SUBSTRATE TREATING APPARATUS AND SUBSTRATE TREATING METHOD

BACKGROUND

[0001] This disclosure relates to a substrate treating apparatus and a substrate treating method.

[0002] To manufacture semiconductor devices or liquid crystal displays, various processes such as an etching process, an ashing process, and a cleaning process may be performed on a substrate. An ICP source, a remote plasma source and so on are used as a plasma source.

[0003] A cluster type of apparatus is used to perform above processes. In a cluster type of apparatus, a loadlock chamber and a process chambers are arranged in a circumference of a transfer chamber.

[0004] In the transfer chamber, a transfer unit for transferring a wafer is provided between the loadlock chamber and the process chamber, or between one of the process chamber and another one of the process chambers.

SUMMARY

[0005] An embodiment includes a substrate treating apparatus and a substrate treating method for treating a substrate efficiently.

[0006] An embodiment includes a substrate treating apparatus and a substrate treating method for treating a substrate as an outer circumference of the substrate is covered.

[0007] Example embodiments of the inventive concept may provide a substrate treating apparatus comprising: an equipment front end module (EFEM) having a load port and an index robot; a process chamber; a transfer chamber having a transfer robot for carrying in or carrying out the substrate in respective to the process

chamber; and a loadlock chamber positioned between the transfer chamber and the EFEM, and having a substrate support unit for supporting a substrate and a cover support unit for supporting a cover which may cover outer circumference of the substrate.

[0008] In example embodiments, the substrate support unit may include a first substrate support unit for supporting a bottom surface of the substrate.

[0009] In example embodiments, the substrate support unit may include a second substrate support unit for supporting an outer circumference of the substrate.

[0010] In example embodiments, the cover support unit may be positioned outer side of the substrate support unit.

[0011] In example embodiments, the cover support unit may be positioned such that its top end is higher by predetermined length than a top end of the substrate support unit.

[0012] Example embodiments may further comprise a pusher positioned outer side of the substrate support unit, and movable to a lateral direction of the substrate which is placed in the substrate support unit.

[0013] In example embodiments, a plurality of the pushers may be provided to face each other with respect to the substrate.

[0014] In example embodiments, a plurality of the process chambers may be provided, and the loadlock chamber may have a plurality of transfer areas, wherein each of the transfer areas having the substrate support unit and the cover support unit.

[0015] In example embodiments, each of the transfer areas may provides a carry in path where the substrate is carried in from the EFEM to the transfer chamber, and a carry out path where the substrate is carried out from the transfer chamber to the EFEM.

[0016] In example embodiments, the number of the transfer areas may be more than the number of the process chambers.

[0017] In example embodiments, the process chamber may perform a process treatment through plasma.

[0018] In other embodiments of the inventive concept may provide a substrate treating method comprising: carrying in a untreated substrate to a loadlock chamber; placing a cover in outer circumference of the substrate within the loadlock chamber; carrying out the untreated substrate where the cover is placed from the loadlock chamber to a transfer chamber; and carrying in the untreated substrate where the cover is placed to a process chamber.

[0019] In example embodiments, placing the cover may include:lining up the untreated substrates vertically as the untreated substrates are positioned under the cover, which is placed in the loadlock chamber; and elevating the untreated substrates in the cover direction.

[0020] In example embodiments, the cover placed in the loadlock chamber may be provided as placed in a cover support unit, which is placed in an outer side of a substrate support unit for supporting the substrate in the loadlock chamber.

[0021] In example embodiments, carrying in the untreated substrate to the loadlock chamber may be processed by an index robot of EFEM, and placing the cover and carrying out the untreated substrate from the loadlock chamber may be processed by a transfer robot of the transfer chamber.

[0022] In example embodiments, the process chamber may treat the substrate using plasma.

[0023] Example embodiments of the inventive concept may provide a substrate treating method comprising: carrying in a treated substrate from a transfer chamber

to a loadlock chamber, and a cover is placed in outer circumference of the substrate; placing the cover inner side of the loadlock chamber; placing the treated substrate in a substrate support unit which is placed in the loadlock chamber; and carrying out the substrate to EFEM.

