WHAT IS CLAIMED IS:

1. A method of preparing a fluidic channel, the method comprising:

covalently coupling a first region of a substrate to a first region of a cover using first moieties covalently coupled to the first region of the substrate and second moieties covalently coupled to the first region of the cover,

wherein the covalent coupling between the first region of the substrate and the first region of the cover suspends a second region of the cover over a second region of the substrate to form a fluidic channel;

the method further comprising disposing an intervening layer between the first region of the substrate and the first region of the cover, wherein covalently coupling the first region of the substrate to the first region of the cover comprises:

covalently coupling the first region of the substrate to the intervening layer; and

covalently coupling the first region of the cover to the intervening layer; wherein:

(i) covalently coupling the first region of the substrate to the intervening layer comprises a first azide-alkyne [3+2] cyclo-addition;

and/or ;

(ii) covalently coupling the first region of the cover to the intervening layer comprises a second azide-alkyne [3+2] cyclo-addition.

2. The method of claim 1, further comprising coupling oligonucleotides to the second region of the substrate.

3. The method of claim 2, wherein the oligonucleotides are coupled to the second region of the substrate before the first region of the substrate is coupled to the first region of the cover.

4. The method of claim 2 or claim 3, further comprising protecting the oligonucleotides before the first region of the substrate is covalently coupled to the first region of the cover.

5. The method of claim 4, wherein protecting the oligonucleotides comprises depositing a mask over the oligonucleotides;

optionally wherein the method further comprises removing the mask after the first region of the substrate is covalently coupled to the first region of the cover.

6. The method of any one of claims 2 to 5, wherein (i) the oligonucleotides are covalently coupled to the second region of the substrate using second moieties covalently coupled to the second region of the substrate; and/or
(ii) the oligonucleotides comprise capture primers.

7. The method of any one of claims 2 or 4 to 6, wherein the oligonucleotides are coupled to the second region of the substrate after the first region of the substrate is coupled to the first region of the cover.

8. The method of any one of claims 1 to 7, wherein covalently coupling the first region of the substrate to the first region of the cover comprises selectively applying heat to the first region of the substrate or the first region of the cover; optionally wherein the heat is applied using light, optionally wherein said light includes an infrared or near-infrared wavelength.

9. The method of any one of claims 1 to 8, wherein:
(i) covalently coupling the first region of the substrate to the first region of the cover comprises applying pressure to the first region of the substrate and the first region of the cover; and/or
(ii) the intervening layer comprises the first moieties or the second moieties; and/or
(iii) the first moieties are covalently coupled to the first region of the substrate via silane groups, carboxylate groups, or amidate groups; and/or
(iv) the second moieties are covalently coupled to the second region of the substrate via silane groups, carboxylate groups, or amidate groups; and/or
(v) the cover comprises a different material than the substrate; and/or
(vi) the cover comprises at least one material selected from the group consisting of: cyclic olefin polymer (COP), cyclic olefin copolymer (COC), glass, silicon, polypropylene (PP), photoresist, polyethylene terephthalate (PET), poly(N-(5-azidoacetamidylpentyl) acrylamide-co-acrylamide) (PAZAM), and polyethylene (PE); and/or
(vii) the substrate comprises at least one material selected from the group consisting of: cyclic olefin polymer (COP), cyclic olefin copolymer (COC), glass, silicon, polypropylene (PP),

photoresist, polyethylene terephthalate (PET), poly(N-(5-azidoacetamidylpentyl) acrylamide-co-acrylamide) (PAZAM), and polyethylene (PE); and/or

(viii) the second region of the cover is separated from the second region of the substrate by between 1 μm (±5%) and 1 cm (±5%).

10. A fluidic device, comprising:

a substrate comprising a first region and a second region; and

a cover comprising a first region and a second region,

the first region of the substrate being covalently coupled to the first region of the cover using first moieties covalently coupled to the first region of the substrate and second moieties covalently coupled to the first region of the cover,

wherein the covalent coupling between the first region of the substrate and the first region of the cover suspends the second region of the cover over the second region of the substrate to form a fluidic channel;

the fluidic device further comprising an intervening layer between the first region of the substrate and the first region of the cover, wherein the first region of the substrate is covalently coupled to the intervening layer, and wherein the first region of the cover is covalently coupled to the intervening layer,

wherein: (i) the first region of the substrate is covalently coupled to the intervening layer via the product of an azide-alkyne [3+2] cyclo-addition reaction; and/or

(ii) the first region of the cover is covalently coupled to the intervening layer via the product of an azide-alkyne [3+2] cyclo-addition reaction.

11. The device of claim 10, further comprising oligonucleotides coupled to the second region of the substrate, optionally wherein the oligonucleotides are covalently coupled to the second region of the substrate using second moieties covalently coupled to the second region of the substrate.

12. The device of claim 11, wherein the oligonucleotides comprise capture primers.

13. The device of any one of claims 10 to 12, wherein:

(i) the intervening layer comprises the first moieties or the second moieties; and/or

(ii) the first moieties are covalently coupled to the first region of the substrate via silane groups, carboxylate groups, or amidate groups; and/or

(iii) the second moieties are covalently coupled to the second region of the cover via silane groups, carboxylate groups, or amidate groups.

(iv) the cover comprises a different material than the substrate; and/or

(v) the substrate comprises at least one material selected from the group consisting of: cyclic olefin polymer (COP), cyclic olefin copolymer (COC), glass, silicon, polypropylene (PP), photoresist, polyethylene terephthalate (PET), poly(N-(5-azidoacetamidylpentyl) acrylamide-co-acrylamide) (PAZAM), and polyethylene (PE) ; and/or

(vi) the cover comprises at least one material selected from the group consisting of: cyclic olefin polymer (COP), cyclic olefin copolymer (COC), glass, silicon, polypropylene (PP), photoresist, polyethylene terephthalate (PET), poly(N-(5-azidoacetamidylpentyl) acrylamide-co-acrylamide) (PAZAM), and polyethylene (PE) ; and/or

(vii) the second region of the cover is separated from the second region of the substrate by between 1 μm (±5%) and 1 cm (±5%).

14. A method of making the device of any one of claims 12 to 13, wherein the first region of the substrate is covalently coupled to the first region of the cover using selectively application of heat to the first region of the substrate or the first region of the cover.

15. The method of claim 14, wherein the heat is applied using light, optionally wherein the light includes an infrared or near-infrared wavelength.