gential organ, external male genital organ, floating organ, flower-spray organ of Ruffini, genital organ, Golgi tendon organ, gustatory organ, organ of hearing, internal female genital organ, internal male genital organ, intromittent organ, Jacobson organ, neurohemal organ, neurotendinous organ, olfactory organ, otolithic organ, ptotic organ, organ of Rosenmuller, sense organ, organ of smell, spiral organ, subcommissural organ, subfornical organ, supernumerary organ, tactile organ, target organ, organ of taste, organ of touch, urinary organ, vascular organ of lamina terminalis, vestibular organ, vestibulocochlear organ, vestigial organ, organ of vision, visual organ, vomeronasal organ, wandering organ, Weber organ and organ of Zuckerkandl can be manipulated. Exemplary internal animal organs include brain, lung, liver, spleen, bone marrow, thymus, heart, lymph, blood, bone, cartilage, pancreas, kidney, gall bladder, stomach, intestine, testis, ovary, uterus, rectum, nervous system, gland, internal blood vessels. Exemplary diseases or disorders include neoplasm (neoplasia), cancers, immune system diseases or disorders, metabolism diseases or disorders, muscle and bone diseases or disorders, nervous system diseases or disorders, signal diseases or disorders, transporter diseases or disorders.

Analyte from any fluid sample can be detected by the present method. Exemplary liquid sample include buffer, blood, serum, plasma, or urine, or a solution or suspension containing solid or gaseous biological material.

Manufacturing Methods

In one embodiment, a method of manufacturing the presently described devices is provided. Such a method frequently comprises: applying the dielectric coating to the base member; applying the electrode system to the base member and over a portion of the dielectric coating; applying the dielectric layer to the base member and over at least a portion of the electrode system but not within the reaction area; applying the test reagent to at least a portion of the dielectric coating within the reaction area; and adhering the laminate member to the dielectric layer. Frequently, the dielectric coating, the electrode system and/or the dielectric layer are applied via a screen-printing method.

Other methods of manufacturing are contemplated and are dependant on the desired device configurations.

The above embodiments are included for illustrative purposes only and are not intended to limit the scope of the invention. Many variations to those described above are possible. Since modifications and variations to the examples described above will be apparent to those of skill in this art, it is intended that this invention be limited only by the scope of the appended claims.

What is claimed is:

1. A biosensor for electrochemical analysis of a liquid sample, which biosensor comprises:

a) a base member having a proximal and a distal end;

b) a laminate member having a proximal and a distal end positioned in vertical, parallel alignment with said base member, wherein the laminate member defines a venting means and a sample application means positioned over said distal end of said laminate, and wherein said distal end of said laminate member is aligned with said distal end of said base member;

c) an electrode system positioned between said base member and said laminate member, wherein said electrode system comprises a working electrode and a counter electrode, said working and counter electrodes having conductive leads at said proximal end of said base member for connecting said electrodes to a read-out device for electrochemical measurement, wherein said working electrode is positioned adjacent to said counter electrode, and there is a gap space between said working and counter electrodes;

d) an insulating layer positioned between said base member and said laminate member;

e) a reaction area positioned between said base member and said laminate member, which reaction area encompasses at least a portion of said working electrode, said counter electrode and the gap space between said working electrode and said counter electrode, wherein the reaction area is defined by an opening between said base member and said laminate member, and which reaction area has a test reagent positioned therein; and

f) a dielectric coating positioned between said electrode system and said base member and within at least a portion of the reaction area,

wherein the test reagent comprises a liquid soluble hydrophilic component.

2. The biosensor of claim **1**, wherein the test reagent is positioned to overlap at least a portion of the working electrode and the counter electrode, and wherein, when the test reagent is positioned, any portion of the test reagent not overlapping the working and counter electrodes is positioned on the dielectric coating.

3. The biosensor of claim **1**, wherein the reaction area is further defined by a recess positioned in the laminate member between the sample application means and the venting means.

4. The biosensor of claim **3**, wherein the reaction area comprises an opening in the biosensor having internal boundaries comprising the laminate member and the dielectric coating as opposing boundaries and a lateral boundary between the laminate member and the dielectric coating comprising the insulating layer together with a portion of the recess in the laminate member.

5. The biosensor of claim **3**, wherein the working and counter electrodes are carbon coated.

6. The biosensor of claim **5**, wherein the working and counter electrodes have two or more coatings of carbon at the portion encompassed by the reaction area.

7. The biosensor of claim **3**, wherein the sample application means comprises one or more openings that allow fluid communication with the reaction area for sample application.

8. The biosensor of claim **1**, wherein said insulating layer and said dielectric coating are comprised of the same materials.

9. The biosensor of claim **1**, wherein said reaction area comprises a complete cross-section of a portion of the electrode system.

10. The biosensor of claim **1**, wherein the laminate member is comprised of polyurethane or polyethylene.

11. The biosensor of claim **1**, wherein the test reagent fiiLrther comprises a surfactant and citric acid.

12. The biosensor of claim **1**, wherein the liquid soluble hydrophilic component comprises polyvinylpyridine (PVP).

13. The biosensor of claim **1**, wherein the liquid soluble hydrophilic component comprises PVP.

14. The biosensor of claim **1**, wherein the base member comprises vinyl polymer(s), polymide(s), polyester(s), nylon, nitrocellulose or a combination thereof.

15. The biosensor of claim **1**, further comprising an electron transfer mediator disposed in the reaction area.

16. The biosensor of claim **15**, wherein the electron transfer mediator is selected from the group consisting of