

## ***ABSTRACT***

Petrology is a field of geological science focused on the study of rock and its forming conditions. Petrography is a branch of petrology that explains detailed descriptions of rocks based on mineral content and texture. Rocks are a collection of minerals that have been frozen, these minerals are generally referred to as rock-forming minerals. By identifying each of the minerals found in the rock with the microscope we can classify the type of the rock. Characteristics of each type of rock can be classified from the percentage of minerals that make up the rock.

In the process of classifying it, geologists, especially petrographer, examined from a petrographic microscope. The microscope can be analyzing in detail from minerals with optical mineralogy and thin section from rocks. However, petrographers still use conventional way to examine it with the senses of vision through a microscope that certainly subjective in terms of accuracy and efficiency of time.

In this Final Project, the author will design a software based on MATLAB which is expected to the software can classify the types of rocks. This system will be given input in the form of digital images of the rocks microscopically taken from a petrographic microscope. Then the image will be processed by the system. The first process is feature extraction through the Discrete Wavelet Transform (DWT) method. Next is the image classification process through the Support Vector Machine (SVM) method. From the results of testing to be performed is get the best accuracy 83% by DWT feature extraction method and SVM classification.

**Keywords** : Petrology, Petrography, DWT, SVM.