CLAIMS

WHAT IS CLAIMED IS:

1. A method for dispensing a sample to a substrate surface, comprising: dispensing, via a sample dispenser, a sample solution comprising a plurality of beads onto said substrate surface along a path while said substrate surface and said sample dispenser are in relative motion, wherein said substrate surface comprises a plurality of individually addressable locations that receives and immobilizes said plurality of beads, wherein said substrate surface comprises a first location and a second location, wherein said first location has a higher affinity for a bead of said plurality of beads than said second location, wherein said first location comprises an individually addressable location of said plurality of individually addressable locations, and wherein subsequent to said dispensing, said bead is immobilized at said first location.

2. The method of claim 1, wherein said substrate surface is substantially planar.

3. The method of claim 1, wherein said substrate surface is patterned using surface chemistry.

4. The method of claim 1, wherein said path is in a substantially spiral pattern.

5. The method of claim 4, wherein said sample solution is dispensed onto said substrate surface in said substantially spiral pattern in a radially outward direction with respect to a central axis of said substrate surface.

6. The method of claim 4, wherein said sample solution is dispensed onto said substrate surface in said substantially spiral pattern in a radially inward direction with respect to a central axis of said substrate surface.

7. The method of claim 4, wherein a path width of said path is greater than a path pitch of said path, wherein said path pitch is a distance between a center of said path at a first position and a center of said path at a second position after one rotation of said substrate surface.

8. The method of claim 4, wherein a path width of said path is less than a path pitch of said path, wherein said path pitch is a distance between a center of said path at a first position and a center of said path at a second position after one rotation of said substrate surface.

9. The method of claim 4, wherein a path width of said path is substantially the same as a path pitch of said path, wherein said path pitch is a distance between a center of said path at a first position and a center of said path at a second position after one rotation of said substrate surface.

10. The method of claim 1, wherein during said dispensing at least one of said substrate surface or said sample dispenser is moving.

11. The method of claim 10, wherein during said dispensing (i) said substrate surface is rotating with respect to a rotational axis and (ii) said sample dispenser is moving with respect to said rotational axis of said substrate surface or said substrate surface is moving such that said rotational axis is moving with respect to said sample dispenser.

12. The method of claim 11, wherein said substrate surface is rotating at a rotational frequency of no more than 5 revolutions per minute (rpm).

13. The method of claim 1, wherein said plurality of beads comprises a first subset of beads and a second subset of beads, wherein said first subset of beads each comprises a respective template nucleic acid sequence coupled thereto and said second subset of beads does not comprise a template nucleic acid sequence coupled thereto.

14. The method of claim 13, wherein subsequent to said dispensing said first subset of beads is immobilized to individually addressable locations of said plurality of individually addressable locations and said second subset of beads is not immobilized to said plurality of individually addressable locations.

15. The method of claim 1, wherein said bead comprises a plurality of nucleic acid molecules having sequence identity.

16. The method of claim 1, wherein said plurality of individually addressable locations comprise at least 50,000,000,000 individually addressable locations.

17. The method of claim 1, wherein said substrate surface comprises a set of first locations and a set of second locations different from said set of first locations, wherein said set of first locations comprises said first location, and wherein said set of second locations comprises said second location.

18. The method of claim 17, wherein said first location is not in contact with another first location of said set of first locations.

19. The method of claim 18, wherein said set of first locations carries a positive electrostatic charge with affinity towards a negative electrostatic charge, wherein said bead comprises a nucleic acid molecule coupled thereto, which nucleic acid molecule carries said negative electrostatic charge.

20. The method of claim 19, wherein said set of first locations comprises (3-aminopropyl)triethoxysilane (APTMS) and wherein said second set of locations comprises hexamethyldisilazane (HMDS).