

WATER COHERENCE DOMAINS REVISITED

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Liquid water is a complex medium, source of deep mysteries as well as source of life. For a classical mind deep-rooted in Newtonian physics for matter and Maxwell's equations for the electromagnetic field, liquid water will always be an enigma. Invoking first quantization quantum mechanics for explaining water properties, is useless owing to the fact that the electromagnetic field is still considered as a classical entity obeying to macroscopic Maxwell's equations. The situation changes completely in second quantization quantum mechanics, where vacuum's electromagnetic field becomes quantized and able, by coupling with the matter field, to establish quantum phase coherence at a nanometer scale [1-3]. Within this coherence domain (CD) new paradigm, all liquid water "anomalies" evaporates in the quantum vacuum, and the "hydrogen bond" concept should be better viewed as a consequence of the formation of high- T_c Bose-Einstein condensate rather than a chemical bond [4]. Within this new paradigm, it is also possible to tackle on a firm scientific ground subtle problems such as the occurrence of Hofmeister's series in biology [5] or the highly controversial concept of "water memory" [6]. It remains however that, despite a firm attractive theoretical basis, experimental evidence for the existence of CDs in pure liquid water remains quite elusive. A recent refinement of the theory taking into account electronic repulsions that were neglected in [1-3], has shown that CDs were in fact unstable in 3D, explaining the current lack of experimental evidence in bulk water. A prerequisite for the formation of CDs is thus to be able adsorbing water on a 2D interface in the form of nanobubbles for pure liquid water, colloids for natural liquid water and lipidic membranes, polysaccharides and polynucleotides for biological water. In [6], it was proposed to adopt the name "morphogenic water" for making explicit reference to nano-structured 2D water films on inert mineral or organic interfaces and in [3] it was proposed to use the name "zoemorphic water" to characterize the same nano-structuration on living interfaces. These terms were forged to recall the obvious fact that without these water films, many material things would be shapeless and amorphous or non-living. In this talk, I will first explain the new expected specific properties of morphogenic water in terms of entropy and ability to memorize information. To conclude, some new experimental results will be presented in the field of homeopathic remedies using NMR and electro-photonics techniques [8] in relation with the DYNHOM project [9].

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