

Claims

1. A retainer ring for holding an outer circumferential surface of a wafer used in a chemical mechanical polishing apparatus, the retainer ring having an annular face having radially inner and outer edges and to be engaged with the polishing surface; the annular surface being provided with one or more grooves extending from the radially outer edge towards the radially inner edge and reaching the radially inner edge, and the grooves are inclined relative to the radial direction formed on the lower surface of the retainer ring, and the direction of inclination of the grooves corresponds to a rotation direction of the retainer ring,

wherein the retainer ring includes a first retainer ring member which is vertically movable and a second retainer ring member which is fixed to a wafer holder body, the grooves are provided in the first retainer ring member, and the first retainer ring member is pressed against the polishing surface independently from the wafer.

2. A retainer ring for holding an outer circumferential surface of a wafer used in a chemical mechanical polishing apparatus, the retainer ring having an annular face having radially inner and outer edges and to be engaged with the polishing surface; the annular surface being provided with one or more grooves extending from the radially outer edge towards the radially inner edge and ending short of the radially inner edge, and the retainer ring is fixedly connected to a substrate holder body of the chemical mechanical polishing apparatus thereby holding a substrate while polishing,

wherein the retainer ring includes a first retainer ring member which is vertically movable and a second retainer ring member which is fixed to a wafer holder body, the grooves are provided in the first retainer ring member, and the first retainer ring member is independently pressed against the polishing surface from the wafer.

3. A retainer ring for holding an outer circumferential surface of a wafer used in a chemical mechanical polishing apparatus as set forth in one of claim 1 or claim 2, wherein the retainer ring is made of a resin material.

4. A retainer ring for use in a chemical mechanical polishing apparatus for polishing a wafer, comprising:

a first retainer ring member which is vertically movable;
and

a second retainer ring member which is fixed to a wafer holder body, the wafer holder body being configured to hold the wafer,

wherein said first retainer ring member is pressed against a polishing surface independently from said wafer, and said first retainer ring member and said second retainer ring member face each other.

5. A substrate polishing apparatus for holding a substrate and bringing it into contact with a polishing table for polishing, the substrate polishing apparatus comprising a retainer ring as set forth in any one of Claims 1, 2 and 4.

6. A substrate holding apparatus for holding a substrate for polishing, the substrate holding apparatus comprising a retainer ring as set forth in any one of Claims 1, 2 and 4.

Claims

1. A retainer ring for holding an outer circumferential surface of a wafer used in a chemical mechanical polishing apparatus, the retainer ring having an annular face having radially inner and outer edges and to be engaged with the polishing surface; the annular surface being provided with one or more grooves extending from the radially outer edge towards the radially inner edge and reaching the radially inner edge, and the grooves are inclined relative to the radial direction formed on the lower surface of the retainer ring, and the direction of inclination of the grooves corresponds to a rotation direction of the retainer ring,

wherein the retainer ring includes a first retainer ring member which is vertically movable and a second retainer ring member which is fixed to a wafer holder body, the grooves are provided in the first retainer ring member, and the first retainer ring member is pressed against the polishing surface independently from the wafer.

2. A retainer ring for holding an outer circumferential surface of a wafer used in a chemical mechanical polishing apparatus, the retainer ring having an annular face having radially inner and outer edges and to be engaged with the polishing surface; the annular surface being provided with one or more grooves extending from the radially outer edge towards the radially inner edge and ending short of the radially inner edge, and the retainer ring is connected to a wafer holder body of the chemical mechanical polishing apparatus thereby holding a substrate while polishing,

wherein the retainer ring includes a first retainer ring member which is vertically movable and a second retainer ring member which is fixed to the wafer holder body, the grooves are provided in the first retainer ring member, and the first retainer ring member is independently pressed against the polishing surface from the wafer.

3. A retainer ring for holding an outer circumferential surface of a wafer used in a chemical mechanical polishing apparatus as set forth in one of claim 1 or claim 2, wherein the retainer ring is made of a resin material:

4. A retainer ring for use in a chemical mechanical polishing apparatus for polishing a wafer, comprising:

a first retainer ring member which is vertically movable; and
a second retainer ring member which is fixed to a wafer holder body, the wafer holder body being configured to hold the wafer,
wherein said first retainer ring member is pressed against a polishing surface independently from said wafer, and said first retainer ring member and said second retainer ring member face each other.

5. A substrate polishing apparatus for holding a substrate and bringing it into contact with a polishing table for polishing, the substrate polishing apparatus comprising, a retainer ring as set forth in any one of Claims 1, 2 and 4.

6. A substrate holding apparatus for holding a substrate for polishing, the substrate holding apparatus comprising a retainer ring as set forth in any one of Claims 1, 2 and 4.