CLAIMS

[Claim 1]

A sleeping state detection system, comprising:

a room or closed space in which a subject sleeps, the room being provided inside with a living space as a closed space; and

a dust counter disposed inside the room or closed space,

at least a part of at least one of walls of the room or closed space being constituted by a wall with an internal space capable of introducing outside air, comprising: airways communicating the outside and the internal space, provided on the edge of the wall, at least one of major surfaces forming the internal space being made of a membrane not passing through dust particles but passing through gas molecules, or by a membrane not passing through dust particles but passing through gas molecules,

the membrane having the area A set by scaling of {(V/A)/(D/L)} where V is the volume of the room or closed space, A is the area of the membrane, L is the thickness of the membrane and D is the diffusion constant of oxygen in the membrane,

the area A of the membrane being set so as to satisfy at least

$$A \geqq \frac{BL}{D(\frac{V_{O_2}}{V} - \eta)} \qquad (15)$$

where B is the oxygen consumption rate inside the room or closed space, Vo2 is the volume of oxygen in equilibrium state with the outside and without oxygen consumption inside the room or closed space and η(η>0.18) is the target oxygen concentration inside the room or closed space,

a fan filter unit being disposed in the room or closed space,

the sleeping state of the subject being detected by measuring the change over time in the number of dust particles inside the room or closed space by the dust counter in a state where the inside of the room or closed space is kept cleaner than the outside of the room or closed space, while the subject sleeps.

[Claim 2]

The sleeping state detection system according to claim 1 wherein the room or closed space is constituted so that all of gases which are absorbed from an absorption opening of the fan filter unit and flow inside the room or closed space from a blow opening of the fan filter unit are fed back to the absorption opening of the fan filter unit.

[Claim 3]

The sleeping state detection system according to claim 1 or 2 wherein the room or closed space is a tent in which a part or all of the side and the ceiling is occupied by the membrane.

[Claim 4]

The sleeping state detection system according to any one of claims 1 ~ 3 wherein cleanliness of the inside of the room or closed space is determined so that the number density of dust particles corresponding to attainable cleanliness of the room or closed space when the subject is at rest is smaller than the number density of dust particles emitted inside the room or closed space when the subject tosses about.

[Claim 5]

The sleeping state detection system according to any one of claims 1 ~ 4 wherein the inside of the room is kept at a cleanliness of US 209D Class100 or better.

[Claim 6]

The sleeping state detection system according to any one of claims 1 ~ 5 wherein the sleeping state of the subject is detected by performing analysis of characteristic of the change over time in a parameter as the number of dust particles inside the room or closed space.

[Claim 7]

The sleeping state detection system according to claim 6 wherein the analysis of characteristic of the change over time is an autocorrelation function analysis.

[Claim 8]

The sleeping state detection system according to claim 7, further comprising an arithmetic unit for obtaining the

autocorrelation by calculating the autocorrelation function from the result of measurement of the change over time in the number of dust particles measured by the dust counter.

[Claim 9]

The sleeping state detection system according to any one of claims 1 ~ 8 wherein the health state of the subject is ascertained by detecting the sleeping state of the subject.

[Claim 10]

A sleeping state detection method wherein the sleeping state of a subject is detected by measuring the change over time in the number of dust particles inside a room or closed space in which the subject sleeps, the room being provided inside a living space as a closed space, by a dust counter in a state where the inside of the room or closed space is kept cleaner than the outside of the room or closed space, while the subject sleeps, comprising:

at least a part of at least one of walls of the room or closed space being constituted by a wall with an internal space capable of introducing outside air, comprising: airways communicating the outside and the internal space, provided on the edge of the wall, at least one of major surfaces forming the internal space being made of a membrane not passing through dust particles but passing through gas molecules, or by a membrane not passing through dust particles but passing through gas molecules,

the membrane having the area A set by scaling of {(V/A)/(D/L)} where V is the volume of the room or closed space, A is the area of the membrane, L is the thickness of the membrane and D is the diffusion constant of oxygen in the membrane,

the area A of the membrane being set so as to satisfy at least

$$A \geqq \frac{BL}{D(\frac{V_{O_2}}{V} - \eta)} \quad (15)$$

where B is the oxygen consumption rate inside the room or closed space, V_{O_2} is the volume of oxygen in equilibrium state with the outside and without oxygen consumption inside the room or closed space and η (η>0.18) is the target oxygen concentration inside the room or closed space,

a filter unit being disposed in the room or closed space.

