Application of Biotechnologies for Receiving Nano-Dimensional Pigments

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The purpose of the project is caused by improvements of an ecological situation. Every year the volume of color metal waste increases and it still causes a number of problems. Searching for solutions have let to the new direction in science by biotechnology. During biotechnological tests emergence of the accompanying materials - rainfall received from activity of a bacterium was revealed. Project is directed by assessment of this rainfall with a possibility of further application as pigments. For achievement of purposes used bacteria thiobacillus ferroxidance relating to flagellum to autotrophic prokaryote. The mechanism of their action consists in oxidations of ions of iron and other metals for the purpose of their translation in solution. Have available tank with bacterial a complex in which waste of production color metal is located, and bacteria begin to leach useful components from slag, transferring them to solution. So in solution there are ions of different metals: nickel, copper, zinc other metals and jarosite. As a result of chemical and heat treatment of an initial deposit have received rainfall of three flowers: blue, yellow and red that which in a consequence will gives us, three primary colors of different shades, which vary its proportions in mix. This study showed that Chemically synthesized pigments are large particles that are not uniform in their shape and size. On the contrary, bio-chemical pigments are much smaller and have a spherical shape, which will significantly improve the uniformity of paint when mixing pigments with a binder. Further experiments will study the properties of Nano-powders and test the methods for their preparation.

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