

## **PREPARATION OF POLYVINYL ALCOHOL WITH NATURAL HYDROXYAPATITE FROM WOLF HERRING FISH BONE AS BIO COMPOSITE**

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### **Abstract**

The focus of this work was to study the bio composite materials as a potential application in medical field. A theoretical study was carried out in the literature review where the focus was on various types of biomaterials mainly on composites of Polyvinyl Alcohol (PVA) and natural Hydroxyapatite (HAp). Natural hydroxyapatite was obtained from Whitefin Wolf Herring fish bones. The fish bones were cleaned, then calcinated at 800°C for 4 hours and powdered to 200 $\mu$ m. Polyvinyl alcohol (PVA) samples were prepared with various ratios of Hydroxyapatite (0% HAp, 2.5% HAp, 5% HAp, 10% HAp, 20% HAp and 30% HAp) through the solution casting method. Fourier Transform Infrared Spectrometer (FTIR) was used to identify and verify the various functional group in the composite samples. Thermogravimetric Analyse (TGA) and universal tensile testing was done to measure the effect on amount of HAp in the bio composite samples based on its thermal stability and mechanical properties respectively. The major contribution by this work will be that bio composites of PVA/HAp were tested and characterised by using a wide scope of methods. For as in FTIR, the components bonding between them are detected, the composites thermal stability has been further improved when compared to that of pure PVA and finally mechanical properties of the bio composite has been strongly influenced as well.

Keywords: Hydroxyapatite, Polyvinyl Alcohol, Bio composite, Solution casting  
Characterization