CLAIMS

What is claimed is:

1. An optical sensor system, comprising:

an optically clear body with a first surface and a second surface facing away from the first surface, wherein the optically clear body further comprises a third surface recessed from the second surface;

a target over the third surface; and

a first reflector to optically couple the first surface to the target.

2. The optical sensor system of claim 1, further comprising:

a second reflector to optically couple the first surface to the target, wherein the first reflector and the second reflector are between the second surface and the third surface.

3. The optical sensor of claim 1, wherein the first reflector and the second reflector are embedded in the optically clear body.

4. The optical sensor of claim 1, wherein the optical path passes through the target.

5. The optical sensor of claim 1, further comprising:

a housing; and

a lens within the housing, wherein the lens is adjacent to the first surface of the optically clear body.

6. The optical sensor of claim 1, wherein the first surface of the optically clear body is a lens.

7. The optical sensor system of claim 1, further comprising:

a light source optically coupled to the optically clear body; and

an optical detector optically coupled to the optically clear body.

8. The optical sensor system of claim 7, wherein the light source is a single wavelength source or a broad band light source.

9. The optical sensor system of claim 7, wherein the optical detector is a single wavelength detector or a spectrometer.

10. An optical sensor, comprising:

an optically clear body, wherein the optically clear body comprises:

a first surface;

a second surface opposite from the first surface; and

a third surface recessed into the second surface;

a target over the third surface;

a first reflector embedded in the optically clear body;

a second reflector embedded in the optically clear body;

a light source optically coupled to the optically clear body; and

an optical detector optically coupled to the optically clear body.

11. The optical sensor of claim 10, wherein the first reflector and the second reflector are positioned between the second surface and the third surface.

12. The optical sensor of claim 10, wherein the first reflector is between the second surface and the third surface, and wherein the second reflector is between the first surface and the third surface.

13. The optical sensor of claim 10, wherein the optically clear body comprises glass or sapphire.

14. The optical sensor of claim 10, wherein the first reflector is a mirror.

~~15. The optical sensor of claim 10, wherein one or both of the first reflector and the target comprise a grating.~~

1. A plasma processing chamber, comprising:

an optical sensing system passing through a wall of the plasma processing chamber, wherein the optical sensing system comprises:

a lens;

an optically clear body adjacent to the lens, wherein the optically clear body comprises:

a first surface that faces the lens;

a second surface opposite from the first surface; and

a third surface recessed into the second surface, wherein the third surface faces a center of the processing chamber;

a target over the third surface; and

a first reflector embedded in the optically clear body.

2. The plasma processing chamber of claim ~~16~~1, wherein the optical sensing system is configured to provide a plasma condition, a wall condition, a substrate condition, or any combination thereof.

3. The plasma processing chamber of claim ~~16~~1, further comprising a plurality of optical sensing systems.

4. The plasma processing chamber of claim ~~16~~1, further comprising:

a light source optically coupled to the optically clear body; and

an optical detector optically coupled to the optically clear body

5. The plasma processing chamber of claim ~~16~~1, wherein the target is outside of the optically clear body and within the plasma processing chamber.~~—~~