成果详情

记录 ID： 1000003952236

类别： 期刊论文

标题：

外文标题： Three-dimensional multi-material electromagnetic band-gap structure: design, fabrication and property studies

摘要：

外文摘要： Purpose - The purpose of this paper is to bring up the concept of multi-material electromagnetic band-gap structure (EBGs) and develop a method for its fabrication. Meanwhile, its microwave properties were studied and compared with the traditional EBGs consisting of two kinds of material.

Design/methodology/approach - Stereo lithography (SL) and gel casting were used to fabricate 3D multi-material EBGs. Resin mold was designed and fabricated based on SL process, slurries loaded with 55vol per cent Al2O3 and 55vo1 per cent TiO2, respectively, were prepared, and using gel casting, multilayer EBGs with diamond structure were fabricated. T/R method was used to obtain the characteristic parameter S-21 of the EBGs; meanwhile, characters of their band structure were studied based on plane wave expansion method.

Findings - The fabricated EBGs with a TiO2-resin-air structure showed a band gap from 11.7 GHz to 16.0 GHz along <1, 1, 0 > direction; the EBGs with a TiO2-resin-Al2O3 structure showed a band gap from 11.4 GHz to 11.9 GHz along <1, 1, 0 > direction. Both of them agreed well with the simulation result. Also, through the study of multi-material EBGs' microwave properties, it could be seen that this structure was a good approach to adjust the band gap.

Originality/value - With the concept of multi-material EBG structure brought up, multilayer 3D EBGs were designed and fabricated based on SL combined with gel casting. It could be seen that multi-material EBGs was a good approach to adjust the band gap. Also, the fact that the testing result matched the simulation validates the feasibility of the process.

关键词：

外文关键词： Manufacturing systems; Electromagnetism; Bandwidths; Electromagnetic band-gap structure; Stereolithography;

	Gel casting; Three-dimensional; Multi-material
作者：	*Sun, Kun, Li, Dichen, Wu, Haihua, Wang, Minjie, Tian, Xiaoyong
期刊名称：	Rapid Prototyping Journal
状态：	已发表
发表日期：	2012
期号：	3
卷号：	18
起止页码：	222-229
收录情况：	SCI
影响因子：	1.0230(2011)
引用次数：	0(2012-11-23 10:56:18)
备注：	
最后更新时间：	2012-12-26 08:01:27

成果详情

记录 ID： 1000003952251
类别： 期刊论文
标题：
外文标题： Effective fabrication method of 3D ceramic photonic crystals with diamond structure
摘要：
外文摘要： Purpose - The purpose of this paper is to present a novel and effective fabricating method of 3D ceramic photonic crystals with diamond structure.
Design/methodology/approach - The reverse diamond-structure resin molds are fabricated by stereolithography (SL), then ceramic slurry is prepared and injected into the molds under vacuum condition. Subsequently, ceramic photonic crystals are obtained after vacuum freeze-drying and sintering.
Findings - The combination of SL, gel-casting and freeze-drying could be used to fabricate the 3D ceramic photonic crystals with diamond structure which have intact structure and minimal shrinkage. The samples have been tested and the experimental results indicate that their band gap is in the range of 10.14-12.20 GHz, consistent with the simulation results.
Research limitations/implications - The influence of fabrication process on the photonic band gap needs further study.
Originality/value - This paper presents a novel fabricating method of 3D diamond-structure ceramic photonic crystals based on SL, gel-casting and freeze-drying. The method fabricates complex ceramic photonic crystals with high accuracy and helps further research in this field.
关键词：
外文关键词： Crystals; Ceramics and glass technology; 3D photonic crystals; Ceramic stereolithography
作者： *Chen, Shibin, Li, Dichen, Tian, Xiaoyong, Wang, Minjie, Dai, Wei
期刊名称： Rapid Prototyping Journal
状态： 已发表
发表日期： 2012
期号： 1
卷号： 18

起止页码： 49-55
收录情况： SCI
影响因子： 1.0230(2011)
引用次数： 0(2012-11-23 10:47:01)
备注：
最后更新时间： 2012-12-26 08:01:32

