

ABSTRACT

Sandstone is an example of the most encountered clastic sedimentary rocks. These are very recognizable because usually, these rocks are resistant to weathering. Seeing the abundance of benefits from sandstone one of them as knowledge of earth history as well as a reservoir of petroleum. So that petrologists are increasingly interested in doing research. It is so diverse a variety of shaped variations, that petrologists must be meticulously in enforcing research still undertaken with the senses of vision aided with microscope tools, whereby the means are still conventional and have limitations.

At this final project, it was designed a MATLAB-based system simulation to assist petrologists in classification. The classifier of rock types based on the textures possessed from such stones using digital image processing using GLCM extraction method. The classification accuracy based on texture on 80% data sharing of train data and 20% of test data obtained for cross nicol is 84.6% with computing time of 0.12 seconds with GLCM parameters of 1 pixel distance, 0 degree angle, 32 quantization level. Whereas for parallel nicol get an accuracy value of 95.6% using the GLCM parameter of 3 pixel distance, 135 degree angle, 32 quantization level and 0.24 seconds computational time. Then for 50% data sharing of train data and 50% of the 80.3% cross nicol accuracy value test data with its computing time of 0.12 seconds uses GLCM parameters of 3 pixel distance, 90 degree angle, and 32 quantization level. In parallel nikol sampling are obtained with an accuracy value of 94.6% with a computational time of 0.11 seconds at a distance of 4 pixels and an angle of 0 degrees with a quantization level of 32. Classification of sedimentary sandstone based on textures with a 470 x 612-pixel image size where its output can classify sandstone types based on its class.

Keywords: Sandstone, GLCM, Decision Tree, Cross Nikol, Paralel Nikol