

## Phosphate Layers on Titanium and Ti6Al4V Titanium Alloy – Comparison of Hydroxyapatite Layers Obtained During SBF Soaking

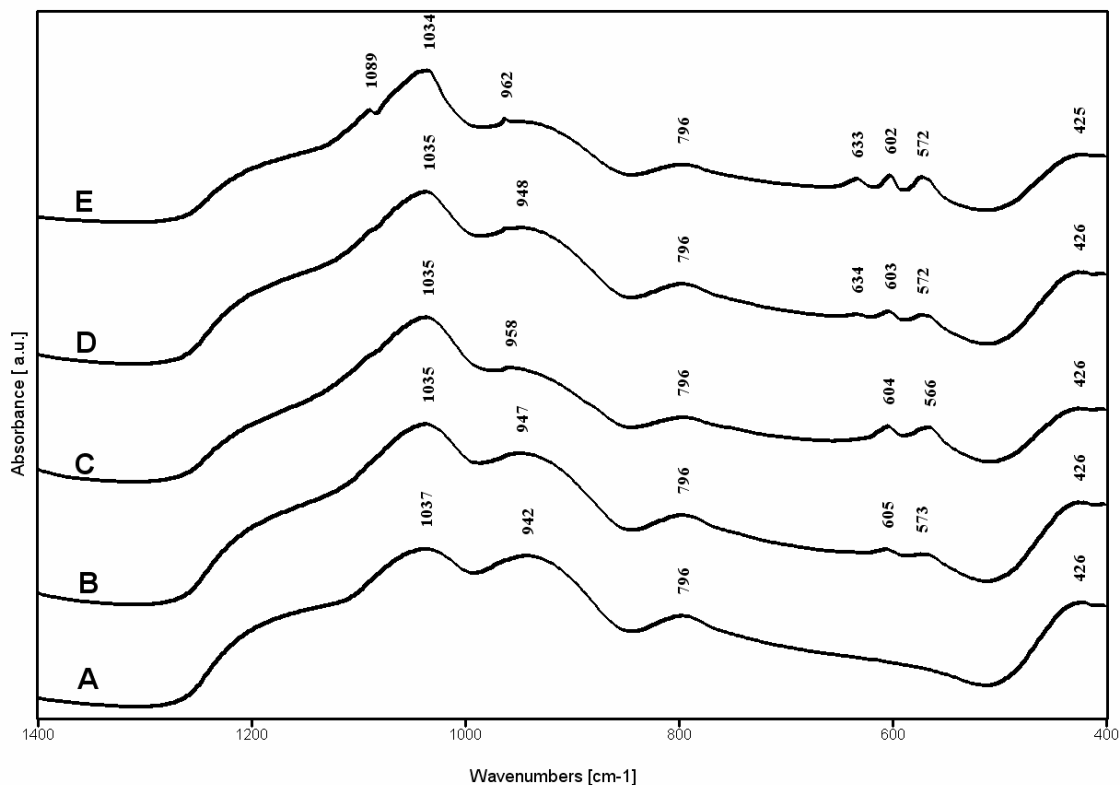
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Titanium and its alloy are used for orthopaedic and dental implants preparation despite poor bioactive properties. Covering the metallic base by ceramic phosphate layers is a chance of correction of bioparameters retaining mechanical properties.

The series of phosphate and silica-phosphate layers on the mentioned bases were obtained using sol-gel and electrophoresis methods. The selection of sol/suspension composition, time of depositing and layer heating treatment conditions have the conclusive influence on the layers parameters. The obtained layers are amorphous or nearly amorphous (what was checked using XRD analysis). The chemical composition of the layers was estimated on the base of SEM with EDX measurements.

All the samples were soaked in standard simulated body fluid (SBF) [1]. Amorphous hydroxyapatite growing on the samples surface was expected. FT IR spectroscopy with mathematic treatment of the spectra (BIO-RAD Win IR program, Arithmetic-subtract function) was used to detect the increase or decrease of any phosphate phases. On the base of FT IR results the processes of hydroxyapatite growing or layer solution were estimated.



**Fig. 1:** MIR spectra of samples on titanium base: A) Si-Ti sublayer, B) Si-Ti + electrophoresis HAp (pure base), C) sample B after SBF soaking, D) Si-Ti + electrophoresis HAp (nitriding base), E) sample D after SBF soaking

[1] T. Kokubo: *Novel Bioactive Materials Derived from Glasses*. Proc. Int. Congress Glass, Madrid, 7 (1992) 119.