30. The cartridge of claim 29 further comprising a second electrode having a second assay reagent immobilized thereon, said second electrode being arranged adjacent to said first electrode.

31. The cartridge of claim 29 wherein said plurality of electrodes comprise carbon ink.

32. The cartridge of claim 29, said detection chamber further comprising at least one detection chamber surface, wherein at least a portion of said detection chamber surface is transparent.

33. The cartridge of claim 29 further comprising an optical detector adapted and arranged to detect luminescence from said detection chamber.

34. A method of performing a plurality of assays comprising measuring assay dependent signals using a plurality of electrodes, wherein at least one of said plurality of electrodes is used as a working electrode for measuring an assay dependent signal and, subsequently, as a counter electrode for measuring a different assay dependent signal at a different one of said plurality of electrodes.

35. The method of claim 34, wherein each of at least two of said plurality of electrodes is used as a working electrode for measuring an assay dependent signal and, subsequently, as a counter electrode for measuring a different assay dependent signal at a different one of said plurality of electrodes

36. The method of claim 34, wherein said plurality of electrodes comprises a dedicated counter electrode, a dedicated working electrode and two or more additional electrodes, each of which is used as a working electrode for measuring an assay dependent signal and, subsequently, as a counter electrode for measuring a different assay dependent signal at a different one of said plurality of electrodes.

37. A method of conducting an electrochemiluminescence measurement, said method comprising the steps of:

measuring the impedance between two electrodes in a measurement chamber to detect the presence of air bubbles, said measurement using electrical potentials that are insufficient for generating electrochemiluminescence at said electrodes; and

inducing electrochemiluminescence at one of said two electrodes.

38. (canceled)

39. A method of depositing assay reagents on an electrode surface to form an assay domain, the method comprising the steps of:

dispensing a predetermined volume of said assay reagents on said electrode surface using impact-driven fluid spreading to coat a predefined region on said electrode surface, said predefined region having a predefined assay reagent area.

40-70 (canceled)

71. A method of forming a plurality of assay domains, the method comprising the steps of:

a. treating one of a plurality of predefined region of a surface with solution of a biotin-binding protein so as to form an adsorbed biotin-binding protein layer within said predefined region of said surface;

b. treating said adsorbed biotin-binding protein layer with a solution comprising an assay reagent wherein said assay reagent is linked to biotin; and

c. repeating steps a. and b. for each of said plurality of assay domains.

72-102 (canceled)

103. A method of forming a plurality of assay domains, the method comprising the steps of:

A. treating one of a plurality of predefined region of a surface with solution of a second binding partner so as to form an adsorbed second binding partner layer within said predefined region of said surface;

B. treating said adsorbed second binding partner layer with a solution comprising an assay reagent wherein said assay reagent is linked to or comprises a first binding

partner and wherein said first and second binding partners specifically bind each other; and

C. repeating steps a. and b. for each of said plurality of assay domains.

104-119 (canceled)

120. A cartridge for conducting a plurality of assays, comprising:

a flow cell having an inlet, an outlet and a detection chamber, said inlet, detection chamber and outlet defining a flow path through the flow cell, said detection chamber comprising:

a plurality of working electrodes having assay reagents immobilized thereon, said electrodes being arranged in a one-dimensional array along the flow path;

a common counter electrode.

121-134 (canceled)

135. An assay cartridge comprising:

a cartridge body having a first side and

one or more first side cover layers mated to said first side such that said cartridge body and said first side cover layers define one or more first side fluidic networks therebetween, wherein said assay cartridge includes

a sample chamber having a sample introduction port with a sealable closure,

a sample chamber vent port connected to said sample chamber;

a first waste chamber,

a first waste chamber vent port connected to said waste chamber and

a first detection chamber connected to said sample chamber by a first sample conduit and to said first waste chamber by a first waste conduit.

136. The assay cartridge of claim 135, said cartridge body further comprising a second side and one or more second side cover layers mated to said second side, said cartridge body and said second side cover layers defining one or more second side fluidic networks therebetween,

wherein said cartridge body has at least one through-hole that provides fluidic communication between said first and second side fluidic networks.

137. The assay cartridge of claim 136, wherein at least one of said fluidic networks is defined, at least in part, by recesses in said cartridge body and/or said cover layers.