

Spectral Analysis and classification of igneous and metamorphic rocks of Hamadan region for remote sensing studies; using laboratory reflectance spectra (350-2500 nm)

K. Rangzan¹, A. Saki^{*2}, H. Hassanshahi¹, B. Mojaradi³

1- Department of GIS & Remote Sensing, Faculty of Geosciences, Shahid Chamran University, Ahvaz,

2- Department of Geology, Faculty of Geosciences, Shahid Chamran University, Ahvaz, Iran.

3- Department of Civil Engineering, Shahid Rajayee University, Tehran, Iran.

(Received: 25/10/2010, in revised form: 9/4/2011)

Abstract: Reflectance spectrometry techniques with the integration of remote sensing data help us in identifying and mapping the phenomena on the earth. Using these techniques to discriminate the petrologic units independently and without knowing the spectral behavior of rocks along the electromagnetic wavelengths can not be so much useful. For the purposes of this study, 65 samples of igneous and metamorphic rocks from Hamedan region were collected and their spectra were measured using Fieldspec3 device in laboratory. The spectra were analyzed on the basis of absorption, position and shape. Petrographic analyses were used to interpret the absorption patterns as well. Then the spectra were classified according to spectral patterns. This measurement was done on both freshly cut and exposed surfaces of the samples and except a few samples, the two sets of spectra did not differ significantly. Finally, to evaluate the possibility of recognition of these targets, the responses of two hyperspectral and multispectral sensors were simulated from spectra representative of the spectral classes, showing that significant identification and classification of well exposed rocks are potentially possible using remote instruments providing high quality spectra. Also Aster simulation showed that a preliminary gross discrimination of rocks was however possible.

Keywords: *spectrometry; Fieldspec3; absorption; simulation; Hamedan.*

متن فارسی اصل مقاله از صفحه ۸۱ تا ۹۶ در این شماره به چاپ رسیده است.

* Corresponding author, Tel-fax: 0611-3331059, E-mail: Adel_saki@scu.ac.ir