成果详情

记录 ID：	1000003952261
类别：	期刊论文
标题：	
外文标题：	Fabrication of diamond-structured multiceramic coupling photonic crystal and its ultra-wide bandgap properties
摘要：	
外文摘要：	The diamond-structured multiceramic coupling photonic crystal (PC) containing alumina and yttira simultaneously was successfully fabricated by stereolithography and multistep gel-casting process. Compared with the bandgap width of the alumina PC or the yttira PC separately, the bandgap width of the multiceramic coupling PC is 8.5 GHz that became 134.9% of the alumina PC's bandgap width and 146.6% of the yttira PC's bandgap width along the direction G-X < 100 >, and the resulting gap-midgap ratio significantly increased too. These results agreed well with the simulation results by finite integration technique. (c) 2012 Wiley Periodicals, Inc. Microwave Opt Technol Lett 54:2569-2572, 2012; View this article online at wileyonlinelibrary.com. DOI 10.1002/mop.27134
关键词：	
外文关键词：	diamond-structured; multiceramic; coupling; photonic crystal; bandgap
作者：	*Liang, Qingxuan, Li, Dichen, Yang, Gai
期刊名称：	Microwave and Optical Technology Letters
状态：	已发表
发表日期：	2012/11
期号：	11
卷号：	54
起止页码：	2569-2572
收录情况：	SCI
影响因子：	0.6180(2011)
引用次数：	0(2012-11-23 10:45:59)
备注：	
最后更新时间：	2012-12-26 08:01:37

成果详情

记录 ID： 1000003952287
类别： 期刊论文
标题：
外文标题： Biocompatibility and biodegradation studies of PCL/beta-TCP bone tissue scaffold fabricated by structural porogen method
摘要：
外文摘要： Three-dimensional printer (3DP) (Z-Corp) is a solid freeform fabrication system capable of generating sub-millimeter physical features required for tissue engineering scaffolds. By using plaster composite materials, 3DP can fabricate a universal porogen which can be injected with a wide range of high melting temperature biomaterials. Here we report results toward the manufacture of either pure polycaprolactone (PCL) or homogeneous composites of 90/10 or 80/20 (w/w) PCL/beta-tricalcium phosphate (beta-TCP) by injection molding into plaster composite porogens fabricated by 3DP. The resolution of printed plaster porogens and produced scaffolds was studied by scanning electron microscopy. Cytotoxicity test on scaffold extracts and biocompatibility test on the scaffolds as a matrix supporting murine osteoblast (7F2) and endothelial hybridoma (EAhy 926) cells growth for up to 4 days showed that the porogens removal process had only negligible effects on cell proliferation. The biodegradation tests of pure PCL and PCL/beta-TCP composites were performed in DMEM with 10 % (v/v) FBS for up to 6 weeks. The PCL/beta-TCP composites show faster degradation rate than that of pure PCL due to the addition of beta-TCP, and the strength of 80/20 PCL/beta-TCP composite is still suitable for human cancellous bone healing support after 6 weeks degradation. Combining precisely controlled porogen fabrication structure, good biocompatibility, and suitable mechanical properties after biodegradation, PCL/beta-TCP scaffolds fabricated by 3DP porogen method provide essential capability for bone tissue engineering.
关键词：
外文关键词：
作者： Lu, Lin, Zhang, Qingwei, Wootton, David, Chiou, Richard, Li, Dichen, Lu, Bingheng, Lelkes, Peter, *Zhou, Jack

期刊名称： Journal of Materials Science: Materials In Medicine
状态： 已发表
发表日期： 2012/9
期号： 9
卷号： 23
起止页码： 2217-2226
收录情况： SCI
影响因子： 2.3160(2011)
引用次数： 0(2012-11-23 10:46:14)
备注：
最后更新时间： 2012-12-26 08:01:53

成果详情

记录 ID：	1000003952305
类别：	期刊论文
标题：	
外文标题：	Ultra-wide bandgap of gradient dielectric constant photonic crystal
摘要：	
外文摘要：	A diamond-structured photonic crystal (PC) of gradient dielectric constant realized by combining alumina PC with two different solid loadings of alumina powder in the slurry was fabricated using the stereolithography (SL) and gel-casting process. The ultra-wide bandgap was experimentally confirmed by reflection and transmission measurements and simulated by the Finite Integration Technique (FIT). It was found that, the bandgap width of the PC with gradient dielectric constant increased remarkably in comparison with that of the normal alumina PC and reached 8 GHz, which was 117.6% of that of the alumina PC(60 vol.%). The maximum attenuation attained from the fabricated sample is -63.4 dB. The results indicate that the diamond-structured PC with gradient dielectric constant could effectively expand the bandgap width of the PC. The simulation result agreed well with the measurement result by FIT.
关键词：	
外文关键词：	Electronic materials; Ceramics; Diamond-structured; Photonic crystal; Gradient dielectric constant
作者：	*Liang, Qingxuan, Li, Dichen, Yang, Gai, Han, Haoxue
期刊名称：	Materials Letters
状态：	已发表
发表日期：	2012/7/15
期号：	
卷号：	79
起止页码：	48-50
收录情况：	SCI
影响因子：	2.3070(2011)
引用次数：	0(2012-11-23 10:48:53)
备注：	
最后更新时间：	2012-12-26 08:01:59