[0024] In example embodiments, placing the cover inner side of the loadlock chamber may include: placing the treated substrate upper side of a cover support unit which is placed in the loadlock chamber; and moving the treated substrate downward.

[0025] In example embodiments, carrying out the substrate to the EFEM may be processed by an index robot placed in the EFEM, and carrying in the substrate to the loadlock chamber and placing the substrate in the support unit may be processed by a transfer robot placed in the transfer chamber.

[0026] Embodiments of the inventive concepts may provide a substrate treating apparatus and substrate treating method for treating a substrate efficiently.

[0027] Embodiments of the inventive concepts may provide a substrate treating apparatus and substrate treating method for treating a substrate as an outer circumference of the substrate is covered.

BRIEF DESCRIPTION OF THE DRAWINGS

[0028] FIG. 1is a plan view of a substrate treating apparatus according to an embodiment.

[0029] FIG. 2is a view of a loadlock chamber.

[0030] FIG. 3 is a view of a plasma module that may be provided in a process chamber of FIG. 1.

[0031] FIG. 4is a view of a loadlock chamber before a substrate is carried in.

[0032] FIG. 5 is a view illustrating a state where a substrate is carried into a loadlock chamber in EFEM.

[0033] FIG. 6is a view illustrating a pusher modifying a position of a substrate.

[0034] FIG. 7 is a view placing a cover in a substrate.

[0035] FIG. 8is a view illustrating a state where a transfer robot is carrying in a substrate to a process chamber.

[0036] FIG. 9 is a view illustrating a state where a substrate is placed in a susceptor.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0037] Embodiments will be described below in more detail with reference to the accompanying drawings. Embodiments may, however, take different forms and should not be constructed as limited to the particular embodiments set forth herein. Rather, these embodiments are provided so that this disclosure will be thorough and complete, and will fully convey the scope to those skilled in the art. In the drawings, shapes are exaggerated for clarity.

[0038] FIG. 1is a plan view of a substrate treating apparatus according to an embodiment.

[0039] Referring to FIG. 1, a substrate treating apparatus 1 comprises an EFEM (equipment front end module) 20, a process treating unit 30, and a controller 70. The EFEM 20 and the process treating unit 30are arranged in serial along one direction. Hereinafter, a direction where the EFEM 20 and the process treating unit 30are arranged will be referred to as a first direction 11, and a direction that is perpendicular to the first direction 11when viewed from the top will be referred to as a second direction 12.

[0040] The EFEM 20 comprises a load port 10 and a transfer frame 21. The load port 10 is arranged in front of the EFEM 20 along the first direction 11. The load port 10 has a plurality of supporters 6. Each of the supporters 6 are arranged in serial along the second direction 12 and a substrate which will be provided in a process and

a carrier 4 (for example, cassette, FOUP, and more) are placed. The carrier 4 is stored with a treated substrate W. In the carrier 4, a substrate W which will be provided in a process and a substrate W finished with a treatment are stored. The transfer frame 21 is arranged between the load port 10 and a process treatment chamber 30. The transfer frame 21 is placed therein and includes an index robot 25 for transferring the substrate W between the load port 10 and the process treatment chamber 30. The index robot 25 moves along a transfer rail 27 placed along the second direction 12 and transfer the substrate W between the carrier 4 and the process treatment chamber 30.

[0041] The process treatment chamber 30includes a loadlock chamber 40, a transfer chamber 50, and a process chamber 60.

[0042] The loadlock chamber 40 and the transfer frame 21are placed adjacently. In an example, the loadlock chamber 40 may be placed between the transfer chamber 50 and the EFEM 20. The loadlock chamber 40 provides a standby space for a substrate W to be provided in a process before transferred to the process chamber 60, or for a substrate W finished with a treatment before transferred to the EFEM 20.

