

EFFECTS OF LORENTZ FORCE ON WATER USING ELECTRO POWERED LATTICE MAGNETS AND APPLICATIONS OF SMALL CLUSTERED WATER

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Abstract: - In this work we show the after effects of certain amount of magnetic field on a water for a specific amount of time in very calculable way. Here we are passing water between two magnetic poles and in that way, we will magnetize the water and will break its molecular clusters into smaller parts. It is helpful in both agriculture and household.

A water molecule consists of one oxygen and two hydrogens. Thus: H₂O. Simply put, the oxygen act as a negative, while each hydrogen acts as a positive. Water molecules do not travel alone. They form clusters with other water molecules by the attraction of a positive hydrogen of one molecule to the negative oxygen of another. Water molecule clusters come in many sizes, depending on the number of water molecules involved.

In the case of water that has not been magnetically structured, the water molecule clusters are generally comprised of many water molecules that are loosely attracted. This loose and chaotic form of attraction allows for toxins and pollutants to travel inside the water molecule cluster. As these water molecule clusters pass by the cell membrane, many of them are sloughed off because they are too large or because of the toxins contained, which the plant is programmed to reject. The smaller of these chaotic clusters will enter the cell, some carrying toxins with them. It requires a great deal of unstructured water to hydrate a plant.

Magnetic field, when applied to normal water, restructures the water molecules into very small water molecule clusters, each made up of six symmetrically organized molecules. This miniscule cluster is recognized by the cell as "bio-friendly" due to its hexagonal structure and because the toxins cannot travel within the cluster, and easily enters the passageways in plant and animal cell membranes. The result provides maximum, healthy hydration with less water.

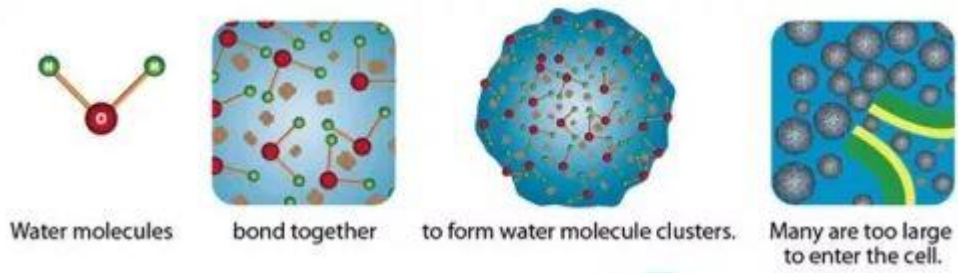


Figure 1

Which shows water with bigger clusters are impossible to penetrate in those cells.



Figure 2

But when water will pass through our magnetizing chamber,

It will magnetize the water in a way to break those bulky clusters.

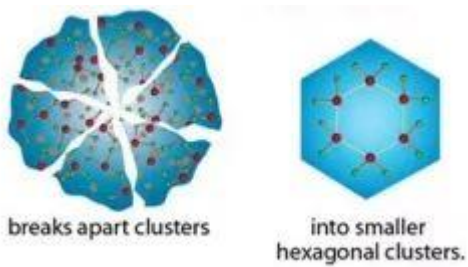


Figure 3

The results of magnetization can be seen as below

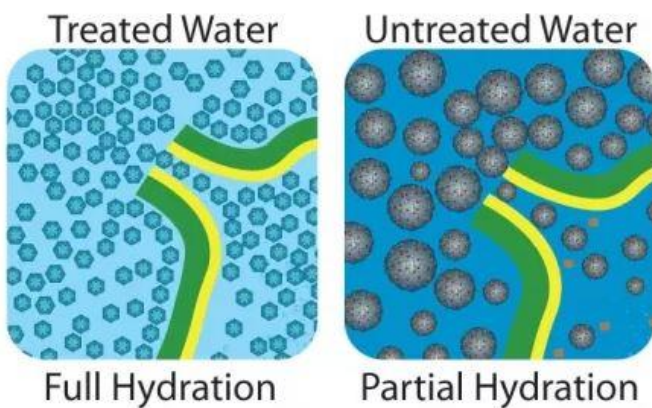


Figure 4

For doing so we have to vibrate water molecules at its resonating frequency.

