



# The physical energy of the photons that used wildlife on the Earth can solve basic problems of energy and life outside the Earth

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## Abstract

The concept of the new managed Eco-Physical hydrogen Energetics of Photons (EFhEF – energetics) is introduced. It can solve the problems of ecology and of the replacement of fossil fuels on the Earth and is able to meet the challenges of life outside the Earth: lighting and heat, air and water regeneration, and return of all 100% organic waste at the new cycle of use, and even with the production of food from this waste. The EFhEF – energetics inherits the technologies of wildlife (yet photosynthesis) which use energy in the form of separate photons of solar radiation. The photosynthesis only is the way to capture CO<sub>2</sub> and of Sun's energy to ensure of organic structures. The wildlife is managed by the digital software, recorded in the molecule of DNA, and works in conventional terrestrial atmospheric conditions (4-40°C) using the energy of solar photons. For the first time, the EFhEF energetics provided any installation by its own source of energy ("solar" photons). This allows to actually inheriting the rich experience of the wildlife for operation with organic matter. The EFhEF-energetics allows "to carry out" even our Sun at any distance in the space.

## Key words

EFhEF energy, photons, hydrogen, continuous radiation, solar flare, life support, environment

## 1. Introduction

Solar energy is the basis of all life on the Earth. This energy radiates by photosphere (a thin surface layer) in the form of photons continuous spectrum of negative hydrogen ion. Photosynthesis is the process of converting radiant energy of the Sun into energy of physical and chemical links to synthesize carbohydrates from carbon dioxide CO<sub>2</sub> and water H<sub>2</sub>O. This is the only way to capture CO<sub>2</sub> and of Sun's energy to ensure of life structures. The life Nature uses all (known and unknown) physical, chemical, and quantum properties of atoms and molecules to create living organisms (and flora and fauna). Our task is to master in our practice at least the basic principles of this technology to solve environmental problems and energy today and the survival of humanity, at all tomorrow.

Waste products of living organisms in settlements outside the Earth require full 100% recycling and returning of them to a new cycle of use. And only managed physical EFhEF – energetics [1] that inherits the photosynthesis technologies of decomposition/synthesis of the organics indicates the development ways of such technologies. The live Nature is able to manage by these processes is quite "simply". The metamorphosis of egg-Caterpillar-Butterfly-egg is controlled by subprograms of one common genetic program in the DNA. We know already that the foundations of this structure, while this program deciphered only on~4%. But, we can begin the first steps to managed 100% decomposition of organics and synthesis of new organics (up to proteins, fats and carbohydrates), with a view to ensuring the full cycle of life activity of remote settlements.

The EFhEF – energetics that does not use the natural resources and oxygen is the first step on the path to creating a full cycle of ecological life support on Earth, other planets, space expeditions. Our physical energetics of photons "takes" in the road with men and the Sun itself. For the first time, photons of "solar" radiation can be produced by man regardless of the Sun. This is the new quality transition of mankind with the time of harnessing of fire on the Earth.

## 2. The solution of the primary problem of solar flares and the discovery of the theoretical current sheets in the Nature

The main problem of solar flares physics [2, 3] is resolved [1]. The primary source of active flare processes in solar plasma is energy of magnetic field. The transformation of magnetic field energy into plasma energy is the current sheet (CS). The first CS in the Nature is discovered on the flare spectra and researches experimentally. Any solar flare itself is appeared to be the current sheet directly.

The main conclusions are made on the base [1]: 1) Spectral observations of solar flares and their complex photometric analysis with 40-channel digital MF4A-densitometer. 2) Creation the theory of spectral line profiles of inhomogeneous chromosphere 3D-formations with intensity directed motions of plasma flows. 3) The decision of the full (with no limit on the number of quantum levels) system of equations of statistical equilibrium (UST) for discrete radiation of hydrogen atoms together with continuous radiation of negative ion of hydrogen for 50 solar flares throughout the range of their capacities.

