

THE EFFECTS OF SINTERING BEHAVIOR OF ZIRCONIA DOPED-HYDROXYAPATITE FOR CLINICAL APPLICATIONS

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Abstract: Hydroxyapatite is one of the most potential bioceramic to be applied into the medical and dental field due to its biocompatibility with human hard tissue. However, its properties are still behind those of hard tissues and further studies had to be done to improve its mechanical properties. In the current work, hydroxyapatite powder was prepared via the wet chemical method. Subsequently, the powder was doped with zirconia with weight percentages of 0.05 %, 0.1 %, 0.5 %, 1 % and 5 %. The bulks were then sintered at temperatures of 1100°C, 1200°C and 1300°C at atmospheric pressure. The results revealed that the highest relative density of 99.9 % was obtained for samples doped with 0.1 % zirconia when sintered at 1200°C. Nevertheless, samples doped with 5 wt.% of zirconia showed relative lower relative densities regardless of sintering temperature. This was attributed by the presence of secondary phase which has cause decomposition during sintering.