Claims

1. A photopolymerizable slurry, comprising

a plurality of particles of an inorganic salt; and

at least one polymerizable monomer or oligomer;

wherein the cation of the inorganic salt is a metal cation; wherein the anion of the inorganic salt is neither oxide nor hydroxide wherein the inorganic salt has a melting point of above 250 °C at atmospheric pressure; wherein the inorganic salt has a solubility in water above 9 %w/w at room temperature; and

wherein the metal cation of the inorganic salt is selected from a group consisting of barium, beryllium, cadmium, calcium, cesium, cobalt, copper, iron, lead, magnesium, manganese, nickel, potassium, rubidium, silver, and sodium.

2. The photopolymerizable slurry according to claim 1, wherein the anion of the inorganic salt is selected from a group consisting of bromide, chloride, fluoride, iodide, sulfate, nitrate, nitrite, carbonate, and cyanide.

3. The photopolymerizable slurry according to claim 1 or 2, wherein the photopolymerizable slurry comprises a photoinitiator, and/or an inhibitor, and/or a diluent, and/or a sintering aid.

4. The photopolymerizable slurry according to any of claims 1 to 3, wherein the inorganic salt particles are coated or functionalized with a dispersant.

5. A method for manufacturing a photopolymerizable slurry, the method comprising the steps:

a) providing a plurality of particles of an inorganic salt in the form of a powder; wherein said inorganic salt has a metal cation selected from a group consisting of barium, beryllium, cadmium, calcium, cesium, cobalt, copper, iron, lead, magnesium, manganese, nickel, potassium, rubidium, silver, and sodium, and an anion that is neither oxide nor hydroxide; wherein the inorganic salt has a melting point of above 250 °C at atmospheric pressure; and wherein the inorganic salt has a solubility in water above 9 %w/w at room temperature;

b) providing at least one radiation curable monomer; the at least one radiation curable monomer being in the liquid phase; and

c) adding the inorganic salt particles to the liquid composition and mixing the inorganic salt particles with the liquid composition; obtaining a photopolymerizable slurry.

6. The method according to claim 5, wherein the inorganic salt particles are produced by

milling an amount of inorganic salt together with a dispersant in a liquid phase, thereby obtaining a dispersion of inorganic salt particles coated or functionalized with the dispersant; and

removing the liquid phase.

7. The method according to claim 5 or 6, wherein a photo initiator, and/or an inhibitor, and/or a diluent, and/or a sintering aid are provided.

8. A method for manufacturing a sintered ceramic article, the method comprising the steps:

a) providing a photopolymerizable slurry according to any of claims 1 to 4;

b) selectively curing the photopolymerizable slurry to obtain a green body article;

c) debinding the green body article to obtain a binderless body article; and

d) sintering the binderless body article to obtain a sintered ceramic article.

9. The method according to claim 8, wherein the selective curing of the photopolymerizable slurry to obtain a green body article is carried out within an additive manufacturing process.

10. A method for manufacturing cast articles, the method comprising

a) providing a first template mold (1); wherein the first template mold comprises a sintered ceramic article manufactured with a method according to claim 8 or 9;

b) providing a second mold (2, 2', 2''); wherein the second mold comprises a compartment into which said first template mold can be placed;

c) mounting the first template mold into the compartment of the second mold, thereby obtaining an operative mold (1, 2, 2', 2'');

d) casting a fluid casting material (3, 3', 3'') into said operative mold to obtain after solidification of said casting material an infiltrated template mold (8) comprising a solid article (9) that is at least partially located within the first template mold (1); and

e) separating said solid article from the first template mold by dissolving the sintered ceramic article of the first template mold with a suitable solvent, for example water.

11. The method according to claim 10, wherein the solid article and the first template mold are removed from the second mold before dissolving the sintered ceramic article of the first template mold.

12. The method according to claim 10 or 11, wherein the solid article is positively locked in the first template mold.

13. The method according to any of claims 10 or 12, wherein the second mold is a permanent mold or a lost mold.

14. The method according to any of claims 10 to 13, wherein a metallic material or a polymer material or a ceramic material or a composite material is used as the casting material.