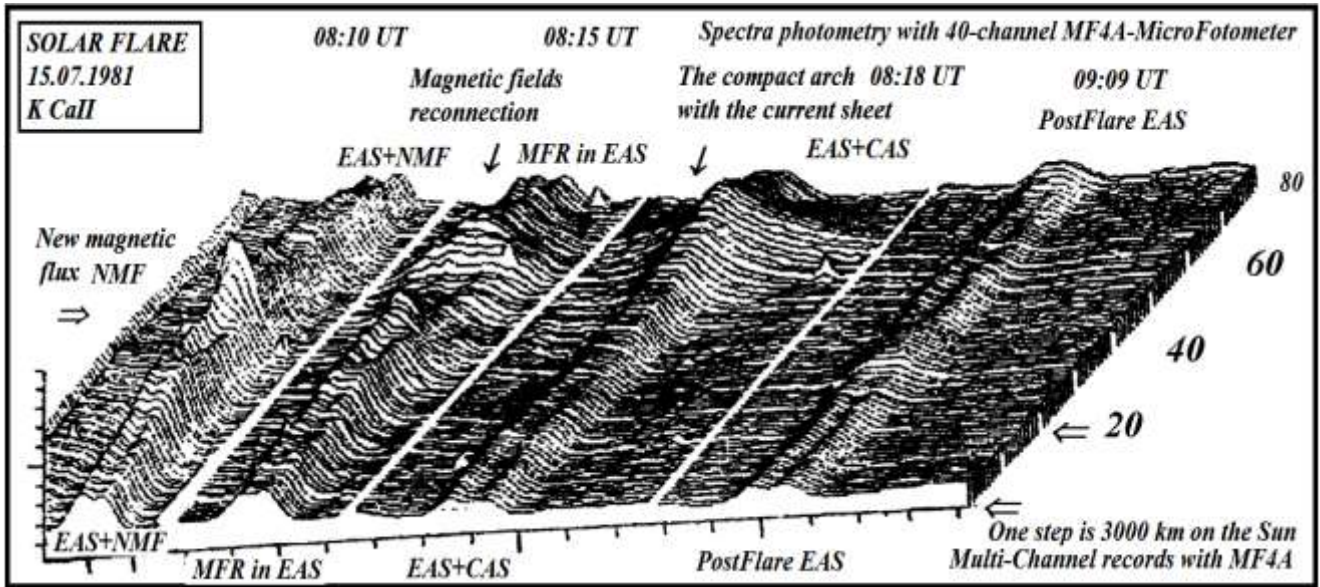


Fig.1. The discovery of the current sheet in the Nature [1].

The multi-channel spectra-photometry of the appearance process of a compact arched system (CAS) of a new magnetic flux (8:10 UT) under existing long arched system (EAS) of the active region is shown. The destruction of EAS field in the result of magnetic fields reconnection we see in the 08:15 UT spectrum fragment. And in 08:18 UT fragment we see the CAS with the current sheet those development is the solar flare development. Any solar flare is proved to be a current sheet directly.

The continuous emission of current sheets such as the BLF (Black Light Flare and the WLF (White Light Flare) and also the radiation of solar photosphere arisen due the excitation of hydrogen negative ion (on plasma density  $n_H > 5 \cdot 10^{17} \text{ cm}^{-3}$ ). In weak solar flares (s and 1 importance), continuous emission of the current sheet does not occur (fields  $< 1000 \text{ Gs}$ ,  $n_H < 5 \cdot 10^{17} \text{ cm}^{-3}$ ). All variety of solar flares is reduced to a single development of a current sheet, which occurs as a result of the collision of the magnetic fields of various strengths. The flare classification there is a classification of magnetic on both its parameters. In particularly powerful flares (fields  $> 4000 \text{ Gs}$ ,  $n_H > 5 \cdot 10^{18} \text{ cm}^{-3}$ ) the current sheet is destroyed immediately (title figure of Ostapenko monographs [1]). There are powerful tsunamis and coronal mass ejections CME only.

