

## **PEMBUATAN BETA-TRIKALSIUM FOSFAT MENGGUNAKAN LIMBAH KARBIT SEBAGAI SUMBER KALSIUM**

Aisya Annur Sanyoto  
16/394108/PA/17199

### **INTISARI**

Dalam penelitian ini dilakukan pembuatan beta-trikalsium fosfat ( $\beta$ -TCP) dengan teknik presipitasi menggunakan kalsium oksida hasil pengolahan limbah karbit yang direaksikan dengan garam fosfat. Penelitian ini diawali dengan pengolahan limbah karbit dan ekstraksi CaO. Limbah karbit dikeringkan dalam oven pada temperatur 110 °C selama dua jam dan digerus untuk mendapatkan serbuk limbah karbit berukuran 200  $\mu$ m. Limbah dikalsinasi pada 450 °C selama dua jam untuk menghasilkan CaO.  $\beta$ -TCP disintesis dengan teknik presipitasi dan kalsinasi dalam *furnace* pada suhu 900 °C selama dua jam. Serbuk limbah karbit dan produk  $\beta$ -TCP dikarakterisasi dengan spektrofotometer FTIR dan XRD.

Hasil menunjukkan bahwa limbah karbit termasuk jenis kapur mati (*slaked lime*),  $\text{Ca(OH)}_2$ , dengan kadar kalsium 54,86% (sebagai CaO) dan mengandung beberapa unsur lainnya seperti S, Si, Al dan Mo. Ekstraksi CaO dari limbah karbit menghasilkan rendemen 92,43%.  $\beta$ -TCP telah berhasil disintesis dari CaO yang berasal dari limbah karbit.  $\beta$ -TCP yang dihasilkan berwarna putih, tidak berbau dan memiliki tekstur halus seperti serbuk.

Kata kunci:  $\beta$ -TCP, limbah karbit, presipitasi

## **PREPARATION OF BETA-TRICALCIUM PHOSPHATE FROM CARBIDE WASTE AS CALCIUM SOURCE**

Aisya Annur Sanyoto  
16/394108/PA/17199

### **ABSTRACT**

In this experiment, beta-tricalcium phosphate ( $\beta$ -TCP) has been synthesized by precipitation method using calcium oxide extracted from carbide waste which is reacted with phosphate. This research was begun with preparation of carbide waste and extraction of CaO. Carbide waste was dried at 110 °C for two hours the oven and grounded to get carbide waste powder with the size of 200 mesh. The carbide waste powder was calcined at 450 °C for two hours to produce CaO. The  $\beta$ -TCP synthesis in this study was conducted by with chemical precipitation technique and calcination in a furnace at 900 °C for two hours. The carbide waste powder and  $\beta$ -TCP resulted were analyzed with FTIR spectrophotometer and XRD.

The results showed that carbide waste was dominated by slaked lime,  $\text{Ca(OH)}_2$ , which contained calcium of 54,86% (presented as CaO) and other elements including S, Si, Al and Mo. CaO extracted from carbide waste gave a yield of 92,43%. Precipitation method has been successful to synthesize  $\beta$ -TCP by using CaO from the results of waste carbide extraction. Obtained  $\beta$ -TCP has white colour, odorless and has fine texture like powder.

Keywords:  $\beta$ -TCP, carbide waste, precipitation