成果详情

记录 ID： 1000003952357
类别： 期刊论文
标题：
外文标题： Ice-template-induced silk fibroin-chitosan scaffolds with predefined microfluidic channels and fully porous structures
摘要：
外文摘要： Scaffold-based tissue engineering has made great progress in fabricating relatively simple tissues. One of the major challenges in creating thick complex organs is to achieve sufficient nutrient supply as well as uniform cell distribution in a three-dimensional (3D) scaffold. Here we employed microstructured ice templates to fabricate silk fibroin-chitosan (SF-CS) scaffolds with predefined microfluidic channels, open-pore surface and oriented porous structures. The effects of these structural organizations in ice-template-induced (ITI) scaffolds on nutrient delivery, cell seeding as well as cell growth were well investigated in comparison with that of polydimethylsiloxane-template-induced scaffolds. The ITI scaffolds exhibited better structural properties in promoting mass transport, facilitating uniform cell distribution and growth. The ITI scaffolds uniformly seeded with living cells could be further rolled up to form a thick tissue-engineered construct with predefined microfluidic channels. We envision that our ITI scaffolds can be potentially used to engineer thick prevascularized organs when the oriented porous structures are uniformly seeded with primary cells and the predefined microfluidic channels are incorporated with endothelial cells. (C) 2012 Acta Materialia Inc. Published by Elsevier Ltd. All rights reserved.

关键词：
外文关键词： Ice template; Silk fibroin-chitosan scaffold; Oriented pores; Predefined microfluidic channels
作者： Mao, Mao, He, Jiankang, *Liu, Yaxiong, Li, Xiao, Li, Dichen
期刊名称： Acta Biomaterialia
状态： 已发表
发表日期： 2012/7
期号： 6
卷号： 8

起止页码： 2175-2184
收录情况： SCI
影响因子： 4.8650(2011)
引用次数： 0(2012-11-23 10:49:49)
备注：
最后更新时间： 2012-12-26 08:02:23

成果详情

记录 ID：	1000003952388
类别：	期刊论文
标题：	
外文标题：	Bottom-up generation of 3D silk fibroin-gelatin microfluidic scaffolds with improved structural and biological properties
摘要：	
外文摘要：	Silk fibroin has shown great potential for tissue engineering applications. However, it is still challenging to generate three-dimensional (3D) silk fibroin microfluidic scaffolds with desirable properties. Here we proposed to improve the structural and biological properties of silk fibroin scaffolds by the addition of gelatin. The blending ratio of silk fibroin and gelatin was investigated. The obtained composite material was further employed to generate 3D microfluidic porous scaffolds using a bottom-up assembly strategy. We envision that this method can be potentially used to engineer thick tissues when the microfluidic channels are per, fused with culture medium to enhance nutrient and oxygen supply.
关键词：	
外文关键词：	Biomaterials; Microstructure; Scaffold; Tissue engineering
作者：	He, Jiankang, *Liu, Yaxiong, Hao, Xing, Mao, Mao, Zhu, Lin, Li, Dichen
期刊名称：	Materials Letters
状态：	已发表
发表日期：	2012/7/1
期号：	
卷号：	78
起止页码：	102-105
收录情况：	SCI
影响因子：	2.3070(2011)
引用次数：	0(2012-11-23 10:49:24)
备注：	
最后更新时间：	2012-12-26 08:02:39

成果详情

记录 ID：	1000003952407
类别：	期刊论文
标题：	
外文标题：	Diamond-Structured Photonic Crystals with Graded Air Spheres Radii
摘要：	
外文摘要：	A diamond-structured photonic crystal (PC) with graded air spheres radii was fabricated successfully by stereolithography (SL) and gel-casting process. The graded radii in photonic crystal were formed by uniting different radii in photonic crystals with a uniform radius together along the Gamma-X < 100 > direction. The stop band was observed between 26.1 GHz and 34.3 GHz by reflection and transmission measurements in the direction. The result agreed well with the simulation attained by the Finite Integration Technique (FIT). The stop band width was 8.2 GHz and the resulting gap/midgap ratio was 27.2%, which became respectively 141.4% and 161.9% of the perfect PC. The results indicate that the stop band width of the diamond-structured PC can be expanded by graded air spheres radii along the Gamma-X < 100 > direction, which is beneficial to develop a multi bandpass filter.
关键词：	
外文关键词：	diamond-structured; photonic crystals; stop band; graded
作者：	*Liang, Qingxuan, Li, Dichen, Han, Haoxue
期刊名称：	Materials
状态：	已发表
发表日期：	2012/5
期号：	5
卷号：	5
起止页码：	851-856
收录情况：	SCI
影响因子：	1.6770(2011)
引用次数：	0(2012-11-23 10:51:12)
备注：	
最后更新时间：	2012-12-26 08:02:51