[Claim 11]

A system using information of involuntary body movement during sleep, comprising:

a room or closed space in which a subject sleeps, the room being provided inside with a living space as a closed space; and

a dust counter disposed inside the room or closed space,

at least a part of at least one of walls of the room or closed space being constituted by a wall with an internal space capable of introducing outside air,

comprising: airways communicating the outside and the internal space, provided on the edge of the wall, at least one of major surfaces forming the internal space being made of a membrane not passing through dust particles but passing through gas molecules, or by a membrane not passing through dust particles but passing through gas molecules,

the membrane having the area A set by scaling of {(V/A)/(D/L)} where V is the volume of the room or closed space, A is the area of the membrane, L is the thickness of the membrane and D is the diffusion constant of oxygen in the membrane,

the area A of the membrane being set so as to satisfy at least

$$A \geqq \frac{BL}{D(\frac{V_{O_2}}{V} - \eta)} \qquad (15)$$

where B is the oxygen consumption rate inside the room or closed space, V_{O_2} is the volume of oxygen in equilibrium state with the outside and without oxygen consumption inside the room or closed space and $\eta(\eta>0.18)$ is the target oxygen concentration inside the room or closed space,

a fan filter unit being disposed in the room or closed space,

the state of the subject being examined by measuring information of involuntary body movement during sleep of the subject by measuring the change over time in the number of dust particles inside the room or closed space by the dust counter in a state where the inside of the

room or closed space is kept cleaner than the outside of the room or closed space, while the subject sleeps.

[Claim 12]

A method using information of involuntary body movement during sleep wherein the state of a subject is examined by measuring information of involuntary body movement during sleep of the subject by measuring the change over time in the number of dust particles inside a room or closed space in which the subject sleeps, the room being provided inside a living space as a closed space, by a dust counter in a state where the inside of the room or closed space is kept cleaner than the outside of the room or closed space, while the subject sleeps, comprising:

at least a part of at least one of walls of the room or closed space being constituted by a wall with an internal space capable of introducing outside air, comprising: airways communicating the outside and the internal space, provided on the edge of the wall, at least one of major surfaces forming the internal space being made of a membrane not passing through dust particles but passing through gas molecules, or by a membrane not passing through dust particles but passing through gas molecules,

the membrane having the area A set by scaling of {(V/A)/(D/L)} where V is the volume of the room or closed space, A is the area of the membrane, L is the thickness of the membrane and D is the diffusion constant of oxygen in the membrane,

the area A of the membrane being set so as to satisfy at least

$$A \geqq \frac{BL}{D(\frac{V_{O_2}}{V} - \eta)} \quad (15)$$

where B is the oxygen consumption rate inside the room or closed space, V_{O_2} is the volume of oxygen in equilibrium state with the outside and without oxygen consumption inside the room or closed space and η (η>0.18) is the target oxygen concentration inside the room or closed space,

a fan filter unit being disposed in the room or closed space.

[Claim 13]

A sleeping state detection system, comprising:

a room or closed space in which a subject sleeps, the room being provided inside with a living space as a closed space; and

a dust counter disposed inside the room or closed space,

at least a part of at least one of walls of the room or closed space being provided with a membrane not passing through dust particles but passing through gas molecules in contact with the living space or closed space,

the surface of the membrane on the opposite side of the living space or closed space being in contact with outside air,

the membrane having the area A set by scaling of {(V/A)/(D/L)} where V is the volume of the room or closed

space, A is the area of the membrane, L is the thickness of the membrane and D is the diffusion constant of oxygen in the membrane,

the area A of the membrane being set so as to satisfy at least

$$A \geqq \frac{BL}{D(\frac{V_{O_2}}{V} - \eta)} \quad (15)$$

where B is the oxygen consumption rate inside the room or closed space, Vo2 is the volume of oxygen in equilibrium state with the outside and without oxygen consumption inside the room or closed space and η(η>0.18) is the target oxygen concentration inside the room or closed space,

a fan filter unit being disposed in the room or closed space,

the sleeping state of the subject being detected by measuring the change over time in the number of dust particles inside the room or closed space by the dust counter in a state where the inside of the room or closed space is kept cleaner than the outside of the room or closed space, while the subject sleeps.

