

BOOK

Dear reader, I ask to excuse me for bad text translation from Russian on English. I have no opportunity to pay the qualified translation, therefore I translate texts with the help of a computer and then I correct them.

THEORETICAL BASIS OF PHYSICHEMISTRY OF NANOTECHNOLOGIES Ph. M. Kanarev.

Krasnodar, KSAU. 2008. 675 pages. The book contains: 359 formulas, 175 figures and 45 tables.

In the book the substantiation of parameters and interactions of the basic inhabitants of a microcosm is submitted: photons, electrons, protons, neutrons, nucleus of atoms, atoms, molecules and clusters and which are the basic participants of any nanotechnologies.

In the last chapter it is resulted more than 800 questions following from the new theory of a microcosm and experimental data of the author in the field of hydrogen and thermal power, and brief answers to these questions are given.

The book is intended to physicists, chemists and other experts developing nanotechnologies and new energy sources.

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THE FOREWORD

Nano is a milliard part of unit of the analyzed parameter in system of SI. It is considered, that the sizes of atoms and molecules are in nano a range ($1 \cdot 10^{-9} m$), therefore technologies which basic participants are atoms and molecules, are named nanotechnologies.

However, atoms connect in molecules electrons, and their sizes are in pico a range ($1 \cdot 10^{-12} m$). The sizes of protons, neutrons and nucleus are in femto a range ($1 \cdot 10^{-15} m$).

Carriers of heat and the information are, basically, photons which are radiated and absorbed by electrons and protons, therefore they also - participants of all nanotechnologies, and their sizes change from otto a range ($1 \cdot 10^{-18} m$) up to milly a range ($1 \cdot 10^{-3} m$).

It is quite natural, that correct interpretation of anyone **nanotechnology** process is impossible without the detailed information on electromagnetic structures of the basic inhabitants of a microcosm: photons, electrons, protons, neutrons, nucleus, atoms, molecules and clusters. The given book also is devoted to the analysis of structures of these formations and their behavior. Its first edition has left under the name «Theoretical bases nanotechnologies». Krasnodar 2007, 514 pages [3].

Features of the second and third editions of this book are the increased list of questions on behavior of inhabitants of a microcosm and brief answers to them submitted in last chapter. They show depth of penetration of human idea in secrets of a microcosm and facilitate development of the new scientific information necessary by development nanotechnologies and new energy sources, more detailed information about which is submitted in 8-th edition of the monography «The Beginnings Physchemistry of a Microcosm». Krasnodar 2007, 750 pages [1].

INTRODUCTION

The abundance of the experimental and theoretical information on inhabitants of a microcosm is known: photons, electrons, protons, neutrons, nucleus, atoms, molecules and clusters. It, basically, the statistical information on their behavior. Methods of formation of such information and criteria of an estimation of its reliability already for a long time have exhausted the opportunities in knowledge of depths of a microcosm. Therefore for a long time there is a necessity of development of new methods of knowledge of a microcosm which would allow to receive the information on individual behavior of all participants of statistical processes of this world.

Statistical methods of the analysis of behavior of inhabitants of a microcosm result in wave character of this behavior. However, in any case inhabitants of a microcosm – the located formations, therefore the following stage of knowledge of a microcosm – disclosing of laws of localization of its inhabitants, formations of their internal structures and interactions.

At the end of XX century a series of scientific works to which the priority has been given to modeling of inhabitants of a microcosm has appeared: photons, electrons, protons, neutrons, nucleus, atoms, molecules and clusters. In result the new theory of a microcosm which allows to describe inhabitants of a microcosm individually as participants of statistical processes of all nanotechnologies has appeared.

The new information on a microcosm is consequence of the new analysis of initial scientific concepts on which our knowledge of world around are based.

The main initial concept displaying essence of the world surrounding us, the concept **space** is. There would be no space, there would be nothing. The following on importance are concepts **a matter and time**.

Let's pay attention to the basic properties of initial scientific concepts: space, a matter and time. First of all, we know, that in the Nature there are no such phenomena which could influence space: to compress it, to bend or stretch (bend or drag out). It is subject to nobody, therefore we have all bases to consider space **absolute**.

The statement about a relativity of space on which the theoretical physics of XX century was based, till now has no unequivocal experimental proof of its reliability, therefore we do not take it into consideration.

The following concept – **a matter**. It concerns to concepts with vast semantic capacity and consequently the opportunity of its unequivocal definition is excluded. We still have one opportunity – to believe, that scientists approximately equally understand its maintenance. As we till now do not know a source which is giving rise material objects at us is not present while the bases to consider a matter absolute.

Concept **time** – the most mysterious. Nevertheless, we know, that in the Nature there are no such phenomena which could influence for a while, accelerate or slow down rate of its current. Therefore we have all bases to consider time **absolute**.

The statement about a relativity of time on which the theoretical physics of XX century was based, has no direct experimental proof of its reliability. The fixed change of rate of current of time by various devices in various conditions reflects properties of devices, but not the fact of change of rate of current of time. Therefore we believe, that the error about change of rate of current of time by itself will leave a field of activity of scientists in section of a history of a science.

So, we were determined with the maintenance and properties of primary scientific concepts on which we shall base our scientific judgments. Now we are obliged to find the independent **judge** of correctness of use of these concepts of scientific search.

The most fundamental property of space, matter and time is that they exist independently from each other and at the same time - together. Them to divide it is impossible. The matter cannot exist outside of space. Time can flow only in the space containing a matter. **Means all three primary elements of a universe: the space, a matter and time, showing the**

independence, exist in the unshared condition. This property of space, a matter and time has all features **of evidence** and we have basis to name inseparable existence of space, a matter and time **an axiom of Unity**.

