Transformations of minerals in soils are, next to the transformation of organic matter, an integral part of soil forming processes. The type and amount of minerals contained in the soil determine the suitability of the soil for biocenosis. In this study, it was assumed that in the sandy soils of the young glacial area, soil forming processes (podzolization, rustification ant gleyization) have an impact on the mineral composition of the soil, and this impact is visible both in the differences between individual types of soil and between the individual genetic horizons of each of the tested soils.

The aim of the research was to determine the directions and intensity of this influence. The motivation to undertake this research is the fact that there are few works systematizing mineral transformations in soils in the context of typological soil forming processes, especially works devoted to primary minerals in sandy soils.

During the study, a set of methods typical for both soil science and mineralogical sciences were used. A standard set of soil science laboratory analyzes was carried out, and in addition, a petrographic analysis of gravel was conducted, the ratio of feldspar to quartz content in sand fractions was determined, the heavy mineral composition of the very fine sand fraction was analyzed, and in the <0.1 mm fraction, an analysis of the mineral composition was carried out using the XRD method and examination of elemental composition using the ICP-MS method.

The research confirmed the destructive impact of soil forming processes on primary minerals in surface soil horizons, especially in acidic soils, and the protective effect of ferrous coatings on primary mineral grains in enrichment horizons was discovered. This is manifested in a decrease in the amount of mineral grains less resistant to hypergenic conditions (for example feldspars, garnets and amphiboles) in surface horizons, an increase in their content in enrichment horizons, and then another decrease in their share in the upper parts of the parent rock of the tested soils. This regularity was found in the examined profiles of rusty and podzolic soils, but it did not occur in the case of mucky soils. Additionally, it was noted that enrichment horizons constitute a reservoir of many elements. Moreover, it was found that secondary minerals are more diverse in podzolic soils than in rusty soils.

Obtained results allowed to confirm the relationship between the mineral composition and the soil forming process under which the soil was formed and contributed to expanding knowledge about this influence.