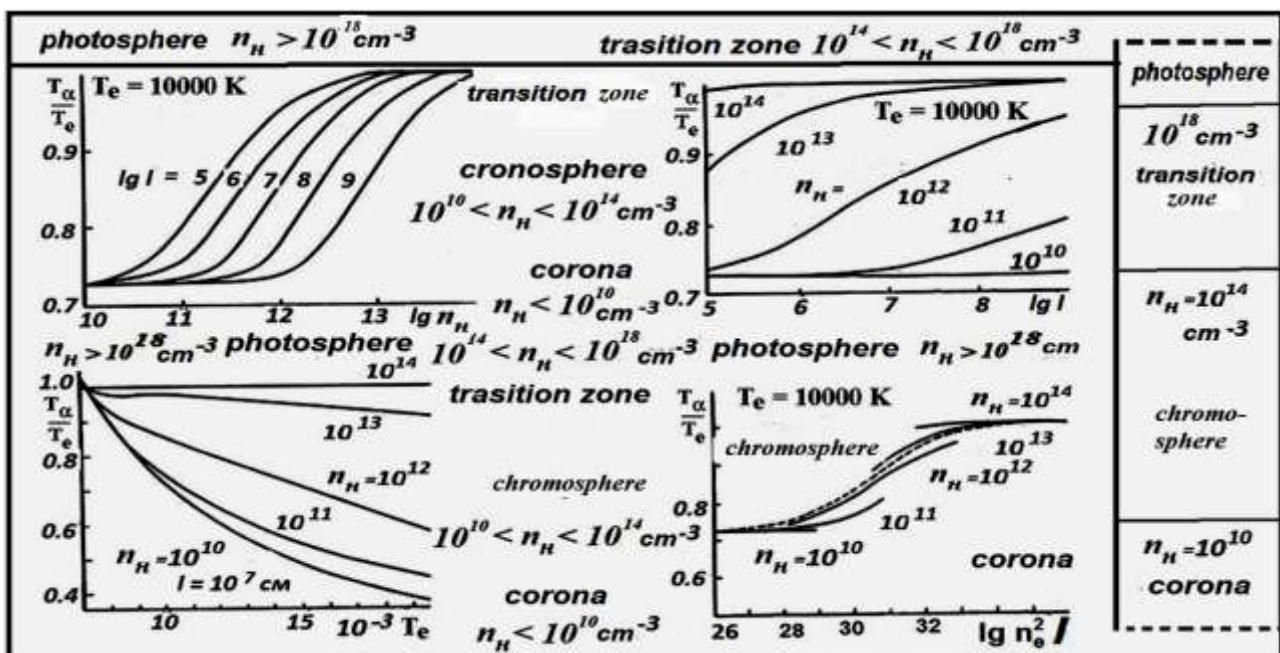


Fig.2. The Lyman-alpha ( $L_\alpha$  1216 Å line) radiation field of the hydrogen atom in the Sun's atmosphere

The curves are built according to the work of Kurochka et al. [4]. The different zones of the Sun's atmosphere we are really obtained of their physically sensible values of the borders.

It is solved also the problem of Lyman-alpha radiation fields in the solar atmosphere. This provides an opportunity to assess for the first time the number of hydrogen atoms in the ground state when calculating the hydrogen plasma. Baker and Menzel [5] considered two cases: case A (optically thin medium) and case B (optically thick medium with LTE (local thermodynamic equilibrium) in plasma. It allowed to identify different physically meaningful zones of solar atmosphere (corona (case A,  $n_H < 10^{10} \text{ cm}^{-3}$ ), chromosphere ( $10^{10} < n_H < 10^{14} \text{ cm}^{-3}$ ), transition zone (case B,  $10^{14} < n_H < 10^{18} \text{ cm}^{-3}$ ) in hydrogen lines (fig.2), and photosphere ( $n_H > 10^{18} \text{ cm}^{-3}$ , excitation of the continuous radiation of negative hydrogen ions, fig.3).

These Lyman-alpha data are allowed replacing the equation for the first level in the full UST equations system of statistical equilibrium of hydrogen atom by the approximate expression [1]:

$$T_{21} = 7300 + \frac{T_e - 7300}{1 + e^{-x}}, \quad (1).$$

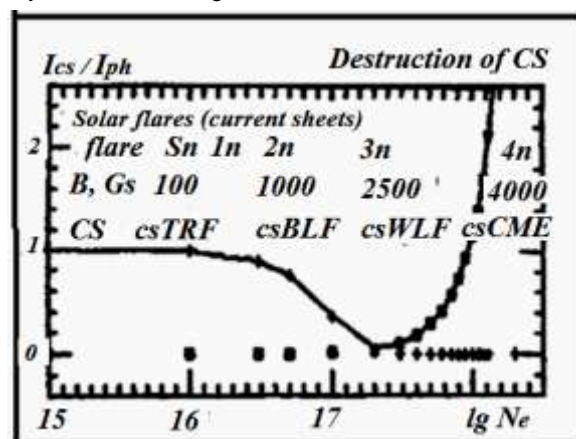
$$x = \lg n_e^2 l - 29.4 - 3.14 (\lg T_e - 3.7).$$

In **chromosphere** the LTE is absent (fig.2). The **transition zone** is begun after plasma density achieving of  $n_H \sim 10^{14} \text{ cm}^{-3}$ . Here photosphere absorption lines of metals are formed and the LTE as the case A of the Menzel approximation is achieved in  $L_\alpha$  hydrogen line [3]. **Photosphere** begins by achieving the  $n_H \sim 10^{18} \text{ cm}^{-3}$  plasma density. Hydrogen plasma is not transparent in a continuous spectrum due the negative hydrogen ion excitation (fig.3).

