Abstract

The substrate of stainless steel 306 was bombarded with nitrogen ions of 0.5MeV energy by using 2MV pelletron accelerator. The prepared samples were immersed in SBF for 14 days, and then the samples were characterized for FTIR, XRD SEM and PIXE studies. In this work we have demonstrated that the implantation of nitrogen ions on the surface of stainless steel can induce osteoconductivity, uniform proliferation and nucleation. Hydroxyapatite precipitation is confirmed in the entire sample by using FTIR. In low dose of nitrogen ions, the sample is shallow, low density, localized and non crystalline. Scanning electron microscopy (SEM) and X-Ray diffraction (XRD) studies reveal that the higher Nitrogen ion dose sample exhibits good osteoconductivity, typical hydroxyapatite morphology and good crystallinity. It is also found that ion holes serve as nucleation points for crystalline growth of hydroxyapatite.