skilled in the art, upon reading the appended disclosure will be able to manufacture, make and use the present invention in other environments and for other purposes, without the e3xercise of inventive skill and without departing from the spirit and scope of the appended claims.

We claim:

1. An electric switch comprising tow electrically conducting electrodes, separated by a gap, one electrode having a silver surface, and an organic monolayer in the gap, in contact with each, but separating said two electrodes.

2. The electric switch of claim 1, wherein one of the electrodes has a surface of gold or platinum.

3. The electric switch of claim, wherein the monolayer has functional groups which bond to metal surfaces.

4. The electric switch of claim 1, wherein the monolayer comprises octanethiol.

5. The electric switch of claim 1, wherein the monolayer comprises octadecanethiol.

6. A plurality of the electric switches of claim 1, arranged in an array to form a logic circuit.

7. A method of using the switch of claim 1, comprising applying a voltage to the electrode with the silver surface to cause silver ions to become mobile in the monolayer.

8. The method of claim 7, wherein the silver ions bridge the gap between the electrodes.

9. The method of claim 8, wherein the silver ions from a silver filament between the electrodes.

10. The method of claim 7, further comprising applying a bias to the non-silver electrode to cause the ions to return to the silver surface.

11. The method of claim 7, wherein the voltage is applied in pluses to cause the switch to cycle between write, read and erase functions.

12. A method of fabricating an electric switch said method comprising:

Providing a silver electrode and a counter electrode;

Forming a monolayer of an organic material on the surface of one of the silver or counter electrodes, and,

Placing the other electrode not having the monolayer thereon in contact with the monolayer.

13. The method of claim 12, wherein the monolayer is octanethiol.

14. The method of claim 12, wherein the monolayer is octadecanethiol.

15. The method of claim 12, wherein the counter electrode has a surface formed of platinum or gold.

16. A method of forming a nanoscale crossbar array comprising providing a plurality of silver electrodes placed parallel to one another, providing a plurality of counter electrodes running parallel to the plane of said plurality of silver electrodes but separated by a gap so as to form an array, and placing a monolayer of organic material within the gap so as to contact the silver and counter electrodes creating points of intersection between the silver and counter electrodes.

17. The method of claim 16, wherein the monolayer is first formed on the silver electrodes and then the counter electrodes are placed in contact with the monolayer.

18. The method of claim 16, wherein the monolayer is first formed on the counter electrodes and then the silver electrodes are placed in contact with the monolayer.

19. The method of claim 16, wherein the monolayer comprises octadecanethiol or octanethiol.

20. The method of claim 16, wherein the counter electrodes have a surface of gold or platinum.

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