CLAIMS

1. A fluid detecting system, the system comprising:

(a) a cartridge comprising a wicking material configured to draw leaked fluid escaping a fluid retention boundary from a first location to a second location,

(i) wherein the first location and the second location are not in direct physical contact with each other;

(ii) wherein the wicking material extends from the first location to the second location;

(iii) wherein the first location is disposed proximate to the fluid retention boundary so as the wicking material is exposed to the leaked fluid escaping the fluid retention boundary; and

(iv) wherein a thickness of the wicking material and an associated adhesive is less than 200 μm;

(b) an imaging or viewing system component comprising an optical objective,

(i) wherein the imaging or viewing system component is at or near the first location;

(ii) wherein the optical objective is configured to optically analyze a fluid within the fluid retention boundary; and

(iii) wherein the optical objective is positioned 100μm to 1000μm from a viewing surface of the fluid within the fluid retention boundary;

(c) a fluid indicator located at the second location, wherein the fluid indicator contacts a portion of the wicking material at the second location, wherein a detectable color alteration to the fluid indicator is produced when fluid contacts the fluid indicator; and

(d) an optical sensor to detect the detectable color alteration, wherein the optical sensor does not physically contact the fluid indicator and is different from the imaging or viewing system component.

2. The system of claim 1, wherein the fluid indicator comprises a tape indicator.

3. The system of claims 1 or 2, wherein the optical sensor comprises a colorimetric reflective optical sensor.

4. The system of any of claims 1-3, wherein the wicking material comprises a woven material.

5. The system of any of claims 1-4, wherein the wicking material comprises a nylon mesh fiber material.

6. The system of any of claims 1-5, wherein the wicking material is attached to a surface at the first location by a hydrophilic adhesive.

7. The system of claim 6, wherein the wicking material and the hydrophilic adhesive have a maximum combined thickness of about 120 μm at the first location.

8. The system of any of claims 1-7, wherein the wicking material at the first location is proximate to a fluid-sensitive element.

9. The system of any of claims 1-8, further comprising a communication component coupled to the optical sensor to produce a signal when the optical sensor detects the detectable color alteration.

10. A method of detecting fluid using the system of claim 1 comprising:

contacting the leaked fluid with the wicking material of the cartridge at the first location at which the fluid has escaped the fluid retention boundary;

drawing the fluid from the first location to the second location via the wicking material;

contacting the fluid with the fluid indicator in contact with the wicking material at the second location; and

detecting the detectable color alteration via the optical sensor operatively associated with the fluid indicator.

11. The method of claim 10, wherein the fluid contacting the wicking material has a volume of about 1 to about 500 μL.

12. The method of claims 10 or 11, wherein the fluid indicator comprises a tape indicator.

13. The method of any of claims 10-12, wherein the optical sensor comprises a colorimetric reflective optical sensor.

14. The method of any of claims 10-13, wherein the wicking material comprises a woven material.

15. The method of any of claims 10-14, wherein the wicking material is attached to a surface at the first location by a hydrophilic adhesive, wherein the wicking material and the hydrophilic adhesive have a maximum combined thickness of about 120 μm at the first location.

16. A fluid analysis system comprising:

(a) a cartridge comprising a fluid channel, a wicking material, and a fluidic device,

(i) wherein the fluidic device includes a viewing surface;

(ii) wherein a portion of the fluidic device is disposed at a first location;

(iii) wherein the fluidic device is connected to the fluid channel at the first location;

(iv) wherein the wicking material extends from the first location to a second location; and

(v) wherein the first location and the second location are not in direct physical contact with each other;

(b) an imaging or viewing system component comprising an optical objective,

(i) wherein the imaging or viewing system component is at or near the first location;

(ii) wherein the optical objective is configured to optically analyze a fluid within the fluidic device; and

(iii) wherein the optical objective is positioned 100μm to 1000μm from the viewing surface of the fluidic device;

(c) a fluid indicator at the second location, wherein the fluid indicator contacts a portion of the wicking material at the second location, wherein a detectable color alteration to the fluid indicator is produced when fluid contacts the fluid indicator; and

(d) an optical sensor to detect the detectable color alteration, wherein the optical sensor does not physically contact the fluid indicator and is different from the imaging or viewing system component.

17. The system of claim 16, wherein the fluid indicator comprises a tape indicator.

18. The system of claims 16 or 17, wherein the optical sensor comprises a colorimetric reflective optical sensor.

19. The system of any of claims 16-18, wherein the wicking material comprises a woven material.

20. The system of any of claims 16-19, further comprising a second wicking material surrounding the fluidic device, wherein the fluid indicator contacts a portion of the second wicking material at the second location.