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# The study of the influence of a scalar physical field on aqueous solutions in a critical range

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**Abstract**

We have studied changes in the permittivity of 50%-aqueous solution of alcohol as affected by Teslar® technology, a special signal generator contained within a wrist-watch or bracelet. It has been found that the changes in fact are significant. The method employed has allowed us to fix the value of frequency of the field generated by the Teslar® watch; the frequency has been determined to be approximately 8 Hz. In submicroscopic treatment the Teslar's field is associated with the inerton field, a substructure of the matter waves of moving entities, which has previously been introduced by V. Krasnoholovets in a series of works.


*Keywords:* Teslar technology; Permittivity; Mass; Inertons; Quantum mechanics

## 1. Introduction

The influence of physical fields generated by sources of electromagnetic waves of the so-called non-Hertzian type (scalar waves), has been marked in operations of the medical and biologic profile [1–3]. In those experiments, the effect of generators of scalar waves on biological objects of various levels of organization was researched. The *Teslar® technology* is said to be of such kind of generator. Those authors put forward the supposition that the effect of energy of scalar fields on such nonlinear systems as biological objects was more essential than the influence of conventional vector electromagnetic fields. Those medical and biological experiments have allowed other kinds of studies, namely, the examination of behavior of chemical and physical systems affected by the Teslar® technology. Taking into account the nonlinear behavior of responses of biological objects to the Teslar® chip (TC), we have examined those temperature regions in which nonlinear properties of selected objects are most clearly observed. It seems that the first kind of phase transition of the system studied (for instance, the liquid–steam transition) is the most suitable for our purpose. That is why in our experiments we have studied features of the influence of scalar fields of the TC on the process of evaporation of components of the aqueous solution under examination. More exactly, our purpose has been the comparison of dielectric characteristics of aqueous solutions of organic substances, both under and independent of the influence of the TC.

## 2. Experimental

Our experiments have been conducted in a special room shielded from electromagnetic interference; at such conditions, measuring equipment yields results with accuracy up to 10 nV. In the room, the following common conditions were maintained: barometric pressure was controlled between 750 to 770 mm of mercury column; temperature was maintained between 18 and 22 °C; relative humidity of air was maintained between 65% and 75%. The experiments were conducted during normal day working hours.

Two kinds of the experiments have been performed: (a) the study of the behavior of capacity of the 50%-aqueous solution of alcohol affected by the TC in the course of evaporation of the solution components; (b) the study of the behavior of capacity

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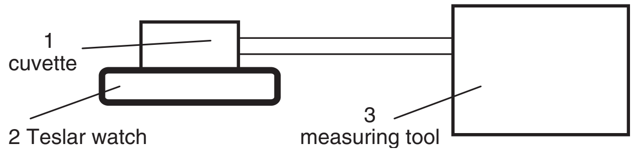


Fig. 1. Scheme of the experiments of the kind (a).

of the 50%-aqueous solution of alcohol affected by the TC and the modulated laser radiation in the course of evaporation of the solution components.

In the experiments of the kind (a) we used the set-up shown in Fig. 1.

The experiments were carried out with the use of a measuring cell, i.e. the cuvette “1” with sizes $30 \times 4 \times 0.5$ mm$^3$. It was a typical capacitor: two plates made of high-quality nickel, which are jointed by thin teflon gaskets. The top surface of the capacitor was open for free evaporation of components of the solution. The capacity of the aqueous solution was measured by device “3” that is the measuring tool of impedance E7-15. The value of measuring field was equal to $U_{meas}=2$ V; the frequency of measuring field was chosen equal to $f_{meas}=100$ Hz and $f_{meas}=1$ kHz.

In the experiments we have investigated how the capacity of the solution varies with time. We considered two cases: the aqueous solution without the TC (control) and the aqueous solution affected by the TC (test samples). The watch “2” has been placed as shown in Fig. 1. The distance between the watch and the cuvette was equal to 1 mm. The residual solution was weighed and its volume measured to estimate the density. The typical experimental results are presented in Figs. 2 and 3.

