



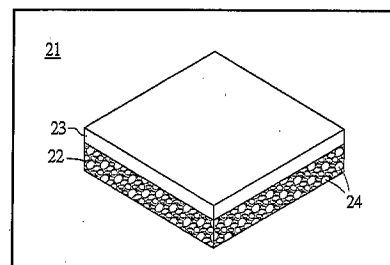
雙介面人工骨骼

提案人：張志豪 副教授

單位：國立臺灣大學 醫學系骨科部

簡歷：張志豪副教授於 1993 年畢業於台大醫學系，1994 年起擔任台灣大學附設醫院骨科部住院醫師、總住院醫師及主治醫師。2003 年前往美國加州大學聖地牙哥分校醫工研究所任研究員，2010 年取得台灣大學醫學工程學研究所博士學位。

專長於手足外科、肩肘關節手術、抗菌材料、醫材表面處理及 3D 列印骨科研究。張志豪副教授曾任台灣手外科醫學會第十三屆理事長、宜蘭羅東博愛醫院骨科部主任等，現為國立台灣大學醫學院附設醫院骨科部主治醫師及手足外科主任、國立台灣大學醫學院骨科專任副教授、台灣手外科醫學會理事長、醫療器材創新發展協會理事長。



市場及需求：

外傷或腫瘤手術後，患者的齒槽骨乃至基底骨，因切除手術、拔牙或牙周病之骨吸收造成骨缺陷，齒槽骨缺損之修復對於牙科是一極為重要的臨床治療目標。在骨科上，手術將骨腫瘤或骨髓炎的感染組織切除之後所產生的骨組織缺陷，也是非常棘手的問題，目前可採行的方法為自體骨移植、異體骨移植或骨痂延長術。目前市售人工骨僅使用單一材質，無法同時針對不同組織提供良好的材料環境。因此開發雙介面人工骨以提供患者另一種人工骨選擇。

技術摘要(含成果)：

此技術是利用不同材料列印製備雙介面人工骨：利用陶瓷材料可印製出硬組織模擬層，模擬硬骨提供所需之支撐力；接下來利用軟質材料(如明膠…)印製出軟組織模擬層，提供相鄰部位所需之特性(如緩衝、延展…等)。

優勢：

1. 技術及材料自主性提升
2. 複合式材料增加應用範圍

競爭產品：

Cellink (美國)

專利現況：

無

聯絡方式(請不用填)：

臺大產學合作總中心

Tel: 02-3366-9945, E-mail: ntuciac@ntu.edu.tw

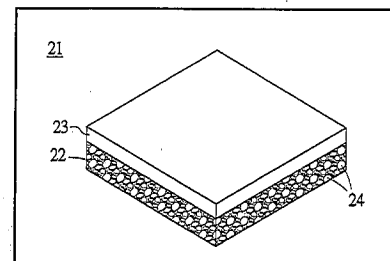


Biphasic artificial bone graft

PI : Assoc. Prof. Chih-Hao Chang
Department of Orthopedic Surgery, National Taiwan University

Experience:

Professor Chih-Hao Chang is currently the Associate Professor in National Taiwan University. He was the Managing Director of Taiwan Society for Surgery of the Hand (TSSH). He was engaged in teaching, research and clinical work for over twenty years. He received his PhD in Biomedical Engineering Institute in 2010 from National Taiwan University. In addition to his university and hospital work, Professor Chang is energetic in research relating to antibacterial material, surface treatment of medical device and 3D-printed orthopedics device.



Market Needs:

After suffering trauma or tumor surgery, patient's alveolar bone and underlying bone have bone defect result from bone absorption because of surgery, extraction and periodontal disease. The repairment of the alveolar bone defect is a crucial object of clinical treatment. In orthopedics, the bone tissue defect results from cutting off infected tissue of bone tumor or osteomyelitis is a thorny problem. The methods can be adopted are autogenously bone graft, allograft and callus lengthening. Consequently, biphasic artificial bone becomes an alternative choice for patients.

Our Technology:

This technique is the combination of 3D printing and multi-materials. Using ceramic materials, hard tissue simulating layer could be 3D printed. This layer can provide the mechanical force for supporting. On the other hand, using proper materials can print different soft tissue simulating layers. These layers can provide many different functions depending on the properties of materials.

Strength:

1. The ability to produce artificial bone independently
2. Expanding the usage of artificial bone graft due to the biphasic layer.

Competing Products:

Cellink (USA)

Intellectual Properties:

Contact (do not need to fill out):

Center for Industry-Academia Cooperation, NTU

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