## CLAIMS

WHAT IS CLAIMED IS:

1. A device for storing information, comprising:

a solid support, wherein the solid support comprises a plurality of wells, wherein each of the wells comprises an addressable locus comprising:

a synthesis surface located in a bottom region of each of the wells;

a bottom electrode in addressable communication with the synthesis surface; and

at least one sidewall electrode located on a sidewall of each of the wells, wherein the at least one sidewall electrode is 50 nm to 200 nm from the bottom region.

2. The device of claim 1, wherein the solid support comprises addressable loci at a density of at least 100 $x10^6$ addressable loci per $cm^2$.

3. The device of claim 1, wherein the solid support comprises addressable loci at a density of 100 x $10^6$ to 100 x $10^7$ addressable loci per $cm^2$.

4. The device of claim 1, wherein the addressable locus comprises a diameter up to about 750 nm.

5. The device of claim 1, wherein each of the wells comprises a depth up to about 1000 nm.

6. The device of claim 1, wherein each of the wells comprises a depth of 100 nm to 1000 nm.

7. The device of claim 1, wherein each of the wells comprises a longest cross-sectional diameter of 100 nm to 800 nm.

8. The device of claim 1, wherein each of the wells is cylindrical.

9. The device of claim 1, wherein the bottom electrode comprises a cross-sectional area of $10^4$ $nm^2$ to $10^5$ $nm^2$.

10. The device of claim 1, wherein the at least one sidewall electrode is 75 nm to 125 nm from the bottom region.

11. The device of claim 1, wherein the at least one sidewall electrode comprises a height of 5 nm to 25 nm.

12. The device of claim 1, comprising at least two sidewall electrodes.

13. The device of claim 1, wherein the at least one sidewall electrode and the bottom electrode are independently addressable.

14. A method for storing information, comprising:
    a) providing a device of claim 1;
    b) providing instructions for polynucleotide synthesis;
    c) depositing at least one nucleoside on the synthesis surface, wherein the at least one nucleoside couples to a polynucleotide attached to the synthesis surface; and
    d) repeating step c) to synthesize a plurality of polynucleotides on the synthesis surface, wherein the instructions comprise at least one sequence encoding for the plurality of polynucleotides.
15. The method of claim 14, wherein the method further comprises cleaving at least one polynucleotide from the surface, wherein the polynucleotide is dissolved in a droplet.
16. The method of claim 14, wherein the method further comprises sequencing at least one polynucleotide from the surface.
17. The method of claim 14, wherein the nucleoside comprises a nucleoside phosphoramidite.
18. The method of claim 14, wherein the method further comprises a cleavage step, wherein the cleavage step comprises applying an electrical potential to the bottom electrode to generate a cleavage reagent.
19. The method of claim 14, wherein the method further comprises an oxidation step.
20. The method of claim 14, wherein the method further comprises a deblocking step, wherein the deblocking step comprises applying an electrical potential to the at least one sidewall electrode to generate a deprotection reagent.