

**BraneCell**

**Isothermal quantum computing apparatus and materials**

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Enclosed: The Granted Claims

1. A computing apparatus comprising:
  - a) a key that that is either a key molecule, ion, electron or photon and has freedom of motion within a cell body;
  - b) a cell body that has length, width and height in the range of  $10^{-9}$  to  $10^{-4}$  meters, defining a cell-volume;
  - c) wherein walls of the three dimensional cells are made of material that can anchor an antenna-like transmitter/receiver that is capable of transmitting and receiving and re-transmitting a radiant energy pulse;
  - d) wherein antenna-like processes happen through dissociative key anti-docking and associative key docking that are both reversible processes;
  - e) wherein dissociative anti-docking and associative docking are coupled events wherein a quantum of energy from associative docking together with negative differential entropy is coupled with the equal and opposite quantum of energy for dissociative anti-docking together with positive differential entropy; and
  - f) wherein the dissociative key anti-docking and associative key docking coupled events can be used to move a signal of quantized energy.

## **ISOTHERMAL QUANTUM COMPUTING APPARATUS AND MATERIALS**

2. The apparatus of claim 1 that includes said signals, which are characterized by early stage spherical pulses that radiate through arrays of three dimensional cells and said cells are kept isothermal, constant temperature.

**3.** The apparatus of claim **1** wherein the key can be a molecule that can engage in multi-coordinate interaction with a docking site.

**4.** The apparatus of claim **3** wherein a key molecule docking to an antenna-like site generates an energy related to the formation of bonds and anti-docking requires an energy related to breaking bonds and the enthalpy of the docking reaction is matched equal and opposite to the enthalpy of the dissociation reaction.

**5.** The apparatus of claim **3** wherein the step in the docking that determines the radiant pulse energy quantum magnitude is an instantaneous entropy loss step that is part of the key molecule docking process in which the total energy/enthalpy of docking processes may not be the measure of the pulse wavelengths.

**6.** The apparatus of claim **3** wherein antenna-like transmitting and receiving and re-transmitting, in contrast to a low temperature superconducting quantum computer, is a two-body associative and dissociative key molecule and antenna-like site condensation and anti-condensation reaction that can benefit from increasing temperature by increase in reaction rate.

**7.** The apparatus of claim **5** wherein an entropy contraction step, which is part of multi-coordinate docking of a key molecule onto a reversible binder, energizes a quantum of energy to be transmitted over the antenna-like sites.

**8.** The apparatus of claim **3** wherein a docked key molecule and antenna-like tethered docking site may be molecules, elements, transition metal complexes, nanoparticles, quantum dots or a pharmaceutical style docking site with drug-like molecule reversibly associated.

**9.** The apparatus of claim **1** wherein the docking is the absorption of a photon in an element, molecule, nano-particle or quantum dot.

**10.** The apparatus of claim **1** that operates at room temperature, or human body temperature or any temperature that allows for the functioning of binding and anti-binding.

**11.** The apparatus of claim **1** wherein pulses are controlled by allowing or disallowing a pulse to move in a particular direction by use of second pulse or providing a driving force for pulse determined moving by increased Index of Refraction in cell-to-cell pathways.

**12.** The apparatus of claim **1** wherein cells have energy quanta saturation capacity, which is determined by the anti-docking acceptance of a limited input of quantized energy related to key dissociation.

**13.** The apparatus of claim **12** wherein capacitance of the cells to absorb pulses is saturated by additional quantized energy input.

**14.** The apparatus of claim **13** wherein an AND Gate is comprised of at least one cell with an increased Index of Refraction and with an increased number of antenna-like sites in which a first quantum of energy is put in capacitance in the increased Index of Refraction cell and another quantum of energy is used to saturate the capacitance in order to let a quantum of energy pass the AND Gate.

**15.** The apparatus of claim **14** wherein the quantized energy pulse still trapped in the gate can be cleared by annihilation.

**16.** The apparatus of claim **1** wherein the mass of the tethered antenna-like site is greater than the mass of the key molecule.

**17.** The apparatus of claim **14** wherein said AND Gate has cascable properties, in which the signal, represented by the energy pulse that passes the gate, is unchanged in magnitude by passing the gate.

**18.** The apparatus of claim **1** wherein

- a) the cell volume is composed of a liquid phase or gas phase volume or plasma or free radicals or gas phase ions or supercritical fluids;
- b) the cell walls may be composed of organic, carbon-based material;
- c) a key uses molecular liquid Brownian motion processes or gas phase motion to allow for diffusion to a docking site; and
- d) a photon is used to initiate the signaling.

**19.** The apparatus of claim **18** wherein liquid phase cell volume is water; or liquid mixture as in a biological cell; or a suitable solvent for the binding molecule to solubilize, when it is not bound.





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20. The apparatus of claim 5 wherein the quantized energy which happens at the docking event may be Far Infrared.



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