

CONCENTRATING OF ENERGY EXCESS ELECTRONS ON CARBON MATERIALS

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By chemical properties the hydrogen partially reminds properties of metals, but simultaneously in this respect it is close to excess electron - to an elementary particle. Probably, in the long term it is possible to expect the invention of methods of reception of hydrogen at the expense of transformation of energy excess electrons in energy of chemical bonds in a molecular hydrogen. It causes interest to methods concentrating of energy excess electrons. In engineering are known electrets and electrostatic amplifier of Van-de-Graaf, which can be considered as concentrators and depositors excess electrons. In a nature is present unsurpassed on volume and capacity depositors of energy excess electrons - lithosphere of the Earth. Here, apparently, at the expense of energy excess electrons processes of reduction of water up to hydrogen, carbonates up to hydrocarbons, sulphates up to hydrogen sulphide and so on also proceed.

By us is found a new method generating and concentrating energy and charges excess electrons, consisting in passing of a flow superheated water pair or others warmed up of polar gases above a surface of the structured carbon materials. In this method by the donors electrons act monomeral polar molecules of water (or polar gases), and as an acceptors - structured two or three-dimensional thermostabilistical high-resistance carbon materials.

Most effective acceptors excess electrons, most likely, are fullerenes [1], but ability to divide and to keep charges is inherent both other more simple and accessible substances. By us is found, that on a surface two-dimensional of organic pigments of aromatic character in the jet of superheated water pair has a place separation of charges under the known laws of formation of a static electricity. The negative electrical charges thus concentrate on a surface of pigments, and the positive ions are carried away by a jet pair for limits of a processable zone. The adsorbed oxygen, and also the oxygen-containing substituent, halogens fixed with an aromatic nucleus and some other functional groups are displaced by excess electrons, i.e. they are exposed to reduction. During reduction and after displacement of these substituents the separation of charges proceeds at the expense of low electroconductivity of superheated pair, excess electrons form on acceptors powerful blob of energy [2].

If in tube, where the treatment of a sample is conducted to place two metal electrodes (first, for example, as small boat for an studied sample, and second - as a grid for catching ions) and to close them in an electrical circuit, on a mark and size of arising potential it is possible to judge character of chemical and physical processes in a researched sample.

At the fixed meanings of temperature (about 370°C), pressure and speed of a flow superheated pair (20 g/h) above a surface of a phthalcyanine pigment Blue 15 in weight 1,5 g for 1 hour energy accumulating which causes its ignition at contact to air.

Taking into account known analogy in wave properties electron and photon, that will be coordinated with point of view R. Feinman, we offer to consider a phthalcyanine pigment as depositor of energy excess electrons. It is known, that chlorophyll in green plants is unsurpassed depositor of energy of solar light. In a basis of its molecular structure, as well as in a basis of structure of the pigment, investigated by us, lays a flat porphyrin aromatic (two-dimensional) fragment having labilical π -electronic system. The similarity of these molecular structures causes ability in both cases to transform wave energy into energy of chemical bonds. The oxygen is served by «the change coin», and chlorophyll splits out it from water and carbonic gas, and pigment - from various materials: water, carbonates, sulphates and i. e. It is important, that chlorophyll and pigment have ability to deposit wave energy and to accumulate it up to a level, sufficient for transformation into energy of chemical bonds.

The processes of such type are widely distributed in a nature and engineering: the soot ignites and blows up in household and industrial flues, the mountain carbon-contained breeds of terricons and erupted, melted down by volcanos are warmed up and are ignited, the solid mineral fuel ignites also [3]. Earlier [4, 5] by us it is offered to use processes of concentrating of energy excess electrons and relaxation this energy out from depositors for reception of the electric power onboard, for example, automobile at the expense of thermal and kinetic energy of exhaust gases.

About a terminology. If the blobs of energy photons on chlorophyll are excitons, then to blobs of

energy and charges excess electrons on depositors earlier by us are offered to give the name «thermoexitons» [2]. In process concentrating of electrons on depositor and their relaxation electrical «thermoexitonal» currents occurs. Essentially, the depositors are as catalysts of transformation of wave into energy of chemical bond or other forms of energy.

The basic purpose of the present message is the development of the conception of technology of reception of molecular hydrogen at the expense of energy excess electrons. Naturally, that concentrating of energy is the most important aspect of this problem. The fact of a concentrating of the mononame charges in the limited space nanostructure, on the first sight, contradicts the law of Coulon. Nevertheless both in experiment, and in natural conditions the concentrating electrons has a place, and high energysaturation of thermoexitons testifies that in nanospace the anticulon's character forces work.

Probably, the hypothesis about trailing (one-electronic) bonds [6] can solve this contradiction. The trailing bonds is intense, but the sizes nanopores do not allow some molecules, for example oxygen, to penetrate there and to remove a stress. Only electron can to penetrate in nanospace free, and it has position on trailing bond and transforms trailing bond in ordinary sp^2 - bond. Thus, excess electron assumes the function of atom of hydrogen, owing to what the level of potential energy of cluster is lowered.

This effect, and in particular at the account singlet-triplet interactions of trailing bond with excess electron, influences power balance in cluster and can affect other properties of system. Nevertheless, the excess electron which has its position on trailing bond in nanospace, keeps ability to tunneling, i.e. it can be pulled out for limits nanospace. Just it is a hypothesis, by us are offered explaining formation and destruction thermoexitons. The measurement thermoexitonal's currents shows, that their stability essentially depends on a nature of depositor of electrons and level them concentrating.

For reception of hydrogen by a way to split out of oxygen from a molecule of water with use excess electron it is necessary to analyse feature of interaction of major factors of transformations in lithosphere: diffusional, kinetic and thermodynamic. Mobile excess electron penetrates through any barrier, the catalyst - molecule or cluster does not meet yet. Here it loses a part of energy and forms thermoexitons of the first order. The increase of its order and increase of energy can proceed by absorption others wandering electrons.

The fastening of molecules of water can occur on a surface carbon cluster at the expense of the same trailing bonds. Water have a position on a carbon material by atoms of hydrogen. In such situation energy of bond of oxygen - the hydrogen is polarized and so is weakened, that becomes to possible transition electrons from thermoexiton on oxygen, that in the end and as results a molecule of hydrogen splits out.

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