13. The amplification device of claim 1, wherein the internal volume of the amplification chamber is in the range of about 5 uL to about 50 uL.

14. The amplification device of claim 1, wherein an amplification chamber surface to an amplification chamber volume ratio is in the range of about 50 to about 200 square mm for the amplification chamber surface and to about 5 to about 30 cubic mm for the amplification chamber volume.

15. The amplification device of claim 1, wherein an internal shape of the amplification chamber comprises one of a substantially rectangular structure, a substantially rectangular shape with rounded corners, a cylinder, and a cylindrical structure with a substantially oval cross-section.

16. The amplification device of claim 1, wherein the second surface of the first wall comprises a heating circuit.

17. The amplification device of claim 16, wherein the heating circuit comprises a resistive electrical path fabricated on the second surface with a first and second connecting pad for contacting an external circuit for providing current flow through the path.

18. The amplification device of claim 1, wherein the second surface of the first wall comprises a temperature sensor.

19. The amplification device of claim 18, wherein the temperature sensor comprises one of a thermistor and a thermocouple fabricated on the second surface with a first and second connecting pad for contacting an external circuit for connecting to the one of the thermistor and the thermocouple.

20. The amplification device of claim 1, wherein the sample entry orifice is capable of mating with a sample introduction element.

21. The amplification device of claim 20, wherein the sample introduction element comprises:

a wand,

wherein the wand comprises:

a first end with an absorbent pad capable of collecting and retaining a nucleic acid sample; and

a second end forming a handle,

wherein the first end is capable of passing through the sample entry orifice into the amplification chamber, and

wherein the wand includes an engaging structure between the first and second ends for engaging and sealing the wand in the sample entry orifice.

22. The amplification device of claim 21, wherein the engaging structure comprises a male screw structure on the wand and a female screw structure on the sample entry orifice.

23. The amplification device of claim 21, wherein the engaging structure comprises a male collar locking structure on the wand and a female collar locking structure on the sample entry orifice.

24. The amplification device of claim 1, wherein the amplification chamber comprises a sugar glass coating on at least a portion of the first surface of the first wall.

25. The amplification device of claim 1, wherein the amplification chamber is capable of a temperature increase ramp rate in the range of about 10 to about 50 degrees centigrade per second.

26. The amplification device of claim 1, wherein the amplification chamber is capable of a temperature decrease ramp rate in the range of about 4 to about 50 degrees centigrade per second.

27. The amplification device of claim 1, wherein the amplification chamber comprises an optical window.

28. The amplification device of claim 1, wherein the second surface of the first wall comprises a Peltier circuit with a first and second connecting pad for contacting an external circuit.

29. The amplification device of claim 1, wherein the first reversible seal comprises a flexible diaphragm.

30. The amplification device of claim 29, wherein the flexible diaphragm is capable of actuation into a closed position by an applied force and an open position by the absence of the applied force.

31. The amplification device of claim 29, wherein the flexible diaphragm is capable of actuation into a closed position by an applied force provided by an engaged instrument with a pin mating with the flexible diaphragm.

32. The amplification device of claim 1, wherein the second reversible seal comprises a flexible diaphragm.

33. The amplification device of claim 32, wherein the flexible diaphragm is capable of actuation into a closed position by an applied force and an open position by the absence of the applied force.

34. The amplification device of claim 32, wherein the flexible diaphragm is capable of actuation into a closed position by an applied force provided by an engaged instrument with a pin mating with the flexible diaphragm.

35. The amplification device of claim 1, wherein the second conduit comprises a mating feature for engaging a device for detection of the amplicon.

36. The amplification device of claim 1, wherein the first conduit comprises a chip insert with a fluid detection sensor.

37. The amplification device of claim 1, wherein the first surface comprises an interior surface, and

wherein the second surface comprises an exterior surface.

38. A method of nucleic acid amplification for producing an amplicon in a single-use device, comprising the steps of:

a.) introducing a nucleic acid sample into an amplification chamber through a sample entry orifice;

b.) sealing the orifice;

c.) transferring a fluid from a reservoir through a reversibly sealable ingress to the amplification chamber;

d.) sealing the ingress and an egress of the amplification chamber;

e.) mixing the fluid with the sample to form a mixture comprising nucleic acid, a buffer, a polymerase and one or more primers;

f.) cycling the temperature of the amplification chamber between first and second temperatures for a predetermined time and for a predetermined number of cycles to form an amplicon;

g.) opening the ingress and egress of the chamber; and

h.) applying a pneumatic force to the ingress to move the amplicon from the chamber through the egress.

39. A method of nucleic acid amplification for producing an amplicon in a single-use device, comprising the steps of:

a.) introducing a nucleic acid sample into an amplification chamber through a sample entry orifice;

b.) sealing the orifice;

c.) transferring a fluid from a reservoir through a reversibly sealable ingress to the amplification chamber;