

munication with each other through said channel, wherein said channel may be branched or unbranched;

- (ii) an inlet for introducing a sample fluid in communication with said channel, said inlet;
- (iii) an outlet in communication with said flow channel;
- (iv) a plurality of control channels overlaying the flow channel(s),

wherein an elastomeric membrane separates the control channels from the flow channels at each intersection, the elastomeric membrane disposed to be deflected into or withdrawn from the flow channel in response to an actuation force, and

wherein, when the control channels are actuated the flow channel is partitioned into at least 1000 reaction chambers not in fluidic communication with each other;

- (b) a second region comprising a channel or chamber interposed between and in communication with said outlet in (a) and a flow channel in the third region;
  - (c) a third region comprising a plurality of flow channels in fluidic communication with the channel or chamber of the second region, with a region of each flow channel defining a reaction site;
  - (d) a control channel or channels that when actuated separates the first and second regions;
  - (e) a control channel or channels that when actuated separates the second and third regions; and
  - (f) a control channel or channels that when actuated separates the reaction sites of said flow channels from the other portions of control channels.
- 21.** The device of claim **20** wherein the flow channels in the third region are blind flow channels.

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