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END OF THE OIL ERA: BIOTECHNOLOGICAL METHOD OF ARTIFICIAL OIL SYNTHESIS

Organic substances surround us everywhere: in food, in vitamins, in the form of fuel, paper. But an important organic substance that we hear about from television, newspapers, news portals, the substance that determines the development of a country is oil. In the last 20 years, oil has become the main source of production of such substances as gasoline, diesel fuel, aviation kerosene, fuel oil, polyethylene (bags, pipes, films, etc.). But nowadays without new discoveries of oil fields, oil reserves will last for 30 years. And when the oil runs out, the crisis will begin, and therefore scientists around the world are looking for the ways to synthesize a new substance with the same properties.

The aim of the work is to find the optimal method of oil production and its refined products.

Crude oil, liquid petroleum that is found accumulated in various rock formations in Earth's crust and is extracted for burning as fuel or for processing into chemical products. In ancient time, oil was added to body paint or used for rubbing as a tonic. A viscous natural bitumen served as a material for fastening arrowheads and spears. In the writings of ancient historians (Cornelius Tacitus, Strabo), there are frequent references to the extraction of bitumen in the Dead Sea. In the 7th century in Persia, a terrible weapon of that time was created from oil – "Greek fire", the ancestor of napalm.

The modern history of the oil and gas industry started in 1847, with a discovery made by Scottish chemist James Young. Now the following countries, leading in oil production are Russia, the USA, Saudi Arabia, Canada. Now they are engaged in the discovery of a new method related to biotechnology. The oil obtained by the new unique technology is of high

quality, it can be immediately used for the production of kerosene, gasoline or diesel fuel. The process of creating oil looks like this: scientists pump a suspension from a certain kind of wet algae into a chemical reactor in which biological material is treated with a jet of ordinary hot water, but under ultra-high pressure. As a result of this process, oil is obtained.

Unlike fossil fuels, biofuels are man-made fuels created using plant-based renewable resources often known as biomass. Because biofuels are renewable, they can work towards reducing a combustion-powered vehicle's CO₂ and other harmful emissions.

Biodiesel is a liquid fuel produced from renewable sources, such as new and used vegetable oils and animal fats and is a cleaner-burning replacement for petroleum-based diesel fuel. Biodiesel is non-toxic and biodegradable and is produced by combining alcohol with vegetable oil, animal fat, or recycled cooking grease.

Producing advanced biofuels typically involves a multistep process. First, the tough rigid structure of the plant cell wall, which includes the biological molecules cellulose, must be broken down. This can be accomplished in one of the two ways: high temperature deconstruction or low temperature deconstruction. High-temperature deconstruction makes use of extreme heat and pressure to break down solid biomass into liquid or gaseous intermediates. There are three primary routes used in this pathway: pyrolysis, gasification, hydrothermal liquefaction. Low-temperature deconstruction typically makes use of biological catalysts called enzymes or chemicals to breakdown feedstocks into intermediates.

It seems unlikely that biofuels will ever be a direct replacement for petrol and diesel, although that is not to say that they will not play their part over the coming years. But is there a choice, if in 30 years or earlier oil becomes a rare resource, and we do not have new production methods.

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