[0043] The transfer chamber 50 and the loadlock chamber 40 are placed adjacently. When viewed from a top side, the transfer chamber 50 may have a polygonal body. In an example, when viewed from a top side, the transfer chamber 50 may have a pentagonal body. In the outer surface of the body, the loadlock chamber 40 and a plurality of process chambers 60 are arranged along the circumference of the body. In each of the lateral wall of the body, a passageway (not shown) for the substrate W to enter is formed and the passageway connects the transfer chamber 50, the loadlock chamber 40 or the process chambers 60. In each of the passageway, a door (not shown) for opening and closing the passageway, thereby sealing therein is provided.

Inner space of the transfer chamber 50 is provided with a transfer robot 53 for transferring the substrate W between loadlock chamber 40 and the process chambers 60. The transfer robot 53 transfers an untreated substrate W standby in the loadlock chamber 40 to the process chamber 60, or transfers the substrate W finished with the treatment to the loadlock chamber 40. To provide the substrate W sequentially in the plurality of the process chamber 60, the substrate W is transferred between process chambers 60. In a lateral wall of the transfer chamber 50 adjacent to the EFEM 20, each of the loadlock chambers 40 is arranged, and in the rest of the lateral wall, the process chambers 60 are arranged.

[0044] The process chamber 60 is arranged along circumference of the transfer chamber 50. A plurality of process chamber 60 may be provided. The substrate W may be treated in each of the process chambers 60. The process chamber 60 receives the substrate W from the transfer robot 53, treats the substrate W, and provides the treated substrate W to the transfer robot 53. A treatment processed in each of the process chamber 60 may be different. A process performed by the process chamber 60 may be a process during producing a semiconductor device or a display panel using the substrate W. In an example, one or more among process chambers 60 may comprise a plasma module (200a of FIG. 2) for treating the substrate W using plasma.

[0045] The controller 70 controls compositions of the substrate treating apparatus 1.

[0046] FIG. 2 is a view of a loadlock chamber.

[0047] Referring to FIG. 2, the loadlock chamber 40 includes a housing 100, a substrate S support units 110, 120, and a cover support unit 130.

[0048] The housing 100 forms frame of the loadlock chamber 40. The housing 100 connects the transfer frame 21 and the transfer chamber 50. An opening (not shown) connecting the housing 100 and the transfer frame 21 may be opened and closed by a

door (not shown). An opening (not shown) connecting the housing 100 and the transfer chamber 50 may be opened and closed by a door (not shown). In the housing 100, a transfer area 41a, 41b where the substrate S is placed therein may be provided with a plurality of numbers. In an example, in the housing 100, the number of the transfer areas 41a, 41b may be provided with the same or more than a number of the process chamber 60. The transfer areas 41a, 41b may be arranged vertically, horizontally or both. The transfer areas 41a, 41b provides a passageway for carrying in a substrate to be treated and carrying out a treated substrate.

[0049] The substrate support unit 110, 120 supports the substrate S carried in from each of the transfer areas 41a, 41b to the loadlock chamber 40. The substrate support unit 110, 120 includes a first substrate support unit 110 and a second substrate support unit 120.

[0050] The first substrate support unit 110 supports a bottom surface of the substrate S. The first substrate support unit 110 may be positioned at a bottom of the transfer areas 41a, 41b. The first substrate support unit 110 is provided with a shape such that it prevents interference with transfer robots 25, 53, when the transfer robots 25, 53, carrying in and carrying out the substrate S. In an example, the first substrate support unit 110 may be provided with a plurality of load shapes, thereby supporting the bottom surface of the substrate S.

[0051] In an embodiment, the first substrate support unit 110 may be provided with a plate shape, thereby including a unit to support the substrate S and a pin for elevating the substrate S to a predetermined height when exchanging the substrate S with the transfer robots 25, 53.

