reagent through swab head **2835** and vi) removing the extracted analyte through sample conduit **2845**. The extracted analyte may then be directed to a detection chamber for analysis. In one preferred embodiment, the shaft is cleaved by applying a force to the exposed end of the shaft of swab **2830** in a direction perpendicular to the length of chamber **2810** so as to break the shaft at an edge **2827** of chamber **2810** and allow removal of the part of the shaft that extends out of the chamber. Preferably, swab head **2830** is seated against the opposing end of chamber **2810** prior to cleaving the shaft.

[0192] In an especially preferred embodiment, the shaft of swab **2830** is constructed to have weak point (shown as weak point **2837**) so that application of a force causes swab **2830** to reproducibly break at the weak point. Preferably, the swab shaft includes a stress/strain concentration feature (notch, score, or the like), e.g., the weak point is introduced by making the swab shaft narrower at the weak point or by "scoring" the shaft (i.e., cutting or etching one or more notches into the shaft at the weak point). Preferably the notch forms a circuit around the shaft so that the shaft may be broken in any direction. Such a notch may be made by cutting a groove in the shaft (e.g., with a tool or a laser) while turning the applicator stick on a lathe. Most preferably, the weak point is located so that when the shaft is inserted into chamber **2810** it is sufficiently near to edge **2827** so that a sufficient force can be applied to break the shaft, but sufficiently close to head **2835** so that the closure **2825** can be sealed. Optionally, the assay cartridge includes a window through which the user may view the inserted swab head on the applicator stick to verify that it is properly inserted into the sample chamber.

[0193] The sample chamber may also include additional passive and/or active features to promote a facile and reproducible break of a swab within the sample chamber. Passive features may include one or more of, e.g., geometrical configuration/arrangement of the sample chamber itself (e.g., curvature or angles along the length of the sample chamber), force focusing elements (e.g., protrusions from the internal walls of the sample chamber), and the like. Active features may include one or more actuatable mechanisms arranged and configured within the sample chamber for cleaving the swab, e.g., a "guillotine" device similar to a cigar cutter that can be actuated by a user exerting a force upon the device.

[0194] FIG. **29** shows sample chamber **2910**, an adaptation of sample chamber **2810**. Sample chamber **2910** has a constriction defined by protrusions **2990** that project inward from the walls of the chamber to form force focusing elements within the chamber. As illustrated in the figure, applying a lateral force to swab **2930** that is seated in sample chamber **2910** causes the swab shaft to contact one or more protrusions **2990**. The lateral force is thereby focused on one location on the swab, promoting breakage of the swab at that location. Preferably, the swab and sample chamber are designed/selected so that the swab has a weak point (shown as weak point **2937**) at the same location (preferably, the swab is scored at that location).

[0195] In an especially preferred embodiment, the sample chamber is configured to cause an applicator stick to bend upon insertion thus promoting fracture of the shaft. FIG. **30** shows sample chamber **3010**, an especially preferred adaptation of sample chamber **2810** that has a bend or angle **3015** along its length such that the sample chamber has a first elongated region (on one side of the bend or angle) oriented in one direction and a second elongated region (on the other side of the bend or angle) oriented in second direction, the two regions being oriented at an angle relative to each other. As shown in the FIG. **30**, insertion of swab **3030** leads to contact between a location on the shaft of the swab and a site on the inner surface of the angle or bend. This contact focuses force on that location and promotes breakage of the shaft at that location (to form head segment **3071** and shaft segment **3072**). Preferably, the width of the sample chamber is designed to fit the swab head snugly but not so tightly that insertion of the swab requires excessive force. Most preferably, the swab and sample chamber are designed/selected so that the swab has a weak point (shown as weak point **3037**) at or near the location of contact (preferably, the swab is scored at that location). Applicants have found that this arrangement allows for concurrent insertion and breaking of the swab in one simple operation. Advantageously, the breakage is reproducible and occurs without any violent motion that can lead to expulsion of sample from the cartridge. Preferred angles or degrees of curvature are 20-90 degrees, more preferably 30-70 degrees, even more preferably 40-50 degrees, most preferably 45 degrees. While FIGS. **28**, **29** and **30** illustrate embodiments employing swabs, the techniques are applicable to other types of application sticks.

[0196] The sample chamber is connected to a sample conduit for transferring fluids from the sample chamber to other fluidic components in the cartridge. The sample chamber may also be connected to a vent port and/or a reagent chamber (e.g., through fluidic conduits). In a preferred configuration for receiving liquid samples, the sample chamber is connected to a sample conduit and a vent port. A cross-sectional view of a preferred embodiment is shown in FIG. **27**. Sample chamber **2710** has sample introduction port **2720** and is linked to sample conduit **2730** and sample vent port **2740** (through vent conduit **2750**). Sample conduit **2730** is advantageously arranged to intersect sample chamber **2710** at or near the bottom of the chamber (relative to the orientation of the cartridge during operation) so as to allow for efficient transfer of a large fraction of the sample volume without the introduction of bubbles. Vent conduit **2750** is advantageously arranged to intersect sample chamber **2710** above sample conduit **2730** and at a height that is greater than the anticipated sample fill level height to avoid possible contamination of the instrument and/or escape of the sample fluid. Preferably, vent conduit **2750** has sufficient volume in the fluidic conduit so that a small amount of sample fluid, e.g. as may be observed if the sample is foamy or has bubbles, may enter the conduit without being pulled all the way to vent port **2740**. In one embodiment, as depicted in FIG. **9**, a well/trap **975** may be arranged within the fluidic conduit. In another embodiment, as depicted in FIG. **20**, the fluidic conduit may be extended/lengthened, e.g., utilizing a serpentine configuration **2030**.

[0197] Cap **2760** can be used to seal sample introduction port **2720** without preventing the flow of air through vent conduit **2750**. In FIG. **27**, the fluidic compartments and conduits are formed by recesses (e.g., channels) or holes in cartridge body **2770** and by cover layer **2780** which is sealed against cartridge body **2770**. Sample chamber **2710** has internal ledge **2790**. Vent conduit **2750** includes a vertical hole from the bottom of cartridge body **2770** to the top face of ledge **2790**. This arrangement provides for a simplified manufacturing process that is amenable to injection molding or machining of the cartridge body; other arrangements of the vent conduit will be readily apparent to the skilled artisan.