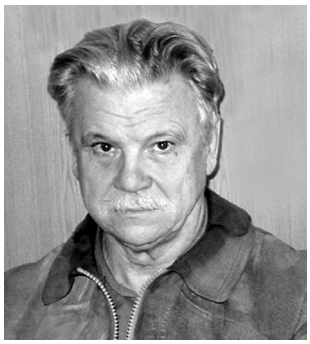
Spontaneous Polarization of some Glasses and Inexhaustible Energy Source of Direct Current



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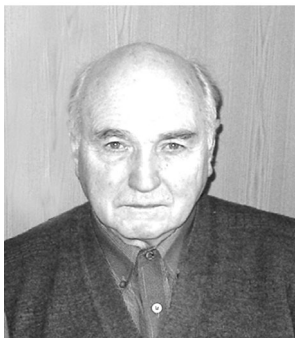

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At the beginning of the last century Mary Sklodowska-Curie discovered a spontaneous temperature increase of the radioactive samples in comparison with the environment. Scientific Community met that fact with the greatest distrust, as it seemed breaking the Supreme Energy Conservation Law. But for that moment the latter survived. However, some recently discovered and absolutely unexpected facts hardly let it withstand this time.

Imagine semi-conductor (transistor) approximated in the width of its inhibited zone to the dielectric (non-conductor). Within that inhibited zone there could be arisen some traps, which at the producing of material were orientet by the strong external electric field. The energy (potential) of such traps can be spherically unsymmetrical and looks (1-Dimentional case) like one shown for example at Fig.1.

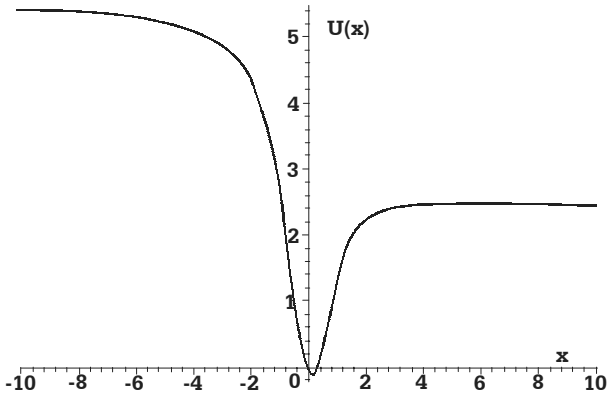

Fig. 1

The electrons' behavior in that potential well trap will bear a strong resemblance to the process inside the Correa reactor described in [1] and in accordance with Unitary Quantum Theory is submitted to some differential equation (see [2-12]). When electrons fall in such traps there the solution called "Maternity home" can be realized. Electrons according to that solution acquire power after series of oscillations inside the trap and they leave the trap moving in one direction (to the right), in essence *spontaneously*, creating so direct current without any additional outside efforts. The idea of using such effect to create the energy sources normally arises from the Unitary Quantum Theory. The author's comprehended it far ago but worried even to speak about because of its suddenness and improbability. But today there are considerable proofs of the existence of that effect studied and utilized by Prof. Valery M. Sobolev and his group with the use of especially prepared glasses. To our regret we do not know strict scientific publications or reports of that group, but the entire fact of the creation of the inexhaustible energy source by that group is widely discussed in mass media *(Editorial: see the review on Valerian Sobolev's Discovery in "NET", #5(8) 2002, p.70).*

Let us treat these ideas in details.

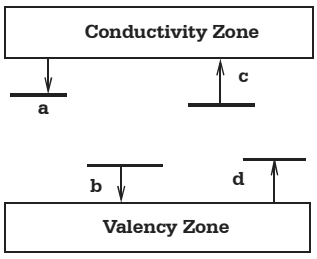

Fig.2a

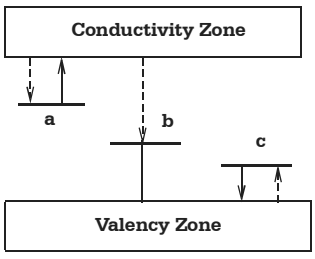

Fig.2b

Usual crystal lattice contains the formations, which break its periodicity. Here electrons' localization (capture) can occur from the conductivity zone or holes out of valency zone. Exactly these formations serve as wells (traps). They can differ by their origin: for example, alien (admixed) atoms in the lattice points or in interstitial space, vacant lattice points (Schottky

defects), atoms displaced from equilibrium positions (Frenckel defects), dislocations, micro-crystals' bounds. According to zone theory of solid state such crystal lattice irregularity are entailed with discrete levels in forbidden zones of the electronic state power spectrum (Fig. 2a). In the quantum states corresponding these discrete levels electrons are localized in the traps. Electron localization arises at its transition from the conductivity zone to the discrete level *a* Fig. 2a. Electrons transition from the discrete level *b* to the valency zone may be considered as capture of the hole by the trap (adhesion). The reverse transfer *c* and *d* – are the effects of delocalization of the electron and holes (liberation, throwing out).