[0052] The second substrate support unit 120 supports outer circumference of the substrate S. A plurality of the second substrate support units 120 may be locatedon a

position which corresponds to an outer edge of the substrate S. In an example, when the substrate S is provided as a square, two or more second substrate support units 120 may be located on an edge of the substrate S. When the substrate S is provided as a circle, two or more second substrate support units 120 may be located on a position which corresponds to any outer bottom surface of the substrate S. In here, the second substrate support unit 120may be equally spaced apart along the circumference.

[0053] In the second substrate support unit120, a support groove 121 which corresponds to an outer bottom surface of the substrate S may be formed. When the substrate S is moved as arranged vertically to the second substrate support unit 120, the substrate S is supported by the support groove 121 and prevented from deviating to outside. A distance between an outer surface and an outer surface of the support grooves 121 may be formed bigger than a predetermined size and a size of the substrate S.Even if there is an error while arranging the substrate S and the second substrate support unit120 vertically, the substrate S may be located in the support groove 121.

[0054] One of the first substrate support unit 110 and the second substrate support unit120 may be omitted. The substrate S may be supported by the first substrate support unit 110 or the second substrate support unit120.

[0055] The cover support unit 130 supports a cover 150 in each of the transfer areas 41a, 41b. The cover support unit 130 is located an outer side of the substrate support units 110, 120 and prevents interference with the substrate S which is located in the substrate support units 110, 120. The cover support unit 130 is located in a position that may prevent interference with the transfer robots 25, 53 which carries in and out the substrate S. In an example, the cover support unit 130may be a plurality of load

ports located outside of the substrate support unit 110, 120 or a plate having a predetermined width. An upper end of the cover support unit 130 may be higher than a predetermined height of an upper end of the substrate support units 110, 120. Therefore, the cover 150 supported by the cover support unit 130 may be located higher than the substrate S which is located in the substrate support units 110, 120.

[0056] In the outside of the substrate support units 110, 120, a pusher 140 may be located. The pusher 140 is provided such a surface facing a lateral surface of the substrate S is movable along the substrate S. A plurality of the pushers 140 may be provided to face each other with respect to the substrate S. In an example, two pushers 140 may be provided to face each other based on the substrate S, or four pushers 140 may be provided to cross each other.

[0057] FIG. 3 is a view of a plasma module that may be provided in a process chamber of FIG. 1.

[0058] Referring to FIG. 3, the process chamber 60 includes a chamber 2100, a susceptor 2200, a shower head 2300, and a plasma excite unit 2400.

[0059] The chamber 2100 provides a space for a substrate treating process. The chamber 2100 includes a body 2110 and a sealing cover 2120. An upper surface of the body 2110 is opened and has an inner space. An opening (not shown) where the substrate enters is formed in a lateral wall of the body 2110 and the opening may be opened and closed by an opening and closing device such as a slit door (not shown).The opening and closing device shuts the opening while substrate W is treated within the chamber 2100, and opens the opening when the substrate W is carried into the chamber 2100 and carried out to outside.

[0060] In a bottom wall of the body 2110 a vent hole 2111 is formed. The vent hole 2111 is connected to a vent line 2112. Pressure inside the chamber 2100 is controlled

through the vent line 2112, and reaction by-products generated in a process are exhausted outside of the chamber 2100.

[0061] The sealing cover 2120 is coupled to an upper wall of the body 2110, covers open upper surface of the body 2110 and seals inside of the body 2120. An upper end of the sealing cover 2120 is connected to the plasma excite unit 2400. A spread space 212 is formed in the sealing cover 2120. The spread space 2121 becomes wider when it gets closer to the shower head 2300. For example, the spread space 2121 may be upside-down funnel form.

[0062] The susceptor 2200 is located in the chamber 2100. A substrate is placed in upper surface of the susceptor 2200. In the susceptor 2200, a cooling path (not shown) where cooling fluid is circulated may be formed. Cooling fluid is circulated along the cooling path and cools the susceptor 2200. In the susceptor 2200, a power may be applied from a bias power 2210 to control substrate W treatment from plasma. A power applied from the bias power 2210 may be RF (radio frequency). The susceptor 2200 forms a sheath by a power supplied from the bias power 2210, and may form high density plasma thereby enhancing processing ability.

