

Efinda Putri N.S, 2013, **Sintesis Dan Karakterisasi Paduan Kobalt Dengan Variasi Cr Melalui Metode Peleburan Sebagai Material Implan**, dibawah bimbingan Ir. Aminatun, M.Si dan Dyah Hikmawati SSi., MSi.. Program Studi Fisika, Departemen Fisika, Fakultas Sains dan Teknologi, Universitas Airlangga.

Abstract

The use of metal as a bone implant prosthesis continues to grow, demand also increases with the number of cases bone surgery in Indonesia. Cobalt alloy with variation of Cr (28.5; 30; 31.5; 33, and from 34.5% wt) have been synthesized by smelting method that begins with the process of compaction, followed by smelt using Tri Arc Melting Furnace at 200A current . After smelting process is carried out by homogenizing process at recrystallization temperature (1250° C) for 3 hours to allow the atoms to diffuse and transform into γ phase, then performed a rolling process that is accompanied by heating at 1200° C for \pm 15 minutes and followed by quenching. This process is repeated until the obtained thickness of \pm 1 mm. The results showed that increasing Cr composition can stabilize the formation of γ -phase, it is characterized by an increase in the percentage of γ -phase XRD test results. SEM test results show that the whole process of producing cobalt alloy solubility alloying elements are either on a flat surface area. Hardness test results showed high levels of violence cobalt alloy, while the best of hardness is at 345.24 VHN generated by the variation of 33% Cr. Corrosion test results showed that the sample of 31.5% and 34.5% Cr with corrosion rate of 0.016 and 0.17 mpy has corrosion rate under the specified of Europe standard value is 0.457 mpy. Viewed from the aspect of data linearity, the cobalt alloy with 33% Cr possess the best of microstructure and mechanical properties among the others. Therefore cobalt alloy with 33% Cr variation as a potential bone implant prosthesis material.

Keywords : Cobalt alloys, Prosthesis, XRD, Microvickers Hardness, SEM-EDX, Corrosion Test