成果详情

记录 ID：	1000003952417
类别：	期刊论文
标题：	
外文标题：	Study on the Microwave Transmission Characteristics of a Three-Dimensional Electromagnetic Bandgap Structure with Coupled Defects
摘要：	
外文摘要：	The influence of a vertical coupled defect on the localized properties of a diamond electromagnetic bandgap (EBG) structure has been studied in the present research. The diamond EBG structure with a cavity defect was fabricated by stereolithography and gel-casting processes with alumina slurry. The resonant peaks of two kinds of defects were compared by measuring their microwave transmission characteristics using a network analyzer. A higher quality factor (Q) was obtained for the diamond EBG structure with a vertical coupled defect, and the transmission efficiency of resonant peak was improved by 29.6% in comparison with a single defect. Experimental results agreed with the simulation results. These microwave transmission characteristics of the three-dimensional (3D) EBG structures indicate that they can be applied in microwave devices to improve transmission efficiency.
关键词：	
外文关键词：	Coupled defect; EBG; stereolithography; resonant peak; gel casting
作者：	*Chen, Shibin, Li, Dichen, Tian, Xiaoyong, Han, Haoxue, Wu, Haihua
期刊名称：	Journal of Electronic Materials
状态：	已发表
发表日期：	2012/3
期号：	3
卷号：	41
起止页码：	514-518
收录情况：	SCI
影响因子：	1.4660(2011)
引用次数：	0(2012-11-23 10:54:24)
备注：	
最后更新时间：	2012-12-26 08:02:57

成果详情

记录 ID：	1000003952467
类别：	期刊论文
标题：	
外文标题：	Effects of compaction and UV exposure on performance of acrylate/glass-fiber composites cured layer by layer
摘要：	
外文摘要：	With an aim to reducing manufacturing costs, in general and specifically to provide a solution to the thick laminate curing depth issue for composite materials, UV curing technology was combined with a fiber placement process to fabricate acrylate/glass-fiber composites. A novel layer-by-layer UV in situ curing method was employed in this article and interlaminar shear strength (ILSS) tests and SEM were used to evaluate the effect of processing parameters, including compaction force and UV exposure dose, on ILSS. The SEM images from short-beam strength test samples and the results of ILSS showed that the fibers' distribution was uniform in the cured matrix resin resulting from the compaction forces and that beneficially influenced the ILSS of the composite greatly. However, the matrix resin produced large shrinkage stresses when it reached a high degree of conversion (DC) in one-step, which resulted in poor interlaminar adhesion. In addition, the fast curing speed of UV on the composite resulted in poor wetting between fiber and resin, and accordingly resulted in lower ILSS. To overcome these problems and obtain high ILSS value composites, an optimized compaction force and UV exposure dose were determined experimentally. (C) 2011 Wiley Periodicals, Inc. J Appl Polym Sci 123: 3799-3805, 2012
关键词：	
外文关键词：	UV curing; composites; acrylate; fibers; mechanical properties
作者：	*Duan, Yugang, Li, Jia, Zhong, Weihong, Maguire, Russell G., Zhao, Guoqiang, Xie, Hong, Li, Dichen, Lu, Bingheng
期刊名称：	Journal of Applied Polymer Science
状态：	已发表
发表日期：	2012/3/15
期号：	6
卷号：	123
起止页码：	3799-3805

收录情况：	SCI
影响因子：	1.2890(2011)
引用次数：	0(2012-11-23 10:53:28)
备注：	
最后更新时间：	2012-12-26 08:03:15