In the experiments of the kind (b) the cuvette was additionally irradiated by a modulated laser beam. The flow of laser radiation was modulated by a mechanical modulator, which entered the make-up of the power tester. The frequency of modulation could be tuned between the range of 7 to 20 Hz

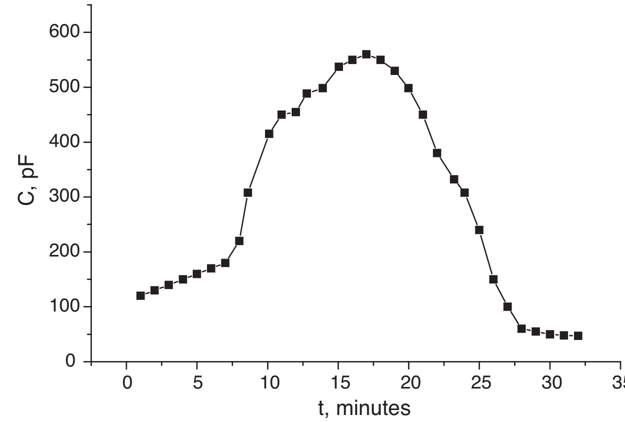


Fig. 3. Capacity of the 50%-aqueous solution of alcohol affected by the TC as a function of time at the frequency of measuring electric field $f_{meas}=1$ kHz.

with accuracy 0.1 Hz. In the experiments, we have investigated how the capacity of aqueous solution varies with time both under the influence of the TC, and outside the influence of the TC.

It should be particularly emphasized the significance of this experimentation: it allows us to act upon the aqueous solution under examination in the frequency range close to 7 to 9 Hz, which as presupposed is distinctive for the non-specific radiation of the TC.

The typical experimental results obtained are presented in Figs. 4 and 5.

## 3. Discussion and conclusion

The results (Figs. 2 and 3) are associated with the behavior of the permittivity $\varepsilon$ of the solution, because the capacity $C$ is proportional to $\varepsilon$ and the permittivities of the solution components are $\varepsilon_{water}=81$ and $\varepsilon_{alcohol}=26$. The real part of the permittivity $\varepsilon$ of the solution increases remarkably with time. The following decrease of $\varepsilon$ is provoked by the evaporation of

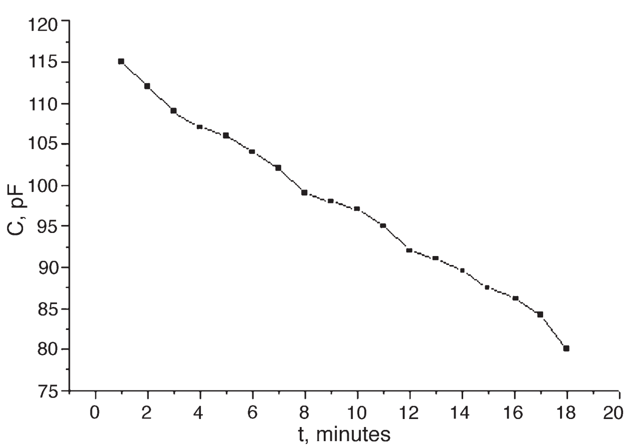


Fig. 2. Capacity of the 50%-aqueous solution of alcohol as a function of time at the frequency of measuring electric field $f_{meas}=1$ kHz without the influence of the TC. However, a conventional quartz watch (an imitator) is used, under the cuvette, for the compensation of influence of the metal case of the Teslar watch on the allocation of the strength of the measuring field in the experimental cell, i.e. cuvette.

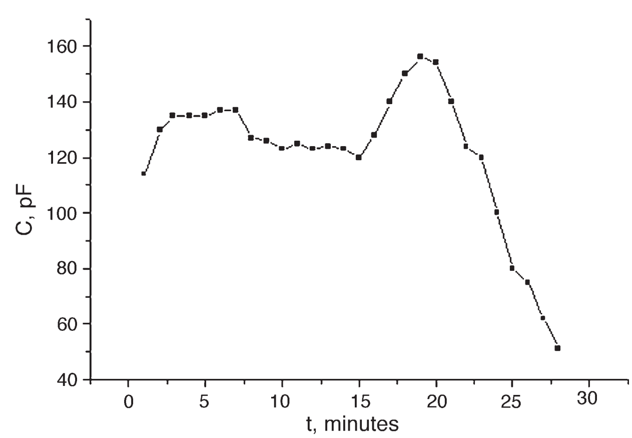


Fig. 4. Capacity of the 50%-aqueous solution of alcohol as a function of time, without the TC, but in the presence of an imitator. The cuvette is scanned by the measuring electric field with the frequency $f_{meas}=1$ kHz and is irradiated by the laser beam. The frequency of mechanical modulation $f_{mod}$ of the laser beam changes as follows: $f_{mod}=7$ Hz from the 1st minute to $f_{mod}=20$ Hz at 28th minute.

