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FABRICATION AND CHARACTERIZATION OF CALCIUM SILICATE CERAMIC USING RICE HUSK ASH AND POWDER CALCIUM OXIDE BY SOLID STATE REACTION TECHNIQUE

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Calcium silicate ceramic has been synthesized using raw material of rice husk ash and commercial calcium oxide by solid state reaction technique. Rice husk powder burned for 6 hours at temperature of 750°C. Synthesis carried out by reacting the powdered rice husk ash and calcium oxide with a mass ratio of rice husk and CaO 1: 1. Sample than ground far 1 hour and than molded into pellets. Pellet sintering calcium silicate with temperature variation of 1000°C, 1100°C, 1200°C and 1300°C. Characterization of calcium silicate using FTIR, SEM and XRD. The FTIR result show of Si-O groups on the wide band between 910.63 cm⁻¹ to 1010.44 cm⁻¹ which is indicated as CaSiO₃. The SEM results show that increasing the sintering temperature is reduced micro cracking effect of dominate cristobalite phase and the pores decreases. The XRD results showed that the crystal structure of calcium silicate is formed at temperature of 1000°C and 1300°C perfect temperature. The results of physical tests of shrinkage, density and resistivity is proportional to the increase of sintering temperature is increased. As for the porosity results are inversely proportional to the increase of sintering temperature and it shows the decrease in the pores of the ceramic calcium silicate.

Key Word: Solid State, Sintering, Calcium Silicate, FTIR, SEM, XRD