CLAIMS

1. An apparatus for cleaning an optical component in an analysis unit that is configured to analyze, using the optical component, samples that are located in a removable cartridge during analysis, the apparatus comprising: a cleaning cartridge frame that is configured to be receivable by and supported by a cartridge receiver of the analysis unit that is configured to receive and support the removable cartridge; and one or more optical cleaning assemblies, each optical cleaning assembly including: an absorbent cleaning pad, and a compliant support structure that is proud of a surface of the cleaning cartridge frame and interposed between the cleaning cartridge frame and at least a portion of the cleaning pad.

2. The apparatus of claim 1, wherein the compliant support structure comprises an elastomeric material and has a first portion that is a domed shape.

3. The apparatus of claim 2, wherein the domed shape has a radius that at least substantially matches a radius of curvature of a surface of the optical component that faces towards the cleaning cartridge frame when the apparatus is supported by the cartridge receiver.

4. The apparatus of claim 1, wherein the absorbent cleaning pad is a laminate including a microfiber layer and a foam layer interposed between the microfiber layer and the compliant support structure.

5. The apparatus of claim 1, wherein: the cleaning cartridge frame has a corresponding optical cleaning assembly well for each optical cleaning assembly, each corresponding optical cleaning assembly well has one or more sidewalls and a floor, and each optical cleaning assembly is located in the corresponding optical cleaning assembly well.

6. The apparatus of claim 5, wherein: each optical cleaning assembly further includes a corresponding cover plate that is sized to at least extend to the sidewalls of the corresponding optical cleaning assembly well, each cover plate has an aperture sized to allow the compliant support structure of the corresponding optical cleaning assembly to protrude through the cover plate, and at least a portion of the absorbent cleaning pad for each optical cleaning assembly is sandwiched between the corresponding cover plate for the optical cleaning assembly and the cleaning cartridge frame.

7. The apparatus of claim 1, further comprising at least one sensor selected from the group consisting of: an alcohol detection sensor and a liquid detection sensor, wherein the at least one sensor is positioned so as to detect, respectively, alcohol or liquid, present in the optical cleaning assembly well.

8. The apparatus of claim 1, wherein at least a portion of the absorbent cleaning pad includes an indicator that causes the portion of the absorbent cleaning pad to change color when exposed to a substance selected from the group consisting of: a liquid and isopropyl alcohol.

9. The apparatus of claim 1, wherein the number of optical cleaning assemblies is selected from the group consisting of: one optical cleaning assembly, two optical cleaning

assemblies, three optical cleaning assemblies, four optical cleaning assemblies, and more than four optical cleaning assemblies.

10. The apparatus of claim 1, further comprising a re-use prevention mechanism selected from the group consisting of: a radio-frequency identification tag, a bar code, a quick response (QR) code, a serial number, and a near field communication tag.

11. A kit comprising: the apparatus of claim 1, and at least one item selected from the group consisting of: a container of liquid cleaning agent, a syringe, and a pipette.

12. A method comprising: a) obtaining an apparatus of that includes: a cleaning cartridge frame; and one or more optical cleaning assemblies, each optical cleaning assembly including: an absorbent cleaning pad, and a compliant support structure that is proud of a surface of the cleaning cartridge frame and interposed between the cleaning cartridge frame and at least a portion of the cleaning pad; b) applying a liquid cleaning agent to the absorbent cleaning pad of a first optical cleaning assembly of the one of the one or more optical cleaning assemblies; c) installing the apparatus into a cartridge receiver of an analysis unit; d) controlling the analysis unit to cause relative vertical translation between the cartridge receiver and an optical component of the analysis unit such that the optical component of the analysis unit and the absorbent cleaning pad of the first optical cleaning assembly come into contact with one another and such that the absorbent cleaning pad of the first optical cleaning assembly and the compliant support structure of the first optical cleaning assembly are compressed by a first amount; and e) controlling the analysis unit to cause relative horizontal translation between the cartridge receiver and the optical component so as to cause the absorbent cleaning pad of the first optical cleaning assembly to clean the optical component.

13. The method of claim 12, wherein (e) includes controlling the analysis unit to cause relative horizontal translation between the cartridge receiver and the optical component in a bowtie ($\bowtie$) pattern or a lemniscate (∞) pattern for one or more times.

