8. The microfluidic platform for selectively manipulating magnetic particles according to claim 1, wherein the membrane is transparent.

9. An apparatus which comprises the microfluidic platform of claim 1 and a magnetic force microscope cantilever.

10. A microfluidic platform for selectively manipulating magnetic particles, said microfluidic platform comprising:

a membrane; at least one selectively generateable magnetic field; and

a plurality of spin valve magnetic traps attached to the membrane, each of the plurality of spin valve magnetic traps being switchable between an on state and an off state when temporarily subjected to a magnetic field of sufficient strength to change the magnetization state of the spin valve trap, (a) the on state characterized in that the spin valve magnetic trap produces its own local magnetic field which persists after the at least one selectively generateable magnetic field is discontinued, said produced local magnetic field being capable of attracting and retaining magnetic particles proximate the spin valve magnetic trap, and (b) the off state characterized in that no local magnetic field is produced by the spin valve magnetic trap and the magnetic particles are not attracted or retained proximate the spin valve magnetic trap.

11. The microfluidic platform of claim 10, wherein the plurality of spin valve magnetic traps are individually switchable between the on and off states thereof.

12. The microfluidic platform of claim 10, wherein the plurality of spin valve magnetic traps are globally switchable between the on and off states thereof.

13. The microfluidic platform of claim 10, wherein the plurality of spin valve magnetic traps are both individually and globally switchable between the on and off states thereof.

14. The microfluidic platform of claim 10, wherein the membrane is at least partially free-standing so as to define opposite surfaces, wherein the plurality of spin valve magnetic traps are attached to one of the opposite surfaces of the membrane, and wherein the fluid having the magnetic particles dispersed therein is brought proximate the array of spin valve magnetic traps on the other of the opposite surfaces of the membrane so that the membrane provides a barrier between the fluid and the plurality of spin valve magnetic traps.

15. The microfluidic platform of claim 1, wherein the membrane is at least partially free-standing so as to define opposite surfaces, wherein the plurality of spin valve magnetic traps are attached to one of the opposite surfaces of the membrane, and wherein the fluid having the magnetic particles dispersed therein is brought proximate the array of spin valve magnetic traps on the other of the opposite surfaces of the membrane so that the membrane provides a barrier between the fluid and the plurality of spin valve magnetic traps.

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