

We Claim:

1. A five-sided degas chamber comprising a quartz window removably mounted on an upper surface of a the degas chamber, the quartz window comprising a quartz plate of uniform thickness, the quartz plate comprising: a bottom surface, a top surface and a sidewall extending between the bottom surface and the top surface, wherein the sidewall includes five straight sections interconnected by five arcuate sections.

2. ~~The quartz window~~ degas chamber of claim 1, wherein the five straight sections and the five arcuate sections consist of a straight base section, two straight lower diverging sections and two straight upper converging sections with two large radius arcuate sections between the upper converging sections and the lower diverging sections and two small radius arcuate sections between the base section and the lower diverging sections and another small radius arcuate section between the upper converging sections.

3. ~~The quartz window~~ degas chamber of claim 1, wherein the five straight sections and five arcuate sections include:

a first arcuate section having a radius of about 2.32 inches and a central angle of about 85.7°;

a second arcuate section having a radius of about 6.3 inches and a central angle of about 65.7°;

the third arcuate section having a radius of about 1.38 inches and a central angle of about 71.5°;

a fourth arcuate section having a radius of about 1.38 inches and a central angle of about 71.5°;

a fifth arcuate section having a radius of about 6.3 inches and a central angle of about 65.7°;

a first straight section connected to the first and second arcuate sections;

a second straight section connected to the second and third arcuate sections;

a third straight section connected to the third and fourth arcuate sections;

a fourth straight section connected to the fourth and fifth arcuate sections;

a fifth straight section connected to the fifth and first arcuate sections; and

each of the straight sections is tangent to both arcuate sections it is connected to.

4. ~~The quartz window degas chamber~~ of claim 1, wherein the thickness of the quartz window is about 1.15 inches and the upper surface has a maximum dimension of about 15.2 inches and a minimum dimension of about 12.6 inches.

5. ~~The quartz window degas chamber~~ of claim 1, wherein the top surface and the bottom surface are polished surfaces having a roughness with R_a between 1 and 5 microinches.

6. ~~The quartz window of claim 2, further comprising four arcuate recesses in the sidewall along the converging and diverging sections, wherein the recesses have parallel upper and lower walls and a curved vertical wall therebetween, the curved vertical wall having a radius of about 0.75 inch and a height between the upper and lower walls of about 0.5 inch, the recesses being located midway between the top surface and the bottom surface.~~

76. ~~The quartz window degas chamber~~ of claim 1, wherein the quartz is synthetic quartz.

8. ~~A degas chamber comprising the quartz window of claim 1 removably mounted on an upper surface of the degas chamber.~~

97. A degas chamber of claim 8 1, wherein the quartz window is removably mounted by a plurality of clamps, and a continuous pentagon-shaped O-ring disposed between the quartz window and the upper surface of the degas chamber to provide a vacuum seal.

8. A five-sided quartz window of a degas chamber, the quartz window comprising a quartz plate of uniform thickness, the quartz plate comprising
a bottom surface, a top surface and a sidewall extending between the bottom surface and the top surface, wherein the sidewall includes five straight sections

interconnected by five arcuate sections, and further comprising four arcuate recesses in the sidewall along the converging and diverging sections, wherein the recesses have parallel upper and lower walls and a curved vertical wall therebetween, the curved vertical wall having a radius of about 0.75 inch and a height between the upper and lower walls of about 0.5 inch, the recesses being located midway between the top surface and the bottom surface.

109. A method of processing a semiconductor substrate, comprising:
placing the semiconductor substrate into the degas chamber of claim-8 1;
supplying ozone gas or O₂ gas into the degas chamber while maintaining a vacuum pressure in the chamber of 10 mTorr to 10 Torr;
generating O radicals by irradiating the ozone gas or O₂ gas in the degas chamber through the quartz window with UV light;
removing halogen-containing residues on the semiconductor substrate by reaction with the O radicals.