14. The method of claim 12, wherein at least a portion of the absorbent cleaning pad includes an indicator that causes the portion of the absorbent cleaning pad to change color when exposed to a substance selected from the group consisting of: a liquid and isopropyl alcohol and the method further comprises: controlling the analysis unit to cause the analysis unit to obtain imaging data of the absorbent cleaning pad of the first optical cleaning assembly prior to (d) or (e), and determining that the liquid cleaning agent has been applied to the absorbent cleaning pad of the first optical cleaning assembly based on a color detected in the imaging data.

15. The method of claim 12, wherein the method further comprises: controlling the analysis unit to cause the analysis unit to obtain imaging data of the absorbent cleaning pad of the first optical cleaning assembly prior to (d) or (e), and determining that the liquid cleaning agent has been applied to the absorbent cleaning pad of the first optical cleaning assembly based on reflectivity of the absorbent cleaning pad measured from the imaging data.

16. The method of claim 12, wherein the apparatus further includes at least one sensor selected from the group consisting of: i) an alcohol detection sensor and ii) a liquid detection

sensor, the at least one sensor is positioned so as to detect, respectively, alcohol or liquid, present in the optical cleaning assembly well, and the method further comprises: controlling the analysis unit to obtain a sensor reading from the at least one sensor prior to (d) or (e).

17. An analysis unit comprising: an optical sensor head including an optical component; a cartridge receiver configured to receive and support a removable cartridge; and a controller including one or more processors and a memory, wherein: the one or more processors are communicatively connected with the memory, and the memory stores instructions for controlling the one or more processors to: a) determine that an apparatus has been installed in the cartridge receiver, the apparatus including: a cleaning cartridge frame; and one or more optical cleaning assemblies, each optical cleaning assembly including: an absorbent cleaning pad, and a compliant support structure that is proud of a surface of the cleaning cartridge frame and interposed between the cleaning cartridge frame and at least a portion of the cleaning pad; b) cause relative vertical translation between the cartridge receiver and the optical component such that the optical component and the absorbent cleaning pad of a first optical cleaning assembly of the one or more optical cleaning assemblies of the apparatus come into contact with one another and such that the absorbent cleaning pad of the first optical cleaning assembly and the compliant support structure of the first optical cleaning assembly are compressed by a first amount; and c) cause relative horizontal translation between the cartridge receiver and the optical component so as to cause the absorbent cleaning pad of the first optical cleaning assembly to clean the optical component.

18. The analysis unit of claim 17, wherein the apparatus includes a re-use prevention mechanism selected from the group consisting of: a radio-frequency identification tag, a bar code, a quick response (QR) code, a serial number, and a near field communication tag and the memory further stores instructions for controlling the one or more processors to further cause the analysis unit to: obtain data from the re-use prevention mechanism, determine whether the apparatus is authorized to be used based on the data, and perform (b) and (c) only when the apparatus is determined to be authorized for use.

19. The analysis unit of claim 17, wherein the memory further stores instructions for controlling the one or more processors to further cause, as part of (c), relative horizontal translation between the cartridge receiver and the optical component in a bowtie (⋈) pattern or a lemniscate (∞) pattern for one or more times.

20. The analysis unit of claim 17, wherein at least a portion of the absorbent cleaning pad includes an indicator that causes the portion of the absorbent cleaning pad to change color when exposed to a substance selected from the group consisting of: a liquid and isopropyl alcohol and the memory further stores instructions for controlling the one or more processors to further cause the analysis unit to: obtain imaging data of the absorbent cleaning pad of the first optical cleaning assembly prior to (b) or (c), and determine that a liquid cleaning agent has been applied to the absorbent cleaning pad of the first optical cleaning assembly based on a color detected in the imaging data.

21. The analysis unit of claim 17, wherein the memory further stores instructions for controlling the one or more processors to further cause the analysis unit to: obtain imaging data of the absorbent cleaning pad of the first optical cleaning assembly prior to (b) or (c), and determine that a liquid cleaning agent has been applied to the absorbent cleaning pad of

the first optical cleaning assembly based on reflectivity of the absorbent cleaning pad measured from the imaging data.

22. The analysis unit of claim 17, wherein the apparatus further includes at least one sensor selected from the group consisting of: an alcohol detection sensor and a liquid detection sensor, wherein the at least one sensor is positioned so as to detect, respectively, alcohol or liquid, present in the optical cleaning assembly well and the memory further stores instructions for controlling the one or more processors to further cause the analysis unit to: obtain a sensor reading from the at least one sensor prior to (b) or (c), and determine that a liquid cleaning agent has been applied to the absorbent cleaning pad of the first optical cleaning assembly based on the sensor reading.