成果详情

记录 ID：	1000003952517
类别：	期刊论文
标题：	
外文标题：	Research on the curing performance of UV-LED light based stereolithography
摘要：	
外文摘要：	The UV-LED light based Stereo Lithography system (LED-SL) was developed. Because of the kinematic behavior of the mechanical scanning workbench, the exposure at the ends of a single cured line is much greater than that in the middle segment, and hence bone-shaped errors occur, which means that the ends of a cured line have larger sizes than the middle segment. The purpose of this paper is to investigate the curing performance of LED-SL process and eliminate the bone-shaped errors. The effects of acceleration and deceleration motions of the scanner on the shape of a cured line were formulated and the curing equations were presented. The light switching and power matching scanning methods were studied to improve the accuracy of a cured line. The comparison results of different scanning methods indicate that although both of the above two methods can improve accuracy, the latter has higher fabrication efficiency and larger scanning range than the former.
关键词：	
外文关键词：	Stereolithography; UV-LED; Power matching
作者：	Xie, Ruidong, *Li, Dichen
期刊名称：	Optics and Laser Technology
状态：	已发表
发表日期：	2012/6
期号：	4
卷号：	44
起止页码：	1163-1171
收录情况：	SCI
影响因子：	1.5150(2011)
引用次数：	0(2012-11-23 10:51:09)
备注：	
最后更新时间：	2012-12-26 08:03:34

成果详情

记录 ID：	1000003952522
类别：	期刊论文
标题：	
外文标题：	Free-space carpet-cloak based on gradient index photonic crystals in metamaterial regime
摘要：	
外文摘要：	A free-space broadband carpet-cloak, designed based on transformations optics and quasi-conformal mapping, was realized with all-dielectric gradient index rod-connected diamond-structured photonic crystals (PCs) in metamaterial regime. Complex three-dimensional sample with smooth continuous changing unit cells was fabricated precisely by stereolithography (SL) using photo-curable resin. Thus, by gradually varying the unit cell constitutive parameters of the diamond-based PCs with nearly isotropic properties, the required complex spatial distribution of the refractive index profile was ideally achieved to reduce the scattering of the electromagnetic wave. The non-resonant property of the sub-wavelength PCs unit cell resulted in broad bandwidth and relatively low loss. (C) 2012 American Institute of Physics. [http://dx.doi.org/10.1063/1.3696040]
关键词：	
外文关键词：	
作者：	Yin, Ming, *Tian, Xiao Yong, Han, Hao Xue, Li, Di Chen
期刊名称：	Applied Physics Letters
状态：	已发表
发表日期：	2012/3/19
期号：	12
卷号：	100
起止页码：	
收录情况：	SCI
影响因子：	3.8440(2011)
引用次数：	1(2012-11-23 10:52:45)
备注：	
最后更新时间：	2012-12-26 08:03:37

成果详情

记录 ID：	1000003952578
类别：	期刊论文
标题：	
外文标题：	Reaction-bonded SiC derived from resin precursors by Stereolithography
摘要：	
外文摘要：	A photo-curable resin with a high carbon yield after pyrolysis was developed in the present research. It consisted of phenolic epoxy acrylate resin, phenolic resin, triethylene glycol as pore forming agent and benzoin dimethyl ether as photoinitiator. The well-prepared mixed resin was used by Stereolithograpy to form resin prototypes. The influence of mixed resin composition on the process parameters was studied to meet the requirement for the cured thickness. Carbon preforms with open porosity of 27% and bending strength of 4.48 MPa were obtained after pyrolyzing the resin prototypes. After molten silicon infiltration at the temperature 2300 degrees C, the carbon preform converted to reaction-bonded SiC. The maximum bending strength of the produced SiC samples was 127.8 +/- 0.5 MPa as the pore forming agent content was 40 wt.%. Neither residual carbon nor silicon remained in the reaction-bonded SiC sample according to the XRD analysis. (C) 2011 Elsevier Ltd and Techna Group S.r.l.
关键词：	
外文关键词：	Precursors-organic; Shaping; Mechanical properties; Reaction-bonded SiC; Stereolithography
作者：	*Tian, Xiaoyong, Zhang, Weigang, Li, Dichen, Heinrich, Juergen G.
期刊名称：	Ceramics International
状态：	已发表
发表日期：	2012/1
期号：	1
卷号：	38
起止页码：	589-597
收录情况：	SCI
影响因子：	1.7510(2011)
引用次数：	0(2012-11-23 10:47:32)
备注：	
最后更新时间：	2012-12-26 08:03:54

