
Abstract

Background mechanisms of UHD working

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Background In spite of strong opposition from the orthodox scientific circles, the UHD effects are gradually becoming a part of the accepted science, because of the quickly growing corpus of UHD effects evidence. While this process should continue, the next great step would be to disentangle UHD working mechanisms with the perspective to give us understanding and explanation of its rational, causal-consequential and objective background. **Aims** Based on the already known and confirmed UHD phenomena as well as some more developed proposed theories that try to explain them, the aim of the presentation is to explore, which of the theories could be the most appropriate for the development of the UHD science. It should lead to the one that would be acceptable by a majority of the concerned scientific community (physicists, physical-chemists, biologists, medical doctors, etc.). **Methodology** We contrast the established facts of UHD science with the most developed theories to find out, which theory could cover the phenomena in the most comprehensive way. The applied theories are as follows: the basic and the extended theory of coherent domains (Preparata – Giudice – Yinnon), hydrogen bonded clusters theory (Chaplin), nanomaterial theories (Rajendran, Chikramane), the theory of chains of water nano-pearls (Meessen). **Results and discussion** The results show that the advanced theory of coherent domains (Yinnon) together with the theory of chains of water nano-pearls (Meessen) are the most promising. They connect the basic UHD background mechanisms to the electromagnetic and electric fields and are supported with advanced and recent physicochemical research. Nevertheless, the theories are still in the stage of principal explanation and are mostly not yet capable of giving exact predictions. Therefore, the theory that would predict phenomena and would initiate a virtuous circle of scientific validation of UHD effects is still needed. **Conclusion** The most developed contemporary theories cover a plethora of UHD phenomena. However, they may still have some deficiencies regarding the explanation of the whole richness of the UHD phenomena.

Keywords: UHD effects, theory of coherent domains, water clusters, ferroelectric particles, nanoassociates, water nano-pearls

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