A good model must reproduce the structure of liquid water identified by experimental x-ray and neutron diffraction methods. The results of the F3C water model are in good agreement with the experimental results.²² This model employs a short-range truncation which significantly improves the efficiency of the computational process. The F3C water model is an interatomic potential model in which the conformational energy U of a molecular system comprises bonded and nonbonded terms, i.e.,

$$U = U_{\text{bonded}} + U_{\text{nonbonded}},$$

where U_{bonded} represents the bonded interactions which arise from bond stretching and bending, i.e.,

$$\begin{aligned} U_{\text{bonded}} &= U_{\text{bond}} + U_{\text{bend}} \\ &= \sum K_b (b_i - b_0)^2 + \sum K_\theta (\theta_i - \theta_0)^2, \end{aligned}$$

where b_i , θ_i , b_0 , and θ_0 are the i th O–H bond length, the i th H–O–H bond angle, the equilibrium length of the O–H bond length in a water molecule, and the equilibrium angle of the H–O–H bond angle in a water molecule, respectively.

The nonbonded interaction ($U_{\text{nonbonded}}$) is expressed as

$$U_{\text{nonbonded}} = U_{\text{vdW}} + U_{\text{Coulomb}},$$

where U_{vdW} and U_{Coulomb} are the van der Waals potential and the Coulomb potential, respectively. The complete form of the van der Waals potential is given by

$$U_{\text{vdW}}(r_{ij}) = \sum [A_{\text{SC}} \epsilon (r_0/r_{ij})^{12} - 2\epsilon (r_0/r_{ij})^6 - S_{\text{vdW}}(r_{ij})],$$

Figure 5

where the parameter ASC is determined by the cut off distance specified in the F3C water model.²² ASC reduces the repulsive van der Waals energy to compensate for the loss of attractive interactions at smaller cut off distances. In the present simulations, the cut off distance is specified as 10 Å and the value of ASC is set to 1. The general form of the truncation shift function S_{fr} is given by

$$S_f(r) = \begin{cases} [f(r_c) + (r - r_c)(df(r_c)/dr)], & r < r_c, \\ 0, & r > r_c \end{cases},$$

where $f(r_c)$ and r_c are the potential function and the cutoff distance, respectively. The complete form of $S_{vdW}(r_{ij})$ is

$$S_{vdW}(r_{ij}) = [A_{SC}\epsilon(r_0/r_c)^{12} - 2\epsilon(r_0/r_c)^6] - 12(r - r_c) \\ \times [A_{SC}\epsilon(r_0/r_c)^{12} - \epsilon(r_0/r_c)^6]/r_c.$$

The Coulomb potential $U_{Coulomb}$ has the following form:

Figure 6

$$U_{Coulomb}(r_{ij}) = \sum \left[\frac{q^i q^j}{r_{ij}} - S_{Coulomb}(r_{ij}) \right],$$

where the potential function $S_{Coulomb}(r_{ij})$ is expressed as

$$S_{Coulomb}(r_{ij}) = [q^i q^j / r_c] - (r - r_c)[q^i q^j / r_c^2],$$

Figure 7

where q_i and q_j represent the partial charges of the hydrogen or oxygen atoms of two different water molecules within the cut off distance.