The flares of any magnificence are proven meet by the single approved the picture of the forming in the active region of the current sheet and the subsequent continuous increase of plasma density in the CS compressed layer. The stage, which develops each flare is the only achievement of the equilibrium magnetic and gas pressures in the CS layer ( $B^2/8\pi = n_{cs} k T$ ). The evolution of any solar flare is the process itself of the magnetic fields collision. The CS compressed layer (weak flares;  $n_{cs} < 5 \cdot 10^{16} \text{ cm}^{-3}$ ) transparent (csTRF) flare for continuous radiation of the photosphere and the outside does not detect for observers. The «black» flare stage (csBLF - Black Light Flare) corresponds to an intermediate values ( $5 \cdot 10^{16} < n_{cs} < 7 \cdot 10^{17} \text{ cm}^{-3}$ ) of plasma density in the CS layer and it precedes in the appearance of the «white» flare (csWLF - White Light Flare) when  $n_{cs} > 10^{18} \text{ cm}^{-3}$  [1].

### 3. Solar flares and managed hydrogen energy

Continuous radiation of negative hydrogen ion turned out to be manageable (fig.3) that can be used for terrestrial applications. This is the new physical and environmental form of energy, which on the Earth is not yet used as such. The EFhEF (Eco Physical hydrogen Energetics of Photons) originated on the basis of the analysis of hydrogen plasmas in the annex to the active processes (solar flares) on the Sun. The EFhEF-energetics believes operating with the single photons as energy sources for detailed processes of synthesis or decomposition of organic matter. A task made easier by the fact that this energetics has already been mastered in the Nature for the synthesis of the organic matter (photosynthesis). These technologies are working on the Earth billions of years already, and it giving us hopes of success. And only managed physical EFhEF - energetics [1] that inherits the photosynthesis technologies indicates the development ways of such technologies of decomposition/synthesis of the organics.



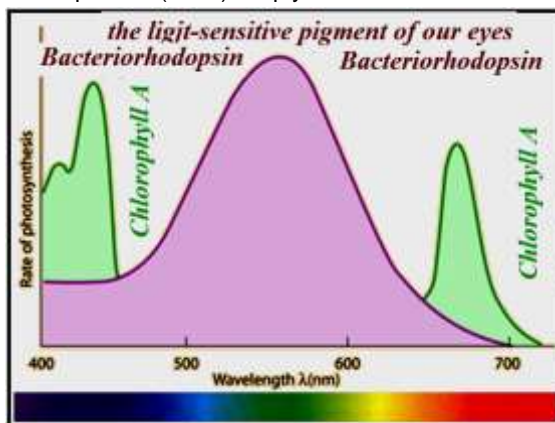
**Fig.3. The calculated intensity curve of energy release in the form of photons by hydrogen plasma.**

The intensity is defined only by the plasma density at 6000°K in the photosphere of the Sun. The curve has reflected the full coincidence between solar flares and the evolutionary development of the current sheet in solar plasma. So, the main problem of solar flares is proved to be resolved by Ostapenko [1]. Magnetic fields are the originate source of flaring activity of the Sun. It means the discovery of the current sheets in the Nature and the resolution of the principal task of the IGY-1957.



The problem of creating a "solar" field of radiation in the installation reactor is similar on the Earth already with problems of creating "artificial Sun" ([6], section 1-7). In our case, it is need to create hydrogen-gas and it is succeed to excite into install the negative ion of hydrogen with its "solar" radiation. Radiation of solar photosphere is provided by excitation of negative hydrogen ions. Spectral distribution of solar radiation has a maximum in green (550 nm) range. It is to this region adapted the eye of the animal world. A molecule of chlorophyll absorbs red (and IR) and blue (and the near UV) photons spectrum (fig. 4) and scatters radiation green area of the spectrum.

The degree of negative hydrogen ion excitation is determined only by the plasma density of hydrogen atoms in the volume of plasma and occurs without the participation of oxygen. Theoretical dependency on fig.3 gives us the ability to manage the process of release of energy. Problems of high temperatures (6000°K in photosphere) cut by not-thermal excitation mechanisms of hydrogen plasma. A task made easier by the need to create only UV part (2500-3500 Å) of Planck curve (fig.4). Magnetic confinement problem in such plasma (~0°C) simply does not arise.

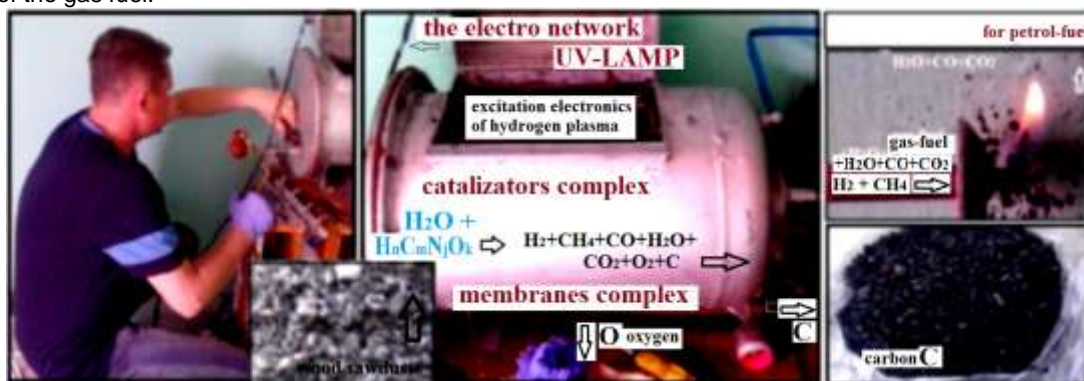


**Fig.4. The corpuscular-wave duality in the absorption curves of the chlorophyll:**

- UV photons excite the carbon accumulates the energy of photons in the C-H links of organic molecules.
- IR photons (waves already) heated (the molecule's controllability) organic molecules [7].