[0063] A heating member 2220 may be provided in the susceptor 2200. In an embodiment, the heating member 2220 may be a hot wire. The heating member 2220 heats the substrate W to a predetermined temperature.

[0064] The shower head 2300 is coupled to an upper wall of the body 2110. The shower head 2300 has a circular shape and may be arranged parallel to an upper surface of the susceptor 2200. The shower head 2300 may be an aluminum material where a surface is oxidized. Distribution holes 2310 may be formed in the shower head 2300. The distribution holes 2310 may be certain spaced apart from concentric circumference to supply radicals equally. Plasma spread in the spread space 2121

flows to the distribution holes 2310. During this, charged particles such as electron or ion are captured in the shower head 2300, and neutral particles like oxygen radical go through the distribution holes 2310 and provided to the substrate W. Also, the shower head may be grounded and form a path where an electron or an ion moves.

[0065] The plasma excite unit 2400generates plasma and supplies to the chamber 2100. The plasma excite unit 2400 may be provided upper part of the chamber 2100. The plasma excite unit 2400 includes an oscillator 2410, awave guide 2420, a dielectric guide 2430, and a process gas supply unit 2440.

[0066] The oscillator 2410 generates an electromagnetic wave. The wave guide 2420connects the oscillator 2410 with the dielectric guide 2430, and provides a passageway where an electromagnetic wave generated from the oscillator 2410 is passed to the dielectric guide 2430. The process gas supply unit 2440 supplies a process gas to upper part of the chamber 2100. The process gas may be supplied as a first process gas and a second process gas depending on processing. A process gas provided to the dielectric guide 2430 is made to a plasma state by the electromagnetic wave. Plasma goes through the dielectric guide 2430 and flows to the spread space 2121.

[0067] The plasma excite unit 2400 is exemplified as using an electromagnetic wave. In another embodiment, the plasma excite unit 2400 may be provided as inductively coupled plasma excite unit and capacitive coupled plasma excite unit.

[0068] FIG. 4 is a view of a loadlock chamber before a substrate is carried in.

[0069] Referring to FIGS. 2 and 4, before the substrate S is carried in from the EFEM 20 to the loadlock chamber 40, the cover 150 is placed in the cover support unit 130. The cover 150 is provided with a square ring or a circular shape to correspond to an outer circumference of the substrate S. Therefore, when the cover

150 is placed on upper surface of the substrate S, the outer circumference of the substrate S is coved by the cover 150. A form of an inner bottom surface of the cover 150 corresponds to an outer surface of the substrate S and may include a receiving groove 151. Therefore, adhesion may be formed between the cover 150 and the substrate S. A groove 152 may be formed in the cover 150. The groove 152 may correspond to a shape of an upper end of the cover support unit 130. When the cover 150 is located in the cover support unit 130, the upper end of the cover support unit 130 is located in the groove 152, and may prevent the cover 150 deviating from the cover support unit 130.

[0070] FIG. 5 is a view illustrating a state where a substrate is carried into a loadlock chamber in EFEM.

[0071] Referring to FIG. 5, the index robot 25 carries in the substrate S which may be treated in the process chamber 60 to the loadlock chamber 40. The controller 70 controls the index robot 25 such that the substrate S may be carried in to a higher position than which may be supported by the substrate support units 110, 120.When the substrate S is arranged vertically to a position which may be supported by the substrate support units 110, 120, the index robot 25 moves downward, and makes the substrate S to be located in the substrate support units 110, 120.

[0072] FIG. 6 is a view illustrating a pusher modifying a position of a substrate.

