CLAIMS

1. A method for producing a beta-emitting radionuclide labelled particle, wherein said particle has a size in the range of 5-400 μm, and wherein said particle has a surface with less than 10 protrusions each with a minimum height of 1 μm, the method comprising,
    a) Providing a beta-emitting radionuclide which is a ^{90}Y salt,
    b) Providing a particle consisting of a sulfonic acid conjugated polymeric resin being a styrene divinyl benzene copolymer being conjugated with sulfonic acid, and wherein the resin is conditioned as a sodium salt,
    c) Mixing said beta-emitting radionuclide and said particle in an aqueous solution at a pH in the range of pH 6.5 to less than 7.5, and
    d) Isolating a beta-emitting radionuclide labelled particle from said aqueous solution.

2. The method according to any of claim 1, wherein the weight ratio between said radionuclide and said particle is in the range of 1:40-1:6000 (mg/mg), such as in the range of 1:100-1:6000, such as in the range of 1:1000-1:6000, such as about 1:5000.

3. The method according to any of claims 1-2, wherein the weight ratio between said radionuclide and said particle is in the range of 1:40-1:1000, such as in the range of 1:50-1:100, 1:45-1:75, such as about 1:50.

4. The method according to any of claims 1-3, wherein in step d) is performed within no more than 60 minutes, such as no more than 30 minutes, such as no more than 15 minutes after step c).

5. The beta-emitting radionuclide labelled particle produced by the method according to any of claims 1-4.

6. The pharmaceutical composition comprising a particle according to claim 5.

7. The pharmaceutical composition according to claim 6, comprising a diluent, carrier, surfactant, deflocculant and/or excipient.

8. The pharmaceutical composition according to any of claims 6 or 7, further comprising a biocompatible adhesive or a component thereof.

9. The pharmaceutical composition according to any of claims 6-8, further comprising an albumin, such as e.g., bovine serum albumin.

10. The pharmaceutical composition according to any of claims 6-9, prepared with an amount of radionuclide that is 1kBq to 10GBq per dosing, or with an amount of radionuclide that is 50 MBq to 1000 GBq suitable for multidose industrial scale production.

11. The beta-emitting radionuclide labelled particle according to any of claims 4-5, or a pharmaceutical composition according to any of claims 6-10, for use as a medicament.

12. The beta-emitting radionuclide labelled particle, or the pharmaceutical composition for use according to claim 11, wherein the medicament is for use in the treatment or amelioration of cancer.

13. The beta-emitting radionuclide labelled particle, or the pharmaceutical composition for use according to claim 12, wherein the medicament is for use in the treatment or amelioration of head and neck squamous cell carcinoma, metastatic melanoma, sarcoma, non-small cell lung cancer, colorectal cancer, primary and secondary hepatocellular carcinoma, pancreatic ductal adenocarcinoma, renal cell carcinoma, ovarian cancer, muscle invasive bladder cancer, prostate cancer, and/or osteosarcoma, preferably, unresectable hepatocellular carcinoma and/or locally-advanced borderline-resectable pancreatic ductal adenocarcinoma.

14. The beta-emitting radionuclide labelled particle or a pharmaceutical composition for use according to claim 12, wherein the medicament is for use in locoregional radiotherapy.

15. The method of preparing a cured ^{90}Y radiotherapeutic composition comprising,
    a) Providing,
        i. a ^{90}Y labelled particle suspension comprising particles according to claim 6,

ii. an uncured biocompatible adhesive and/or non-polymerized hydrogel in an aqueous solution,

iii. a curing and/or polymerizing agent which upon mixture with ii), or i) and ii) induces curing of said biocompatible adhesive and/or polymerization of said hydrogel, and

b) Mixing i., ii. and iii. to obtain a cured ^{90}Y radiotherapeutic composition, comprising biocompatible adhesive and/or hydrogel embedded ^{90}Y radiotherapeutic particles.