronic wiring coatings or electronic device components.

20. The article of claim 19, wherein the article is a medical device selected from a balloon catheter and a stent.

21. The article of claim 20, wherein the article is a balloon catheter, and wherein at least the inflatable portion of the balloon catheter comprises the thermoplastic elastomer composition of claim 1.

22. An adhesive comprising, the composition of claim 1, ~~:~~

~~a random multigraft copolymer comprising a rubbery polymeric backbone and a plurality of glassy or semi-crystalline polymeric grafts, wherein each of the plurality of glassy or semi-crystalline polymeric grafts is attached to the rubbery polymeric backbone at one of a plurality of randomly spaced branch points;~~ and

a tackifier.

29. The adhesive of claim 28, wherein the decorative agent is a pigment, a dye or glitter.

30. A coated object comprising a coating layer wherein the coating layer comprises the ~~comprising a random~~ multigraft graft copolymer of claim 1, wherein ~~the random multigraft copolymer comprises a rubbery polymeric backbone and a plurality of glassy or semi-crystalline polymeric grafts, wherein each of the plurality of glassy or semi-crystalline polymeric grafts is attached to the rubbery polymeric backbone at one of a plurality of randomly spaced branch points, wherein~~ the coating layer covers at least a portion of a surface of a wood, ceramic, glass, carbon fiber, metal, metallic, leather, fabric, stone, or plastic object.

31. The coated object of claim 30, wherein the object comprises an article of clothing, an eating/cooking utensil, a medical implant, a medical/surgical tool, or an electronic device.

32. The coated object of claim 30, wherein the object comprises a medical implant or a medical/surgical tool and wherein the coating layer further comprises a therapeutic agent additive selected from the group consisting of a carcinostatic, an immunosuppressive, an antibiotic, an antirheumatic, an antithrombotic, an antihyperlipidemic, an ACE inhibitor, a calcium antagonist, an integrin inhibitor, an antiallergic, an antioxidant, a GPIIb/IIIa antagonist, a retinoid, a flavonoid, a carotenoid, a lipid improving agent, a DNA synthesis inhibitor, a tyrosine kinase inhibitor, an antiplatelet, a vascular smooth muscle antiproliferative agent, an antiinflammatory agent, an interferon, or a NO production accelerator.

33. The coated object of claim 30, wherein the coated object comprises a stent, wherein the stent comprises a metal or metallic wire mesh or a metal or metallic coil having a cylindrical shape, wherein the wire mesh or coil is covered by the coating layer.