ABSTRACT

Research has been conducted related to natural polarization, electrical conductivity, absorption coefficient in transformer oil. The purpose of this study is to determine the correlation between changes in polarization angle, electrical conductivity, and absorption coefficient with the length of heating in transformer oil. The test method used is natural polarization to determine changes in polarization angle in transformer oil and measurement of electrical conductivity of transformer oil using a conductometer plus measurement of the value of light intensity passing through the sample to determine the absorption coefficient of transformer oil. The samples were heated at 100°C with heating times of 0 hours, 3 hours, 6 hours, 9 hours, 12 hours, and 15 hours. In the natural polarization process, the laser used has a wavelength of 532 nm. The results only show the relationship between changes in polarization angle and absorption coefficient with the length of heating in transformer oil. The sample heated for 15 hours with a polarizer angle of 90° has the largest change in polarization angle among the other samples, which is 0.42°. This study has not shown any effect of heating duration on changes in electrical conductivity values. The results of this study also show that the heating time of the sample affects the absorption coefficient of the sample to the laser light through it. The longer the heating of the sample tends to reduce the value of the absorption coefficient.

Keywords : natural polarization, electrical conductivity, heating, polarization angle change, material absorption coefficient