

## **STUDY OF INSTABILITY PHENOMENA IN THE STUDENTS-ECOLOGISTS RESEARCHES**

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One of the important problems of modern natural science is observation, analysis and understanding of the processes of instability and formation of ordered structures. The purpose of the work: to fill the lack of development of knowledge about nature. Particular attention should be paid to the ability to set a goal, to argue the proposed provisions, ideas, hypotheses, the ability to ask questions (this is especially valuable).

In biotechnology processes based on surface phenomena such as adsorption, adhesion, wetting, dewetting are widely used. These phenomena and processes are applied to solve the urgent environmental problems of recycling industrial waste resins, waste phenol-formaldehyde and epoxy binder composites.

In the students works of 20.03.01 (Safety engineering) lacquers containing artificial film former–cellulose esters: nitrate, acetobutyrate, ethyl cellulose experimentally were investigated as a model of multicomponent systems. The kinetics of film spreading on a liquid substrate is described, the phase decay of the system and the equilibrium of the resulting layer are considered. At the same time, the process of hardening of the lacquer film is accompanied by the instability in the form of wrinkles, fringe as regular relief at the interphase boundaries. The step of this regular structure and the length of wrinkles were measured. The influence of various additives in the liquid (water) substrate, as well as the effect of temperature during the experiments was studied.

In addition, other examples of instabilities observed by students in laboratory and living conditions, in nature (clouds, jets, draping of natural and artificial materials) are collected and analyzed. In particular, we can note the unusual relationship of the diameter of the trees with the shape of the cross-section of the trunk: with a sufficiently large diameter of the trunk the instability of the form comes. From round it becomes wavy, there is a ribbed «butt swelling».