[Claim 14]

A system using information of involuntary body movement during sleep, comprising:

a room or closed space in which a subject sleeps, the room being provided inside with a living space as a closed space; and

a dust counter disposed inside the room or closed space,

at least a part of at least one of walls of the room or closed space being provided with a membrane not passing through dust particles but passing through gas molecules in contact with the living space or closed space,

the surface of the membrane on the opposite side of the living space or closed space being in contact with outside air,

the membrane having the area A set by scaling of {(V/A)/(D/L)} where V is the volume of the room or closed space, A is the area of the membrane, L is the thickness of the membrane and D is the diffusion constant of oxygen in the membrane,

the area A of the membrane being set so as to satisfy at least

$$A \geqq \frac{BL}{D(\frac{V_{O_2}}{V} - \eta)} \qquad (15)$$

where B is the oxygen consumption rate inside the room or closed space, Vo2 is the volume of oxygen in equilibrium state with the outside and without oxygen consumption inside the room or closed space and η(η>0.18) is the target oxygen concentration inside the room or closed space,

a fan filter unit being disposed in the room or closed space,

the state of the subject being examined by measuring information of involuntary body movement during sleep of the subject by measuring the change over time in the

number of dust particles inside the room or closed space by the dust counter in a state where the inside of the room or closed space is kept cleaner than the outside of the room or closed space, while the subject sleeps.

[TITLE OF DOCUMENT] CLAIMS

[Claim 1]

A sleeping state detection system, comprising:

a room or closed space in which a subject sleeps; and

a measurement device disposed inside the room or closed space for measuring environmental information and/or vital information of the subject without contact and noninvasively with the subject,

the sleeping state of the subject being detected by measuring the environmental information and/or vital information by the measurement device while the subject sleeps.

[Claim 2]

The sleeping state detection system according to claim 1 wherein the measurement device includes a dust counter for measuring dust particles inside the room or closed space, and the sleeping state of the subject is detected by measuring the change over time in the number of dust particles inside the room or closed space by the dust counter in a state where the inside of the room or closed space is kept cleaner than the outside of the room or closed space, while the subject sleeps.

[Claim 3]

The sleeping state detection system according to claim 2 wherein cleanliness of the inside of the room or closed space is determined so that the number density of dust particles corresponding to attainable cleanliness of the room or closed space when the subject is at rest is smaller than the number density of dust particles emitted inside the room or closed space when the subject tosses about.

[Claim 4]

The sleeping state detection system according to claim 2 or 3 wherein the inside of the room is kept at a cleanliness of US 209D Class100 or better.

[Claim 5]

The sleeping state detection system according to any one of claims 2 to 4 wherein the sleeping state of the subject is detected by performing analysis of characteristic of the change over time in a parameter as the number of dust particles inside the room

or closed space.

[Claim 6]

The sleeping state detection system according to claim 5 wherein the analysis of characteristic of the change overtime is anautocorrelation function analysis.

[Claim 7]

The sleeping state detection system according to claim 6, further comprising an arithmetic unit for obtaining the autocorrelation by calculating the autocorrelation function from the result of measurement of the change over time in the number of dust particles measured by the dust counter.

[Claim 8]

The sleeping state detection system according to any one of claims 1 to 7 wherein at least a part of walls of the room or closed space is constituted by a wall with an internal space capable of introducing outside air for a room, comprising: airways communicating the outside and the internal space, provided on the edge of the wall, at least one of major surfaces forming the internal space being made of a membrane not passing through dust particles but passing through gas molecules.

[Claim 9]

The sleeping state detection system according to claim 8 wherein the wall is in contact with the inside of the room or closed space via the membrane, and the area A of the membrane is set so as to satisfy at least

$$A \geqq \frac{BL}{D(\eta_0 - \eta)} \qquad (16)$$

where B is the oxygen consumption rate inside the room or closed space, η_0 is the oxygen concentration in equilibrium state with the outside, L is the thickness of the membrane, D is the diffusion constant of oxygen in the membrane and η (η>0.18) is the target oxygen concentration inside the room or closed space.

