【CLAIMS】

【Claim 1】

A method for manufacturing porous inorganic particles, comprising the steps of:

a) forming crosslinked polymer particles;

b) forming shells on the particles of step a) by using an inorganic precursor to form core-shell particles;

c) forming an emulsion comprising the core-shell particles and an organic solvent in the inner phase thereof;

d) removing the organic solvent from the emulsion; and

e) calcining the resultant product of step d) to form porous inorganic particles,

wherein the crosslinked polymer has negative charges on the surfaces thereof,

the inorganic precursor is a silica (SiO_2) precursor,

the organic solvent is toluene, decane, octanol, hexane, dimethyl sulfoxide (DMSO), cyclohexanone or a mixture thereof,

the removing the organic solvent is carried out by heating and agitating the emulsion, and

the calcining is carried out at a temperature of 600-900°C for 3-10 hours.

【Claim 2】

The method according to claim 1, wherein the crosslinked polymer is selected from the group consisting of polystyrene, polymethyl methacrylate and polyamide.

【Claim 3】

The method according to claim 1, which further comprises step b-1) of modifying the surfaces of the core-shell particles into hydrophobic surfaces, after step b) of forming core-shell particles and before step c) of forming an emulsion.

【Claim 4】

The method according to claim 3, wherein the surface modification into hydrophobic surfaces is carried out by using a coupling agent selected from the group

consisting of octadecyl trimethoxylsilane (OTMS), octadecylethoxysilane (OTES), 3-glycidyloxypropyl trimethoxylsilane (GPTMS), 1,1,1,3,3,3-hexamethyldisilazane (HMDS), and oleic acid (OA).

【Claim 5】

The method according to claim 1, wherein the emulsion is an oil-in-water (O/W) emulsion.

【Claim 6】

A method for manufacturing a light-reflecting composition, comprising the steps of:

calculating the effective refraction index of the porous inorganic particles obtained by the method as defined in any one of claims 1 to 5; and

dispersing the porous inorganic particles in a medium having a refraction index different from the effective refraction index of the porous inorganic particles by 0.03 or less.

【Claim 7】

The method for manufacturing a light-reflecting composition according to claim 6, wherein the effective refraction index of the porous inorganic particles is calculated by calculating the effective refraction index of one core-shell particle according to the following Formula 1, and putting the effective refraction index into the following Formula 2:

[Formula 1]

$$n_{eff(p)} = \sqrt{n_c^2 f + n_s^2 (1 - f)}$$

wherein n_c is a core refractive index, n_s is a shell refraction index, and f is a volume fraction.

[Formula 2]

$$n_{eff(s)} = \sqrt{\frac{2n_m{}^2 + n_{eff(p)}{}^2 + 2\emptyset(n_m{}^2 - n_{eff(p)}{}^2)}{2n_m{}^2 + n_{eff(p)}{}^2 - \emptyset(n_m{}^2 - n_{eff(p)}{}^2)}}$$

wherein n_m is the refraction index of a medium, and ø is a packing fraction.

【Claim 8】

A light-reflecting composition comprising: the porous inorganic particles obtained by the method as defined in any one of claims 1 to 5; and a medium having a refraction index different from the effective refraction index of the porous inorganic particles by 0.03 or less.

【Claim 9】

The light-reflecting composition according to claim 8, wherein the composition is for UV protection.

【Claim 10】

The light-reflecting composition according to claim 8, wherein the composition is transparent.