Further, analyzing results of experiments with participation of inhabitants of a microcosm, we shall see, that all of them behave within the framework of **an axiom of Unity**, and the majority of the theories describing their behavior, work behind frameworks of an axiom of Unity. It – the main reason constraining disclosing of electromagnetic structures of inhabitants of a microcosm within XX century.

And now we shall define concepts: an axiom, a postulate and a hypothesis which we shall use in our scientific search.

An axiom – the obvious statement which is not demanding experimental check and not having exceptions. Therefore reliability of an axiom is **absolute**. It protects its obvious connection with a reality.

Scientific value of an axiom does not depend on its recognition, therefore ignoring **of an axiom of Unity** at the theoretical description of objects of research is equivalent to fruitless theoretical creativity.

The postulate – the unevident statement, which reliability is proved experimentally or - by set of the theoretical results following from experiments.

Reliability of a postulate is determined by a level of a recognition its scientific community, therefore its value is not absolute [1].

A hypothesis – the unproved statement which is not a postulate. The proof can be theoretical and experimental. Both these proofs should not contradict axioms and the conventional postulates. Only after that hypothetical statements receive statuses of postulates, and the statements generalizing set of axioms and postulates, – the status of the authentic theory.

The detailed information on work of an axiom of Unity at an estimation of reliability of any mathematical theories is stated in the monography «The Beginnings Physchemistry of a Microcosm ». 8 edition. Krasnodar, 2007.750 pages. [1].

THE CONCLUSION

The new axiomatics of the exact sciences arms researchers with new criteria for an estimation of reliability of any theories. Therefore it can be named axiomatics of Natural sciences. The list of axioms is headed with the most important axioms of Natural sciences: **the space and time are absolute, the space, a matter and time are inseparable**, therefore the unity of space, a matter and time is named an axiom **of Unity**.

The analysis of set of the mathematical models describing behavior of photons of all scale of radiations, shows, that they share on two groups: corpuscular and wave. The first describe photons, as corpuscles, and the second as waves, therefore the true structure of a photon remained unopened. Search of the reason of such condition shows, that the mathematical models describing behavior of photons as corpuscles, correspond to an axiom of Unity, and the mathematical models describing behavior of photons as waves, contradict this axiom.

In reality photons behave within the framework of an axiom of Unity, therefore corpuscular mathematical models precisely describe their behavior, and wave mathematical models give only statistical information on this behavior and in some cases completely deform it.

To remove contradictions between wave and corpuscular properties of photons, the following from mathematical models describing their behavior in different experiments, it is necessary to formulate a postulate asserting (approving), that photons have such internal located structure at which the radius of rotation of a photon is equal to length of its wave.

If this postulate corresponds to a reality from the careful analysis of existing set of the corpuscular mathematical models describing behavior of photons, the structure of model of a photon should follow. And it is valid so. It appears consisting of 6-ty parts. The nature of these parts is not established yet finally.

Nevertheless, all for a long time postulated mathematical models describing behavior of photons, are deduced analytically from its located model consisting from 6-ty of magnetic on circular contour magnetic or electromagnetic fields.

New there were only two parametrical equations of the short cycloid describing movement of the center of mass of a photon within the framework of an axiom of Unity. If to take one of these equations it will work behind frameworks of an axiom of Unity and from it equations Louis de Broglie and Schroedinger, describing wave properties of photons are automatically deduced.

Equations of Maxwell obviously contradict an axiom of Unity, therefore they completely deform all processes of electrodynamics, and concurrence of some results of their decision to experimental data turns to casual process.

The model of a photon clears up processes of transfer of energy and the information in space and allows to receive answers to many questions of a microcosm remaining unrequited.

The coordination of the mathematical models describing structure of electron and its behavior is based on twenty constants which convincingly prove reliability of the postulates based at a substantiation of model of electron.

Model of electron and the law of formation of spectra of atoms and ions considerably change our representations about structure of atoms and molecules. Orbital movement of electrons in atoms automatically leaves in section of a history of a science. Linear interaction of electrons with nucleus of atoms together with a six-polar magnetic field of a neutron opens structures of nucleus, and **the Periodic table of chemical elements is supplemented with periodicity of formation of their structures.**

Chemists receive the new tool of knowledge of structure of atoms, ions and molecules. Representations about process of formation of chemical connections considerably become simpler and there is an opportunity of more exact calculation of their power parameters.

Vector properties of a constant of Planck automatically include its law of radiation of absolutely black body in number of laws of classical physics, and the law Fault opens secrets of formation of temperature and existence of its absolute zero.

The law of radiation of absolutely black body and the law Fault, together with the law of formation of spectra of atoms and ions open secrets of a spectrum of the universe. They convincingly show, that the maximal extremum of this spectrum forms process of synthesis of atoms of hydrogen in vicinities of stars, and other two extrema with smaller density of radiation are formed by processes of synthesis of molecules of hydrogen and their transition in the liquefied condition.

A. Einstein's formula for calculation of a photoeffect appears to the equivalent formula for calculation of spectra of atoms and ions.

Absence of length of a wave of radiation in formula Schwarzschild for calculation of radius of a black hole automatically translates idea of formation of black holes in number of beautiful myths of XX century composed by scientists.

The law of preservation of the kinetic moment (the moment of a pulse) confidently occupies a pedestal of the main law of a material world.

The new understanding of physical and chemical processes of a microcosm became possible due to the new theoretical description of elementary particles: photons, electrons, protons and neutrons which generate these processes.

Thus, the new scientific information on a microcosm on a level of completeness, depth, detail, interrelation and reliability considerably outstrips old representations about a microcosm which most part appeared erroneous.

The way for use of the new scientific information on a microcosm by development nanotechnologies is open and we have bases to wish success on this way to the future researchers [1], [3].

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