[0073] Referring to FIG. 6, after the substrate S is carried in from the EFEM 20, a position of the substrate S may be corrected by the pusher 140. The index robot 25 is set to place the substrate S in a setting position. However, while placing the substrate S to the substrate support units 110, 120, the substrate S position and the setting position may be different. The controller 70 moves the pusher 140 by a predetermined distance along the substrate S and may push the substrate S such that

it may be located in the right place. After that, the pusher 140 moves to opposite way from the substrate S and may prevent interference with other components during moving the substrate S.

[0074] FIG. 7 is a view placing a cover in a substrate.

[0075] Referring to FIG. 7, the transfer robot 53 places the cover 150 in the substrate S and carries out the substrate from the loadlock chamber 40.

[0076] The transfer robot 53 is carried into the loadlock chamber 40 to be placed bottom part of the substrate S, elevated and picks up the substrate S. The transfer robot 53 is further elevated to a setting height and places the cover 150 in the substrate S. The transfer robot 53 moves along the transfer chamber 50 and moves the substrate S which will be treated along the transfer chamber 50.

[0077] The transfer areas 41a, 41b used to carry in the substrate S are carried out with the cover 150 and the substrate S, thereby the cover support unit 130 becomes empty. When carrying in the substrate S to the transfer chamber 50, the controller 70 stores information of the transfer areas 41a, 41b which the cover support unit 130 is emptied.

[0078] FIG. 8 is a view illustrating a state where a transfer robot is carrying in a substrate to a process chamber. FIG. 9 is a view illustrating a state where a substrate is placed in a susceptor.

[0079] Referring to FIGS. 8 and 9, the substrate S carried out from the loadlock chamber 40 is carried into the process chamber 60.

[0080] When the substrate S is carried into the process chamber 60, a lift pin 2230 may be elevated in the susceptor 2200.After the substrate S is vertically arranged with the susceptor 2200, the transfer robot 53 moves downward. Therefore, the substrate S is supported by the lift pin 2230, and the transfer robot 53 moves along

the transfer chamber 50. When the lift pin 2230 elevates downward, the substrate S is place upper surface of the susceptor 2200.

[0081] According to an embodiment, the substrate S carried into the process chamber 60 is provided such that its outer circumference is covered by the cover 150. Therefore, a phenomenon generated by the outer circumference of the substrate S exposed to plasma may be prevented or its degree may be decreased. In an example, when the substrate S is located in the susceptor 2200, a bottom surfaced of the outer circumference of the substrate S may not be a plane, thereby there may be a gap between the outer bottom surface of the substrate S and the susceptor 2200. This kind of gap may generate a yak when the substrate S is treated and thereby damage the substrate S. It may be a necessary to block treat the outer circumference of the substrate S by plasma.

[0082] In an embodiment, there is no need place the cover 150 on the substrate S in the process chamber 60, so it is easier to maintain the process chamber 60.

[0083] When the substrate S is finished with treatment, the substrate S is carried out in inverse order of carrying in the substrate S. When the lift pin 2230 is elevated, the transfer robot 53 carries out the substrate S placed with the cover 150 from the process chamber 60. The controller 70 controls the transfer robot 53 such that the substrate is carried into the transfer areas 41a, 41b where the cover support unit 130 is absent. The transfer robot 53 carries in the substrate S to the loadlock chamber 40 so that the cover 150 is vertically arranged with the cover support unit 130, and place the cover 150 and the substrate S to be located in the cover support unit 130 and the substrate support units 110, 120, respectively. After that, the transfer robot 53 moves to the transfer chamber 50, and the index robot 25 goes to the loadlock chamber 40 and carries out the treated substrate S.

[0084] The foregoing detailed descriptions may be merely examples of the embodiments. Further, the above contents merely illustrate and describe preferred embodiments and other embodiments may include various combinations, changes, and environments. That is, it will be appreciated by those skilled in the art that substitutions, modifications and changes may be made in these embodiments without departing from the principles and spirit, the scope of which is defined in the appended claims and their equivalents. Further, it is not intended that the scope of this application be limited to these specific embodiments or to their specific features or benefits. Rather, it is intended that the scope of this application be limited solely to the claims which now follow and to their equivalents.

