

Aquaphotomics

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Water is a collective media being always in a similar ratio with the rest of the system it organizes: in the cell, in our bodies, on Earth and may be in the cosmos. In the contemporary world of interdisciplinary science and technology understanding the role of water is of crucial importance. Unfortunately, until now, it has not been very well explored. Recently, with the development of computer science, data analysis and new measurement technologies, water has been studied by scientific teams in wide variety of disciplines.

Aquaphotomics is a new “- omics” discipline introduced by the Laboratory of Bio Measurement Technology at Faculty of Agriculture, Kobe University, Japan. The main object of this new field is to understand the role of the water molecular system by monitoring water spectrum of bio – and aqueous systems under various perturbations. Aquaphotomics presents water spectrum as holistic bio marker that epitomizes the respective system. Water emerges as a molecular mirror when invisible infrared light (half of the Sun light) illuminates the aqua system. Even tiny perturbation to the system as temperature, light, presence of other molecules etc. does change the structure of the water molecular system. These changes are captured and reflected by the water as changes in its spectral pattern. It means that the light that leaves the system and gets back to the surroundings has a different spectrum, i.e. different intensity at each energy level. In the experimental settings, different spectra are registered by the measurement device, which is made by silicon semiconductor. Very often, silicon could be found next to water in aqua systems as a “receiver” that materializes the water molecular mirror and transfers the information coming out of the water.

In the talk, examples of water spectral patterns called aquagrams will be shown for various aqua systems under perturbation shedding more light on the role of water in biology.