Claims

1. An optical spectrometer for measuring gas dissociation degrees, the optical spectrometer comprising:

- a main path for performing processes of plasma-assisted deposition, membrane etching and material surface modification to achieve special functions and effects in semiconductor integrated circuit manufacturing;
- a tube body connected with and contacted with the main path;
- a second path connected to the tube body for storing the reactive gas;
- a detecting element and an optical spectrum plasma gas dissociation measuring device,

wherein the detecting element detects a gas dissociation degree of the reactive gas in the tube body and the optical spectrum plasma gas dissociation measuring device calculates a relative dissociation quantity value of the reactive gas in a manufacturing process so as to introduce and discharge the reactive gas for removing contaminants in the main path.

2. The optical spectrometer of claim 1, wherein

the detecting element and optical spectrum plasma gas dissociation measuring device are disposed at the tube body.

3. The optical spectrometer of claim 1 and 2, wherein

the detecting element and optical spectrum plasma gas dissociation measuring device are disposed at the main path.

4. The optical spectrometer of any of the preceding claims, wherein the detecting element and optical spectrum plasma gas dissociation measuring device are disposed at the second path.

5. The optical spectrometer of any of the preceding claims, wherein the detecting element and optical spectrum plasma gas dissociation measuring device are disposed at locations in a fluid path of the reactive gas.

6. The optical spectrometer of any of the preceding claims, wherein the detecting element and optical spectrum plasma gas dissociation measuring device are applied in a device in a plasma source device, a plasma gas chamber or an electrical control system.

7. The optical spectrometer of any of the preceding claims, wherein the processes comprise processes in a physical vapor deposition device, chemical vapor deposition device, etching device and in the semiconductor, photoelectric, panel industries, a remote plasma source device, and inspection examination device in biotechnology, chemistry, applied physics industries, and inspection apparatus or testing platform in the equipment maintenance industry for the foregoing industries.

8. A method for measuring gas dissociation degrees, comprising:

performing a reaction process with at least one reactive gas in a main path and a second path connecting to the main path for storing the reactive gas;

detecting a plasma gas dissociation degree of the reactive gas in the reaction process;

calculating a dissociation quantity value of the reactive gas in the reaction process;

providing an amount of the reactive gas in the main path after the reaction process according to the dissociation quantity value of the reactive gas; and

introducing and discharging the reactive gas for removing contaminants in the main path.

9. The method of claim 8, wherein the reaction process comprises physical vapor deposition, chemical vapor deposition, and etching processes.

10. The method of claim 8, wherein the plasma gas dissociation degree of the reactive gas is detected by a detecting element and the dissociation quantity value of the reactive gas is calculated by an optical spectrum plasma gas dissociation measuring device.

11. The method of claim 10, wherein the detecting element and the optical spectrum plasma gas dissociation measuring device are disposed at the main path.

12. The method of claim 10, wherein the detecting element and the optical spectrum plasma gas dissociation measuring device are disposed at the second path.

13. The method of claim 8 further comprising a step of vacuum discharge after the step of discharging the reactive gas by a vacuum pump and a gas purifier connecting to the main path.

14. The method of claim 13, wherein the detecting element and the optical spectrum plasma gas dissociation measuring device are disposed between the main path and the vacuum pump.