This study employs the algorithm proposed in Ref. 23, in which the Lorentz forces acting on the charged particles are considered, to simulate the movement of the charged particles in the homogeneous external magnetic field. A charged particle performs Larmor oscillations of Larmor frequency when the magnetic field is applied. The algorithm23 describes a charged particle exposed to a static homogeneous external magnetic field which moves spirally with Larmor frequency. In a strong magnetic field, the algorithm can be derived using a Taylor expansion of the second-order velocity Verlet algorithm or from a velocity transformation. Since the time step in the present simulations is sufficiently small, this study adopts the simpler form of the algorithm presented in Ref. 23, in which the strength of the magnetic field is dependent on the value of the time step. The magnetic field is assumed to act in the z direction in the simulation boxes, and the velocities of the oxygen and hydrogen atoms change in both the x and the y directions. The present simulations are based on the following:

$$r_x(t + \Delta t) = r_x(t) + \Delta t v_x(t) + \frac{1}{2}(\Delta t)^2 [a_x^C(t) + \Omega v_y(t)],$$

$$r_y(t + \Delta t) = r_y(t) + \Delta t v_y(t) + \frac{1}{2}(\Delta t)^2 [a_y^C(t) - \Omega v_x(t)],$$

$$r_z(t + \Delta t) = r_z(t) + \Delta t v_z(t) + \frac{1}{2}(\Delta t)^2 a_z^C(t),$$

Figure 8

$$v_x(t + \Delta t) = v_x(t) + \frac{1}{2}\Delta t [a_x^C(t) + a_x^C(t + \Delta t) + 2\Omega v_y(t)] \\ + \frac{1}{4}(\Delta t)^2 \Omega [a_y^C(t) + a_y^C(t + \Delta t) - 2\Omega v_x(t)],$$

$$v_y(t + \Delta t) = v_y(t) + \frac{1}{2}\Delta t [a_y^C(t) + a_y^C(t + \Delta t) + 2\Omega v_x(t)] \\ - \frac{1}{4}(\Delta t)^2 \Omega [a_x^C(t) + a_x^C(t + \Delta t) + 2\Omega v_y(t)],$$

$$v_z(t + \Delta t) = v_z(t) + \frac{1}{2}\Delta t [a_z^C(t) + a_z^C(t + \Delta t)],$$

Figure 9

Now we have to look for resonant frequency for/of water molecule(s)

Water molecules contain three atoms and so can vibrate in a number of different ways. This makes calculating their resonant frequency very difficult. However microwave radiation of any frequency will affect them although they may not resonate.

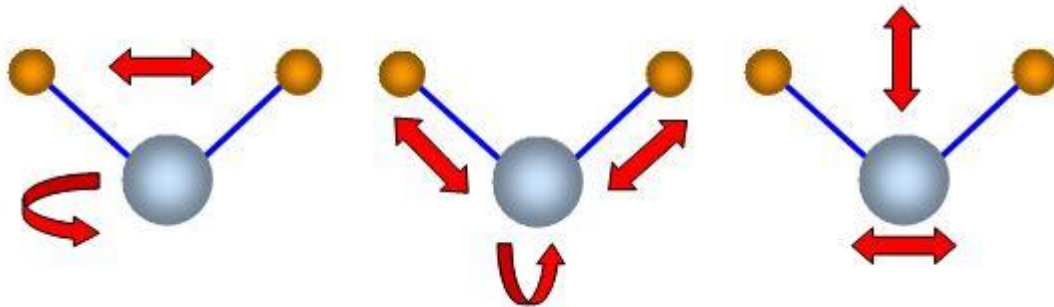


Figure 10

Some vibrations of a three atom molecules are shown in the diagram. They are not to scale and are only meant to represent possible states of vibration.

When microwaves pass through water the water molecules absorb some of the microwave energy and as a result they twist and turn, writhing around, as the radiation passes by. However after the microwaves have gone the molecules stop moving again, remitting the energy as more microwaves. In free water molecules this does not result in a heating.

In a liquid things are rather different. The water molecules are close to reach other and so there is "friction" between them. It is the rubbing of one molecule against another as in liquid water that allows the energy to be retained and prevents it being reemitted as microwaves. The "friction" between the writhing water molecules and other molecules in a solid also heats up the solid.