We selected the adaptation task of the EFhEF- energetics to its capability to the physical decomposition (not burning) of any organic matters. The first installations of the decomposition of organic matter have already shown its effectiveness. When the gas-fuel is produced by our technologies, would mean and the decision of the principal problem of the energetics. This is the problem of replacing fossil energy sources of unrestricted organic wildlife. Only the EFhEF - energetics is capable to decompose selectively the polluting spills of petroleum products, as well as to separate radioactive impurities from organic matter obtaining of pure synthesis gas ( $H_2$ ,  $H_2O$ ,  $CO$ ,  $CO_2$ ,  $CH_4$ , and  $C_nH_{2n}$ ) or gas-fuel. Other enabling technologies of the EFhEF - energetics: 1. Disposal of pesticides and toxic chemicals. 2. Utilization of polyethylene and plastics. 3. The air and water regeneration systems. 4. Elimination of atmospheric ejections of heat boilers with simultaneous production of gas-fuel.

The process of decomposition of organic molecules ( $H_nC_mN_jO_k + H_2O$ ) to combustible (synthesis-) gas fuel ( $H_2 + C_nH_{2n+2} + H_2O + CO + CO_2$ ) occurs on the scheme ( $H_nC_mN_jO_k + H_2O + \text{photons} + \text{catalysts}$ ) like of photosynthesis schemes ( $CO_2 + H_2O + \text{photons} + \text{chlorophyll}$ ). It is no burning; it is the decomposition of the organics), and always with the production of the gas fuel.



**Fig.5. The laboratory installation of the decomposition of organic matter and the production of hydrogen-hydrocarbons gas-fuel. Our installation is equipped with next systems: (a) electronics for generation of "solar" photons; (b) generation of protons, thermal and accelerated electrons; (c) systems of water photolysis; (d) catalyzators systems for decomposition of organics and synthesis of new organic compounds; (e) membrane systems for selection of some gas components. On the figure (left) Igor V. Ostapenko is Director of the laboratory of EFhEF- energy.**



## 4. Photosynthesis of live Nature

Photosynthesis (FS) is the most effective process of synthesis of organic molecules, where energy of the Sun is stored. This technology appeared on the Earth >3 billions years ago. The FS uses Sun's photons with the quantum yield of ~100% turning of this photons energy into the energy of molecular C-H links. Plants use light with wavelengths of 350+50 & 680+50 nm (fig.4). In the first (FS-1) stage excitation of molecules of chlorophyll (Chl) P700 gives electron to acceptor. Through a system of vectors, the electron goes on the outside of the thylakoid that is faced into the stroma. P700 molecule oxidizes and turns into a molecule of P700<sup>+</sup>:  $\text{Chl P700} + \text{photons} \rightarrow \text{Chl P700}^{+} + e^{-}$ .

In plants the FS-2 process enables to absorb the photons energy for decomposing of water. The FS-2 system (!) may be modified for creating of industrial modules of decomposing of water. The prototype of the element that capable of generating electricity using vegetable proteins has created at the Massachusetts Institute of technology. These are proteins that separated from chloroplasts of natural spinach. Such battery is able to transform into electricity to 20% of the energy of the photons. For decomposition of water under the action of photons, the molecular catalyst was also created on the base of Ruthenium  $^{101}\text{Ru}_{44}$  ([Kr] 4d<sup>7</sup>5s<sup>1</sup>) (Stockholm, [8, 9]). But molecular catalysts operate stably in the environment of plants only. More stable organic complexes on metals should to use instead of biological molecules. But, the establishment of effective technologies requires knowledge of FS.