成果详情

记录 ID： 1000003952612
类别： 期刊论文
标题：
外文标题： Effect of point defects on band-gap properties in diamond structure photonic crystals
摘要：
外文摘要： Three dimensional diamond structure photonic crystals (PCs) with point defects fabricated by rapid prototyping and gel casting with alumina were studied at microwave frequencies. The sphere, ellipsoid, and cylinder point defects were introduced in the PCs first and it was found that the localization of electromagnetic wave is the strongest in ellipsoid point defect photonic crystals. Then, the size change of the ellipsoid point defect was studied to find out the optimal size. When the size of the ellipsoid point defect is close to one unit cell, the Q factor, which represents the localization intensity of the electromagnetic wave, will be the biggest. Based on the optimal size of ellipsoid point defect, more ellipsoid point defects were introduced into one diamond PC structure. Three point defect resonant modes were found in a photonic crystal with three ellipsoid point defects and the distance between each defect was twice of the lattice constant. A guided band was observed in the forbidden band gap in a photonic crystal with five ellipsoid point defects, in which the distance between each defect was of one lattice constant. (C) 2012 American Institute of Physics.
关键词：
外文关键词：
作者： Dai, Wei, *Wang, Hong, Chen, Shibin, Li, Dichen, Zhou, Di
期刊名称： Journal of Applied Physics
状态： 已发表
发表日期： 2012/1/15
期号： 2
卷号： 111
起止页码：
收录情况： SCI
影响因子： 2.1680(2011)
引用次数： 0(2012-11-23 10:54:42)
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最后更新时间：　2012-12-26 08:04:03

成果详情

记录 ID：	1000003952629
类别：	期刊论文
标题：	构建大段组织工程骨的新型生物反应器的设计与制造
外文标题：	
摘要：	目的:设计、制造一种新的灌注式生物反应器,专门用于高效地构建大体积、β-磷酸三钙组织工程骨。方法:在普通模式灌注生物反应器的灌流室内生成间断性低压环境(-0.01 mpa,0.5 Hz),用材料色素颗粒洗脱实验进行验证后,将复合兔骨髓间充质干细胞的大段、管状 β-磷酸三钙材料分别在静态、反应器内常压灌注和间断低压灌注三种环境下培养 4 周。期间收集培养液检测葡萄糖日耗量、细胞活力(MTT 比色法)、碱性磷酸酶比活性、骨桥蛋白水平,并进行硬组织切片检查。结果:色素颗粒洗脱实验证明,间断性低压可以改善低流量液流在材料内的分布;在培养 2 周和 4 周时,负压灌注组日均葡萄糖消耗量和细胞活力均显著高于常压灌注组:(t=20.254 P<0.05,t=64.794 P<0.05)及(t=17.586 P<0.05,t=7.583 P<0.05);碱性磷酸酶(ALP)比活性测定和骨桥蛋白水平(OPN)反映间断低压灌注组中骨髓间充质细胞向成骨细胞分化效率更高,但高峰相晚于常压灌注组和静态培养组;在间断低压灌注组中材料深部的占孔率最高,并且分布更均匀。结论:此新型灌注式生物反应器适用于构建大体积、特殊构型组织工程骨;其高效的促进细胞增殖效应可减少初始复合的种子细胞数量,缩短构建周期。
外文摘要：	
关键词：	生物反应器;;组织工程骨;;骨髓间充质细胞;;细胞培养 Bioreactor;Engineering bone;Bone mesenchymal cell;Cell culturing
外文关键词：	
作者：	张宇, 王臻, 栗向东, 卢建熙, 李涤尘
期刊名称：	现代生物医学进展
状态：	已发表
发表日期：	2012
期号：	03
卷号：	
起止页码：	404-409
收录情况：	
备注：	
最后更新时间：	2012-12-26 08:04:09

成果详情

记录 ID：	1000003952665
类别：	期刊论文
标题：	
外文标题：	Fabrication of three-dimensional electromagnetic band-gap structure with alumina based on stereolithography and gelcasting
摘要：	
外文摘要：	The paper presents a manufacturing study of three-dimensional (3D) diamond electromagnetic band-gap (EBG) structures with a new manufacturing system. The EBG structures made from dielectric composites of alumina-slurry with 55 vol% Al2O3 powder were fabricated by means of a stereolithography (SL) and gelcasting system. The samples of the EBG structure of alumina-resin (before sintering) and that of alumina-air (after sintering) were investigated. The lattice constant was 12 mm, while the band-gap in the (110) direction appeared at 9.00-12.00 GHz, which agreed fairly well with the simulation results based on the finite element method (FEM) in Ansoft HFSS.
关键词：	
外文关键词：	
作者：	*Hu, Yawen, Li, Dichen, Dai, Wei, Wang, Minjie, Wang, Hong, Sun, Kun
期刊名称：	Journal of Manufacturing Systems
状态：	已发表
发表日期：	2012/1
期号：	1
卷号：	31
起止页码：	22-25
收录情况：	SCI
影响因子：	0.6390(2011)
引用次数：	0(2012-11-23 10:56:42)
备注：	
最后更新时间：	2012-12-26 08:04:22

