What is claimed is:

1. Device for processing wafer-shaped articles, comprising a holder adapted to maintain a wafer-shaped article in a predetermined orientation during a processing operation to be performed on the article, and a plurality of support pins operatively engaged with the holder and adapted and positioned relative to the holder so as to support a wafer-shaped article to be processed on the device either from below or from an edge of the article, wherein said support pins comprise: a gear; a body formed of a chemically inert bulk material, wherein said body defines a hollow cavity and a gripping part adapted to contact a wafer-shaped article; and an insert positioned within said cavity formed of a material whose Young's modulus is greater than that of the bulk material.

2. The device according to claim 1, wherein the holder is a spin chuck surrounded by a process chamber for single wafer wet processing of semiconductor wafers.

3. The device according to claim 1, wherein the pins are positioned in a circular series surrounding an area where a wafer-shaped article is to be positioned on the holder, the pins being adapted to make edge contact with a wafer shaped article thereby to constrain in from lateral movement away from the predetermined position.

4. The device according to claim 1, wherein the bulk material is a chemically inert plastic.

5. The device according to claim 1, wherein the bulk material is selected from the group consisting of polytetrafluoroethylene (PTFE), perfluoroalkoxy (PFA), polyphenylenesulfide (PPS), polyetheretherketone (PEEK), polystyrene/polyethylstyrene (PS/PES), ethylene tetrafluoroethylene (ETFE), polyvinylidene fluoride (PVDF), homopolymer of chlorotrifluoroethylene (PCTFE), fluorinated ethylene propylene (FEP), and ethylene chlorotrifluoroethylene (ECTFE).

6. The device according to claim 5, wherein the bulk material is polytetrafluoroethylene (PTFE) or polyvinylidene fluoride (PVDF).

7. The device according to claim 1, wherein the insert is a carbon fiber reinforced composite.

8. The device according to claim 1, wherein the insert is stainless steel or titanium.

9. The device according to claim 1, wherein the insert has a Young's modulus at least one order of magnitude greater than a Young's modulus of said bulk material, expressed as N/mm^2.

10. The device according to claim 1, wherein the insert has a Young's modulus at least two orders of magnitude greater than a Young's modulus of said bulk material, expressed as N/mm^2.

11. A pin for use in devices for processing wafer-shaped articles, comprising: a gear; a body formed of a chemically inert bulk material, wherein said body defines a hollow cavity and a gripping part adapted to contact a wafer-shaped article; and an insert positioned within said cavity formed of a material whose Young's modulus is greater than that of the bulk material.

12. The pin according to claim 11, wherein the bulk material is selected from the group consisting of polytetrafluoroethylene (PTFE), perfluoroalkoxy (PFA), polyphenylenesulfide (PPS), polyetheretherketone (PEEK), polystyrene/polyethylstyrene (PS/PES), ethylene tetrafluoroethylene (ETFE), polyvinylidene fluoride (PVDF), homopolymer of chlorotrifluoroethylene (PCTFE), fluorinated ethylene propylene (FEP), and ethylene chlorotrifluoroethylene (ECTFE).

13. The pin according to claim 11, wherein the insert is a carbon fiber reinforced composite or stainless steel or titanium.

14. The pin according to claim 11, wherein the insert has a Young's modulus at least one order of magnitude greater than a Young's modulus of said bulk material, expressed as N/mm^2.

15. The pin according to claim 14, wherein the insert has a Young's modulus at least two orders of magnitude greater than a Young's modulus of said bulk material, expressed as N/mm^2.

Claims

[Claim 0001] Device for processing wafer-shaped articles, comprising a holder adapted to maintain a wafer-shaped article in a predetermined orientation during a processing operation to be performed on the article, and a plurality of support pins operatively engaged with the holder and adapted and positioned relative to the holder so as to support a wafer-shaped article to be processed on the device either from below or from an edge of the article, wherein said support pins comprise a body formed of a chemically inert bulk material and defining a hollow cavity, and an insert positioned within said cavity formed of a material whose Young's modulus is greater than that of the bulk material.

[Claim 0002] The device according to claim 1, wherein the holder is a spin chuck surrounded by a process chamber for single wafer wet processing of semiconductor wafers.

[Claim 0003] The device according to claim 1, wherein the pins are positioned in a circular series surrounding an area where a wafer-shaped article is to be positioned on the holder, the pins being adapted to make edge contact with a wafer shaped article thereby to constrain in from lateral movement away from the predetermined position.

[Claim 0004] The device according to claim 1, wherein the bulk material is a chemically inert plastic.

[Claim 0005] The device according to claim 1, wherein the bulk material is selected from the group consisting of polytetrafluoroethylene (PTFE), perfluoroalkoxy (PFA), polyphenylenesulfide (PPS), polyetheretherketone (PEEK), polystyrene/polyethylstyrene (PS/PES), ethylene tetrafluoroethylene (ETFE), polyvinylidene fluoride (PVDF), homopolymer of chlorotrifluoroethylene (PCTFE), fluorinated ethylene propylene (FEP), and ethylene chlorotrifluoroethylene (ECTFE).

[Claim 0006] The device according to claim 5, wherein the bulk material is polytetrafluoroethylene (PTFE) or polyvinylidene fluoride (PVDF).

[Claim 0007] The device according to claim 1, wherein the insert is a carbon fiber reinforced composite.

[Claim 0008] The device according to claim 1, wherein the insert is stainless steel or titanium.

[Claim 0009] The device according to claim 1, wherein the insert has a Young's modulus at least one order of magnitude greater than a Young's modulus of said bulk material, expressed as N/mm^2.

[Claim 0010] The device according to claim 1, wherein the insert has a Young's modulus at least two orders of magnitude greater than a Young's modulus of said bulk material, expressed as N/mm².

[Claim 0011] A pin for use in devices for processing wafer-shaped articles, comprising a body formed of a chemically inert bulk material and defining a hollow cavity, and an insert positioned within said cavity formed of a material whose Young's modulus is greater than that of the bulk material.

[Claim 0012] The pin according to claim 11, wherein the bulk material is selected from the group consisting of polytetrafluoroethylene (PTFE), perfluoroalkoxy (PFA), polyphenylenesulfide (PPS), polyetheretherketone (PEEK), polystyrene/polyethylstyrene (PS/PES), ethylene tetrafluoroethylene (ETFE), polyvinylidene fluoride (PVDF), homopolymer of chlorotrifluoroethylene (PCTFE), fluorinated ethylene propylene (FEP), and ethylene chlorotrifluoroethylene (ECTFE).

[Claim 0013] The pin according to claim 11, wherein the insert is a carbon fiber reinforced composite or stainless steel or titanium.

[Claim 0014] The pin according to claim 11, wherein the insert has a Young's modulus at least one order of magnitude greater than a Young's modulus of said bulk material, expressed as N/mm².

[Claim 0015] The pin according to claim 14, wherein the insert has a Young's modulus at least two orders of magnitude greater than a Young's modulus of said bulk material, expressed as N/mm².