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LASER PRETREATING OF CYANOBACTERIA BIOMASS TO PRODUCE LIPIDS AS A RENEWABLE ENERGY SOURCE

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Abstract

The composition of cyanobacteria in the Dnieper reservoir is important. At the same time, the development of cyanobacteria leads to the pollution of the Dnieper river waters. The extraction of the most valuable components of cyanobacteria from the reservoir and the valorization became one of the most urgent ecological and resource-saving tasks. The article proposes a method for intensifying the process of extracting lipids from the cellular components of cyanobacteria. A method of pre-treatment the cyanobacteria biomass with medium-intensity laser radiation has been developed. This method is used to destroy the cellular structures and isolate the lipid fraction from them. The total lipid content in the obtained organic fraction was determined. They were separated by thin layer chromatography. It was found that the use of laser pre-treatment of cyanobacteria biomass with subsequent extraction increases the yield of lipids. It is advisable to use the isolated lipids from the cyanobacteria biomass as a renewable source of raw materials to obtain a third-generation energy carrier, for example, biodiesel fuel.

Key words: biodiesel, cyanobacteria, extraction, laser radiation, lipids

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