

• 系統編號	RN9511-2130		
• 計畫中文名稱	鈦金屬植體表面經最佳化電漿清潔及聚合反應之骨整合研究(I)		
• 計畫英文名稱	The Osseointegration Study of Optimizing Plasma Cleaning and Polymerization Processes on Titanium Implant Surfaces (I)		
• 主管機關	行政院國家科學委員會	• 計畫編號	NSC93-2314-B038-038
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• 研究人員	李勝揚; 歐耿良; 施永勳 Lee, Sheng-Yang		
• 中文關鍵字	--		
• 英文關鍵字	--		
• 中文摘要	查無中文摘要		
• 英文摘要	Since the first dental implant was placed, implantologists have been attempting to understand the implant/bone integration mechanisms. By medication of the surface morphology, a mechanical interlock between the implant and the surrounding bone bed could be achieved. But closer examination of the interface demonstrated that fibrous connective tissue intervened between the material and the bone. In order to improve implant/bone integration, it is desirable to control interfacial reactions such that nonspecific adsorption of proteins is minimized and tissue-healing phenomena can be controlled. In order to improve and control the integration between implant and tissue, and to reduce the adsorption of non-specific proteins, cold plasma treatments have been used in recent years to activate the titanium surface to graft specific proteins. However, the optimal status of plasma treatments has not been discussed in many studies. The purpose of this study is to use experimental design to find the optimal condition in cold plasma treatment and to develop a new method to functionalize titanium surfaces by plasma treatment, so that tissue can be healing as soon as possible. Plasma treatment was performed to cleaning surface and polymerization to linking a functional group on plasma-treated titanium surface. The covalent immobilization of bioactive organic molecules and in vitro bioactivity were evaluated by x-ray diffraction (XRD), atomic force spectroscopy (AFM), x-ray photoelectron spectroscopy (XPS), scanning electron microscopy (SEM), and MTT assay. Based on the above investigation, it is obvious oxygen species were implanted in plasma cleaning. It revealed that		

oxygen, existed in process chamber, reacted with titanium plates during cleaning process.