

destination location for the identified reagent. In some embodiments, the imaging device can be configured to produce composite images. In some embodiments, the imaging device can be configured to produce the composite images via slit-scan imaging. In some embodiments, the imaging device can be configured to produce an unrolled image. In some embodiments, the tube holder may comprise a carousel configured to hold a plurality of reagent vessels, wherein the carousel is rotatable along a center axis of the carousel. In some embodiments, the tube holder may comprise a tray configured to hold a plurality of reagent vessels, wherein the tray is configured to linearly slide along an axis. In some embodiments, the tube holder can include a turntable to rotate the reagent vessel along a central axis of the reagent vessel such that the imaging device can view an entire perimeter of the reagent vessel. In some embodiments, a reagent on the tube holder can be aliquoted regardless of a position on the carousel into which the reagent is loaded. In some embodiments, the imaging device may have a field of view configured to simultaneously image each of the plurality of reagent vessels. In some embodiments, the imaging device may be one of a plurality of imaging devices. The plurality of imaging devices can be positioned such that all portions of the label are in view of at least one of the plurality of imaging devices. In some embodiments, the fluid handling system may be configured to determine a level of liquid within the reagent vessel, and the processor may be configured to confirm sufficient volume of liquid has been loaded into the reagent vessel according to the protocol. In some embodiments, the non-transitory computer-readable storage medium may include visual indicators for reagent vessels from different manufacturers. The visual indicators on the label may include lot information for the reagent vessel, the lot information including a lot number and an expiration date. The processor may be configured to provide a warning of an expired reagent.

[0013a] In another example, a fluid handling system for processing a sample using a reagent kit including a plurality of reagent vessels, each of the plurality of reagent vessels containing a corresponding liquid reagent, the fluid handling system comprising: a non-transitory, computer-readable storage medium including a programmed protocol for processing the sample, the programmed protocol including a listing of reagents for processing the sample, a vessel holder configured to receive the plurality of reagent vessels at a corresponding plurality of locations, each reagent vessel having visual indicators of identifying features located on an identification label; an imaging device configured to create

an image of each of the plurality of reagent vessels loaded into the vessel holder; and a processor configured to: recognize the visual indicators in each image and to identify the reagent in each of the plurality of reagent vessels based on the recognized visual indicators; and determine if appropriate reagents have been loaded into the vessel holder as specified in the listing of reagents.

[0014] In an additional example, a fluid handling system for processing a sample using a reagent kit including a plurality of reagent vessels can comprise a non-transitory, computer-readable storage medium including a programmed protocol including a listing of reagent vials, wherein the programmed protocol specifies an expected location for each the plurality of reagent vessels for loading onto a carousel, a reagent carousel configured to receive the plurality of reagent vessels at a corresponding plurality of locations, each reagent vessel having visual indicators of identifying features located on an identification label, an imaging device configured to create an image of each of the plurality of reagent vessels loaded onto

the reagent carousel; and a processor configured to: recognize the visual indicators in each image and to identify the reagent in each of the plurality of reagent vessels based on the recognized visual indicators, and determine if a loaded location for each identified reagent corresponds to an expected location for that reagent as specified in the programmed protocol.

5 In some embodiments, the imaging device can be configured to produce composite images via slit-scan imaging. In some embodiments, the reagent carousel can be rotatable along a center axis of the reagent carousel. In some embodiments, the imaging device may have a field of view configured to simultaneously image the plurality of reagent vessels in the reagent carousel. In some embodiments, the non-transitory, computer-readable storage
10 medium may include a database including visual indicators for reagent vessels from different manufacturers, including a lot number and an expiration date. The processor may be configured to compare visual indicators in the database to decipher the visual indicators in the images. The processor may be configured to compare the deciphered visual indicators in the images to information in the programmed protocol. In some embodiments, the fluid handling
15 system can be configured to determine a level of liquid within a reagent vessel, and the processor can be configured to confirm sufficient volume of liquid has been loaded into the reagent vessel according to the programmed protocol.

[0015] In yet another example, a method of identifying reagents loaded into a fluid handling system can comprise programming a protocol for preparing a sample into a
20 controller of the fluid handling system, loading multiple reagent vessels into a vessel holder of the fluid handling system, imaging individual labels of the multiple reagent vessels with an imaging device to produce label images, comparing information in the label images to identification information located in a database in communication with the controller, and determining if appropriate reagents have been loaded into the carousel to perform the
25 protocol. In some embodiments, the multiple reagent vessels can be loaded into the vessel holder according to positional information in the protocol. In some embodiments, determining if appropriate reagents have been loaded into the vessel holder to perform the protocol can comprise determining if appropriate reagents are loaded into the vessel holder at locations according to the protocol. In some embodiments, the protocol can be performed
30 based on a sequence of steps outlined in the protocol. In some embodiments, the multiple reagent vessels can be loaded into the vessel holder in arbitrary positions. In some