成果详情

记录 ID：	1000003952678
类别：	期刊论文
标题：	
外文标题：	The influence of laser and powder defocusing characteristics on the surface quality in laser direct metal deposition
摘要：	
外文摘要：	To investigate the influencing rules of the variations of powder and laser defocusing distance on surface quality and obtain the smooth surface of parts in laser direct metal deposition, the thin-walled metal parts were fabricated under three different powder defocusing distances and three different laser defocusing distances conditions. The experimental results show that a high surface quality can be obtained with the powder focussed below the substrate and laser focussed above the substrate process, and the variation in which the powder focus moves from above to below the melt pool plays a leading role and the variation in which the laser focus moves from above to below the melt pool plays a supplementary role in the influence on the surface quality. To explain the experimental results, a simple model of the track height is established. (C) 2011 Elsevier Ltd. All rights reserved.
关键词：	
外文关键词：	Laser direct metal deposition; Defocusing distance; Surface quality
作者：	Zhu, Gangxian, *Li, Dichen, Zhang, Anfeng, Pi, Gang, Tang, Yiping
期刊名称：	Optics and Laser Technology
状态：	已发表
发表日期：	2012/3
期号：	2
卷号：	44
起止页码：	349-356
收录情况：	SCI
影响因子：	1.5150(2011)
引用次数：	1(2012-11-23 10:54:38)
备注：	
最后更新时间：	2012-12-26 08:04:27

成果详情

记录 ID：	1000003952694
类别：	期刊论文
标题：	人体下颌骨的 ANSYS 受力分析
外文标题：	
摘要：	人体下颌骨替代物的设计制造一直是人们关注的一个研究焦点。现有的人体下颌骨替代物的制造主要是医生根据患者的下颌骨外形对成品的钛板或钛网进行手工弯制,但由于钛材料的刚性过大,造成一定的应力屏蔽,不能对填充自体骨实现有效的应力传递,导致骨重建失败。所以,寻求新的下颌骨替代物的仿生设计及制造方法非常必要。而仿生设计算先要掌握人体下颌骨的受力状况。文中首先建立了人体下颌骨的 ANSYS 模型,然后用 ANSYS 对人体下颌骨进行了受力分析,获得了应力应变分布云图,并对结果进行了分析讨论,该研究为人体下颌骨替代物的仿生设计提供了一定的理论依据。
外文摘要：	
关键词：	人体下颌骨;;受力规律 mandible;law of force on mandible
外文关键词：	
作者：	杨来侠, 李涤尘, 康利轲
期刊名称：	西安科技大学学报
状态：	已发表
发表日期：	2012
期号：	01
卷号：	
起止页码：	107-110
收录情况：	
备注：	
最后更新时间：	2012-12-26 08:04:32

成果详情

记录 ID：	1000003952705
类别：	期刊论文
标题：	增材制造技术的发展
外文标题：	
摘要：	增材制造技术是近30年快速发展的特种加工技术,其优势在于三维结构的快速和自由制造,被广泛应用于新产品开发、单件小批量制造。通过对增材制造技术设备和应用情况的介绍,阐述了我国增材制造技术的发展趋势和关键技术。未来增材制造技术将向着三个方向发展:一是日常消费品制造方向;二是功能零件制造方向;三是组织与结构一体化制造方向。
外文摘要：	
关键词：	增材制造;;发展趋势;;关键技术 additive manufacturing;development trend;key technology
外文关键词：	
作者：	李涤尘, 田小永, 王永信, 卢秉恒
期刊名称：	电加工与模具
状态：	已发表
发表日期：	2012
期号：	S1
卷号：	
起止页码：	20-22
收录情况：	
备注：	
最后更新时间：	2012-12-26 08:04:36

成果详情

记录 ID：	1000003952723
类别：	期刊论文
标题：	基于统计方法的 NOPD 耗能机理定量分析
外文标题：	
摘要：	非阻塞性微颗粒阻尼(NOPD)是在传统颗粒阻尼和冲击阻尼技术基础上发展起来的新型阻尼技术。本文从湍流物理模型出发,基于统计方法定量分析 NOPD 技术的耗能机理。经分析认为,高频振动中的 NOPD 颗粒群其运动状态和湍流运动相似,故引入 Kolmogorov 的局部各向同性假设,得到 NOPD 的结构函数表达式及能谱密度表达式。研究结果表明,同种材料,相同颗粒直径情况下,能量耗散率随颗粒群体积比的增加而增大;相同颗粒群体积对比时,能量耗散率随颗粒直径的增加而增大。统计方法的引入,为 NOPD 的工程应用提供一种有效的定量分析方法。
外文摘要：	
关键词：	NOPD;;湍流;;Kolmogorov 假设;;能谱密度;;阻尼技术 NOPD;turbulence;Kolmogorov's hypothesis;energy spectral density;damping technology
外文关键词：	
作者：	崔致远, 吴九汇, 陈花玲, 李涤尘
期刊名称：	振动与冲击
状态：	已发表
发表日期：	2012
期号：	09
卷号：	
起止页码：	135-139
收录情况：	
备注：	
最后更新时间：	2012-12-26 08:04:42

