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ТА СОЦІАЛЬНИХ КОМУНІКАЦІЙ

СОЦІАЛЬНО-ГУМАНІТАРНІ АСПЕКТИ РОЗВИТКУ СУЧАСНОГО СУСПІЛЬСТВА

МАТЕРІАЛИ ВСЕУКРАЇНСЬКОЇ НАУКОВОЇ КОНФЕРЕНЦІЇ ВИКЛАДАЧІВ, АСПІРАНТІВ, СПІВРОБІТНИКІВ ТА СТУДЕНТІВ

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limit structures has been obtained. The formation conditions for two limit structures have been found.

Self-similar regime corresponds to the selection of the parameters, at which a set of limiting structures is formed with different size of grains. There have been determined such parameters at which the distribution of energy density of grain boundaries has a power series form. The kinetics of setting the steady-state values of defects density is investigated within the scope the adiabatic approximation. It is demonstrated that grain sizes in the limit structures decrease with the increase in elastic strains.

SPIROPYRAN AS A NEW WORD IN MODERN DYNAMIC MATERIALS

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Nearly all the traditional man-made materials are static in both form and function, and only quite recently the synthetic materials chemists have shifted their attention to the dynamic materials. These dynamic materials have multiple advantages over their static counterparts: selected properties of interest can be reversibly ‘‘turned on’’ and ‘‘off’’ at will and the ability to reconfigure these materials imparts upon them many uses.

One of the representatives of dynamic materials is the photochromic materials. The investigation of photochromic materials is very actual and attracts scientist’s attention because of the broad spectra of possible applications. Products that are based on these materials find application in data storing technologies and reproducing information, colour filters production, photochromic lenses production and various components of molecular electronics. They are also used in medicine for cancer diagnostic and treatment.

The prominent representative of photochromic compounds is spiropyran – molecule with single bonds that can turn into one of two states under the influence of photons with different energies. This molecule has particular configuration. This molecules are related to one of the most prospective and studied class of organic photochromic compounds.

The purpose of the paper is to make the mechanism of photochromism more exact, to investigate the conformational transformations of the spiropyran molecule and the process of changing its hybridization.

To achieve the purpose of the paper the following tasks have been performed:

• to discover the rotamers of open-ring form of spiropyran molecule;

• to investigate the transformation route between two states of the spiropyran.

INTERACTION OF STATIONARY SH-WAVES WITH CURVILINEAR CRACKS IN THE SEMI-INFINITE BODIES

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Modern constructions and buildings work not only in the multiple static and cyclic terms, but also in the dynamic terms. It is well known that during the dynamic loading of bodies that have connections, cracks and other technical or structural faults, the probability of the material destruction is growing. To make an exact mathematical description of the wave field in bodies with defects is very difficult. For rating the limited state of such bodies, the consideration of model problems is needed. As a result the development of methods of solution, dynamic tasks for all-around infinite and semi-infinite bodies with cracks and connections of the elasticity theory, is urgent as well as their exact results.

In fact a crack, as a rule, has not got a straight form and, as the researches showed, the degree of the curve influences greatly on the size and character of changes of the stress intensity factor. Different problems appear during the solution of dynamic tasks dealing with curvilinear cracks.

The goal of the work is to develop the method of task solution of the elasticity theory for semi-infinite bodies with the curvilinear incision system or intercalation. The common approach to calculate the stationary dynamic problem of the theory of elasticity for semi-infinite medium with