Faraday's Equation

Defining mass and charge

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A quantum of photons clusters about a 186-seed i.e $1.859222909 \times 10^{-9}$ kg ether mass. This cluster of photons is atomic mass-the *in-situ* structure of an atom. The seed 186-ether is what scientists and electricians measure as electric charge. Electrolysis of water is experimental proof for existence of ether. Furthermore, the mass of 68961747 Rydberg photons is a measure of atomic mass of a proton. Similarly, the mass of $1.095068725 \times 10^{9}$ Rydberg photons is a measure of atomic mass of an oxide ion.

The Ether Model

Aether in ancient Greek, represents a creative shining light. In the solid elastic theory of early modern science an ether was argued to be a homogenous medium responsible for everything from gravity and the transmission of light to heat and electric charge.

The *ether* I conceive of is a pre-existent medium *out of which* space-time's heavenly bodies are engendered, *basic to* light as electro-magnetism, to the atom, and so, basic to the gravitational forces in which bodies float suspended and in which we all exist in its dense etheric sea; thus the material world at any scale would have to be *less dense* than the etheric.

Ether Constants

Let us calculate for an homogenous medium using the universal gravitational constant, G, in relation to two bodies of mass, M, m, for the outcome for force, F. If a mass spins at a tangential spin velocity of the speed of light, c, then,

$$F = GMm / R^2 = mc^2 / R \quad , \quad G = Rc^2 / M$$

$$G / c^2 = R / M = 7.42604894 \times 10^{-28}\,\text{m/kg} \;= \text{ether constant}$$

Thus one kilogram of this homogenous mass, or ether, is found to be contained within an infinitesimal mean volumetric radius of 10^{-28} meter.

Now from the inverse perspective, when contained over the mean volumetric radius, R, of one meter, the mass of ether is of the huge order of 10^{27} kilograms.

$$c^2 / G = M / R = 1.346611109 \times 10^{27}\,\text{kg/m}$$

Ether as Charge, Q

A Particle

The parameters of mass and radius of this central two-mass body are represented as, $q^2 = M \times R \times 10^7$

$$(1.602176537 \times 10^{-19})^2 = 1.859222909 \times 10^{-9} \times 1.380668031 \times 10^{-36} \times 10^7 \quad .$$

The Etheric Field

Myriads of $1.859222909 \times 10^{-9}$ kg comprise the etheric sea and each particle is represented as,

$$\frac{M}{R} = \frac{1.859222909 \times 10^{-9}}{1.380668038 \times 10^{-36}} = 1.346611109 \times 10^{27}\,\text{kg/m}$$

In this research I will provide experimental evidence for the existence of ether and the astounding fact that this ether is electric charge. The radius of this particle perfectly matches the Boltzmann Constant: it is this body of a radius of $1.380668031 \times 10^{-36}$ and mass of $1.859222909 \times 10^{-9}$ kg that affords us an elegant solution to the deep problem of a unified theory of gravity and electromagnetism.

Electrolysis of Water

Consider the data collected from electrolysis of water. Current $I = 0.068$ amps; Time $t = 18,000$. Equation:

$$2H_2O \longrightarrow O_2 + 4H^+ + 4e^-$$

Charge Q, current I, and time t, are related as $Q = I \times t$. Let us utilize this equation with

$$Q = 0.068 \times 18000 \text{ Coulombs} = 1224 \text{ C}$$

The charge Q, is the total number, n of charges, e,

$$Q = ne$$

Rearranging terms, the number of charges that contribute to the total charge Q is calculated as

$$n = Q / e = 1224 / 1.60217653 \times 10^{-19} = 7.639607603 \times 10^{21}$$

In *Photo-Electric Conversions,* an elementary charge is associated with the two mass body,

$$\text{Ether}_{\text{kg/C}} = (1.859222909 \times 10^{-9} / 1.60217653 \times 10^{-19})\text{kg / C}$$

