Aspects of Water: properties that are not easily recognised.

Introduction:

I never realised that the peculiar properties of water are more complex when combined with the production of reconstituted quantum nano silver suspended in water than first thought. Being well aware of the most obvious ionic states H^+ and OH^- when subjected to voltage potentials exceeding the equilibrium voltage of water at 1.23 volts, something about this does not make any sense. Science tells us that for every ion there must also exist a counter ion, but judging from the way current is measured in water such an electrical balance does not appear to exist.

Current flow and Conductivity

This anomaly in conductance is well demonstrated in every conductance meter I have ever seen from vintage types using valves, Germanium transistors, followed by silicon based transistors and finally digital equipment each with their appropriate read-out. These range from analogue panel meters to fluorescent and LEDs to completely digital displays. All have the same function: measuring a current or voltage potential from a low to a high value and in the case of analogue panel meter use, a deflection from left to right. Ions are either positive or negative and as such positively charged ions being designated as Cations (cathode ions) and negative ions having a negative charge and called Anions (anode ions) respectively. It is also supposed to be true that cations are attracted to the cathode and remaining in close proximity of the cathode and the same to be true for the anions moving toward the anode and remaining there. That equates to a flow to the cathode and another to the anode and thus in opposite directions. This begs the question, "Why are conductivity meters, only measuring current flow (or more precisely 'charge carrier' flow) in one direction only and than always the flow of cations?"

Flawed conductivity measurement

This second biased anomaly would have to be the combined conductivity of H^+ and OH^- which according to 'wet chemistry' as per the NIST Report (see section Water Purity) totals 0.054811 micro Siemens, in a ratio of 0.034981 and 0.01983 micro Siemens respectively. That according to 'wet chemistry' opposing flows of current should be added together rather than subtracted from one another. That these figures are most likely based on a hypothetical mathematical concept is a further anomaly presented by an equally artificial concept of Resistivity at a corresponding 18.2445 million Ohm that is alleged to occur as it is ultimate reciprocal value at a pH value of 7. Divide 1 by 18.2445 and you will get 0.054811 and vice versa. How these figures have been calculated has so far proven illusive and perhaps for a reason: Any form of electrical current or charge carrier (ionic) flow should be measured in ampere/hour, Resistance in Ohms and Voltage potential using Ohm's Law. Instead conductivity in Siemens and its reciprocal Resistivity Specific is measured per centimeter distance, when in fact Resistivity Specific according to Ohm's Law is per centimeter cubic, i.e. cm^3. Another 'wet chemistry' oversight, just as the matter of Conductivity and Resistivity being terms that only relate to solid metallic conductors and the added fact that current in water does not follow a straight line. If that were the only problems!

The use of special probes and the volume of the water

The way that water's conductivity is measured using Siemens or parts thereof using alternating current and a hypothetical resistivity (one dimensional) per centimeter and limited to a maximum of 24 million Ohm at a PH of 7 and at a temperature of 25 degree Centigrade is incapable to have any type of standard applied to it and starting with the probe used.

To appear to be measuring conductance to a standard, probes are used that are fitted with two precious or very stable metallic square foils and measuring 10x10mm facing each other at a distance of 10mm. The total area of the two flats and discounting the sides and the rears makes for two times $1cm^2 = 2cm^2$. However there is the space in between as well as the third dimension. That equates to $1cm^3$ and that is one of the salient factors that is missing, i.e. the volume of the water where the probe is submersed in. Tests have born out that the actual volume of water is a deciding factor in the actual level of conductivity when using Ohm's Law. During an experimental set-up with a 40 litre tank measuring 1,200 mm long and having silver electrodes separated by 1,000 mm, gave a reading of approximately 1,000 million Ohm. Deionised water was used and when the electrodes were placed closer and closer the resistance dropped to a value of 300 million Ohm at a distance of 400mm, a non-linear effect. Each time a resistance was measured, a comparison was made with a 1% precision resistor. It is an interesting fact that a probe described earlier also gave the same value of 300 million Ohm. If I understand current Conductivity philosophy correctly either a 1 litre or a thousand litre volume will make no difference to the reading. Obviously that van not be so!

Parallel Resistance, current hugging and Ohms Law

An even more confusing situation is the matter of parallel resistance. According to Ohms Law, two resistors each measuring 1,000 Ohm and wired in parallel (joined/soldered) at both ends will measure only 500 Ohm and allow double the current to flow as each resistor still operates independently drawing one half of the current. This phenomena implies that if there is any imbalance caused by one resistor having a lower value, i.e. 800 Ohm instead of the 1.000 Ohm it will start to draw more current. This is referred to as current hugging and playing a major part in flawed testing explained as follows:

Using the methodology of current conductivity on the basis of 1 micro Siemens = 1 million Ohm resistivity, 0.1 micro Siemens = 10 million Ohm and 0.01 micro Siemens = 100 million Ohm, 18.2445 million Ohm Resistivity will be the reciprocal value of 0.054811 micro Siemens. For argument's sake let us for the purpose of this writing, accept the calculated 18.2445 million Ohm resistivity (resistance specific) or just Ohmic resistance and imagine trying to measure this value with a multimeter with an equal input resistance of 18.2445 million Ohms. According to the concept of parallel resistance the combined resistance should be 9.12225 million Ohm. That will present an error factor of 50% with the water's real resistance. From this we can learn that the multimeter's input resistance must at least many factors higher to get any accurate measurement. At least 10,000 million Ohm input resistance is required for such a measurement. So far I have never seen an input resistance quoted on any specification of a conductance meter. This is for Direct Current only. For any instrument using alternation current, the correct term is Impedance or AC Resistance. But back to the ionic state of water and any contamination contained therein.

Other fallacies

Even the purest water is often referred to as “Ultra Pure”. Nevertheless water is immediately contaminated when exposed to air by way of carbon dioxide initially and other matter subsequently as well as by dust settling on the surface and slowly dissolving. Water is also self-ionizing and over time saturated with ions of both polarities as well as uncharged organic and inorganic substances. Ions are described as being incomplete atoms, having lost one or more electrons and by the definition must predominantly consist of cations. The question however is “but what about any anions?” By virtue of the fact that an anion can exist by having a surplus electron or electrons, they do not qualify as an incomplete atoms but rather as an over-complete variety.

Missing negative ions (anions)

I have searched in my books and the Internet, but for some reason references about anions or negative ions are hard to find. This is an awkward situation in trying to determine what exactly constitutes an Anion? When confronted with a Hydrogen atom consisting of just one proton and one single electron, its ionization or break up of the atom into a single free proton and a single free electron (both hydrated in the water), can we really talk of the free proton and free electron as a cation and anion respectively as neither can be called an incomplete atom. They no longer relate to each other unless brought together again as a complete atom. There are a number of examples in Physics where there appears to be a shortage of anions and a bias to not be mentioned. For that purpose an instrument has been designed to be able to detect cations and anions in water completely separate and independently of each other. The new instrument boasts two entirely separate circuits with one exclusively seeking positive charges and the other exclusively negative charges and presenting these signals by way of a positive and negative current to the two panel meters that have a center zero setting, making it very clear by its positive or negative deflection away from zero. Having just one center zero meter would only provide the difference. An illustration of the almost complete instrument to do this job is shown as follows:

Conclusion:

Considerably more research will be needed to learn more about all of the fundamental properties of water, especially about any water also containing reconstituted quantum sized suspended silver. Also little is it realised how simplistic and easily designed, manufactured and economical such instruments are for the determination of the properties of water mentioned.

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