Summary

Sulphates represent apparently an important component of Martian rocks and regolith. Their detection and identification is an integral part of the planned exploration missions, as they provide valuable information about the geological history of the planet. Also they could play a crucial exobiological role related with the possibility of existence of extinct or extant Martian life. This thesis provides a comprehensive overview of the occurrence and the geological situation of sulphates on the surface of Mars. The basic genetic factors responsible for formation of sulphates are introduced in terrestrial and Martian conditions. Furthermore, their significance is explained as indicators of geological factors and their connection with a possible Martian life. The second part presents method of Raman spectroscopy and its application in exobiology. The advantages and limitations of laboratory and portable instruments for analyzes exobiological samples are described. Identification capabilities of this method for determination of sulphates are shown, as well as its use on real locations considered as exobiological analogues. At the end, the current concept of Raman spectrometer for ExoMars rover is introduced.

Keywords: Miniaturized Raman spectrometers, field conditions, sulphates