

Abstract

This bachelor thesis is focused on studying crystal chemistry of apatites of the Cenozoic igneous rocks of the Czech Republic. The main goal of this thesis is to determine the substitution trends in 23 samples of apatites from selected volcanic rocks of České středohoří Mts., Doupovské hory Mts. and the Labe Tectono-volcanic Zone. It was found that contents of REE (Ce, La, Nd, Sm, as well as Y) and Si correlate mutually. In addition to that this group of elements displays the inverse correlation with Ca and P. These observations confirm the coupled substitution of REE, Y and Si. The second part deals with refinement of crystal structures of studied apatites. The crystal structure of selected samples was refined by Rietveld method. All samples displayed different peak shapes for 00 l reflections compared to other reflections. It can be assumed that the change of the shape parameters was caused by different size of crystallites in this direction. During the refinement it was found that the samples A7 and A10 contain two different apatites displaying very similar crystal lattice parameters. In the sample A7 this fact is caused by chemical zoning, in particular, by different concentrations of Ce and La.