One coulomb of charge Q, corresponds to an etheric mass of

$$\text{Ether}_{\text{kg/C}} = 1.160435741 \times 10^{10}\,\text{kg/C}$$

The ether mass, M associated with 1224 coulombs used in the electrolysis of water is,

$$1224 \times \text{Ether}_{\text{kg/C}} = 1224 \times 1.160435741 \times 10^{10}$$

$$M = 1.420373341 \times 10^{13}\,\text{kg}$$

This etheric mass divided by the number of charges,

$$\text{Ether}_{\text{kg}} = 1.420373347 \times 10^{13} / 7.639607603 \times 10^{21}$$

Yields, the etheric component of the two mass body,

$$\text{Ether}_{\text{kg}} = 1.859222909 \times 10^{-9}\,\text{kg}$$

Thus I have conclusively proved that the ether component of the two mass body is the source of electric charge Q.

Now let us calculate for the mass of oxygen molecules and protons that accumulate at the electrodes by electrolysis of water.

Equation: $2H_2O \longrightarrow O_2 + 4H^+ + 4e^-$

Using Faraday's laws in electrochemistry,

$$\text{mass}_{\text{g}} = QMr / FZ = 1224 \times 32 / 96485.33829 \times 4$$

$\text{mass}_{\text{g}} = 0.101486922$ g of oxygen molecules **[see Table A]**.

The number of moles of oxygen molecules,

$$\text{moles} = \text{mass}_{\text{g}} / Mr = 0.101486922 / 32.0 = 0.003171466313\ \text{mol}$$

For every one mole of oxygen molecules, four protons are formed.

The number of protons, n, is

$$n = 4 \times \text{moles} \times L = 4 \times 0.003171466313 \times 6.022141536 \times 10^{23} = 7.639607603 \times 10^{21}$$

$$\text{mass}_{\text{H}^+} = 7.639607603 \times 10^{21} \times 1.672622216 \times 10^{-27}\,\text{kg}$$

The mass of protons produced by electrolysis in this experiment is

$1.27781774 \times 10^{-5} kg$ **[see Table A]**

$$\frac{\text{mass}_{\text{g}}}{Q} = \frac{1.27781774 \times 10^{-5}}{1224.0} = \frac{1.672622216 \times 10^{-27}}{1.60217653 \times 10^{-19}}\,\text{kg / C}$$

$$\text{mass}_{\text{g}} / Q = 1.27781774 \times 10^{-5} / 1224.0 = 1.672622216 \times 10^{-27} / 1.60217653 \times 10^{-19}\,\text{kg / C}$$

Clearly, the charge Q of 1224 coulombs produced protons that accumulate at the cathode in the same mass to charge ratio of a proton.

Experimental Evidence Unifying Electrical and Gravitational Energies:

If the gravitational and electric energies are equal,

$$GMm / R = kQq / R$$

$$M^2 = kQQ / G = 8.987551787 \times 10^9 \times 1224.0^2 / 6.6742 \times 10^{-11}$$

$$M = 1.420373341 \times 10^{13}\,\text{kg}$$

This etheric mass divided by the number of charges,

$$\text{Ether}_{\text{kg}} = 1.420373347 \times 10^{13} / 7.639607603 \times 10^{21}$$

Yields, the etheric component of the two mass body,

$$\text{Ether}_{\text{kg}} = 1.859222909 \times 10^{-9}\,\text{kg}$$

Thus the electric charge is related to the etheric mass and Coulomb's equation produces the same energy value as Newton's equation.

Utilizing the ideal gas equation,

$$mc^2 = nRT$$

$$mc^2 = 1.420373347 \times 10^{13} \times 8.987551787 \times 10^{16}\,\text{J}$$

$$mc^2 = 1.276567901 \times 10^{30}\,\text{J}$$

$$nRT = 4 \times 0.003171466313 \times 8.314578297 \times 10^{-13} \times T\ \text{joules}$$

$$T = 1.210273708 \times 10^{44} N$$

Absolute or Kelvin temperature or thermodynamic temperature is force or energy per radial meter of ether.

$$E = mc^2 = 1.346611109 \times 10^{27} \times 8.987551787 \times 10^{16}\,\text{J}$$

ETHER FORCE, $E / R = T = 1.210273708 \times 10^{44}\,\text{N}$

The true nature of charge is thus conclusively evinced in this paper. Charge is a measure of etheric mass.

