

ABSTRACT

Petrography is a branch of petrology that explains detailed descriptions of rocks based on mineral content and texture. Geological processes can form minerals into a mass, and the mass will form mineral sands by changes in weather, climate, and some geological processes. Existences of mineral sands could be predicting the presence of huge amount mineral with the same type.

In one sample of mineral sands, there are various types of minerals that can be distinguished through the shape and color. Geologist can see and classify a sample of minerals manually through microscope. But, this way to do is not effective because it takes too long to classify the minerals.

Telecommunication technology can be used with the implementation of digital image processing. Image processing process is started with microscopic digital image of mineral sands that captured from microscope as the input. Then, followed with preprocessing process, feature extraction using Discrete Wavelet Transform (DWT) methode, and classified using Support Vector Machine (SVM) methode. The purpose fo this final project is to know the percentage of minerals in one sample using digital image processing.

Determination of mineral percentage designed using Matlab based software. With DWT methode for feature extraction and SVM methode for classification, system can decide the number and types of minerals in one sample. From the results of testing to be performed, the best accuracy is 86%.

Keywords: *Discrete Wavelet Transform, Support Vector Machine, and minerals*