[Claim 10]

The sleeping state detection system according to any one of claims 1 to 9 wherein the room comprises at least one room of a

system of highly clean rooms, comprising:

at least one room,

at least one of walls constituting the room being constituted of a wall with an internal space capable of introducing outside air for a room, airways communicating the outside and the internal space being provided on the edge of the wall, at least one of major surfaces forming the internal space being made of a membrane not passing through dust particles but passing through gas molecules,

the room being configured so that the room is provided inside with a living space as aclosed space, there is no movement of air as an air current between the inside and the outside of the living space, the room is provided with the first fan filter unit provided with a blow opening so as to supply gases inside the living space, at least one opening corresponding to an absorption opening of the first fan filter unit is provided in at least one of the lateral walls of the room, and all of gases flowing inside the living space from the blow opening pass through the opening and a gas flow path airtightly communicating the absorption opening and the opening and are fed back to the first fan filter unit,

the room being provided with doorways capable of moving in the living space.

[Claim 11]

The sleeping state detection system according to any one of claims 1 to 9 wherein the room comprises at least one room of a system of highly clean rooms, comprising:

at least one room,

at least one of walls constituting the room being constituted of a wall with an internal space capable of introducing outside air for a room, airways communicating the outside and the internal space being provided on the edge of the wall, at least one of major surfaces forming the internal space being made of a membrane not passing through dust particles but passing through gas molecules,

the room being configured so that the room is provided inside with a living space as aclosed space, and there is no movement of air as an air current between the inside and the outside of the living space,

the room being provided inside with an opening for absorbing air inside the room and a blowing opening for returning again all of the absorbed air after cleaning inside the room as a pair.

[Claim 12]

The sleeping state detection system according to any one of claims 8 to 11 wherein the gas flow path is provided in the internal space of the wall and at least a part of the wall is provided with at least one opening corresponding to the absorbing opening.

[Claim 13]

The sleeping state detection system according to any one of claims 9 to 12 wherein when the volume of the living space is denoted as V, the diffusion constant of oxygen in the membrane of the wall is denoted as D and the thickness of the membrane is denoted as L, the room is designed so that the volume V and the area A of the membrane are scaled by {(V/A)/(D/L)}.

[Claim 14]

The sleeping state detection system according to any one of claims 9 to 13 wherein when the volume of the living space is denoted as V, the oxygen consumption rate inside the living space is denoted as B, the volume of oxygen in equilibrium state with the outside and without oxygen consumption inside the living space is denoted as Vo_2, the diffusion constant of oxygen in the membrane of the wall is denoted as D, the thickness of the membrane is denoted as L and the target oxygen concentration inside the living space is denoted as η ($\eta > 0.18$), the area A of the membrane is set so as to satisfy at least

$$A \geqq \frac{BL}{D(\frac{V_{O_2}}{V} - \eta)} \qquad (15)$$

[Claim 15]

The sleeping state detection system according to any one of claims 9 to 14 wherein directions of air flows flowing in the living space and the internal space of the wall separated by the wall are the same.

[Claim 16]

The sleeping state detection system according to any one of

claims 9 to 15 wherein the doorway is a sliding door.

[Claim 17]

The sleeping state detection system according to any one of claims 9 to 16 wherein the room further comprises an anteroom which is a closed space capable of moving formed by providing a partition so as to face with the doorway inside the living space, the partition is provided with a doorway and the subject can move between the living space and the anteroom through the doorway, there is no air current moving between the inside and the outside of the anteroom, the anteroom is provided with the second fan filter unit in which a blow opening is provided so as to send gases inside the anteroom, at least one opening corresponding to an absorption opening of the second fan filter unit is provided on the lower part of lateral walls of the anteroom, all of gases flowing inside of the anteroom from the blow opening of the second fan filter unit pass through the opening and the second gas flow path communicating the absorption opening of the second fan filter unit and the opening airtightly and are fed back to the second fan filter unit, and the subject can move between the living space and the outside of the room by the doorway and the doorway provided in the partition.

[Claim 18]

The sleeping state detection system according to claim 16 or 17 wherein the doorway provided in the partition is a sliding door.

[Claim 19]

The sleeping state detection system according to claim 18 wherein the doorway provided in the partition is the sliding door with the membrane.

[Claim 20]

The sleeping state detection system according to any one of claims 9 to 19 wherein the room is provided with a local exhaust device having the gas exchange function that exhausts inside air of the living space and the local exhaust device is constituted so that the inside air and the outside air come in contact with each other via at least one membrane, thereby the concentration of molecules constituting the inside air and the concentration

of molecules constituting the outside air approach to the equilibrium state by concentration diffusion of molecules through the membrane and thereafter the inside airis fed back to the living space.

