ABSTRACT

This research discusses about the method to classify coal with digital image processing. Feature extraction method used in this research is Discrete Wavelet Transform (DWT) and Fuzzy Color Histogram (FCH), while classify method used in this research is K-Nearest Neighbor (K-NN) which will be implemented in Matlab software. This research expected to help the people to be more careful in choosing the type of coal to be purchased. There are three types of coal used in this research. They are low class coal with 4000 cal/gr, medium class with 5100 cal/gr, and high class with 7000 cal/gr. These kind of coals have a characteristic in their color. For example, high class coal has a darker color than medium and low class coal. Therefore, this research is done based on color feature on coal image. There are four main steps in processing such as image acquisition, preprocessing, feature extraction, and classification. For image input, image is obtained from photography using 18 MP Canon EOS 600D camera. The measured parameter is the computational time and accuracy rate. The test is done by taking 90 coal samples with each class composition have 20 test images and 10 train images so the result has 76,6666% accuration and 10.13178262s computation time using DWT with parameters of decomposition level 6, daubechies1 wavelet types, filter LL, the value of k=1, and the type of Euclidean. While FCH has accuration with 61,6666% accuration and 12.82627064s computation time with parameters the value of k=1, and the type of Euclidean.

Keywords: *Coal, Discrete Wavelet Transform (DWT), Fuzzy Color Histogram (FCH), K-Nearest Neighbor (K-NN)*