ABSTRACT

THE EFFECT OF ALUMINA (Al_2O_3) 0, 10, AND 15 WT% ON ELECTRICAL CONDUCTIVITY AND MICROSTRUCTURE OF CORDIERITE ($2MgO.2Al_2O_3.5SiO_2$) BASED SILICA FROM RICE HUSK

By

Shella Windi Oktivianty

This study was carried out to investigate the effect of alumina on the physical characteristics, microstructure, and electrical conductivity of cordierite. Silica obtained from rice husk through sol-gel method, while alumina and magnesium were obtained from Sigma-Aldrich. Cordierite was synthesized by the solid state method and sintered at 1200°C. The measurement results revealed that the addition of alumina on cordierite reduced density, increased porosity, and decreased electrical conductivity. The *Scanning Electron Microscopy* (SEM) showed the irregular morphology of all samples. The porosity and aglomeration in cordierite were increased with addition of alumina. *Energy Dispersive Spectroscopy* (EDS) results confirmed the presence of cordierite constituents and several impurities.

Keywords: *Alumina, cordierite, electrical conductivity, microstructure, and rice husk.*