CLAIMS

What is claimed is:

1. A method for fabricating a 3d object, the method comprising:

delivering a build material to a build surface, wherein the build material comprises a blended composition of a powder material and a binder material;

increasing a powder loading density of the build material delivered on the build surface; and

selectively irradiating the build material to alter the physical state of a portion of the build material.

2. The method of claim 1, wherein delivering a build material to a build surface comprises delivering the build material as a pre-mixed slurry.
3. The method of claim 1, comprising sequentially producing multiple layers of material and irradiating the multiple layers to produce an object.
4. The method of claim 3, wherein selectively irradiating the build material comprises irradiating the build material with a pattern of irradiation such that the object has a structure that allows fluid to flow therethrough.
5. The method of claim 2, wherein delivering a build material to a build surface comprises:

lowering the build surface into a vat of build material; and

moving the build surface by incremental motion away from the vat of build material.

6. The method of claim 2, wherein delivering a build material to a build surface comprises:

dispensing layers of material onto the build surface; and

moving the build surface incrementally in a direction away from the imaging system.

7. The method of claim 6, comprising conditioning a surface of the build material delivered on the build surface using a doctoring blade.
8. The method of claim 6, comprising conditioning a surface of the build material delivered on the build surface using a film.

9. The method of claim 8, comprising stabilizing the film with a rigid surface during layer formation.
10. The method of claim 4, wherein increasing a powder loading density of the build material comprises flowing fluid through the build surface.
11. The method of claim 10, wherein increasing a powder loading density of the build material comprises flowing fluid through the object being built.
12. The method of claim 2, wherein increasing a powder loading density of the build material comprises applying ultrasonic agitation to compact the powder material.
13. The method of claim 2, wherein increasing a powder loading density of the build material comprises at least partially evaporating at least one component of the binder material.
14. The method of claim 13, wherein the at least one component is a volatile organic solvent.
15. The method of claim 3, wherein increasing a powder loading density of the build material comprises removing an amount of binder from a given layer such that the layer has a porous structure.
16. A method for fabricating a 3d object, the method comprising:

delivering a build material to a build surface, wherein the build material comprises a solid blend of a powder material and a binder material;

changing a phase of the binder material; and

selectively irradiating the build material to alter the physical state of a portion of the build material.
17. The method of claim 16, wherein the solid blend comprises a film containing the powder material and the binder material.
18. The method of claim 17, wherein the film comprises multiple layers, wherein one layer comprises a non-reactive, translucent imaging window.
19. The method of claim 17, wherein changing a phase of the binder material comprises forming a melt pool from the film on the build surface, wherein the melt pool is conditioned into a uniform layer.
20. The method of claim 16, wherein the solid blend comprises pellets containing the powder material and the binder material.