CLAIMS

1. An imaging system comprising:

a light source;

a beam splitter to create first and second beams from the light source;

a focusing lens positioned to receive the first and second beams output by the beam splitter, to focus the received first and second beams to a spot sized dimensioned to fall within a sample container to be imaged, and to receive first and second beams reflected from the sample container;

an image sensor positioned to receive the light beams reflected from the sample container; and

a roof prism positioned in an optical path between the focusing lens and the image sensor, the roof prism dimensioned to cause the first and second beams reflected from the sample container to converge on to the image sensor.

2. The imaging system of claim 1, further comprising a lens positioned to form a beam waist along the optical path.

3. The imaging system of claim 2, wherein the light source comprises a laser and an optical fiber having first and second ends, the first end of the optical fiber to receive output from the laser, and wherein the second end is coupled to an insert that is slidable.

4. The imaging system of claim 3, wherein moving the insert between a first position and a second position moves a beam waist along the optical path.

5. The imaging system of claim 4, further comprising a locking mechanism to fix a position of the insert.

6. The imaging system of claim 1, wherein the beam splitter is a prism.

7. The imaging system of claim 1, further comprising a second light source, wherein the beam splitter creates third and fourth beams from the second light source, and wherein

the focusing lens is positioned (i) to receive the third and fourth beams output by the beam splitter, (ii) to focus the received third and fourth beams to a second spot at the sample container, and (iii) to receive the third and fourth beams reflected from the sample container.

8. The imaging system of claim 7, further comprising a dove prism to cause the third and fourth beams reflected from the sample container to converge with the first and second beams reflected from the sample container on to the image sensor.

9. The imaging system of claim 7, wherein the third and fourth beams are a look-ahead or look-behind focus tracking set of beams.

10. The imaging system of claim 1, wherein the focusing lens is a prism.

11. The imaging system of claim 1, wherein the sample container comprises a plurality of layers.

12. The imaging system of claim 11, wherein a top layer of the plurality of layers is transparent.

13. The imaging system of claim 11, wherein the first and second beams are reflected from a surface of the plurality of layers of the sample container.

14. The imaging system of claim 11, further comprising a blocking structure positioned to block reflections of the first and second beams from at least one surface of the plurality of layers.

15. The imaging system of claim 1, wherein the focusing lens is moveable from a first position to a second position, wherein the focusing lens is to focus the received first and second beams at a first surface within the sample container when in the first position, and wherein the focusing lens is to focus the received first and second beams at a second surface within the sample container when in the second position.