The light-independent (dark) stage goes together with the light-dependent (light) stage and uses the products created in the light stage. Processes occur in chloroplasts ( $H_{Lp}$ ), where there are molecules of chlorophyll ( $H_{Lf}$ ) such as  $H_{Lf} P_{700}$  and  $H_{Lf} P_{680}$ , absorbing light at wavelengths of 700 and 680 nm. They are part of the reaction centers of FS-I and FS-2. The light (energy) stage of FS goes on the light in kvantosomes of membranes of thylakoid. The process involves: photons, water ( $H_2O$ ), ADP &  $H_{Lf}$ . Light energy is transformed into energy of ATP. Poor energy electrons of water move to energy-rich electrons of NADP H<sub>2</sub>. The light phase is divided into physical and chemical phase. In the physical phase occurs the absorption of photons in molecules  $H_{Lf} P_{700}$  (FS-I) and  $P_{680}$  (FS-2) and move them to the excited state. In the chemical phase of both FS work consistently.

The dark (metabolic) stage takes place outside of the thylakoid in the aquatic environment of the stroma. Primary products:  $CO_2$ , ribuloso-di-phosphate, ATP and NADPH<sub>2</sub>. In this phase the synthesis of ( $C_6H_{12}O_6$ ) glucose goes from  $CO_2$ . Without the energy of light stage the dark stage is impossible. For FS, plants need a lot of air, because it contains only ~0.03%  $CO_2$ . From 10000 m<sup>3</sup> of air you can get 3 m<sup>3</sup> of  $CO_2$  or ~110 g of glucose. In greenhouses  $CO_2$  in the air lead to 1-5%.

The adenosinediphosphate (ADP) is carrier of energy. This is the nucleotide, consisting of adenine, ribose and of two remnants of phosphoric acid. The ADP is formed as a result of the migration of the last phosphate group of the ATP. ADP participates in energy metabolism in all living organisms. From it is formed ATP in the result of addition of one phosphate group ( $H_3PO_4$ ) with energy costs (during photosynthesis, in partly):  $ADP + H_3PO_4 + \text{energy} \rightarrow ATP + H_2O$ .

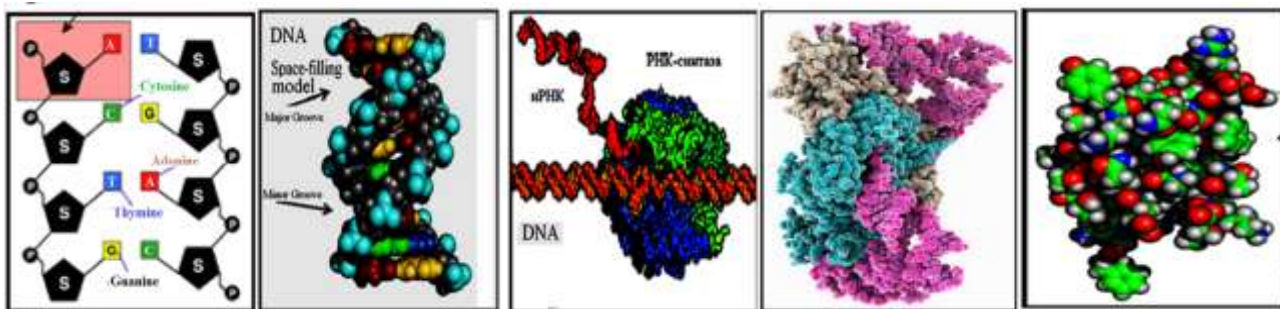
Cyclic transforming of ADP to ATP and then use ATP as an energy source form the process of forming the essence of energy metabolism (catabolism).

## 5. Biocatalysts and Molecular machines

Under the photosynthesis (FS) we understand the use by the plants of photons energy to transform  $CO_2$  into organic matter. The Nature begins the creation of organic molecules by building of the special matrix (molecules of Mg-chlorophyll). Building of living structures begins with creating of the special molecules (glucose  $C_6H_{12}O_6$ ) under ruling of chlorophyll. This is the first "building block" (with the Sun's energy) of all future structures. The further establishment of wildlife is managed in detail by digital programs, written in a molecule of DNA. Widely applied molecular catalysts based on metals. The basic unit of information and primary "brick" all subsequent structures of a living organism are nucleotides. They are based on the glucose molecules with its efficient possibilities of hydroxyl links. The circular ring of glucose of coding structures in DNA molecules are necessarily modified by nitrogen atoms. Nucleic acids provide the hereditary information. All organisms (the organics) are constructed from sets of four elements of life only ( $H_n C_m N_j O_k$  molecules).

The creation process of organic structures is very multi-pass and is very complicated. Molecules that catches solar photons are the complexes on magnesium (hemoglobin is the complex on iron) are unavailable now objects for inherit. A number of systems of the FS are unstable. But if the inherit the Nature, it is necessary to understand the molecular basis of their work for to create themselves technologies of photons conversion and receive energy resources on the Earth today, as well as receive any new organic matter tomorrow (especially proteins, fats, carbohydrates). Because the FS efficiency is ~95% in using of photons and solar batteries is ~15%. But the base, the obtaining of "solar" photons in installations we have already achieved (section 2).

