

CLAIMS**WHAT IS CLAIMED IS:**

1. A method of detecting materials in a mixture of materials, the method comprising:
providing materials;
5 providing oligonucleotides having different sequences than one another, each of the oligonucleotides being within, and corresponding to, a respective one of the materials;
obtaining a mixture of at least two of the materials with one another, the mixture comprising the oligonucleotides corresponding to those materials;
sequencing the oligonucleotides in the mixture; and
10 detecting the materials corresponding to those oligonucleotides using the sequences of those oligonucleotides.
2. The method of claim 1, wherein the materials comprise reagents for use in sequencing.
- 15 3. The method of claim 1 or claim 2, wherein the materials respectively are provided in reservoirs of a substrate.
4. The method of any one of claims 1 to 3, wherein the sequence of each of the oligonucleotides comprises: (i) an index corresponding to the mixture and (ii) a barcode
20 corresponding to the respective material.
5. The method of any one of claims 1 to 4, wherein the sequence of each of the oligonucleotides includes a barcode corresponding to the respective material, and the method further comprising adding, to each of the oligonucleotides, an index corresponding to the
25 mixture.
6. The method of claim 5, wherein the index is added after obtaining the mixture.
7. The method of any one of claims 1 to 6, wherein the mixture is obtained using a first
30 sequencing system.

8. The method of claim 7, wherein the mixture comprises waste from the first sequencing system.
9. The method of claim 7 or claim 8, wherein the oligonucleotides in the mixture are sequenced using a second sequencing system that is different from the first sequencing system.
10. The method of claim 9, wherein the sequences of the oligonucleotides comprise adapters that are compatible with the second sequencing system and are incompatible with the first sequencing system.
11. The method of any one of claims 1 to 10, wherein sequencing the oligonucleotides in the mixture comprises amplifying the oligonucleotides on a surface to generate respective clusters of amplicons on a surface.
12. The method of any one of claims 1 to 11, wherein detecting the materials comprises comparing the sequences of the oligonucleotides to stored sequences.
13. The method of any one of claims 1 to 12, wherein detecting the materials comprises quantifying respective amounts of the oligonucleotides, and correlating the amounts of the oligonucleotides to amounts of the respective materials.
14. The method of any one of claims 1 to 13, wherein the oligonucleotides comprise single-stranded DNA, double-stranded DNA, RNA, LNA, or a sequence of modified nucleotides.
15. The method of any one of claims 1 to 14, wherein each of the materials is independently selected from the group consisting of a liquid, a semi-solid, and a solid.
16. The method of claim 15, wherein the liquid comprises a solvent or reagent.
17. The method of claim 15 or claim 16, wherein the solid comprises a dry powder or a powder in a liquid.
18. The method of any one of claims 15 to 17, wherein the semi-solid comprises a gel.

19. A method of detecting a material in a mixture of materials, the method comprising:
mixing at least two materials with one another to obtain a mixture,
different oligonucleotides having different sequences than one another being disposed
within different ones of the materials;
- 5 wherein the sequences of the oligonucleotides are used to detect the materials in the
mixture.
20. The method of claim 19, wherein the materials comprise reagents for use in sequencing.
- 10 21. The method of claim 19 or claim 20, wherein the materials respectively are provided in
reservoirs of a substrate.
22. The method of any one of claims 19 to 21, wherein the sequence of each of the
oligonucleotides comprises one or both of (i) an index corresponding to the mixture and (ii) a
15 barcode corresponding to the respective material.
23. The method of any one of claims 19 to 22, wherein the mixture is obtained using a first
sequencing system.
- 20 24. The method of claim 23, wherein the mixture comprises waste from the sequencing
system.
25. The method of claim 23 or claim 24, wherein the oligonucleotides in the mixture are
sequenced using a second sequencing system that is different from the first sequencing system.
- 25 26. The method of claim 25, wherein the sequences of the oligonucleotides comprise
adapters that are compatible with the second sequencing system and are incompatible with the
first sequencing system.
- 30 27. The method of any one of claims 19 to 26, wherein the materials are detected by
comparing the sequences of the oligonucleotides to stored sequences.

28. The method of any one of claims 19 to 27, wherein the materials are detected by quantifying respective amounts of the oligonucleotides, and correlating the amounts of the oligonucleotides to amounts of the respective materials.

5 29. The method of any one of claims 19 to 28, wherein the oligonucleotides comprise single-stranded DNA, double-stranded DNA, RNA, LNA, or a sequence of modified nucleotides.

30. The method of any one of claims 19 to 29, wherein each of the materials is
10 independently selected from the group consisting of a liquid, a semi-solid, and a solid.

31. The method of claim 30, wherein the liquid comprises a solvent or reagent.

32. The method of claim 30 or claim 31, wherein the solid comprises a dry powder or a
15 powder in a liquid.

33. The method of any one of claims 30 to 32, wherein the semi-solid comprises a gel.

34. An apparatus, comprising:
20 a substrate comprising a plurality of reservoirs;
plurality of materials, each of the materials being within a respective one of the reservoirs; and
a plurality of oligonucleotides having different sequences than one another, each of the oligonucleotides being within a respective one of the materials.

25 35. The apparatus of claim 34, wherein the materials comprise reagents for use in sequencing.

36. The apparatus of claim 34 or claim 35, wherein the sequence of each of the
30 oligonucleotides comprises one or both of (i) an index corresponding to the mixture and (ii) a barcode corresponding to the respective material.

37. The apparatus of any one of claims 34 to 36, for use in a sequencing system to obtain a mixture of two or more of the materials.

38. The apparatus of claim 37, wherein the mixture comprises waste from the sequencing system.

5 39. The apparatus of claim 37 or claim 38, wherein the sequences of the oligonucleotides comprise adapters that are incompatible with the sequencing system.

40. The apparatus of any one of claims 34 to 39, wherein the oligonucleotides comprise single-stranded DNA, double-stranded DNA, RNA, LNA, or a sequence of modified
10 nucleotides.

41. The apparatus of any one of claims 34 to 40, wherein each of the materials is independently selected from the group consisting of a liquid, a semi-solid, and a solid.

15 42. The apparatus of claim 41, wherein the liquid comprises a solvent or reagent.

43. The apparatus of claim 41 or claim 42, wherein the solid comprises a dry powder or a powder in a liquid.

20 44. The apparatus of any one of claims 41 to 43, wherein the semi-solid comprises a gel.