The simplest model of the trap is hydrogen-like atom. If the crystal dielectric coefficient is high enough (for such glass it is $\varepsilon \approx 10$), the influence of the crystal lattice electric field can be described by means of crystal polarization. In this case the binding energy of the electron inside the trap equals to $E \approx \frac{m^* e^4}{2\hbar^2 \varepsilon^2} \approx$ 0.1- 0.05 eV, where m^* is efficiency mass, the Bohr orbital radius of the localized electron in primary state is $r = \frac{\hbar^2 \varepsilon^2}{m^* e^2} \approx$ 5A. Thus geometrical section of such trap equals about $25 \cdot 10^{-16}$ cm^2, as for the examining capture cross-sections their dimensions are limited within 10^{-12} - 10^{-22} cm^2. After the capture by the trap electron has two possibilities either to be thrown into the conductivity zone again or pass to the valency zone. If the possibility of electrons thermal throwing into the conductivity zone prevails, the trap is an adhesive center. In the case of predomination of the electron transmission into the valency zone, i.e. in the case when the hole capture is right after the capture of the electron, the trap serves as a center of abundant electrons and holes recombination. Similarly the trap may be the center of the holes adhesion, as it is shown at Fig. 2b. In that case the hole captured from the valency zone returns to that zone again.

The character and the properties of the trap are determined by the position of its power level or levels, if the trap is polyvalent, as well as by the effective electron or trap capture cross-sections or by the electrons and holes densities in the zones. The latter depends on the Fermi level or quasi-levels of the material. The trap may serves as donor or acceptor, center of adhesion or recombination, luminescence activator or extinguisher. Unfortunately in solid-state physics the questions dealing with these phenomena – are the mostly complicated and do not have any conventional technical terms. The energy increasing of all electrons or of their majority inside the traps and their flying out mainly in one direction requires the strong deformation of the spherically symmetrical field of the trap, as well as their definite orientation with respect to some selected direction.

Such a result may be achieved if one use as a material a special glass exposed at the stage of fusion to strong electric field. The exposition is to be stopped after total cooling only. The non-stoichiometric character of the glass (quite general situation for all glasses) results unsymmetrical character of the traps due to the different natures of the neighbor charges (atoms) surrounding the trap.

The glass as a material combines vitreous and crystal phases in either one or other proportion. It can be obtained in the process of metals' oxides and natural materials agglomeration. And in the cases of the glasses partial crystallization there are rather promising materials like glass-ceramic and glasses studied by Prof. Valery M. Sobolev group. For example, the well-known astro-glassceramic has vanishingly small linear expansion factor within quite wide range of temperatures. That means that the atoms belonging to the astro-glass-ceramics structure are positioning inside potential wells with strictly parabolic shape. It is quite astonishing fact.

We have no idea about Sobolev's glasses' technologies. From the reporters and eyewitnesses who attended at the materials production and measurements of their parameters, we know that the result mostly looked like transparent pieces resembling blue quartz (might be because of the cobalt or ferrous oxide admixture). But on the assumption of the above mentioned the said glass in the process of melting should be obligatory positioned inside the strong electric field and has to be cut off after total chilling only. It should be done for the nonequilibrium state freezing. Only then the material will contain the electron traps with strongly asymmetrical field which are oriented by electric field (like dipoles of dielectrics do while its polarization). The entire material by its nature will be similar to the well-known electrets. If positioning that material between condenser's segments (in the experiments of Prof. Sobolev the tension arose has the value up to 1500 V within 100 cubic cm of glass) it could be discharged giving useful load. The condenser will be discharged by delivering its power, but after some time (about 3-4 hours) its charge will be restored to the initial value and the process can be reproduced again and again, in principal unlimitedly.

The operational principle of that glass is the following: electrons in the traps (adhesive centers) start oscillating due to heat fluctuations and if the initial phase is appropriate for the "Maternity Home" solution, then these electrons having conducted some energy ***will fly out of the traps*** *moving mainly in one direction.* The negative charge at one side of the sample increases until the electric field arose begins to brake the electrons flying out of the trap and totally stops the process. After the condenser discharging that surplus negative charge disappears and the process can be repeated once again: after 3-4 hours electrons will be accumulated at one side of the sample and so on and so on. The ordered spontaneous motion of the electrons creates magnetic

field that was also fixed during the experiments. In fact if take quite a big sheet of such a glass with the sprayed capacitor plates there will be always direct voltage on them creating the direct current within the unlimited period of time.

We should underline that according to our point of view *the energy does not appear from the outside (gravitational, electric or magnetic fields, heat energy of the fluctuations) but is generated inside the traps from nothing* [4-6,15,16]. These are the laws of motions for the single quantum micro-particle.

The theorists of the Sobolev's group do not have any clear explanations of the exposed facts and intend to create in future "some theoretical model of the ordered structure on the basis of the theory of magneto electric effect, i.e. generation of the magnetization induced by the electric field, arising inside the dielectric crystal. The theoretical model may be created basing on the Landau thermodynamic theory of the 2nd type phase transitions, i.e. by generalization in case of the appearence of magnetization of dielectric matrix of the melt by the electric field of the charge, that is an internal parameter of the melt and belongs to the structural element of the melt". However we should note that contemporary theoretical science is based entirely on conservation laws and every logically correct corresponding analyses does not allow to obtain the results exceeding the limits of these laws. The new physical theory, the new picture of the world is required only for explanation of Sobolev's results. We propose Unitary Quantum Theory [7-14].

