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SUMMARIES

A.CHIRAKADZE, N.MITAGVARIA, N.LOMIDZE, M.AMBOKADZE. Low-energy desalination using deionization of the battery electrode and the use of the resulting electroactivated water in insecticidal combinations based on nano alumina.

"Energy". №3(99). 2021. Tbilisi. p. 5-9. rus. sum geo. engl.rus.

The reported paper is devoted to the study of one of the main products of the desalination of saline brackish water in the battery electrode deionization (BDI) system (namely, catholyte activated water) in order to assess its potential as a possible synergistic component of the insecticidal combination for a sharp increase in biological effectiveness and environmental safety. The results of the study show that today the use of BDI is the most effective method of desalination of the saline brackish water with very low energy consumption and, accordingly, low cost. The resulting electrochemically activated water can be used to increase the efficiency and environmental safety of pesticides. Nano-alumina, being an important insecticidal component, is most likely also a potentially important synergist for highly effective and less hazardous to wildlife combined pesticides; however, an accurate quantitative assessment of its synergy with other components requires additional research.

Tabl. 1, bibl. 5.

T.MELASHVILI, G.CHUBINIDZE, N.GOGOLASHVILI, I.KURASHVILI, G.DARSAVELIDZE. The contribution of thermal defects to the semiconducting properties of p-Si +2at.%Ge:B alloy. "Energy". №3(99). 2021. Tbilisi. p. 10-16. geo. sum geo. engl.rus.

Nonmonotonic changes in the characteristics of the electrophysical properties and absorption spectra of infrared radiation in p-Si+2at.%Ge:B alloy with (111) orientation have been revealed under the influence of thermal vacuum annealing at high temperatures.

The redistribution of oxygen and carbon atoms from optically active positions of interstitial and substitution into thermal origin defects has been shown. A significant part of thermal defects are dissociated during high-temperature annealing, which results in an increase in the oxygen and carbon content in optically active positions. The results obtained are interesting for the problem of creating semiconductor materials and devices with specified characteristics based on SiGe alloys.

Ill. 3, tabl. 1, bibl.10.

T.KOKHREIDZE, M.KHAKHANOV. Stationary processes in the amorphous-superconducting transformer power controller.

"Energy". №3(99). 2021. Tbilisi. p. 17-21. geo. sum geo. engl. rus.

Equations of the stationary processes in the amorphous-superconducting transformer power controller are derived in matrix format. Main power ratios of windings of the controlling superconducting transformer in an idle mode are obtained as a result of solving equations.

It is determined that the excitation winding should be powered by the voltage the phase of which should coincide with the primary winding power phase but it should vary by magnitude.

It is shown that the unit power of the excitation winding at a given width is determined by the intensity of the magnetic field in the amorphous magnetic conductor and the density of the excitation current and it is proportional to the product of these magnitudes.

Bibl 2.

T.KOKHREIDZE, M.KHAKHANOV. Electromagnetic processes in amorphous-superconducting transformer power controller.

"Energy". №3(99). 2021. Tbilisi. p. 22-31. geo. sum geo. engl. rus.

Equations of the electromagnetic processes in the amorphous-superconducting transformer power controller allowing to analyze the processes in both transition and stationary modes are derived. It is determined that active resistance of each superconducting winding of the control transformer consists of three components: active resistance associated with electrical losses in the superconductive wires; equivalent resistance associated with hysteresis losses in the

superconducting wires; resistance associated with hurricane losses in the superconducting wires and base layer.

Operation modes of the control superconducting transformer such as idle mode, load and short circuit modes are reviewed.

Ill. 4, bibl. 3.

M.AMBOKADZE. Recovery and Oxidation (Redox) Potential of the Products of Energy Saving Electrochemical Desalination of Water and Their Biological Effectiveness Against the Brown Marmorated Stink Bug.

"Energy". №3(99). 2021. Tbilisi. p. 32-38. geo. sum geo. engl. rus.

The present research deals with study of characteristics of the desalinated water produced in a three-chamber zinc/ferric cyanide Electrochemical Desalination Battery (EDB), determination of their biological effectiveness against BMSB and evaluation of potential for its use as a synergistic component of the insecticidal combinations containing diatomaceous earth, bifenthrin, malathion, rosemary oil, bio-degradable emulsifier-disperser Lansperse Bio-868 and hydroxyethylcellulose (HEC). The results obtained clearly showed that solely the anolyte and catholyte solutions water are not effective against BMSB, although both of them revealed a significant biological effectiveness and synergy in combinations with lower content of bifenthrin plus malathion. Hence, we can conclude that the electrochemically pretreated water can be effectively used in insecticidal combinations to reduce the content of synthetic chemical insecticidal components and, therefore, the toxicity of combinations against non-targeted insects and other living organisms.

Ill 2, tabl. 2, bibl.6.

SH. GAGOSHIDZE. To calculation of halocline in the rivers mouths of foothill type.

"Energy". №3(99). 2021. Tbilisi. p. 39-45. rus. sum geo. engl. rus.

The existing theoretical and experimental dependencies for determining the length of seawater intrusion in river mouths obtained under the condition of neglecting the slope of the river bed do not give reliable results for the estuaries of foothill rivers, in particular for the rivers of the black sea coast of Georgia, whose near-mouth bottom slopes are comparable with the slopes of the fresh and salt water friction and even significantly exceed them.

In this article we derive relations for calculating the geometric parameters of the intrusion of the sea salt water wedge (halocline) in the mouths of piedmont type rivers. It is shown that in addition to the velocity of the river flow and the difference between the density of sea and river water, the influence of the slope of the river mouth in determining the length of the intrusion of halocline is crucial.

Ill. 2, bibl. 5.

M.LORDKIPANIDZE, T.JOJUA, B.KHACHIDZE. Study of physico-mechanical properties of concrete modified with chemical additives.

"Energy". №3(99). 2021. Tbilisi. p. 46-50. geo. sum geo. engl. rus.

Concrete applied in modern construction should have high physico-mechanical properties for it to allow its use in any construction field. Various types of additives are used in order to achieve this. In particular, the additives - GRACE ZYLA® 420 M, super-plasticizer, micro-silica and their admixture GRACE ZYLA® 420 M + micro-silica have been selected for study in this article.

By using these additives, the concrete admixture would become more movable and the concrete itself would become a waterproof material with high physico-mechanical properties.

Ill. 1, foto 1.