



Colourants and related phases in leucogranite exploited as feldspar raw material: from waste to by-product enriched in critical metals

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Feldspar-rich leucogranite formed by metasomatic / hydrothermal alteration of granitic precursors in the Horní Slavkov – Krásno ore district (making part of Slavkov crystalline unit located in the western part of the Bohemian Massif, Czech Republic) presents the largest exploited deposit for industrial feldspars in the Czech Republic. As for other feldspar resources, the quality of raw material is controlled by content of colourants, specifically due to presence of hydrated iron oxides (FOH) and Ti-oxides. The recent study originally focused on the re-examination of mineralogical control of concentration of these impurities. However, the SEM-EDS study revealed high content of additional phases such as Li-micas and/or Nb-Ta minerals, partly linked to the presence of FOH and Ti-oxides. Based on these results, laboratory experiments on potential beneficiation of the feldspar ore and on separation of various by-products were conducted by using combined gravitational and magnetic separation. These laboratory trials proved highly effective process allowing acquisition of Li-micas and Nb-Ta concentrate as by products. If the similar separation unit will be built in the industrial scale (only magnetic separation unit is working in the quarry at present), several tons of these highly valuable commodities can be obtained each year.