

WHAT IS CLAIMED IS:

1. A sensor for assessing a sample, wherein the sensor comprises an on-board control system and a testing system within a single reaction chamber, wherein the testing system comprises reactant ingredients for performing a test reaction on the sample, wherein the control system comprises at least one control reagent selected from iodine, ascorbate, ferricyanide, ferrocyanide, 4-amino-2-chlorophenol, or a combination thereof, and wherein the at least one control reagent is not an N-oxide compound and is free of nitroso functional groups; and wherein the at least one control reagent mediates a control reaction that generates a control signal, and wherein the control signal indicates viability of the test reaction or at least one of the reactant ingredients involved in the test reaction, and wherein the at least one control reagent is different from the reactant ingredients involved in the test reaction.
2. The sensor of claim 1, wherein the control signal comprises at least one selected from an electrical signal, an optical signal, a color, and a chemical signal.
3. The sensor of claim 1, wherein the control system comprises an electrochemical control system.
4. The sensor of claim 3, wherein the control reaction is assessed without an external voltage.
5. The sensor of claim 3, wherein the control system comprises at least two electrodes, wherein the at least one control reagent is coated on at least one of the electrodes.
6. The sensor of claim 5, wherein the at least two electrodes are coplanar or opposing to each other.
7. The sensor of claim 3, wherein the control reaction generates an electromotive force.
8. The sensor of claim 7, wherein the electromotive force is generated by dissolution of the at least one control reagent into the sample.

9. The sensor of claim 3, wherein the at least one control reagent comprises ferricyanide.

10. The sensor of claim 9, wherein the control system comprises at least two electrodes, wherein the ferricyanide is coated on at least one of the electrodes is from about 10×10^{-6} to about 200×10^{-6} moles per square meter.

11. The sensor of claim 1, wherein the control reaction is activated upon contacting the at least one control reagent with the sample, wherein the contacting initiates the generation of the control signal.

12. The sensor of claim 11, wherein the control signal generated is dependent upon an external stress, wherein the external stress comprises at least one selected from temperature, pH, humidity, oxygen, light, shelf time, prior liquid contact, and a chemical contamination.

13. The sensor of claim 1, wherein the testing system comprises at least one selected from an immunological testing system, a blood glucose testing system, and a blood coagulation testing system.

14. The sensor of claim 1, wherein the control system is located in a first chamber, wherein a part of the testing system is located in a second chamber.

15. The sensor of claim 14, wherein the first chamber and the second chamber are in parallel fluid connection or in serial fluid connection via a sample passageway.

16. A method of determining viability of a test reaction or at least one of the reactant ingredients involved in the test reaction comprising:

applying a sample to the sensor of claim 1,

detecting the control signal,

comparing the control signal with a standard signal to determine viability of the test reaction or at least one of the reactive ingredients involved in the test reaction.

17. The method of claim 16, wherein the control system comprises an electrochemical control system, wherein the control reaction is assessed without an external voltage.

18. The method of claim 17, wherein the at least one control reagent comprises ferricyanide.

19. The method of claim 17, wherein the sample comprises blood, wherein the test reaction measures blood coagulation rate.

20. A sensor for assessing a sample, wherein the sensor comprises an on-board control system and a testing system within a single reaction chamber, wherein the testing system comprises reactant ingredients for performing a test reaction on the sample, wherein the control system comprises at least one control reagent selected from iodine, ascorbate, ferricyanide, ferrocyanide, 4-amino-2-chlorophenol, or a combination thereof, and wherein the at least one control reagent is not an N-oxide compound and is free of nitroso functional groups; and wherein the at least one control reagent mediates a control reaction that generates a control signal, and wherein the control signal indicates viability of the test reaction or at least one of the reactive ingredients involved in the test reaction, and wherein the at least one control reagent is different from the reactant ingredients involved in the test reaction, the sensor further comprising a neutralizing agent, wherein the neutralizing agent neutralizes the control signal via a neutralizing effect.

21. The sensor of claim 20, wherein the neutralizing effect comprises at least one selected from a chemical reaction and a physical effect.

22. The sensor of claim 21, wherein the physical effect comprises at least one selected from precipitation and diffusion.