



# Phosphating process for titanium alloy with Zn-Zr phosphate solution



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**Introduction.** Driven by the imminent clinical demands and the favorable commercial foreground, the improvement of the biological response of metallic implants has begun to be widely studied, especially by surface modification treatments. The technology of deposition by chemical conversion is important to be studied and introduced among the methods of treating the surfaces of biomaterials because it has multiple advantages. Therefore, the invention refers to a process of phosphating titanium alloys using solutions based on Zr and Zn, in order to obtain thin porous layers capable of improving the biological response of titanium implants, promoting osseointegration, by increasing corrosion and wear resistance.

## Advantages

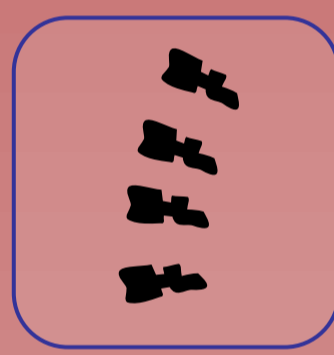
Low impact on the mechanical properties of the substrate



Increases corrosion and wear resistance



High adhesion to the substrate



Excellent design and control ability



Introduction of metallic elements → to promote bone formation, antibacterial and immunoregulatory

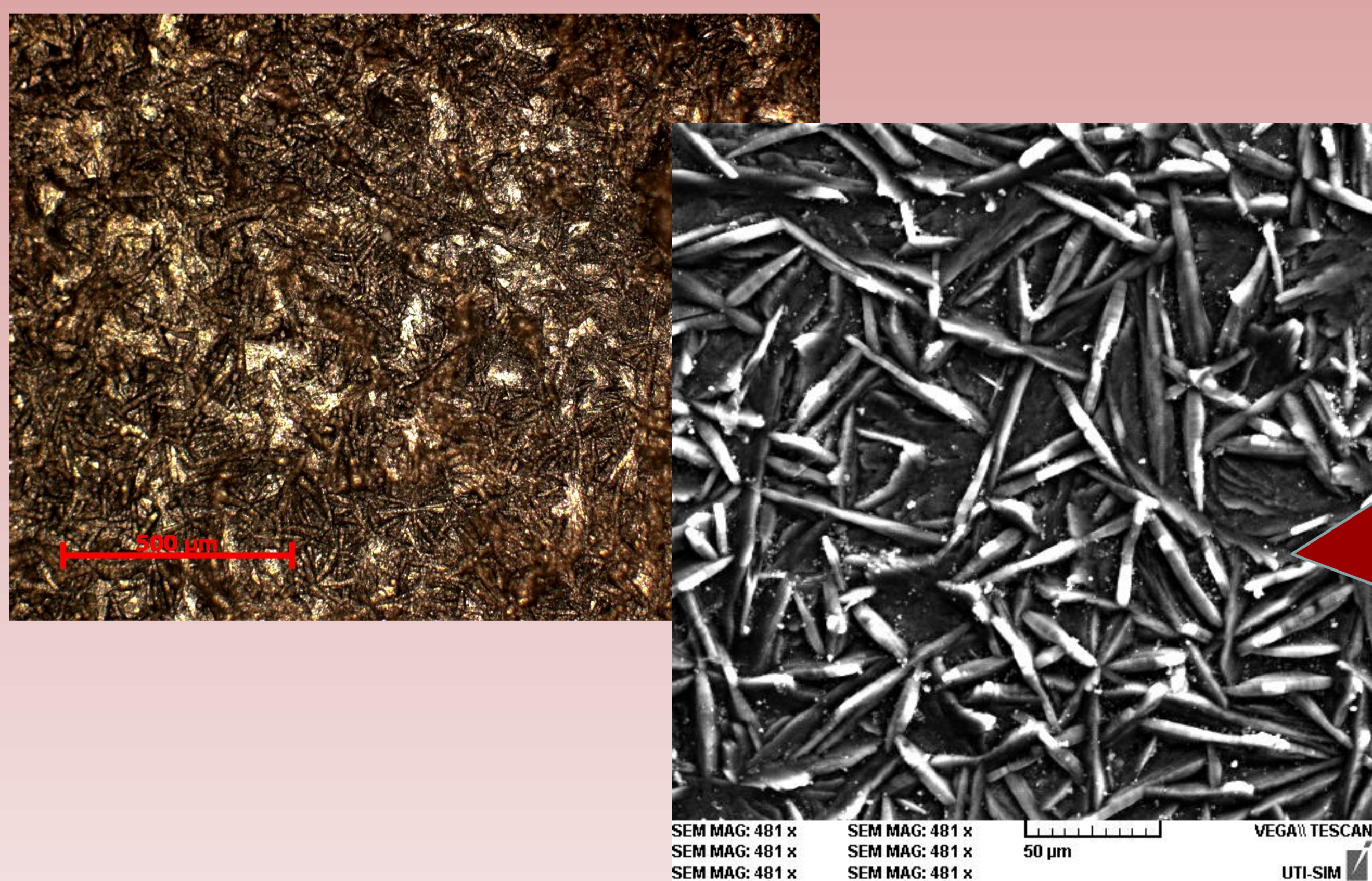
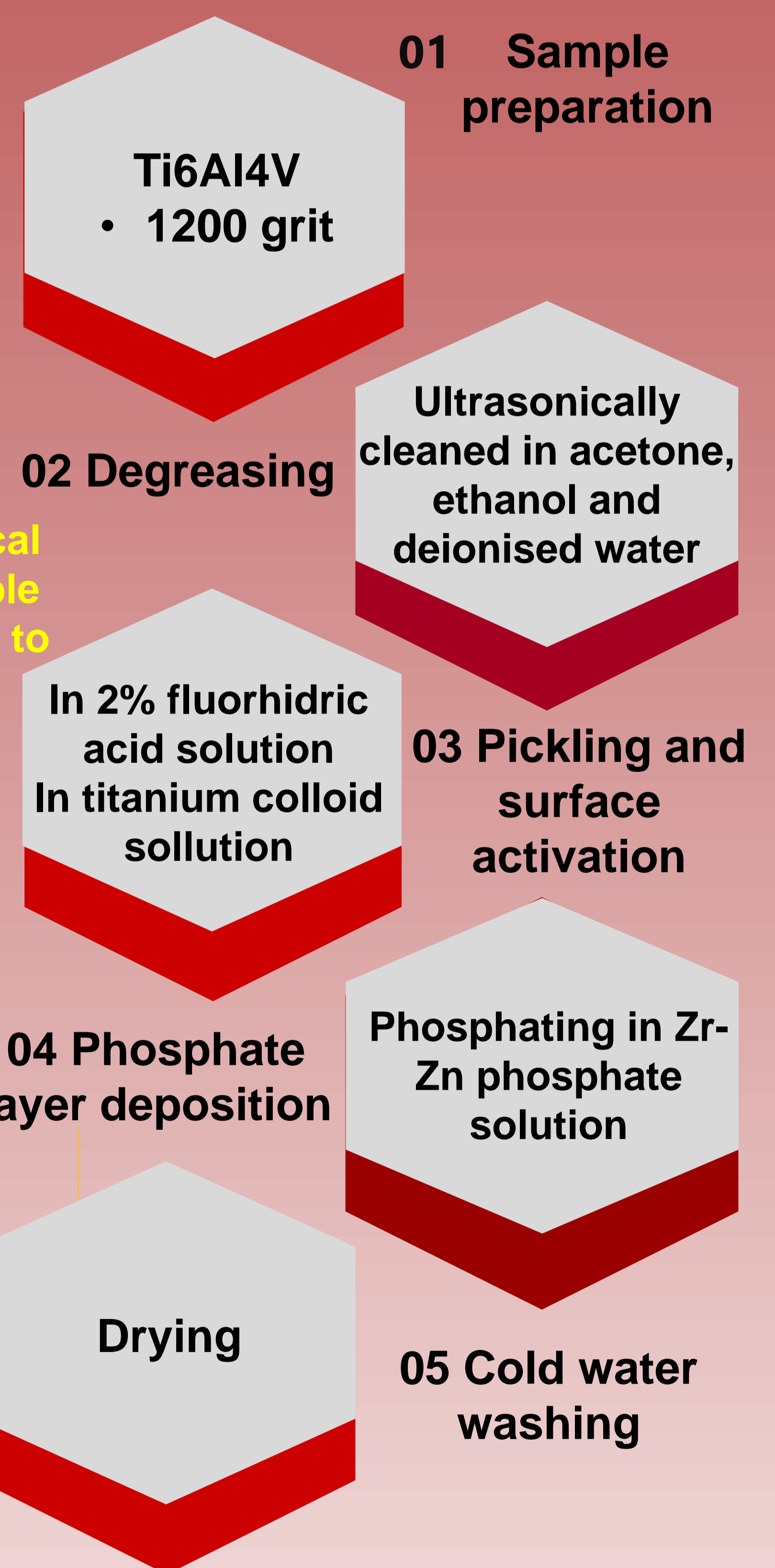


Low price



Obtaining morphological characteristics favorable to cell adhesion similar to related biological functions

## Phosphating stages



## Conclusions

As can be observed from the SEM and OM images, a phosphate layer, based on Zr-Zn, was deposited on the Ti6Al4V surface. This layer aims to improve the corrosion resistance and wear of the titanium alloy, in this way, helping to decrease the reject rate of the implant.

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