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Investigation of biomechanical and biosafety of injection moulded implant materials (Conference Paper)

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Abstract

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This paper presents the attempt to manufacture metallic implant using medical grade 316L stainless steel alloy powder by MIM process. The powder with the median particle size of 15 μm and a binder consisting of palm stearin and poly ethylene were mixed at 160°C using a sigmablade mixer for one hour to prepare the feedstock of the test bar. The rheological properties of the feedstock was tested using capillary rheometer. The test bar was injection moulded using vertical injection moulding machine with the nozzle temperature of 200°C. Prior to sintering, the specimens were debound using a combination of solvent extraction and thermal pyrolysis method. The specimens were then sintered under vacuum at the temperature between 1300°C to 1360°C. The properties of the sintered bar such as physical appearance and densities were presented and discussed. The biocompatibility including toxicity properties of the implant also been presented. The results showed that physical and mechanical properties of the sintered sample complied with the international standard © (2014) Trans Tech Publications, Switzerland.

Author keywords

316L stainless steel Injection moulding Sintering Toxicity

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