

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 multi-analysis system, comprising a housing containing therein:

(i) a plurality of modules mounted on a support structure, wherein an individual module of said plurality of modules comprises:

(a) a sample preparation station configured to effectuate at least one sample preparation procedure; and

(b) an assay station configured to perform one or more types of assays, wherein the assay station is configured to receive one or more individually addressable assay units, each assay unit being fluidically isolated from one another, and each assay unit being configured to perform one or more types of assays, wherein a given type of assay performed within said individually addressable assay unit is configured to yield a detectable signal;

(ii) a detection system that is configured to detect a plurality of signals associated with multiple types of assays; and

(iii) a sample handling system configured to transport said one or more individually addressable assay units from said assay station to a location in which the signal is detectable by said detection system; and

(iv) a cytometry station configured to perform a cytometric assay, wherein the sample handling system is configured to move said individually addressable assay unit from said assay station to the cytometry station,

wherein the multi-analysis system is configured to perform (a) at least one sample preparation procedure selected from the group consisting of sample processing, centrifugation, separation, and chemical processing, and (b) multiple types of assays selected from the group consisting of immunoassay, nucleic acid assay, receptor-based assay, cytometric assay, colorimetric assay, enzymatic assay, electrophoretic assay, electrochemical assay, spectroscopic assay, chromatographic assay, microscopic assay, topographic assay, calorimetric assay, turbidmetric assay, agglutination assay, radioisotope assay, viscometric assay, coagulation assay, clotting time assay, protein synthesis assay, histological assay, culture assay, osmolarity assay, and combinations thereof.

2. The system of claim 1 wherein said sample handling system comprises a pipette configured to uptake, dispense, and/or transfer a biological sample.

3. The system of claim 1 wherein the detection system comprises an imaging device configured to image one or more of the group consisting of a biological sample collected, processing of the biological sample, and reaction performed on the multi-analysis system.

4. The system of claim 1, wherein the multi-analysis system is configured to detect from a sample a plurality of analytes or a disease condition, the concentrations of said plurality of analytes varying from one another by more than one order of magnitude.

5. The system of claim 1, wherein the multi-analysis system comprises a sample collection unit configured to draw a fluid or tissue sample from a subject.

6. The system of claim 1 wherein the detection system and/or sample handling system are integral to the individual module.

7. The system of claim 1 wherein the detection system and/or sample handling system are separate from the individual module and are contained within the housing.

8. The system of claim 1 wherein the housing has one or more of the following characteristics: (a) volume less than or equal to 2 m³; (b) footprint less than or equal to 1.5 m²; or (c) a lateral dimension or height less than or equal to about 1.5 m.

9. The system of claim 1 wherein the detection system comprises a plurality of detectors, an individual detector of said plurality detecting a distinct signal from a given type of assay performed in a given addressable assay unit, and wherein the sample handling system is configured to bring together the individually addressable assay unit yielding said distinct detectable signal within a range in which the signal is detectable by the individual detector.

10. The system of claim 1 wherein the sample handling system is configured to transfer a sample or reagent between individual modules of said plurality.

11. The system of claim 1 wherein the detectable signal is selected from the group consisting of optical signal, thermal signal, electric signal, chemical signal, and audio signal.

12. The system of claim 1 wherein each individual module comprises a communication bus configured to communicate with a controller that is programmed to control performance of said individual module to effectuate said at least one sample preparation procedure and multiple types of assays.

13. The system of claim 12 wherein the communication bus provides power to the individual module.

14. The system of claim 12 wherein the controller is programmed to (i) receive a response from said individual module to evaluate indicators of sample or system performance and (ii) based on said evaluation, send instructions as needed to said system to utilize another function within the same module, another module within the system, or another system in communication with the system to effectuate said at least one sample preparation procedure and multiple types of assays.

15. The system of claim 14 wherein said evaluation identifies malfunctioning of one or more stations and wherein said instructions effects correction of said malfunctioning in real time.

16. The system of claim 12 wherein the controller is external to the system.

17. The system of claim 12 wherein the controller is integral to the support structure.

18. An automated method for processing a sample at a point-of-service location, comprising: providing the sample to a system of claim 1;

allowing said system to process said sample to yield a detectable signal indicating that the sample is processed.

19. The method of claim 18, wherein the processing step assesses histology of the sample or morphology of the sample.

20. The method of claim 18, wherein the processing step assesses the presence and/or concentration of an analyte in the sample or a disease condition associated with the sample.