All calculations are derived from experimental data obtained from electrolysis of water.

Absolute or Kelvin or Thermodynamic temperature is force.

The force due to ether is of a huge order of 10^{44}newtons per radial meter. In may be useful to recall that the force between photons is 29.05350661newtons.

Elementary charge, q_e, squared is a measure of a dynamic photon or electron. Charge, Q, the measure of electric charge is due to etheric mass.

Retrosynthesis of Faraday's Equation

Faraday's equation is used in electrochemistry to predict amount of substance that will deposit at an electrode during electrolysis. It is an experimentally formed equation that relates electricity with matter.

The meaning of mass and charge will now be elucidated.

$$mass_g = \frac{Mr \times Q}{F \times Z}$$

Here, *mass* in grams is the amount of substance deposited or accumulated at an electrode during electrolysis.

Mr, is the *molecular mass* of the substance or *Ar, atomic mass* accumulated at an electrode due to electrolysis.

Q, is the *amount of charge* in coulombs that is used during the course of electrolysis via a direct current source.

F, is *Faraday's constant* and is the product of Avogadro's number, *L* for one mole of substance and elementary charge, *e*.

Z, is the oxidation state of the ion that accumulates at an electrode.

Substituting the value of Faraday's constant, *F* with Avogadro's number, *L* for one mole of substance and elementary charge, *e,*

$$mass_g = \frac{Mr \times Q}{L \times e \times Z} \qquad (1)$$

Since *Mr,* is the *molecular mass* of one mole of a substance, the mass in grams of one unit particle of substance is,

$$particle_{(g)} = \frac{Mr}{L} \qquad (2)$$

Since, $Q = n \times e$, rearranging terms,

$$n = \frac{Q}{e}$$ **here *n* represents number of 186-ether seeds.** (3)

Substituting the values from Eq. (2) and Eq. (3) into Eq. (1) yields,

$$mass_g = \frac{Mr \times Q}{L \times e \times Z} = \frac{particle_{(g)} \times n}{Z} \qquad (4)$$

Thus, the mass in grams accumulated at an electrode is due to the force between ***n*** 186-ether in the external circuit and ***n*** 186-ether associated with ***n*** protons in this case of electrolysis of water; Or the force between ***n*** 186-ether in the circuit and ***n*** 186-ether in the oxide ion. [See pg. 2 - Experimental Evidence Unifying Electrical and Gravitational Energies]

Summarized in Table A, is the experimentally determined depiction of 186-ether seeds cocooned by millions of photons.

Table A	**PROTON**	**OXIDE ION**
Photon mass of a particle **(M)**	$1.672622216 \times 10^{-27} kg$	$2.656017781 \times 10^{-26} kg$
186-ether seeds **(Z)**	1	2
Photon mass per 186 seed **M/Z**	$1.672622216 \times 10^{-27} kg$	$1.328008891 \times 10^{-26} kg$
number of particles, *n*	$7.639607603 \times 10^{21}$	$7.639607603 \times 10^{21}$
Mass in g $\frac{n \times M}{Z}$	$1.27781774 \times 10^{-5} kg$	$1.01454668 \times 10^{-4} kg$

Water Mass

The ratio of proton mass to the Rydberg photon {ref. 1} is,

$$\frac{1.672622216 \times 10^{-27}}{2.425434789 \times 10^{-35}} = 6.8961747 \times 10^{7}$$

It must be recalled that the H-atom and O-atom both have an ionization eV of 13.6 and hence taken to be comprised of Rydberg photons.