WHAT IS CLAIMED IS:

1. A substrate treating apparatus comprising:

an equipment front end module (EFEM) having a load port and an index robot;

a process chamber for the substrate treating process;

a transfer chamber having a transfer robot for carrying in or carrying out the substrate in respective to the process chamber; and

a loadlock chamber positioned between the transfer chamber and the EFEM, and having a substrate support unit for supporting a substrate and a cover support unit for supporting a cover that is positioned around an outer circumference of the substrate and then moved to the transfer chamber with the substrate when the substrate is carried in the process chamber for treating process.

2. The substrate treating apparatus of claim 1, wherein the substrate support unit includes a first substrate support unit for supporting a bottom surface of the substrate.

3. The substrate treating apparatus of claim 1 or 2, wherein the substrate support unit includes a second substrate support unit for supporting an outer circumference of the substrate.

4. The substrate treating apparatus of claim 1, wherein the cover support unit may be positioned outer side of the substrate support unit.

5. The substrate treating apparatus of claim 1, wherein the cover support unit is positioned such that its top end is higher by predetermined length than a top end of the substrate support unit.

6. The substrate treating apparatus of claim 1, further comprises a pusher positioned outer side of the substrate support unit, and movable to a lateral direction of the substrate which is placed in the substrate support unit.

7. The substrate treating apparatus of claim 6, wherein a plurality of the pushers are provided to face each other with respect to the substrate.

8. The substrate treating apparatus of claim 1, wherein a plurality of the process chambers are provided, and the loadlock chamber have a plurality of transfer areas, wherein each of the transfer areas having the substrate support unit and the cover support unit.

9. The substrate treating apparatus of claim 8, wherein each of the transfer areas provides a carry in path where the substrate is carried in from the EFEM to the transfer chamber, and a carry out path where the substrate is carried out from the transfer chamber to the EFEM.

10. The substrate treating apparatus of claim 8 or 9, wherein the number of the transfer areas is more than the number of the process chambers.

11. The substrate treating apparatus of claim 1, wherein the process chamber performs a process treatment through plasma.

12. A substrate treating method comprising:

carrying in a untreated substrate to a loadlock chamber;

placing a cover on outer circumference of the substrate within the loadlock chamber;

carrying out the untreated substrate where the cover is placed from the loadlock chamber to a transfer chamber; and

carrying in the untreated substrate where the cover is placed to a process chamber.

13. The substrate treating method of claim 12, wherein the placing the cover includes:

lining up the untreated substrates vertically as the untreated substrates are positioned under the cover, which is placed in the loadlock chamber; and

elevating the untreated substrates in the cover direction.

14. The substrate treating method of claim 13, wherein the cover placed in the loadlock chamber is provided as placed in a cover support unit, which is placed in an outer side of a substrate support unit for supporting the substrate in the loadlock chamber.

15. The substrate treating method of claim 12, wherein the carrying in the untreated substrate to the loadlock chamber is processed by an index robot of an EFEM, and placing the cover and carrying out the untreated substrate from the loadlock chamber is processed by a transfer robot of the transfer chamber.

16. The substrate treating method of claim 12, wherein the process chamber treats the substrate using plasma.

17. A substrate treating method comprising:

carrying in a treated substrate from a transfer chamber to a loadlock chamber, and a cover is placed on outer circumference of the substrate;

placing the cover inner space of the loadlock chamber;

placing the treated substrate in a substrate support unit which is placed in the loadlock chamber; and

carrying out the substrate to an EFEM.

18. The substrate treating method of claim 17, wherein the placing the cover inner space of the loadlock chamber includes:

placing the treated substrate upper side of a cover support unit which is placed in the loadlock chamber; and

moving the treated substrate downward.

19. The substrate treating method of claim 17, wherein the carrying out the substrate to the EFEM is processed by an index robot placed in the EFEM, and carrying in the substrate to the loadlock chamber and placing the substrate in the support unit are processed by a transfer robot placed in the transfer chamber.