CLAIMS

1. A processing tool, comprising:

   a chamber; and

   an optical sensor system that passes through a wall of the chamber, wherein the optical sensor system comprises:

      a housing;

      an optical path through the housing, wherein the optical path comprises a first end in the chamber and a second end outside of the chamber;

      a reflector at the first end of the optical path;

      a lens between the reflector and the second end of the optical path; and

      an opening through the housing between the lens and the reflector, wherein the opening is within the chamber.

2. The processing tool of claim 1, further comprising:

   a light source optically coupled to the lens; and

   a sensor optically coupled to the lens.

3. The processing tool of claim 2, wherein the light source is a single wavelength source.

4. The processing tool of claim 2, wherein the light source is a broad band light source.

5. The processing tool of claim 2, wherein the light source and the sensor are optically coupled to the lens by a fiber optic cable.

6. The processing tool of claim 5, wherein the fiber optic cable comprises a splitter.

7. The processing tool of claim 2, further comprising:

   a band pass filter at a location along an optical path between the sensor and the opening.

8. The processing tool of claim 2, wherein the sensor is a spectrometer or a photodiode.

9. The processing tool of claim 2, wherein the light source and the sensor are integrated into the housing.

10. The processing tool of claim 1, wherein the housing is transparent.

11. The processing tool of claim 1, wherein the reflector is removable.

12. An optical sensing array for a plasma processing chamber, comprising:

a plurality of optical sensing systems oriented around a perimeter of the processing chamber, wherein the optical sensing systems pass through a wall of the plasma processing chamber, wherein each of the plurality of optical sensing systems comprise:

a housing that passes through the wall of the plasma processing chamber;

an optical path through the housing, wherein the optical path comprises a first end and a second end;

a reflector at the first end of the optical path;

a lens between the reflector and the second end of the optical path; and

an opening through the housing within the plasma processing chamber, wherein the opening is between the lens and the reflector.

13. The optical sensing array of claim 12, wherein the plurality of optical sensing systems are configured to provide uniformity data of a plasma condition, a wall condition, or a plasma condition and a wall condition.

14. The optical sensing array of claim 12, wherein the plurality of optical sensing systems are configured to provide chamber drift monitoring.