WHAT IS CLAIMED IS:

1. A polishing pad comprising a polishing layer and an endpoint detection window,

wherein the window has an absorbance change uniformity (ACU) of 1.5 to 2.5 as calculated by the following Equation 1, when x is 550 nm, y is 750 nm, and z is 650 nm; and

the window has an absorbance change uniformity(ACU) of 2 to 3.5 as calculated by the following Equation 1, when x is 400 nm, y is 800 nm, and z is 600 nm:

[Equation 1]

$$ACU = \frac{Ax + Ay}{Az}$$

wherein:

Ax is an absorbance of the window, measured with light having a wavelength of x;

Ay is an absorbance of the window, measured with light having a wavelength of y; and

Az is an absorbance of the window, measured with light having a wavelength of z~~;~~

~~wherein~~

~~x is 550 nm, y is 750 nm, and z is 650 nm~~.

2. The polishing pad of claim 1, wherein ~~the window has an absorbance change uniformity (ACU) of 2 to 3.5, when x is 400 nm, y is 800 nm, and z is 600 nm, and~~

the window has an absorbance change uniformity (ACU) of 1.5 to 2.5 as calculated by the following Equation 1, when x is 600 nm, y is 750 nm, and z is 675 nm.

3. The polishing pad of claim 1, wherein the window has an absorbance difference (AD) calculated by the following Equation 2, and the absorbance difference (AD) is 0.0004 to 0.0008:

[Equation 2]

$$AD = \left| \frac{Ax - Ay}{x - y} \right|$$

wherein

Ax is the absorbance of the window, measured with light having a wavelength of x, and

Ay is the absorbance of the window, measured with light having a wavelength of y,

wherein x is 550 nm, and y is 750 nm.

4. The polishing pad of claim 1, wherein

the window comprises a cured product obtained by curing a window composition containing a urethane-based prepolymer,

the urethane-based prepolymer having an unreacted NCO content (%) of 8 to 10%,

the absorbance of the window is measured by irradiating the window with light having a wavelength of 400 nm to 800 nm, and

an average of the measured absorbance is 0.61 to 0.80.

5. A method for producing a polishing pad, the method comprising steps of:

preparing a urethane-based prepolymer composition;

preparing a composition for producing a window containing the prepolymer composition and a curing agent;

producing an endpoint detection window by curing the composition for producing a window;

preparing a prepolymer composition;

preparing a composition for producing a polishing layer containing the prepolymer composition, a foaming agent and a curing agent;

producing a polishing layer by curing the composition for producing a polishing layer; and

forming a through-hole in the polishing layer and inserting and bonding the produced window into and to the through-hole,

wherein the window has an absorbance change uniformity (ACU) of 1.5 to 2.5 as calculated by the following Equation 1, when x is 550 nm, y is 750 nm, and z is 650 nm; and

the window has an absorbance change uniformity(ACU) of 2 to 3.5 as calculated by the following Equation 1, when x is 400 nm, y is 800 nm, and z is 600 nm:

[Equation 1]

$$ACU = \frac{Ax + Ay}{Az}$$

wherein:

Ax is an absorbance of the window, measured with light having a wavelength of x;

Ay is an absorbance of the window, measured with light having a wavelength of y; and

Az is an absorbance of the window, measured with light having a wavelength of z~~;~~

~~wherein x is 550 nm, y is 750 nm, and z is 650 nm~~.

6. The method of claim 5, wherein the window has an absorbance difference (AD) calculated by the following Equation 2, and the absorbance difference (AD) is 0.0004 to 0.0008:

[Equation 2]

$$AD = \left| \frac{Ax - Ay}{x - y} \right|$$

wherein

Ax is the absorbance of the window, measured with light having a wavelength of x, and

Ay is the absorbance of the window, measured with light having a wavelength of y,

wherein x is 550 nm, and y is 750 nm.

7. The method of claim 5, wherein the absorbance of the endpoint detection window is measured by irradiating the window with light having a wavelength of 400 nm to 800 nm, and an average of the measured absorbance is 0.61 to 0.80.

8. A method for fabricating a semiconductor device, the method comprising steps of:

1) providing a polishing pad comprising a polishing layer and an endpoint detection window;

2) performing a polishing process on a semiconductor substrate while allowing the semiconductor substrate and the polishing layer to rotate relative to each other in a state in which a polishing-target surface of the semiconductor substrate is in contact with a polishing surface of the polishing layer; and

3) detecting a thickness of the semiconductor substrate and detecting an endpoint of the polishing process, through the endpoint detection window of the polishing pad,

wherein the window has an absorbance change uniformity (ACU) of 1.5 to 2.5 as calculated by the following Equation 1, when x is 550 nm, y is 750 nm, and z is 650 nm; and

the window has an absorbance change uniformity(ACU) of 2 to 3.5 as calculated by the following Equation 1, when x is 400 nm, y is 800 nm, and z is 600 nm:

[Equation 1]

$$ACU = \frac{Ax + Ay}{Az}$$

wherein:

Ax is an absorbance of the window, measured with light having a wavelength of x;

Ay is the absorbance of the window, measured with light having a wavelength of y; and

Az is the absorbance of the window, measured with light having a wavelength of z;

~~wherein x is 550 nm, y is 750 nm, and z is 650 nm~~.

9. The method of claim 8, wherein step 3) comprises detecting the endpoint of the polishing process through the endpoint detection window by irradiating the polishing-target surface with light having any one wavelength within a wavelength range of 550 nm to 750 nm and detecting light reflected from the polishing-target surface.

10. The method of claim 8, wherein

step 3) comprises detecting the endpoint of the polishing process through the endpoint detection window by irradiating the polishing-target surface with light having any one wavelength within a wavelength range of 400 nm to 800 nm and detecting light reflected from the polishing-target surface;

the endpoint detection window has an average absorbance of 0.61 to 0.80;

~~the endpoint detection window has an absorbance change uniformity (ACU) of 2 to 3.5 as calculated by Equation 1, when x is 400 nm, y is 800 nm, and z is 600 nm;~~ and

the endpoint detection window has an absorbance change uniformity (ACU) of 1.5 to 2.5 as calculated by Equation 1, when x is 600 nm, y is 750 nm, and z is 675 nm

ABSTRACT OF THE DISCLOSURE

The present disclosure relates to an endpoint detection window of a polishing pad for use in a polishing process. The polishing pad may prevent an error in detection of the endpoint of the polishing process by preventing a difference in endpoint detection performance from occurring due to a difference in the wavelength of a laser between polishing apparatuses. The present disclosure may also provide a method of fabricating a semiconductor device using the polishing pad.