## CLAIMS

1. An assay cartridge for detecting a target component in a fluid, the assay cartridge including an optical element comprising:

a light pathway comprising an input surface, a reflective surface and an output surface configured such that light entering the input surface undergoes total internal reflection at the reflective surface to create an evanescent field and exits the element from the output surface;

a plurality of capture components directly deposited onto a pre-determined area of the reflective surface; and

a transmission surface configured to enable emissions from the evanescent field to exit the element;

wherein the assay cartridge is a single use cartridge.

2. The assay cartridge according to claim 1, further comprising a one way clip to ensure that the cartridge is single use.

3. The assay cartridge according to claim 1, further comprising an irreversible spot to ensure that the cartridge is single use.

4. The assay cartridge according to claim 1, wherein the single use nature of the cartridge is implemented through data management.

5 The assay cartridge according to claim 4, further comprising an identity tag to ensure that the cartridge is single use.

6. The assay cartridge according to claim 5, wherein the identity tag is printed onto the cartridge.

7. The assay cartridge according to claim 5 or claim 6, wherein the identity tag is selected from a group including a barcode or a QR code, or wherein the identity tag is an RFID tag.

8. The assay cartridge according to any one of claims 1 to 7, wherein the emissions from the evanescent field are Mie, Raman or Rayleigh scattering.

9. The assay cartridge according to any one of claims 1 to 8, wherein at least one of the capture components is DNA or an antibody or a protein.

10. A method of fabricating an array of assay cartridges each cartridge being an assay cartridge according to any one of claims 1 to 9, the method comprising the steps of:

fabricating a plurality of optical elements through the steps of:

heating a preform to a temperature equal to or exceeding the glass transition temperature of the preform;

drawing the preform into an elongate strand; and

dividing the strand into a plurality of optical elements;

mounting at least one optical element in each assay cartridge; and

depositing at least one capture component directly on the reflective surface of each optical element.

11. The method according to claim 10, wherein the dividing of the strand into a plurality of optical elements involves cleaving the strand.

12. The method according to claim 11, wherein the dividing of the strand into a plurality of optical elements involves processing the strand with a laser.

13. The method according to claim 10, 11 or 12, wherein the dividing of the strand occurs perpendicular to the direction in which the preform is drawn.

14. The method according to claim 11, wherein the cleaving step takes place alternately from each side of the strand so that each optical element has a trapezoidal cross section.

15. The method according to any one of claims 10 to 14, wherein the depositing of the capture component occurs by printing.