CLAIMS

1. A transmission pyrometry detector comprising:

a detector manifold to detect radiation from proximate a processing area in a chamber body;

a radiation detector optically coupled to the detector manifold; and

a spectral multi-notch filter.

2. The transmission pyrometry detector of claim 1, wherein the detector manifold comprises a plurality of pyrometer probes in the chamber body.

3. The transmission pyrometry detector of claim 2, wherein the detector manifold comprises a plurality of optical switches, and wherein a subset of the plurality of pyrometer probes is optically coupled to each optical switch.

4. The transmission pyrometry detector of claim 1, wherein the radiation detector is attached to the chamber body.

5. The transmission pyrometry detector of claim 1, wherein the spectral multi-notch filter transmits radiation in two spectral bands, each having a bandwidth of about 10 nm ~~and~~ to about 15 nm.

6. The transmission pyrometry detector of claim 1, wherein the radiation detector comprises:

a diffraction grating,

a cylinder lens, and

a detector array.

7. The transmission pyrometry detector of claim 6, wherein the detector array comprises an indium gallium arsenide linear detector array.

8. The transmission pyrometry detector of claim 1, wherein the radiation detector comprises a scanning photodetector.

9. The transmission pyrometry detector of claim 1, wherein the radiation detector comprises a fiber optic spectrometer.

10. The transmission pyrometry detector of claim 1, wherein the detector manifold has a plurality of radiation inlets proximate to and distributed across the processing area.

11. The transmission pyrometry detector of claim 1, wherein the radiation detector is configured to measure a power spectrum, as a function of wavelength, of transmitted radiation in spectral bands.

12. The transmission pyrometry detector of claim 1, further comprising a plurality of radiation detectors optically coupled to the detector manifold.

13. The transmission pyrometry detector of claim 12, wherein the spectral multi-notch filter is between the processing area and the detector manifold.

14. The transmission pyrometry detector of claim 1, wherein the detector manifold comprises at least one of an optical splitter and an optical combiner.

15. The transmission pyrometry detector of claim 1, wherein the detector manifold comprises a plurality of pyrometer probes and a spectrometer for each of the pyrometer probes.

16. A method comprising:

detecting transmitted radiation from an emitting surface of a substrate in a chamber body;

conveying at least one spectral band of the detected radiation to a photodetector by a spectral multi-notch filter; and

analyzing the detected radiation in the at least one spectral band to determine an inferred temperature of the substrate.

17. The method of claim 16, wherein the analyzing the detected radiation comprises measuring a power spectrum, as a function of wavelength, of the detected radiation in spectral bands.

18. The method of claim 17, wherein at least one spectrometer is used to measure the power spectrum.

19. The method of claim 16, wherein the spectral multi-notch filter conveys radiation in two spectral bands, and each spectral band has a bandwidth of about 10 nm to about 15 nm.

20. The method of claim 16, wherein the emitting surface of the substrate is identified by a plurality of zones, the method further comprising determining an inferred temperature of each of the plurality of zones of the substrate.