INTISARI

PELAPISAN HIDROKSIAPATIT BERBAHAN DASAR CANGKANG KERANG MUTIARA (*PINCTADA MAXIMA*) PADA PERMUKAAN TITANIUM DENGAN METODE *PLASMA ELECTROLYTIC OXIDATION*

Oleh

Davinka Sukma Kirana

21/479058/PA/20781

Telah dilakukan penelitian mengenai pelapisan Hidroksiapatit (HA) pada sampel titanium (Ti-6Al-4V). Penelitian ini menggunakan metode *Plasma Electrolytic Oxidation* (PEO) dengan variasi waktu 5, 10, dan 15 menit serta variasi konsentrasi HA 40% dan 120%. Pada setiap variasi dilakukan pengadukan larutan dengan kecepatan 50 rpm. Larutan elektrolit yang digunakan terdiri dari 6 molar kristal NaOH yang dilarutkan pada akuades. Penelitian ini menggunakan HA yang bersumber dari cangkang kerang mutiara. Proses penelitian dibagi menjadi tiga tahapan, yakni persiapan sampel, proses PEO, dan pengujian sampel. Sampel dianalisis menggunakan SEM-EDX dan uji kuat tekan. Morfologi permukaan yang dihasilkan sesuai dengan hasil penelitian adalah berpori dan homogen. Penambahan konsentrasi HA meningkatkan ketebalan lapisan HA yang terdeposisi pada paduan titanium. Pengadukan pada proses PEO menyebabkan HA tersebar secara homogen sehingga meningkatkan kualitas ketebalan HA terdeposisi. Hasil penelitian menyatakan bahwa HA sudah berhasil terdeposisi pada permukaan titanium.

Kata kunci: pelapisan, hidroksiapatit, kerang mutiara, *Plasma Electrolytic Oxidation* (PEO), titanium

ABSTRACT

COATING OF PEARL MUSSEL SHELL-BASED HYDROXYAPATITE (PINCTADA MAXIMA) ON TITANIUM SURFACE BY PLASMA ELECTROLYTIC OXIDATION METHOD

By

Davinka Sukma Kirana

21/479058/PA/20781

A study has been conducted on hydroxyapatite (HA) coating on titanium (Ti-6Al-4V) samples. The application of HA was chosen because it has the ability to increase osteogenesis in samples that become bone implan media. This research uses Plasma Electrolytic Oxidation (PEO) method with time variation of 5, 10, and 15 minutes as well as 40% and 120% HA concentration variation. In each variation, the solution will be stirred at a speed of 50 rpm. The electrolyte solution used consists of 13 NaOH crystals dissolved in distilled water. This research uses HA sourced from pearl mussel shells. The research process is divided into three stages, namely sample preparation, PEO process, and sample testing. The samples will be analyzed using SEM-EDX and compressive strength test. The resulting surface morphology is porous and homogeneous. The addition of HA concentration increases the thickness of the HA layer deposited on the titanium alloy. Stirring in the PEO process causes HA to be dispersed homogeneously thus improving the quality of the deposited HA thickness. The results state that HA has been successfully deposited on the titanium surface.

Keywords: coating, hydroxyapatite, pearl shell, Plasma Electrolytic Oxidation (PEO), titanium