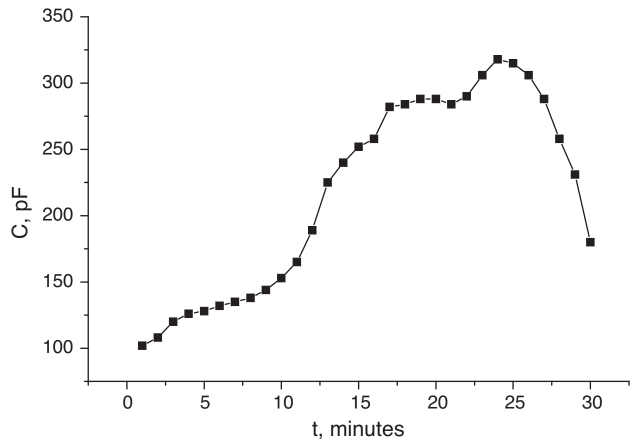


Fig. 5. Capacity of the 50%-aqueous solution of alcohol affected by the TC as a function of time. The cuvette is scanned by the measuring electric field with the frequency $f_{meas}=1$ kHz and is irradiated by the laser beam. The frequency of mechanical modulation $f_{mod}$ of the laser beam changes as follows: $f_{mod}=7.6$ Hz from the 1st to 8th minutes to $f_{mod}=8$ Hz during the 9th minute; $f_{mod}=9$ Hz during the 10th minute; $f_{mod}=10$ Hz from 11th to 16th minutes; and $f_{mod}=20$ Hz from 17th to 30th minutes.

the remaining water. This is apparent from the experiments of the kind (a).

A very similar behavior shows the aqueous solution of alcohol in the case of the experiments of the kind (b), Fig. 5. However, here, the change of ε strongly depends on the value of the modulating frequency $f_{mod}$ of laser beam. In the range around 8 Hz we observe a very peculiar restraining of the evaporation process. The increase of the value of $f_{mod}$ leads to the increase of the real part of the permittivity ε, which in turn means the intensification of evaporation of the alcohol component.

In the TC two flows of electromagnetic field, which spread in the same direction, are cancelled and this creates a scalar low frequency wave that continues to transfer the energy stored in the electromagnetic field. That was the hypothesis of the authors of the invention.

One can ask whether this is possible. The answer of the conventional foundations of physics, which is based on orthodox quantum theory, is rather negative, because these foundations are not fundamental enough. At the same time, the submicroscopic concept of the foundations of physics [4–7] allows us to account for the cancellation of two electromagnetic waves that spread along the same line and whose electric (and magnetic) polarization is shifted on the phase 180°. The submicroscopic theory introduces a mass excitation (called the inerton) of the tessellattice, which moves by relay mechanism. Inertons represent a substructure of particles' matter waves. Inertons can also emerge owing to the cancellation of photons and in this case inertons will continue to move along the path of initial photons and will transfer the same energy that had been carried by photons.

In the aqueous solution, molecules of $H_2O$ and $\tilde{N}_2H_5OH$ fall into the inerton field (i.e. a flow of mass) and become the receptors of the inerton radiation of the TC. The most interesting is the water molecule $H_2O$, because it can be treated as both the "mass dipole" and the electric dipole. In fact, the water molecule is asymmetric: one edge is heavy (oxygen) and the other edge is light (two hydrogen). Hence the heaviest edge should turn to the source of the inerton radiation (i.e. the TC) and the light edge should be oriented in the opposite direction. The electric dipole exactly superimposes on this "mass dipole" (oxygen has the negative charge and a pair of hydrogen has the positive charge).

If the inerton field radiated by the TC orders water molecules, we can then suggest that ordered water molecules begin to interact stronger. The inerton field of the TC stimulates all the water molecules in the cuvette to synchronic motion and this induces additional correlation between dipoles of water molecules.

An additional ordering of water molecules caused by the external inerton field should induce their additional dipole–dipole interaction. That is, the dipole moment $p$ of a water molecule is replaced by a more complicated expression that in the approximation of nearest neighbors can be presented in the form $p \to p \times [1+\chi \mathbf{M}/k_B T]$, where $\mathbf{M}$ is the matrix element of the energy of two interacting dipoles and $\chi$ is a coupling parameter that makes an allowance for the influence of the external inerton field on the interaction of dipoles. Calculated value of ε exactly corresponds to the experimental results above at the value of $\chi=0.45$.

Thus, our results show that in a water system exposed to the Teslar® technology, a substantial increase of the permittivity occurs. The radiation of the Teslar® technology "freezes" dipole water molecules, which leads to the induction of an additional value of the dipole moment in a water molecule.

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