

### **Abstract for the general public**

Market development and popularization of the use of packaging and other products made of biodegradable polymers (BMP), the so-called bio-based materials, such as starch, cellulose, polyhydroxy acids, or polylactic acid, requires new solutions in the organic recycling of selectively collected biowaste. The presence of waste from bio-based materials in the stream of selectively collected biowaste will influence the composition and biodegradability of biowaste subjected to organic recycling. Producers of bio-based materials ensure that they are biodegradable and compostable. Hence, the composting of their waste together with biowaste has been proposed as a method of organic recycling. Standard assessment of biodegradability of bio-based materials is carried out under aerobic conditions at a constant temperature of 58°C. Thus, to improve the knowledge, it is necessary to carry out BMP biodegradation in a typical composting temperature profile. BMP may contain additives that affect functional properties, which may limit their complete biodegradation. Composting can only result in a loss of the mechanical properties of the BMP. As a consequence, biowaste compost with BMP will be contaminated with microplastic (MP). The project will determine the mechanical properties of BMP, as well as the presence of MP in mature compost as indicators of biodegradability, which is not a common practice of assessing the biodegradability of BMP. Moreover, in the project, it is hypothesized that it is possible to increase the composting efficiency as a result of the addition of laccase, which affects the biodegradation of BMP, and thus reduces the contamination of MP. It is planned to determine the microbial species structure involved in the biodegradation of BMP during composting with biowaste selectively collected, using high-efficiency sequencing techniques. The use of methods determining the mechanical properties of BMP during composting as well as molecular techniques ensures the novelty and interdisciplinarity of research allow for a wide interpretation of the results.