

We live in a world of dynamic technological development, driven by the constant pursuit of perfection and increasing prosperity. For generations, people have been competing with each other in designing new inventions and amenities, completely unaware that the environment in which we live is suffering. We are struggling with many negative effects of climate change caused by huge emissions of greenhouse gases into the atmosphere. Many years had to pass before the ecological awareness of society increased. Currently, we are trying at all costs to repair and even erase the mistakes of the past. Scientists around the world are developing new and more sophisticated methods that will help decarbonize the industry.

This project responds to this cry of despair by presenting a holistic approach to the topic of ecological production of chemicals and fuels, as well as to the management of bio-waste. We are observing a constant increase in demand for light hydrocarbons, but traditional methods of their production are unecological and uneconomical. Our proposed methane coupling process in non-thermal plasma conditions, which is a powerful medium conducive to chemical reactions, will circumvent these problems. In order to improve the efficiency of the process, it will be carried out using metallic catalysts mounted on a biochar matrix derived from biomass utilization. This aspect gives the project an even more ecological character.

Preliminary research has already shown that this is absolutely possible. The use of the proposed system allowed for obtaining very satisfactory results. Careful attention to the topic, conscious design of catalysts, and optimization of all parameters of the coupling process will certainly contribute a lot both to the field of chemistry of modern materials and will allow the development of a completely new, efficient and scalable method with potential for use in industry.

Thanks to the results obtained, we will be able to enjoy all the goods that the modern world gives us, without any remorse of ecological conscience. This is a solution that definitely fits into the assumptions of sustainable development, allowing us to "have a cake and eat it too". On the one hand, we do not have to limit our whims and constantly develop, and on the other - live in a clean and safe environment. It's up to us what this world will look like.