WE CLAIM:

1. An instrument comprising:

a light detection system having a housing, the light detection system comprising:

a CCD sensor and an optical lens system, wherein the light detection system is configured for positioning above a single well at a time in a multi-well plate to conduct an electrochemiluminescence analysis of the single well, wherein an area of the CCD sensor is 1x to 2x of an area of the single well, and

a cooling element to cool the CCD sensor,

wherein the instrument further comprises a heat removal system comprising:

a first fan disposed in the light detection system and configured to pull heated air from the light detection system, and

a second fan connected to a cover manifold and oriented toward a top of the light detection system to pull the heated air into the cover manifold and out of the instrument.

2. The instrument of claim 1, wherein the optical lens system comprises a plurality of lenses and the plurality of lenses have both spherical and aspherical surfaces.

3. The instrument of claim 2, wherein an area of the plurality of lenses is larger than the area of the single well.

4. The instrument of claim 1, wherein the light detection system is mounted in a substantially vertical direction onto a housing top.

5. The instrument of claim 1, wherein the heat removal system is mounted onto a housing top.

6. The instrument of claim 1, wherein the second fan is housed within the cover manifold.

7. The instrument of claim 1, wherein the cover manifold houses at least one printed circuit board (PCB) and comprises at least one opening to allow electrical connections between the at least one PCB and electrical components outside of the cover manifold.

8. The instrument of claim 7, wherein a flow baffle is positioned within the cover manifold to minimize recirculation of air within the instrument.

9. The instrument of claim 7, wherein the heated air flows away from the CCD sensor and plate before exiting the instrument.

10. The instrument of claim 9, wherein the heated air further flows across the at least one PCB before exiting the instrument.

11. The instrument of claim 1, wherein the area of the CCD sensor is 1.25x to 1.85x the area of the single well.

12. The instrument of claim 1, wherein the area of the CCD sensor is 1.50x to 1.80x the area of the single well.

13. The instrument of claim 1, wherein the light detection system comprises a camera window coated with an anti-reflection (AR) coating.

14. The instrument of claim 13, wherein the light detection system does not have a separate optical bandpass filter.

15. The instrument of claim 13 wherein the camera window is further coated with one or more layers of material to suppress transmission of infrared (IR) wavelengths through the camera window.

16. The instrument of claim 1, wherein the light detection system comprises a light tight enclosure, and the light tight enclosure comprises at least one tortuous path to discourage light from entering the light tight enclosure.

17. The instrument of claim 1, wherein the optical lens system comprises fewer than 9 optical lenses and at least five or more optical lenses.

18. The instrument of claim 1, wherein the optical lens system comprises fewer than 7 optical lenses and at least one or more optical lenses.

19. The instrument of claim 2, wherein the plurality of lenses form a lens assembly designed to produce a telecentric view.

20. The instrument of claim 1, wherein the heated air is drawn away from the top of the light detection system into the cover manifold and out of the instrument through at least one vent opening.