

ABSTRACT

Dielectrophoresis is a technique of separating charged particles or molecules based on their rate of migration by using electrodes to charge a medium by using direct power supply as its main input. This process has been carried out by researchers with a variety of particles and molecules, in the end with a variety of development processes finally found a new method in this process called teslaphoresis.

In this research, a teslaphoresis implementation with the Tesla coil principle is performed to manipulate the movement of a ZnO particle in a container containing ethanol and water by designing a Tesla coil that can produce a frequency. The frequency is produced by the resonance frequency between the capacitor and the inductor on the primary coil connected in series. The Tesla coil frequency output emits three different frequencies namely 200 kHz, 600 kHz and 1 MHz. The three frequencies are used as a comparison of the effect of manipulation of movement on ZnO particles.

The results obtained are based on testing that can determine the density of the area and the movement of particles at each frequency. Based on testing at frequencies of 200 kHz, 600 kHz, and 1 MHz media water particles can move attracted. Frequencies of 200 kHz, 600 kHz, and 1 MHz ethanol media particles can be moved repealed. In addition, the test results can separate ZnO particles with sand. With these results it can be said that the Tesla coil system is designed to run well.

Keywords: *Dielectrophoresis, Tesla coil, frequency resonance, Teslaphoresis*