All information about the creation of organic structure lies in the DNA. Nucleotides are the main "building block" of all structures of the live body, as well as by unit of programmed information. These are adenine (A), guanine (G), cytosine (C), and thymine (T). These letters is the entire alphabet of the genetic code. In RNA thymine is replaced with similar nucleotide uracil (U). Nucleotides are built in chains of genetic letters. Each protein is a chain of the same nucleotides. Their order and number define the structure of the protein and all its biological properties. For encoding of all proteins is sufficiently of 20 amino acids (codons, triplets - set of three nucleotides).



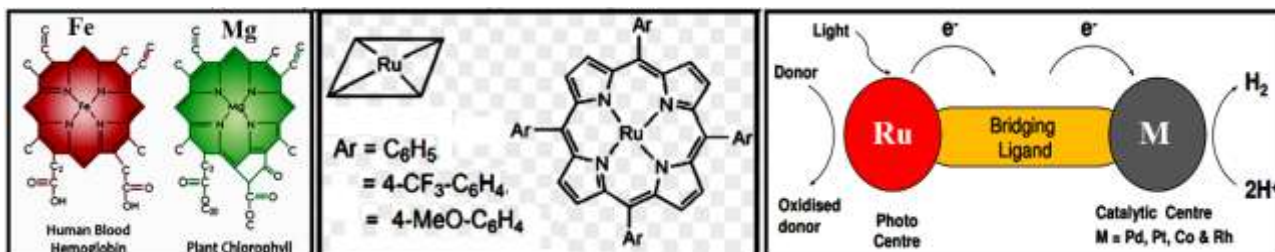
**Fig.6. The complex of molecular machines (MM) for biosynthesis of proteins. These many-atom structures of special purpose are created with the molecule of DNA.**

- (a, b) fragments of genetic information and a image of the DNA fragment [10, 11].
- (c) The MM RNA- polymerase finds the correct subroutine in the DNA and "rides" on the DNA chain (orange color) created a copy of its chain in the form of the mRNA (red color) [12].
- (d) From the kernel of cells the mRNA [13] go through pores in the shell and they go into the cytoplasm to next MM (the Ribosome). Here, amino acids are delivered, using transport molecules. The tRNA carries information only about one gene. The tRNA molecule consists of 70-80 nucleotides. The flat structure in the image of these spirals and loops (recalls clover sheet) do not reflect the true shape of the tRNA. They twisted into a compact structure, of which in one side the ending spiral sticks out to which joins the amino acid, in the other is a spiral with anti-codon loop.
- e) The molecule of insulin has many functions catalyzing and synthesis of proteins also. [14].

	U	C	A	G
U	UUU = phe UUC = phe UUA = leu UUG = leu	UCU = ser UCC = ser UCA = ser UCG = ser	UAU = tyr UAC = tyr UAA = stop UAG = stop	UGU = cys UGC = cys UGA = stop UGG = trp
C	CUU = leu CUC = leu CUA = leu CUG = leu	CCU = pro CCC = pro CCA = pro CCG = pro	CAU = his CAC = his CAA = gln CAG = gln	CGU = arg CGC = arg CGA = arg CGG = arg
A	AUU = ile AUC = ile AUA = ile AUG = met	ACU = thr ACC = thr ACA = thr ACG = thr	AAU = asn AAC = asn AAA = lys AAG = lys	AGU = ser AGC = ser AGA = arg AGG = arg
G	GUU = val GUC = val GUA = val GUG = val	GCU = ala GCC = ala GCA = ala GCG = ala	GAU = asp GAC = asp GAA = glu GAG = glu	GGU = gly GGC = gly GGA = gly GGG = gly

**Fig.7. Genetic code: From DNA to Proteins [15].**

- (a). Full data about all live structures and about functions of these structures are recorded in the DNA. Units of information (codons) are made in the form of nucleotide triads (nucleic acids).
- (b). Any polypeptide chain written in the DNA as subprogram is believed of a protein by definition and, as a rule, such protein is a molecular machine with their specific functions (insulin [14]).



