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• 計畫中文名稱	人工牙根骨癒合檢測用微型直流制動馬達之最佳化設計與開發
• 計畫英文名稱	Optimization and Development of a Micro Actuator for Clinical Stability Assessment of Dental Implants
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• 使用語言	--
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• 中文關鍵字	人工牙根; 骨整合; 穩固度檢測裝置; 微致動器
• 英文關鍵字	Dental implant; Osseointergration; Stability assessment device; Microactuator
• 中文摘要	最常被用來評估人工牙根植入手術成功與否的主要評估要點有：(1)植體在植入初期於骨接面上是否具備良好的緊密度；(2)植體植入後骨癒合過程中，埋入部分是否具有好的穩固度等。而人工牙根與週圍組織的骨整合(Osseointergration)程度是評估人工牙根成功與否的關鍵。本計畫先期研中已針對一階段式(One-stage)植入手術設計出一穩固度檢測裝置。該裝置工作原理是以直流制動馬達引發植震動，並於離體及動物模型中來推求植體系統共振頻率與固持度之相關性。爲進一步提昇該技術可行性及量產性，因此本計畫針對該項技術之關鍵技術進行精密化及國產化，其中包括核心制動器的微型處理、導振片之精密加工、感測器組合之製工具設計及控制電路的標準化等。
• 英文摘要	The mechanical bounding strength(osseointergration) between alveolar bone and implant is often used as the key factor to evaluate whether or not a surgical implantation of a dental implant is successful. There were two reported points of interest that links the good mechanical stability and improved success rate: (1) a good initial fit, which caused mainly from the mechanical luck between fixture body and bone; and (2) a subsequent steady increase of stability, which come from the formation of new bone near and at the implant surface. It is clear that stability both at placement and during healing provides important criterion for the success of dental implants. However, implant mobility and methods of measurement still lack of engineering definition of mechanical mobility, which is independent of the method of measurement. Therefore, base on the model obtained from the self-designed stability assessment device in previous study, a modified version was designed and fabricated through the expertise in micro machining and micro assembly from the Tricore Electronics. Together with result from in animal model, a more reliable and mass-production ready prototype was put into work.