

## SUMMARY

The diploma work deals with chemical composition of photovoltaic panels and assessment of their environmental risks. In its introduction part, the characterization of photovoltaic panels, including the composition of their layers and the significance of some specific metals in these facilities, is summarized. The introduction part also mentions the life cycle of photovoltaic panels from production to end of life.

The experimental part is focused on chemistry of several different types of photovoltaic panels. In addition to the major elements of the panels (Si, Al, Fe, Na, Ca), the analyzes confirmed the increased content of interest metals (especially Cu, Ag, Sb, Sn, Zn, Pb) at tens to thousands of mg/kg depending on the processed sample. A potentially economically interesting value is Ag. The Ag concentrations range from hundreds to 1,300 mg/kg (~ 1,200 g Ag / t of panels) for some types of processed samples. High concentrations exhibit Cu (up to 16,700 mg/kg), Sb (up to 1,890 mg/kg) or Sn (up to 2050 mg/kg).

Leaching experiments (using deionized water and EDTA reagents) were performed at two time intervals (24 and 168 hours). Very low leachability of the metals from the studied samples (in order of per mil or less) has been demonstrated. The studied samples of photovoltaic panels can be classified as category “inert waste” (Council Decision EC, 1999/31/EC, ar. 16, An. II).

Key words: photovoltaic panel, chemistry, extraction, environmental risk