Claims

[Claim 1]

A nanocluster in which a carbon nanomaterial modified with a C_6-C_{24}alkyl group or a C_6-C_{24}alkenyl group is self-assembled,

wherein the carbon nanomaterial is further modified with a polyalkylene glycol, and

wherein the carbon nanomaterial has at least one surface group selected from the group consisting of OH, COOH, and NH2, and the C6-C24 alkyl group or C6-C24 alkenyl group, and the polyalkylene glycol are each bonded to the carbon nanomaterial through the surface group.

[Claim 2]

The nanocluster according to claim 1, modified with polyethylene glycol.

[Claim 3]

The nanocluster according to any one of claims 1 to 2, wherein the C_6-C_{24}alkyl group or the C_6-C_{24}alkenyl group, and the polyalkylene glycol are linked to the carbon nanomaterial by any linking group selected from the group consisting of -NH-, -O-, -CO-O-, -O-CO-, -CO-NH-, -NH-CO-, -NH-CO-O-, -O-CO-NH-, -O-CO-O-, and -NH-CO-NH-.

[Claim 4]

The nanocluster according to any one of claims 1 to 3, complexed with an active ingredient.

[Claim 5]

The nanocluster according to claim 4, wherein the active ingredient is a physiologically active substance, a labeling substance, a perfume, an essential oil, or an organic pigment.

[Claim 6]

The nanocluster according to any one of claims 1 to 5, wherein the carbon nanomaterial is a carbon nanodiamond or carbon nanodots.

[Claim 7]

A delivery carrier for an active ingredient, the delivery carrier comprising the nanocluster described in any one of claims 1 to 6.

[Claim 8]

A carbon nanomaterial modified with a C_6-C_{24}alkyl group and/or a higher C_6-C_{24}group and a polyalkylene glycol, and

wherein the carbon nanomaterial has at least one surface group selected from the group consisting of OH, COOH, and NH2, and the C6-C24 alkyl group or C6-C24 alkenyl group, and the polyalkylene glycol are each bonded to the carbon nanomaterial through the surface group.

[Claim 9]

The carbon nanomaterial according to claim 8, wherein the C_6-C_{24}alkyl group or C_6-C_{24}alkenyl group and the polyalkylene glycol are linked by any linking group selected from the group consisting of -NH-, -O-, -CO-O-, -O-CO-, -CO-NH-, -NH-CO-, -NH-CO-O-, -O-CO-NH-, -O-CO-O-, and -NH-CO-NH-.

[Claim 10]

The carbon nanomaterial according to claim 8 or 9, wherein the carbon nanomaterial is a carbon nanodiamond.

[Claim 11]

A pharmaceutical composition comprising the self-assembled nanocluster described in claim 1, the self-assembled nanocluster being complexed with a drug.