The ratio of oxide ion mass to the Rydberg photon is,

$$\frac{2.656017781 \times 10^{-26}}{2.425434789 \times 10^{-35}} = 1.095068725 \times 10^{9}$$

The Rydberg photons in one molecule of water, H_2O

$= 2 \times 6.8961747 \times 10^{7} + 1.095068725 \times 10^{9}$

$= 1.232992219 \times 10^{9}$ Rydberg photons

The Rydberg photon mass, $= 2.425434789 \times 10^{-35} kg$

The mass of one water molecule,

$= 2.425434789 \times 10^{-35} \times 1.232992219 \times 10^{9}$

$= 2.990542223 \times 10^{-26} kg$

Thus the mass of one molecule of water is worked out from millions of photons.

The mass of one mole of water *(Mr)* is obtained from Avogadro's number,

$= 2.990542223 \times 10^{-26} \times 6.022141536 \times 10^{23} kg$

$= 0.01800946 kg$ or $18.0\ g$

It must be noted that Avogadro's number is the basis for measuring the fundamental unit called mass.

Thus the photonic nature of matter is evinced thru experiment. It is safe to say that we are light. This is quite significant.

Significance

The Faraday's equation is now shown to give deeper meaning to the word mass.
Mass in our daily experience is the kilogram measure of a cluster of photons.
Elementary charge is 186-ether corresponding to 1.6×10^{-19}C.
Charge measured by electricians is 116-ether corresponding to one Coulomb.
Ether mass is an electric shock- which is tangible!

A huge outcome is the defining of oxidation number as the number of 186-ether seeds associated with a particle.
A particle is defined as atomic mass, Ar or relative molecular mass, Mr divided by Avogadro's number, L.

It appears that in measuring mass we are neglecting the mass of ether and perhaps other changing textures of matter.

Another application of the new paradigm for defining mass and oxidation number is mass spectroscopy. I have already demonstrated in {ref. 1}, the phenomenon of pair production going on within the mass to charge ratios.

Utilizing this fresh approach of photon mass and 186-ether as calculated with Faradays equation, we can now begin to rewrite the periodic table. The basic building block of photon mass can be obtained from existing ionization eV data.

Apart from theoretical understanding of real life phenomena- once again I can predict the electric energy, magnetic energy, heat energy via action at a distance in terms of 186-ether. This knowledge has vast application value in terms of superconductivity and ablation of cancer cells and pathogens.

S.I. Values CODATA Recommended

Parentheses indicate uncertainty in the last digits of the value.

Descriptor, Symbol	**Value, Units**
Speed of light in vacuum, c	$2.99792458 \times 10^{8}\,\mathrm{m/s}$
Elementary charge, q_e	$1.602176537 \times 10^{-19}\,\mathrm{C}$
Gravitational constant, G	$6.6742(10) \times 10^{-11}\,\mathrm{m^3\ /\ kg\ s^2}$
Dielectric constant in a vacuum, k	$8.987551787 \times 10^{9}\,\mathrm{Nm^2/C^2}$
Proton mass	$1.672621637 \times 10^{-27}$

Newly Derived Constants and Ratios

Descriptor, Symbol	**Value, Units**
Ether mass to $1m$ radius ratio, $M\ /\ R$	$1.346611109 \times 10^{27}\,\mathrm{kg}$
$q^2 = \text{mass of a photon} \times \text{radius} \times 10^{7}$,	*Conserved* value $\mathrm{C^2}$
Two-mass Body, Mq	$1.859222909 \times 10^{-9}\,\mathrm{kg}$
Radius of the Two-mass Body	$1.380668031 \times 10^{-36}\,\mathrm{m}$
Rydberg photon mass, $m_{Rydberg}$	$2.425434789 \times 10^{-35}\,\mathrm{kg}$

Reference

[1] F.V. Fernandes, *Photo-Electric Conversions,* Parts 1-8, www.worldnpa.org