CLAIMS

1. A photosensitive composition comprising:

synthetic nanocrystalline hydroxyapatite or ~~a synthetic precursor~~octacalcium phosphate thereof doped with a rare earth ion, wherein the nanocrystalline hydroxyapatite or octacalcium phosphate~~synthetic precursor~~ thereof is fluoride ion-substituted and further doped with aluminum ions;

monetite; and

brushite.

2. A photosensitive composition as claimed in claim 1 wherein the rare earth ion exhibits absorption bands which substantially match or overlap one or more absorption bands of the synthetic nanocrystalline hydroxyapatite.

3. A photosensitive composition as claimed in claim 1 or 2 wherein the rare earth ion is an erbium, ytterbium, holmium or thulium ion.

~~4. A photosensitive composition as claimed in any preceding claim obtained or obtainable by a process comprising:~~

~~(a) preparing an aqueous mixture of a calcium ion-containing solution, a phosphate ion-containing solution and a rare earth ion-containing dopant solution at a pH in the range 5 to 14;~~

~~(b) causing the formation of nanocrystalline hydroxyapatite doped with a rare earth ion; and~~

~~(c) isolating the photosensitive composition.~~

~~5. A photosensitive composition as claimed in claim 4 wherein in step (a) a source of fluoride ions is added to the aqueous mixture.~~

~~6. A photosensitive composition as claimed in claim 4 or 5 wherein in step (a) a source of aluminium ions is added to the aqueous mixture.~~

~~7~~4. An aqueous, ketonic or alcoholic dispersion of a photosensitive composition as claimed in any preceding claim.

~~8~~5. A process for preparing a photosensitive composition as defined in any of claims 1 to ~~6~~ 3 comprising:

(a) preparing an aqueous mixture of, a source of aluminium ions, a source of fluoride ions, a calcium ion-containing solution, a phosphate ion-containing solution and a rare earth ion-containing solution at a pH in the range 5 to 14;

(b) causing the formation of synthetic nanocrystalline hydroxyapatite doped with a rare earth ion and aluminium ions and is fluoride-ion substituted; and

(c) isolating the photosensitive composition.

~~9~~6. A cosmetic method for whitening or veneering a tooth of a human or non-human animal subject comprising:

(1) applying an amount of a photosensitive composition as defined in any of claims 1 to ~~6~~ 3 or a physiologically tolerable formulation thereof to a surface of the tooth other than a dentinal surface; and

(2) irradiating the amount of the photosensitive composition with laser irradiation so as to promote densification.

~~10~~7. A method for generating an image of an exposed dentinal surface of a tooth of a human or non-human animal subject comprising:

(A) administering an amount of a photosensitive composition as defined in any of claims 1 to ~~6~~ 3 or a physiologically tolerable formulation thereof to the exposed dentinal surface;

(B) irradiating the photosensitive composition or physiologically tolerable formulation thereof with irradiation;

(C) capturing the radiation emitted by the photosensitive composition or physiologically tolerable formulation thereof; and

(D) generating from the radiation emitted by the photosensitive composition or physiologically tolerable formulation thereof an image of the exposed dentinal surface.

~~11~~8. Photosensitive composition as defined in any of claims 1 to ~~6~~ 3 or a physiologically tolerable formulation thereof for use in restorative or cosmetic dentistry.