[Claim 21]

The sleeping state detection system according to any one of claims 1 to 9 wherein the room is one room of a construction, comprising:

at least one room,

at least one of walls constituting the room being constituted of a wall with an internal space capable of introducing outside air for a room, airways communicating the outside and the internal space being provided on the edge of the wall, at least one of major surfaces forming the internal space being made of a membrane not passing through dust particles but passing through gas molecules,

the room being configured so that the room is provided inside with a living space as a closed space, there is no movement of air as an air current between the inside and the outside of the living space, the room is provided with the first fan filter unit provided with a blow opening so as to supply gases inside the living space, at least one opening corresponding to an absorption opening of the first fan filter unit is provided in at least one of lateral walls of the room, and all of gases flowing inside the living space from the blow opening pass through the opening and a gas flow path airtightly communicating the absorption opening and the opening and are fed back to the first fan filter unit,

the room being provided with doorways capable of moving in the living space.

[Claim 22]

The sleeping state detection system according to claim 21 wherein the room further comprises an anteroom which is a closed space capable of moving formed by providing a partition so as to face with the doorway inside the living space, the partition is provided with a doorway and the subject can move between the living space and the anteroom through the doorway, there is no air current moving between the inside and the outside of the

anteroom, the anteroom is provided with the second fan filter unit in which a blow opening is provided so as to send gases inside the anteroom, at least one opening corresponding to an absorption opening of the second fan filter unit is provided on the lower part of lateral walls of the anteroom, and all of gases flowing inside of the anteroom from the blow opening of the second fan filter unit pass through the opening and the second gas flow path communicating the absorption opening of the second fan filter unit and the opening airtightly and are fed back to the second fan filter unit, and the subject can move between the living space and the outside of the room by the doorway and the doorway provided in the partition.

[Claim 23]

The sleeping state detection system according to any one of claims 1 to 9 wherein the room is one room of a system of highly clean rooms, comprising:

at least one room,

at least one of walls constituting the room being constituted of a wall with an internal space capable of introducing outside air for a room, airways communicating the outside and the internal space being provided on the edge of the wall, at least one of major surfaces forming the internal space being made of a membrane not passing through dust particles but passing through gas molecules,

the room being provided inside with an opening for absorbing air inside the room and a blowing opening for returning again all of the absorbed air after cleaning inside the room as a pair.

[Claim 24]

The sleeping state detection system according to claim 22 wherein the opening and the blow opening are connected to an air filtering device or an air cleaning device placed inside the room.

[Claim 25]

The sleeping state detection system according to claim 22 wherein the system of highly clean rooms comprises the plural rooms, and the opening and the blow opening provided in the plural rooms respectively communicate with a central air filtering device or a central air cleaning device placed outside the room.

[Claim 26]

The sleeping state detection system according to claim 8 wherein the wall of the room is a wall with an internal space capable of introducing outside air for a room provided inside with a living space as aclosed space, comprising:

airways communicating the outside and the internal space, provided on the edge of the wall,

at least one of major surfaces forming the internal space of the wall being made of a membrane not passing through dust particles but passing through gas molecules,

the membrane having the area A set by scaling of {(V/A)/(D/L)} where V is the volume of the living space, A is the area of the membrane, L is the thickness of the membrane and D is the diffusion constant of oxygen in the membrane,

the wall being in contact with the inside of the room via the membrane,

the area A of the membrane being set so as to satisfy at least

$$A \geqq \frac{BL}{D(\eta_0 - \eta)} \qquad (16)$$

where B is the oxygen consumption rate inside the room, η_0 is the oxygen concentration in equilibrium state with the outside, L is the thickness of the membrane, D is the diffusion constant of oxygen in the membrane and $\eta(\eta>0.18)$ is the target oxygen concentration inside the room.

[Claim 27]

The sleeping state detection system according to claim 8 wherein the room is oneroom of a system of highly clean rooms, comprising:

at least one room,

at least one of walls constituting the room being constituted of a wall with an internal space capable of introducing outside air for a room, airways communicating the outside and the internal space being provided on the edge of the wall, at least one of major surfaces forming the internal space being made of a membrane not passing through dust particles but passing through gas molecules,

the room being configured so that the room is provided inside with a living space as aclosed space, there is no movement of air as an air current between the inside and the outside of the living space, air is introduced into the internal space of the wall from the outside space enclosing the room through the airway of the wall, the room is provided with the first fan filter unit provided with a blow opening so as to supply gases inside the living space, at least one opening corresponding to an absorption opening of the first fan filter unit is provided in at least one of lateral walls of the room, and all of gases flowing inside the living space from the blow opening pass through the opening and a gas flow path airtightly communicating the absorption opening and the opening and are fed back to the first fan filter unit,

