

Abstract:

In order to understand the thermal properties of the rock, it is necessary to apply a suitable method to the sample ensuring the most accurate result. We obtain information about thermal properties by measuring thermal conductivity, diffusivity and calculating the volumetric heat capacity of rocks. The mechanism of heat transfer varies depending on the environment, and the presence of certain factors affects the thermal properties of rocks. Optical scanning and Hot Disk are methods capable of measuring the thermal properties of rocks in the laboratory. Eleven rock samples were measured, on which the suitability of applying the methods for a certain petrological feature was monitored. The resulting values in connection with the parameters influencing the thermal conductivity were compared with each other. From the available amount of data, the application of the Optical Scanning method appears to be more advantageous for heterogeneous anisotropic rocks, as it measures a much larger part of the sample and thus provides a more representative value of thermal conductivity. The Hot Disk method is convenient to apply to heterogeneous and non-cohesive samples and also provides the possibility to measure in a furnace and thus provide information on thermal parameters at different temperatures. The choice of a suitable method for measuring a rock sample has a fundamental role in the resulting values of thermal parameters, and knowledge of the principles of the methods will thus prevent incorrect measurements.