**Fig.8. Molecules catalyzing the light processes in living organisms are the MM machines also as the molecular machines for biosynthesis of proteins in fig.6.**

- (a) The molecules on transition metals of hemoglobin (on iron  $^{56}\text{Fe}_{26} [\text{Ar}] 4s^2 3d^6$ ) for transport of  $\text{O}_2$  &  $\text{CO}_2$  by animals and chlorophyll (on magnesium  $^{24}\text{Mg}_{12} [\text{Ne}] 3s^2$ ) for synthesis of glucose by plants [8];





(b,c) Splitting of water on light with Mg in photosynthesis process and hydrogen generation with Ruthenium  $^{101}\text{Ru}_{44}$  ( $[\text{Kr}] 4d^7 5s^1$ ) in complex with M supra-molecular photo catalysts ( $\text{M} \rightarrow ^{57}\text{Co}_{27}$  ( $[\text{Ar}] 4s^2 3d^7$ ), Rhodium  $^{103}\text{Rh}_{45}$  ( $[\text{Kr}] 4d^9 5s^1$ ), Palladium  $^{106}\text{Pd}_{46}$  ( $[\text{Kr}] 4d^{10}$ ), and Platinum  $^{195}\text{Pt}_{78}$  ( $[\text{Xe}] 4f^{14} 5d^9 6s^1$ ) [16, 17].

The number of combinations of the four nucleotides on three is 64, which is more than enough. Triplets of all 20 amino acids have been decrypted already. Natural proteins are constructed from these amino acids. Functional segment of the DNA molecule that carries information about the structure of single protein is called gene. We distinguish genes (4%), where recorded the information for the synthesis of structural and proteins-enzymes and genes for the synthesis of tRNA, iRNA, and other (but 96% is unknown of us).

Protein biosynthesis occurs through connections of amino acids in the polypeptide chain. All morphological and functional features of any cell and whole organism are determined by the structure of proteins, composing the cells. Biological properties of proteins are determined by the sequence of nucleotides. Proteins entering the body as food not digested them in unchanged form. They are broken down to amino acids and of these organisms synthesize their proteins. In the formation of proteins take participate 22 amino acids. 13 of them may become one another. And 9 amino acids are indispensable. So, it possible to synthesize as food and fragments of proteins!

The process of protein biosynthesis goes to Ribosomes in the cytoplasm. Information from the DNA to the site of protein synthesis passes mRNA (on complementation principle), which is synthesized on one of the branches of the DNA molecule. Transcription occurs not at the entire DNA molecule and on the small of its plot with the desired gene. The MM RNA- polymerase has responsible for this. When finding the right place (a subroutine) in a molecule of DNA, it is embedded in there and it splits out a portion of the DNA Double Helix, exposing the short section of one of the branches, as a matrix for the synthesis of mRNA. Moving along this chain the RNA polymerase connects nucleotides in the mRNA chain. A copy of a chain of nucleotides is obtained. Nucleotides are complementary to each other in pairs. For example, these are adenine and thymine, cytosine and guanine. But in the composition of mRNA uracil is included instead of thymine. This is yet one guarantee of reliability.

The iRNA molecule that is synthesized on the DNA nucleus enters in the cytoplasm through the pores of the nucleus shell. Here the iRNA is attaches to ribosome that is the MM also. The translation begins with the codon AUG (start). From this the molecule iRNA steps intermittent from triplet to triplet progressively increasing polypeptide chain through the Ribosome (using MM tRNA). The number of amino acids in such protein is equal to the number of triplets of the iRNA. Ready proteins come in endoplasmic networks channels for their ripening.

## 6. Conclusions

It is developed the bases of new physical (atoms) energy, which is placed in one row with the chemical energy (molecules) and quantum (nuclear). Eco Physical hydrogen Energetics of Photons (EFhEF-energetics) of physical decomposition/synthesis of organic operates with the energy of individual photons. Analogues of technology are absent yet. But, this energy is mastered (photosynthesis plants) to create living organisms on the Earth.

Firstly, photons of "solar" radiation can be produced by man regardless of the Sun. This is the new quality transition of mankind with the time of harnessing of fire. In the base of technology we use the process ( $\text{H}_n\text{C}_m\text{N}_j\text{O}_k + \text{photon} \rightarrow \text{C} + \text{H}_2$ ). It is the reverse process of organic creating ( $\text{CO}_2 + \text{H}_2\text{O} + \text{photon} \rightarrow \text{H}_n\text{C}_m\text{N}_j\text{O}_k + \text{O}_2$ ), which is going on Earth with the participation of a molecule of chlorophyll. The direct and reverse processes used the energy of the hydrogen negative ion.

A relief problem of synthesis of the complete set of proteins and other food products is existed. This can be "to give" the organism itself. Any live organism consuming organic food decomposes it to amino acids (to triplets of nucleotides). Food will be inconvenient or impossible nucleotides and then the goal is to get the right proteins using it is genetic engineering.

The first installations of organic matter destruction with simultaneous production of the gas fuel were created. The new energetics might to replace the limited reserves of fossil energy (coal, oil, gas) of unlimited resources of wildlife. The EFhEF- energetics, which does not using the natural resources and oxygen, is only the first step on the path to creating a full cycle of ecological life support on Earth and in space. The EFhEF - energetics allows us to "take" to the road and the Sun itself.

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