the room being provided with doorways capable of moving in the living space,

the membrane having the area A set by scaling of {(V/A)/(D/L)} where V is the volume of the living space, A is the area of the membrane, L is the thickness of the membrane and D is the diffusion constant of oxygen in the membrane,

the area A of the membrane being set so as to satisfy at least

$$A \geqq \frac{BL}{D(\frac{V_{O_2}}{V} - \eta)} \qquad (15)$$

where V is the volume of the living space, B is the oxygen consumption rate inside the living space, Vo2 is the volume of oxygen in equilibrium state with the outside and without oxygen consumption inside the living space, D is the diffusion constant of oxygen in the membrane of the wall, L is the thickness of the membrane and η(η>0.18) is the target oxygen concentration inside the living space.

[Claim 28]

The sleeping state detection system according to claim 8 wherein the room is oneroom of a system of highly clean rooms, comprising:

at least one room,

at least one of walls constituting the room being constituted

of a wall with an internal space capable of introducing outside air for a room, airways communicating the outside and the internal space being provided on the edge of the wall, at least one of major surfaces forming the internal space being made of a membrane not passing through dust particles but passing through gas molecules,

the room being provided inside with a living space as aclosed space,

the room being provided inside with an opening for absorbing air inside the room and a blow opening for returning again all of the absorbed air after cleaning inside the room as a pair,

the membrane having the area A set by scaling of {(V/A)/(D/L)} where V is the volume of the living space, A is the area of the membrane, L is the thickness of the membrane and D is the diffusion constant of oxygen in the membrane,

the area A of the membrane being set so as to satisfy at least

$$A \geqq \frac{BL}{D(\frac{V_{O_2}}{V} - \eta)} \qquad (15)$$

where V is the volume of the living space, B is the oxygen consumption rate inside the living space, Vo_2 is the volume of oxygen in equilibrium state with the outside and without oxygen consumption inside the living space, D is the diffusion constant of oxygen in the membrane of the wall, L is the thickness of the membrane and $\eta(\eta>0.18)$ is the target oxygen concentration inside the living space.

[Claim 29]

The sleeping state detection system according to claim 28 wherein the system of highly clean rooms comprises the plural rooms, and the opening and the blow opening provided in the plural roomsrespectivelycommunicate with a central air filtering device or a central air cleaning device placed outside the room.

[Claim 30]

The sleeping state detection system according to any one of claims 1 to 7 wherein the room is a tent in which a part or all of the side and the ceiling is occupied by a membrane not passing through dust particles but passing through gas molecules,

the tent being in contact with the inside of the room,

the area A of the membrane being set so as to satisfy at least

$$A \geqq \frac{BL}{D(\eta_0 - \eta)} \qquad (16)$$

where B is the oxygen consumption rate inside the room, η_0 is the oxygen concentration in equilibrium state with the outside, L is the thickness of the membrane, D is the diffusion constant of oxygen in the membrane and η(η>0.18) is the target oxygen concentration inside the room.

[Claim 31]

A sleeping state detection method, comprising:

detecting the sleeping state of a subject by measuring the change over time in the number of dust particles inside a room or closed space in which the subject sleeps by a dust counter in a state where the inside of the room or closed space is kept cleaner than the outside of the room or closed space, while the subject sleeps.

[Claim 32]

A system using information of involuntary body movement during sleep, comprising:

a room or closed space in which a subject sleeps; and

a measurement device disposed inside the room or closed space for measuring information of involuntary body movement of the subject during sleep without contact and invasively with the subject,

the state of the subject being examined by measuring the information of involuntary body movement during sleep by the measurement device while the subject sleeps.

[Claim 33]

The system using information of involuntary body movement during sleep according to claim 32 wherein the information of involuntary body movement during sleep is measured by measuring the change over time in the number of dust particles inside the room or closed space by the dust counter in a state where the inside of the room or closed space is kept cleaner than the outside

of the room or closed space, while the subject sleeps.

[Claim 34]

A method using information of involuntary body movement during sleep, comprising:

examining the state of a subject by measuring information of involuntary body movement of the subject during sleep without contact and invasively with the subject in a state where the inside of a room or closed space in which the subject sleeps is kept cleaner than the outside of the room or closed space, while the subject sleeps.