CLAIMS

What is claimed is:

1. An apparatus, comprising:

a system including a reagent cartridge receptacle;

a flow cell assembly;

a reagent cartridge receivable within the reagent cartridge receptacle and adapted to carry the flow cell assembly, the reagent cartridge comprising a reagent reservoir adapted to be fluidically coupled to the flow cell assembly; and

a sensor module adapted to be positioned adjacent the reagent reservoir, wherein the sensor module is adapted to generate a signal associated with a volume of reagent contained within the reagent reservoir.

2. The apparatus of claim 1, wherein the system comprises a controller adapted to access the signal from the sensor module, and wherein the controller is adapted to determine a flow rate from the reagent reservoir based on the volume within the reagent reservoir over time.

3. The apparatus of claim 2, wherein the controller is adapted to compare the determined reagent flow rate value to a reference flow rate value, and wherein when the determined reagent flow rate value is outside of a threshold range of the reference flow rate value, the controller is adapted to change an operating parameter of the system.

4. The apparatus of claim 3, wherein the operating parameter comprises an amount of time that the reagent is flowed from the reagent reservoir.

5. The apparatus of any one of claims 3 – 4, wherein the operating parameter comprises a pressure applied to the reagent reservoir.

6. The apparatus of any one of the preceding claims, further comprising a pressure source adapted to apply a pressure to the reagent reservoir.

7. The apparatus of claim 6, further comprising a regulator coupled between the pressure source and the reagent reservoir and wherein the controller is adapted to cause the regulator to change the pressure applied to the reagent reservoir.

8. The apparatus of any one of the preceding claims, wherein the system comprises the sensor module.

9. The apparatus of any one of the preceding claims, further comprising a sensor electrode adapted to be communicatively coupled to the sensor module.

10. The apparatus of claim 9, wherein the sensor electrode is wirelessly coupled to the sensor module.

11. The apparatus of claim 9, further comprising a connector adapted to couple the sensor module and the sensor electrode.

12. The apparatus of claim 11, wherein the connector comprises a male portion and a female portion, one of the male portion or the female portion carried by reagent cartridge, the other of the male portion or the female portion carried by the system.

13. The apparatus of any one of claims 9, 11, and 12, wherein the sensor electrode comprises a pair of plates between which the reagent reservoir is positioned.

14. The apparatus of any one of claims 9, 11, and 12, wherein the sensor electrode is an annular electrode and surrounds the reagent reservoir.

15. The apparatus of any one of claims 9 and 11 – 14, wherein the sensor electrode is carried by the reagent cartridge.

16. The apparatus of claim 15, wherein the sensor module comprises a contact interface that connects the sensor module with the sensor electrode.

17. An apparatus, comprising:

a reagent cartridge adapted to carry a flow cell assembly, the reagent cartridge comprising:

a reagent reservoir adapted to be fluidically coupled to the flow cell assembly; and

a sensor electrode associated with the generation of a signal associated with at least one of a volume of reagent within the reagent reservoir, a presence of reagent, or a reagent flow rate value.

18. The apparatus of claim 17, wherein the reagent cartridge comprises a fluidic line, where the sensor electrode is positioned adjacent the reagent fluidic line.

19. The apparatus of any one of claims 17– 18, further comprising the flow cell assembly, where the reagent reservoir is fluidically coupled to the flow cell assembly.

20. The apparatus of any one of claims 17– 19, wherein the sensor electrode comprises conductive tape coupled to the reagent cartridge.

21. The apparatus of any one of claims 17– 20, wherein the sensor electrode comprises a portion of the reagent reservoir of the reagent cartridge.

22. The apparatus of any one of claims 17– 21, wherein the sensor electrode comprises a well filled with a conductive fluid and is adjacent to the reagent reservoir.

23. The apparatus of any one of claims 17– 22, wherein the reagent reservoir comprises a tapered portion.

24. The apparatus of any one of claims 17–23, wherein the reagent reservoir comprises an elongated portion.

25. The apparatus of any one of claims 17–24, wherein the sensor electrode is adjacent to the reagent reservoir.

26. A method, comprising:

flowing reagent from a reagent reservoir to a flow cell assembly;

generating a signal associated with reagent contained within the reagent reservoir; and

based on the signal, determining a volume of the reagent within the reagent reservoir.

27. The method of claim 26, further comprising based on the volume of the reagent over time, determining a reagent flow rate value.

28. The method of claim 27, further comprising pressurizing the reagent reservoir.

29. The method of claim 28, further comprising comparing the determined reagent flow rate value to a reference flow rate value; and when the determined reagent flow rate value is outside of a threshold range of the reference flow rate value, changing a pressure applied to the reagent reservoir to enable a subsequent reagent flow rate value to be within the threshold range of the reference flow rate value.

30. The method of any one of claims 26 – 29, wherein the signal is associated with a height of the reagent contained within the reagent reservoir.

31. The method of any one of claims 26 – 30, wherein the signal is associated with an electrode of an array of electrodes, each electrode of the array of electrodes being positioned adjacent the reagent reservoir and being associated with a different volume of reagent within the reagent reservoir.