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4-amino-1,1-azobenzene-3,4-disulfonic acid (0.4 M) in water then dried in a "dry box".

In assays using alkaline-phosphatase (from bovine intestine)-labeled reagents (APase coupled to haptens or to antibodies at concentrations of up to about 10 ug/mL in a dilute tris buffer) and either Lumigen's Lumiphos™ 530, or KPL Phosphoglow™ AP substrates (both are dioxetanes and have an esterified phosphate residue on which the enzyme acts) used as supplied by the vendors (100 uM in dioxetane), the result was about 200 uL of enzyme and 200 uL of substrate in the waste chamber, thus exposed to the adsorbent material.

After an initial glow rate of 38,550 counts/second (observed by placing the fluidic device in a Molecular Devices M5 luminometer such that the waste chamber was being interrogated), the intensity dropped to about 100 counts/second within a few seconds after adding the adsorbent material (the noise level of the luminometer was about 100 counts/second). In other words, more than 99% of the optical interference was eliminated.

The azobenzene acted in an inhibitory manner on both the enzyme and the substrate. The enzyme was inactivated by the acidity of the reagent, and likely by other mechanisms as well. The substrate was chemically modified by the azobenzene such that it is no longer a substrate for alkaline phosphatase.

While preferred embodiments of the present invention have been shown and described herein, it will be obvious to those skilled in the art that such embodiments are provided by way of example only. Numerous variations, changes, and substitutions will now occur to those skilled in the art without departing from the invention. It should be understood that various alternatives to the embodiments of the invention described herein may be employed in practicing the invention. It is intended that the following claims define the scope of the invention and that methods and structures within the scope of these claims and their equivalents be covered thereby.

What is claimed is:

1. A method of detecting an analyte in a sample, comprising:

a) allowing the sample to react with at least one reactant contained in a fluidic device that comprises:

an assay assembly configured to yield an optical signal that is indicative of the presence of the analyte;

b) moving unreacted reactant from the assay assembly to a quencher assembly operable to be in fluidic communication with, but spaced apart from said assay assembly, wherein said movement is effected via one or more actuating elements controlled by a controller, wherein said quencher assembly is adapted to reduce interference of said optical signal; and

c) detecting said optical signal thereby detecting the analyte in the sample.

2. The method of claim 1, wherein said assay assembly comprises reagent chambers comprising at least one reagent used in said assay and at least one reaction site comprising a reactant that binds said analyte.

3. The method of claim 2, wherein said at least one reagent comprises an enzyme conjugate or an enzyme substrate.

4. The method of claim 2, wherein said quencher assembly comprises a quenching site in fluidic communication with said reaction site and a quenching agent at said quenching site.

5. The method of claim 4, wherein said quencher assembly further comprises an absorbent material.

6. The method of claim 5, wherein said absorbent material is impregnated with said quenching agent.

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7. The method of claim 5, wherein said absorbent material is selected from the group consisting of glass fiber, silica, paper, polyacrylamide gel, agarose, and agar.

8. The method of claim 5, wherein said quenching agent is adapted to inactivate at least one reagent from said assay, thereby reducing said interference of said optical signal.

9. The method of claim 1, wherein said unreacted reactant is reactant not bound to the assay assembly.

10. A method of detecting an analyte in a sample, the method comprising:

allowing the sample to react with at least one reactant at a first location in the fluidic device to yield a detectable signal indicative of the presence of the analyte in the sample;

after the sample has begun to react, reducing background signal by moving unreacted reactant from the first location to a second location and quenching said unreacted reactant at the second location that is separate from the first location, wherein said movement is effected via one or more actuating elements controlled by a controller; and

detecting the detectable signal, thereby detecting the analyte in the sample.

11. The method of claim 10 further comprising an enzyme conjugate or an enzyme substrate at the first location.

12. The method of claim 10 further comprising a quenching agent at a quenching site at the second location.

13. The method of claim 12, wherein said quencher site further comprises an absorbent material.

14. The method of claim 13, wherein said absorbent material is impregnated with said quenching agent.

15. The method of claim 13, wherein said absorbent material is selected from the group consisting of glass fiber, silica, paper, polyacrylamide gel, agarose, and agar.

16. The method of claim 12, wherein said quenching agent is a denaturing agent.

17. The method of claim 12, wherein said quenching agent is 4-amino-1,11-azobenzene-3,41-disulfonic acid.

18. The method of claim 10, wherein said sample of bodily fluid is blood.

19. The method of claim 10, wherein the detectable signal is a luminescent signal.

20. The method of claim 19, wherein the luminescent signal is a chemiluminescent signal.

21. The method of claim 10 wherein said first location comprises a reagent chamber comprising said reagent and at least one reaction site comprising a reactant that binds said analyte.

22. The method of claim 21, wherein said at least one reagent comprises an enzyme conjugate or an enzyme substrate.

23. The method of claim 22 further comprising a quenching agent adapted to inactivate at least one reagent from said assay, thereby reducing said interference of said optical signal.

24. The method of claim 10, wherein said unreacted reactant is reactant not bound to the assay assembly.

25. The method of claim 1 further comprising inserting the fluidic device into a reader assembly that houses a detector that performs the detecting of said optical signal.

26. The method of claim 25 further comprising housing the controller within the reader assembly.

27. The method of claim 1 further comprising controlling, via the controller, the actuating elements including at least one pump and one valve to control and direct said movement.