

- **Nanocomposites and nanomaterials**

The properties of water nanostructures in nanosystems

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Experimental researches have shown that properties of the water, structured near to the surfaces of various materials, substantially depend on physical and structural features of materials, temperature conditions. For near-by surfaces water there are substantial differences of some parameters, including viscosity, redox-potential, optical characteristics, etc. from parameters of usual water.[1].

Properties of EZ-воды have also characteristic differences from properties of interfacial water, i.e. from water, adjoining to the biomolecules of alive. The most unusual properties are shown the water, arranged by single layers in layered compound. So, water, diffusing in compounds $SrFe_2As_2$ and $FeTe_{0,8}S_{0,2}$, can cardinaly change the properties of these compounds, including to induce of superconductivity.

The one-dimensional water occupying the cavities of nanotubes, finds out the unusual mobility at low temperatures and practically does not freeze even at temperatures up to 8 K [2].

The nanostructured water at low temperatures is not the usual ice-like system. It is shown, that some unusual properties of nanostructured waters in nanosystems it is possible to explain if to use ideas of J.Preparata, developed the theory of condensation of water from a position of quantum electrodynamics. The same approach was used and at interpretation of features of interfacial water [3].

1. Del Giudice E., Spinetti P.R., Tedeschi A.. *Water Dynamics at the Root of Metamorphosis in Living Organisms.*//*Water-2010.-2.-P.566-586.*
2. Kolesnikov A.I. et al. *Anomalously Soft Dynamics of Water in a Nanotube:A Revelation of Nanoscale.*// *Phys. Rev. Lett.* 2004. -93. -№3. P.035503 (1-4)
3. Preparata J. *QED Coherence in Condensed Watter.* 1995.-World Sci. Singapore. 236 p.