Microwave ovens operate at a frequency of 2.45 GHz (2.45×10^9 Hz) and this is NOT the resonant frequency of a water molecule. This frequency is much lower than the diatomic molecule resonant frequencies mentioned earlier. If 2.45 GHz were the resonant frequency of water molecules the microwaves would all be absorbed in the surface layer of a substance (liquid water or food) and so the interior of the food would not get cooked at all.

The 2.45 GHz is a kind of useful average frequency. If the frequency was much higher then the waves would penetrate less well, lower frequencies would penetrate better but are absorbed only weakly and so once again the food would not absorb enough energy to cook well.

Standing waves set up within the oven. A standing wave is formed whenever two waves travelling in opposite directions meet in a "restricted area". This restricted area could be a metal box (as in a microwave oven) or a stretched string as in a violin.

Microwave ovens cook unevenly because a pattern of standing waves forms inside the oven chamber, and the pattern creates an array of hotspots throughout the oven's volume. An operating frequency of 2.45 GHz will produce a wavelength of around 12.25 cm, and the regions of maximum intensity (hotspots) will be at half-wave points, or every 6.125 cm, but in a complex 3D pattern.

This standing wave pattern explains why microwave ovens only work effectively if the food is rotated

through the standing waves and why some ovens actually move the pattern by rotating the transmitter.

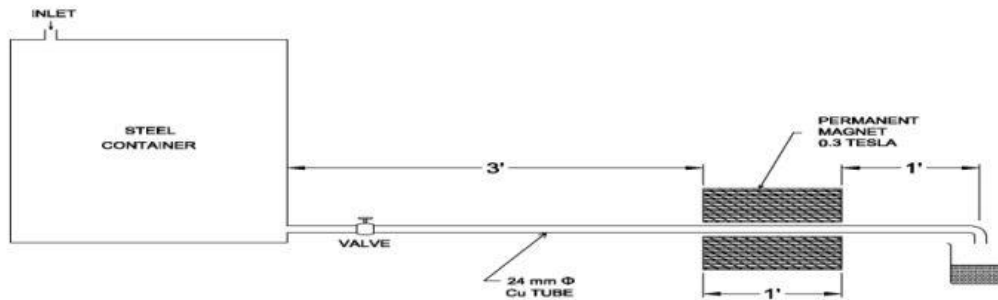


Figure 11

But instead of permanent magnets we can use electromagnets. If necessary for large scale operations, and for that we will be needing coils as follows

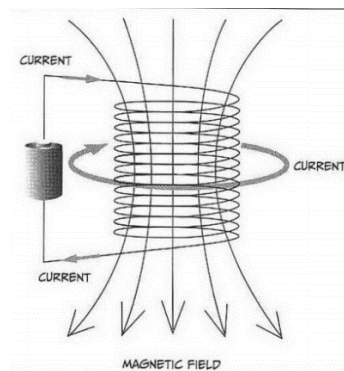


Figure 12

Calculations for two coils in required orientation can be states as below:

$$\begin{aligned}
 B\left(\frac{R}{2}\right) &= 2B_1(R/2) \\
 &= \frac{2\mu_0 n I R^2}{2(R^2 + (R/2)^2)^{3/2}} = \frac{\mu_0 n I R^2}{(R^2 + (R/2)^2)^{3/2}} \\
 &= \frac{\mu_0 n I R^2}{(R^2 + \frac{1}{4}R^2)^{3/2}} = \frac{\mu_0 n I R^2}{(\frac{5}{4}R^2)^{3/2}} \\
 &= \left(\frac{4}{5}\right)^{3/2} \frac{\mu_0 n I}{R} \\
 &= \left(\frac{8}{5\sqrt{5}}\right) \frac{\mu_0 n I}{R}.
 \end{aligned}$$

Figure 13

And this his how water will be magnetized.

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