WHAT IS CLAIMED IS:

1. A device, comprising:

a hydrogel matrix including a photoabsorber; and

a void architecture in the matrix, having a first vessel architecture and a second vessel architecture that are each tubular and branching;

wherein the first and second vessel architectures are fluidically independent from each other, and are both formed from a model based on a tessellation of polyhedra.

2. The device of claim 1, wherein the device allows at least 90% of visible light incident on the device to pass therethrough and allow imaging of the device.

3. The device of claim 1, wherein the photoabsorber has been at least partially washed out of the device.

4. The device of claim 1, wherein the photoabsorber is degradable independent of any degradation of the remaining hydrogel matrix.

5. The device of claim 1, wherein the photoabsorber is degradable by chemical or physical processes including photobleaching or boiling.

6. The device of claim 1, wherein the void architecture is multi-vascular and further comprises a torus entangled with a torus knot.

7. The device of claim 1, wherein the model based on a tessellation of polyhedra represents blood vessels or an airway.

8. The device of claim 1, wherein the void architecture is multi-vascular and further comprises a functional valve.

9. The device of claim 8, wherein the valve is a bicuspid valve, tricuspid valve, monocuspid valve, or Tesla valve.

10. The device of claim 1, wherein the void architecture is multi-vascular and further comprises a fluidic static mixer.

11. The device of claim 10, wherein the fluidic static mixer has between two and fifty fin elements.

12. The device of claims 8 or 9, wherein the functional valve is positionable at any position in the multi-vascular void architecture.

13. The device of claim 1, wherein the device is monolithic.

14. The device of claim 1, wherein the hydrogel matrix is a photopolymerized hydrogel matrix and/or biodegradable.

15. The device of claim 1, wherein the device is produced by additive manufacturing.

16. The device of claim 1, wherein the first vessel architecture and the second vessel architecture are entangled, or the first vessel architecture is ensheathed by the second vessel architecture.

17. The device of claim 1, wherein the hydrogel matrix is porous.

18. The device of claim 1, wherein the device is implantable.

19. The device of claim 1, wherein the photoabsorber is hydrophilic.

20. The device of claim 19, wherein the photoabsorber is one of a food dye, tartrazine, sunset yellow FCF (Yellow No. 6), Brilliant Blue FCF (FD&C Blue No. 1), Indigo Carmine (FD&C Blue No. 2), Fast Green FCF (FD&C Green No. 3) anthocyanins, anthocyanidin, erythrosine (FD&C Red No.3), Allura Red AC (FD&C Red No. 40), riboflavin (Vitamin B2, E101, E101a, E106), ascorbic acid (Vitamin C), Quinoline Yellow WS, carmoisine (azorubine), Ponceau 4R (E124), Patent Blue V (E131), Green S (E142), Yellow 2G (E107), Orange GGN (E111), Red 2G (E128), caramel color, phenol red, Methyl orange, 4-nitrophenol, and NADH disodium salt.

21. The device of claim 1, wherein the photoabsorber is hydrophobic.

22. The device of claim 21, wherein the photoabsorber is one of Curcumin (E100), turmeric, alpha carotene, beta carotene, canthaxanthin (keto-carotenoid), cochineal extract, paprika, saffron, ergocalciferol (vitamin D2), cholecalciferol (vitamin D3), Citrus Red 2, annatto extract, and Lycopene.

23. The device of claim 1, comprising three or more vessel architectures fluidically independent from each other and from the first and second vessel architectures.

24. The device of claim 10, wherein the fluidic static mixer comprises photoabsorber, tartrazine, or fin elements with 180° twists.

25. The device of claim 10, wherein the fluidic static mixer is produced by additive manufacturing.

26. The device of claim 1, further comprising a thickener to prevent cell settling, the thickener comprising xanthan gum having a concentration ranging from 0.02 wt% to 2 wt%.