• 系統編號	RN9704-0415
• 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(III)
• 計畫英文名稱	The Osseointegration Study of Optimizing Plasma Cleaning and Polymerization Processes on Titanium Implant Surfaces (III)
• 主管機關	行政院國家科學委員會
• 計畫編號	NSC95-2314-B038-001
• 執行機構	台北醫學大學牙醫學系
• 本期期間	9508 ~ 9607
• 報告頁數	6 頁
• 使用語言	英文
• 研究人員	李勝揚; 歐耿良 Lee, Sheng-Yang
• 中文關鍵字	--
• 英文關鍵字	Cathodization; Anodization; Titanium hydrides; Multi-nanoporous film
• 中文摘要	查無中文摘要
• 英文摘要	The formation of a multi-nanoporous TiO2 film on Ti bone plates has been investigated clearly. Titanium hydride and sub-stoichiometric titanium hydride were formed following cathodization. A multi-nanoporous TiO2 film was formed on the titanium after anodization. The hydrides (delta-TiH, alpha-TiH2 and alpha-TiH1.971) are directly changed to multi-nanoporous TiO2 film by a dissolution reaction after anodization. Anodization with cathodic pretreatment not only yields a titanium surface with a multi-nanostructure, but also transforms the titanium surface into a nanostructured titanium oxide surface. Furthermore, the Ti with multi-nanoporous film has the similar strength as compared with cortical bones (10~30 GPa), which improve the stress shielding effect between bone and implant. Formation of titanium hydrides by cathodization and nanocrystallization by anodization are believed to enhance biocompatibility and improve stress shielding effect, thereby accelerate the initial osseointegration and re-osseointegration.