CLAIMS

What is claimed is:

1. An apparatus, comprising:

a system, comprising:

a reagent cartridge receptacle;

an illumination assembly comprising an illumination source to emit an illumination light;

a sensor; and

a processor;

a reagent cartridge receivable within the reagent cartridge receptacle, the reagent cartridge, comprising:

a well assembly, comprising:

a body defining a well and having an opening, an aperture, and a field of view (FOV) enabling optical access from the aperture to the well;

reagent contained within the well; and

a cover coupled to the body and covering the opening;

wherein the illumination assembly is positioned to direct the illumination light through the aperture and the sensor is positioned to capture light.

2. The apparatus of claim 1, wherein a membrane is coupled to a surface of the body and a fluidic line is defined between the membrane and the body, further comprising a membrane valve that selectively controls a flow of liquid between the well and the fluidic line.

3. The apparatus of claim 2, wherein the membrane defines an opening aligned with the aperture.

4. The apparatus of any one of the preceding claims, wherein the body comprises an inner portion and an outer portion and wherein the inner portion is substantially transparent and comprises the aperture, and the outer portion is substantially opaque.

5. The apparatus of claim 4, wherein the inner portion comprises a flange and the outer portion is overmolded over the flange.

6. The apparatus of claim 4, wherein the outer portion comprises a tapered surface that redirects the FOV toward the well.

7. The apparatus of claim 6, wherein the reagent within the well is within the FOV.

8. The apparatus of claim 6, wherein the inner portion comprises a second aperture and the outer portion comprises a second tapered surface that redirects the FOV toward the second aperture.

9. The apparatus of claim 8, wherein a headspace within the well is within the FOV.

10. The apparatus of claim 8, wherein the body comprises a base that includes the aperture and the second aperture.

11. The apparatus of claim 8, wherein a central axis of the aperture and a central axis of the second aperture are substantially parallel.

12. The apparatus of claim 4, wherein the inner portion and the outer portion are concentric.

13. The apparatus of claim 4, wherein the inner portion comprises a second aperture and wherein the outer portion comprises a first tapered surface and a portion of the body defining the well comprises a second tapered surface, the first tapered surface and the second tapered surface redirecting the FOV between the aperture and the second aperture.

14. The apparatus of claim 13, wherein the first tapered surface opposes the second tapered surface.

15. The apparatus of claim 4, wherein the inner portion comprises a second aperture and a portion of the body defining the well comprises a tapered surface that redirects the FOV between the aperture and the second aperture.

16. The apparatus of claim 1, wherein the sensor generates illumination data using the light captured and the processor processes the illumination data to determine a parameter value associated with the reagent contained within the well and wherein the parameter value comprises at least one of a moisture content value, an oxygen content value, or a concentration value of at least one component of the reagent.

17. An apparatus, comprising:

a body defining a well and having an opening, an aperture, and a field of view (FOV) enabling optical access from the aperture to the well;

dry reagent contained within the well; and

a cover coupled to the body and covering the opening.

18. The apparatus of claim 17, wherein the body comprises a second aperture having a central axis that is substantially orthogonal to a central axis of the aperture and wherein a portion of the body defining the well comprises a tapered surface that redirects the FOV between the aperture and the second aperture.

19. A method, comprising:

directing an illumination light through an aperture of a body of a well, the body having an opening, the aperture, and a field of view (FOV) enabling optical access from the aperture to the well, a cover being coupled to the body and covering the opening and dry reagent being contained within the well;

capturing light; and

processing illumination data associated with the light to determine a parameter value associated with the dry reagent contained within the well.

20. The method of claim 19, further comprising redirecting the FOV and wherein redirecting the FOV comprises at least one of redirecting the FOV toward the well, redirecting the FOV toward a headspace within the well, redirecting the FOV toward the dry reagent, or redirecting the FOV toward a second aperture.