Let us note that standard view point terms can not explain the work of any inexhaustible energy source also by using the ideas of energy transformation adopted from the surroundings because of meeting principal obstacle once again (theorems of Carnot and circulation).

Below there is some theoretical illustration of electrons' behavior in such traps, that due to the data lack does not relate any concrete glass model.

For the illustration let us examine the motion of the electric charge inside the potential well, determined by the potential:

$$U(x) = -\arctan(x) + 2.5\arctan(x^2), \qquad (1)$$

corresponding to the diagram at the Fig. 1. The motion equation of such a particle looks in accordance with our theory like (non-autonomous variant):

$$\ddot{x} = \left(\frac{1}{1+x^2} - \frac{5x}{1+x^4}\right)\cos^2\left(\frac{1}{2}t\dot{x}^2 - |x\dot{x}| + \theta\right), \quad (2)$$

where the particle's mass and charge as well as the Planck's constant for simplicity are considered equal to the unity. The very essential role here belongs to so called initial phase θ, as the solution character *x(t)* mostly depends on its value.

Let us examine the graph *x(t)* as the function of time *t*, obtained by numerical integration (we hardly can expect the construction analytical solution) of that equation for initial data $x(0) = 0, \dot{x}(0) = 0.1$ (Fig.3) and initial phase $\theta = 0.6$.

We can see that the particle leaves the potential well (trap) after approximately $t = 70$ units of time and after a series of the monotone increasing oscillations. We can see from the corresponding graph $\dot{x}(t)$ that after sufficiently complicated oscillations before flying out the trap the particle velocity gains the value exceeding initial velocity $v_0 = 0.1$ nearly 5.5 times. The charge oscillations remain in full measure that is seen from the analysis of the value $|\cos(\frac{1}{2}t\dot{x}^2 - |x\dot{x}| + \theta)|$ as *t* function. That behavior of the particle is typical for the other values of the phase θ, except some interval around the value $\theta = \pi/2$ (that value is critical in a some sense).

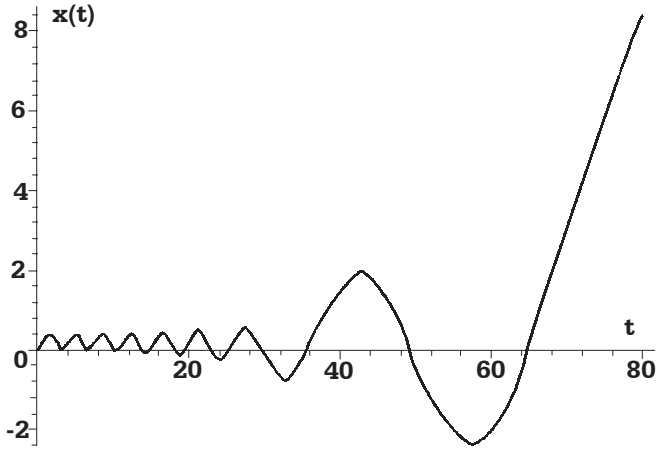

Fig. 3

If the particle motion is considered in the case of the potential

$$U(x) = -0.2\arctan(x) + 2.5\arctan(x^2), \qquad (3)$$

(the left arm of the potential for $x \to -\infty$ is higher then its right arm for $x \to \infty$ merely at 0,6, that is essentially less in comparison with the arms potential (1)), i.e. the pattern of the motion is more complicated. Viz. $x(t)$ at the initial velocity $v_0 = 0.1$ and phase θ within the intervals from 0 to 1.2 and from 2.0 to 3.0 continuously oscillates, at the phase $\theta = 1.4$ electron flies out the trap after the time $t = 250$ with the velocity $v \approx 2.5v_0$. At the phase $\theta = 1.41$ we get the reverse flying out, at the phase $\theta = 1.42$ the result is the flying out with the velocity $v \approx v_0$, at $\vartheta = 1.46$, i.e. flying out with

the velocity $v \to 0$ without initial oscillation and so on. But if the initial velocity is $v_0 = 0.5$, then for the most part of the phases θ lying out of the critical range around $\pi/2$ the particle flys out of the trap with the velocity exceeding $1.2 - 1.3$ times of its initial velocity v_0 with velocity nearly equal to v_0, at the phases $\theta = 0.2, \theta = 2.6$ we get the reverse flying out and so on and so forth.

In the cases when the initial velocities are between 0.1 and 0.5 we can see an intermediate patterns. Thus we can assert that the computations confirm the general tendency of the particles to fly out the potential well in one direction mainly (to the right) with increased velocity for the potential types (1), (3) and initial velocities lying in the proper intervals.

Meanwhile we are not going to comment the other numerous and highly interesting phenomena, examined with the use of these glasses.

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