little side effects can be realized. Furthermore, since the metal-salen complex compound combines with other medical compounds, it also functions as a magnetic carrier of other medical compounds. As examples of other organic magnetic compounds, there are forskolin described in Domestic Re-publication of PCT International Application No. 2008-001851, and a PDE5 inhibitor.

[0004]

The applicant of the present application focuses attention on the difference in density of electron spin electric charges of these organic compounds and reported that magnetic properties of an organic compound becomes higher as the difference in density of electron spin electric charges is higher. Specifically speaking, when the difference in density of electron spin electric charges of the organic compound changes due to modification of side chains and/or cross-linking of the side chains of the organic compound, the organic compound will become ferromagnetic even if it is a known compound.

[Citation List]

[Patent Literature]

[0005]

[PTL 1] Domestic Re-publication of PCT International Application No. 2008-001851

[PTL 2] WO2010/058280

[Summary of Invention]

[Technical Problem]

[0006]

When the structure of an organic compound, which is not magnetic or stays paramagnetic, is intentionally modified with an attempt to make the organic compound magnetic or enhance the magnetic properties of the organic compound, this may sometimes turn out to damage properties of the organic compound. For example, changes in the structure of the organic compound may reduce medical effects of the organic compound or degrade physical properties of the organic compound.

[0007]

~~So, it is an object~~ Embodiments of the present invention seek to provide a magnetization technique capable of enhancing magnetic susceptibility of a compound while maintaining the

structure of the organic compound without damaging properties of the compound and obtain a ferromagnetic substance and a method for manufacturing the ferromagnetic substance by applying this magnetization technique to the compound.

[Solution to Problem]

[0008]

As a result of earnest examinations in order to achieve the above-described object, the inventor of the present invention has found that a crystal structure formed when a magnetization target compound and an electron acceptor are crystallized at a very low temperature contributes to new acquisition of magnetic properties by the magnetization target compound or enhancement of magnetic susceptibility of the magnetization target compound.

[0009]

When the magnetization target compound as an electron donor forms charge transfer complex crystals with the electron acceptor at the very low temperature, electrons move from the magnetization target compound to the electron acceptor. Then, as electric charge density of unpaired electrons in electron orbits of the magnetization target compound increases, the magnetic properties of the magnetization target compound ~~are~~ may be enhanced, that is, the magnetic susceptibility to the applied magnetic field ~~is~~ may be enhanced.

[0010]

~~A series of inventions according to the present application were devised based on such a finding; and a~~ A first aspect of the present invention ~~is characterized by being~~ provides a magnetic substance including a metal-salen complex compound as an organometal complex compound and an electron acceptor. Then, a second aspect of the present invention ~~is~~ provides a magnetic substance including a magnetization target compound and an electron acceptor and ~~is characterized in that~~ wherein the magnetization target compound has electrons to be donated to the electron acceptor; and ~~when~~ wherein the magnetization target compound and the electron acceptor form multicomponent crystals of a charge transfer complex at a very low temperature and ~~the electrons are donated from the magnetization target compound to the electron acceptor,~~ wherein magnetic susceptibility of the magnetization target compound is enhanced by donating the electrons to the electron acceptor.

[0011]

Furthermore, a third aspect of the present invention ~~is~~ provides a ~~magnetic substance manufacturing~~ method for manufacturing a magnetic substance composed of crystals ~~characterized in that a solution is formed by dissolving a mixture~~ of ~~the~~ a magnetization target compound and ~~the~~ an electron acceptor ~~in a solvent, the solution is maintained in a very low temperature state and made to deposit crystals of the magnetic target compound and the electron acceptor, and the crystals are separated from the solvent and thereby formed into a magnetic substance~~ compound, the method comprising: combining the magnetization target compound with the electron acceptor; forming a solution by dissolving a mixture of the magnetization target compound and the electron acceptor in a solvent; maintaining the solution in a very low temperature state and allowing the solution to deposit the crystals of the magnetic target compound and the electron acceptor; and separating the crystals from the solvent. .

[Advantageous Effects of Invention]

[0012]

According to the present invention, magnetization of the magnetization target compound or enhancement of the magnetic susceptibility of the magnetization target compound can be achieved while maintaining the structure of the magnetization target compound without damaging specific properties of the compound.

[Brief Description of Drawings]

[0013]

[Fig. 1] Fig. 1 shows magnetic field–magnetization curves of magnetic substances according to the present invention;

[Fig. 2] Fig. 2 is a block diagram illustrating the outline of an experiment system that verifies the location of a magnetic substance in a magnetic field;

[Fig. 3] Fig. 3 is a characteristic diagram showing measurement results of changes in the number of cells based on variations of a concentration of the magnetic substance in the magnetic field;

[Fig. 4] Fig. 4 is a graph of MRI measurement results (T1 enhanced signal) of the magnetic substance on a mouse's kidney;

[Fig. 5] Fig. 5 is a characteristic diagram showing depression effects of the magnetic substance on melanoma growth in mice;

[Fig. 6] Fig. 6 is a graph illustrating changes of the size of melanomas;

[Fig. 7] Fig. 7 is a characteristic diagram showing the results of a histological examination of melanomas; and

[Fig. 8] Fig. 8 shows graphs of a temperature rise when an AC magnetic field is applied to the magnetic substance.

[Description of Embodiments]