成果详情

记录 ID：	1000003952735
类别：	期刊论文
标题：	基于原子力显微镜的细胞弹性测量及分析方法
外文标题：	
摘要：	原子力显微镜作为纳米压痕工具已被广泛应用于测量细胞等生物材料的力学性能。然而,由于研究目的实验方法和数据处理方法的不同,造成实验结果差异大,数据提取方式不准确,结果分析解释不清等问题。本文以细胞为例,对实验数据获取和处理方法的适用范围、优缺点、可靠性及结果的分析方法进行讨论,并与其他力学性能测量方法相比较,以期提高实验结果的可靠性,为细胞力学性能实验的开展提供参考。
外文摘要：	
关键词：	原子力显微镜;;细胞;;力学性能;;数学模型 atomic force microscopy;cell;mechanical property;mathematical model
外文关键词：	
作者：	鲁卓阳, 龙建纲, 李涤尘, 刘健康
期刊名称：	电子显微学报
状态：	已发表
发表日期：	2012
期号：	04
卷号：	
起止页码：	339-345
收录情况：	
备注：	
最后更新时间：	2012-12-26 08:04:46

成果详情

记录 ID：	1000003952766
类别：	期刊论文
标题：	航空发动机铝合金缸体的快速砂铸工艺研究
外文标题：	
摘要：	以结合了光固化成型技术与砂型铸造的快速砂铸技术为基础,针对某小型航空发动机中的复杂部件——缸体,分别进行了铸造工艺设计、铸型及砂芯模具的 CAD 设计、树脂件模具的制作及填砂制芯和浇注试验的工作,同时提出了铸件精度控制及浇注缺陷控制两大问题并着手解决。最后针对浇注所得铸件进行关键尺寸测量及精度分析,证明了通过该工艺方法制造出的铸件,与传统铸造工艺相比,其精度达到较高水平。
外文摘要：	
关键词：	发动机缸体;;铝合金;;光固化成型(SL);;快速砂铸(RSC) engine cylinder block;aluminum alloy;stereo lithography;rapid sand casting
外文关键词：	
作者：	孙野, 宗学文, 李涤尘
期刊名称：	铸造技术
状态：	已发表
发表日期：	2012
期号：	07
卷号：	
起止页码：	814-817
收录情况：	
备注：	
最后更新时间：	2012-12-26 08:04:56

成果详情

记录 ID：	1000003952776
类别：	期刊论文
标题：	基于节能理念的 LED 光源快速成型系统
外文标题：	
摘要：	LED-SL 是采用大功率 UV-LED 作为固化光源的新型快速成型系统。其基本原理是 LED 发出的紫外光通过聚焦镜汇聚到树脂液面,该聚焦镜在机械式 x-y 工作台的驱动下,在树脂液面进行扫描,使液态光敏树脂固化。通过与激光和汞灯光源的比较,阐述了 UV-LED 固化光源的优势。由于机械式工作台的运动学特性,在扫描固化线时,光束总是在其起始端从静止开始加速,在中段保持匀速运动,到达终点时又减速到静止状态。由于加速和减速段的曝光量大于中间段,使得固化单线两头粗中间细,形成骨形误差。采用功率匹配的能量控制方式以消除骨形误差。功率匹配是指动态调整光束功率,使得扫描过程中光功率始终与扫描速度成正比。实验结果表明功率匹配方式能有效提高成型精度。UV-LED、激光、高压汞灯 3 种固化光源能耗的实验表明,UV-LED 的光固化能耗仅为激光的 0.86%,汞灯的 0.1%,从而证明了 LED-SL 突出的节能优势。
外文摘要：	
关键词：	光固化;;骨形误差;;节能;;UV-LED stereolithography;bone-shaped errors;energy conservation;UV-LED
外文关键词：	
作者：	解瑞东, 李涤尘
期刊名称：	科技导报
状态：	已发表
发表日期：	2012
期号：	01
卷号：	
起止页码：	30-33
收录情况：	
备注：	
最后更新时间：	2012-12-26 08:05:00

成果详情

记录 ID：	1000003952795
类别：	期刊论文
标题：	扫描方式对激光金属直接成形 DZ125L 高温合金薄壁件开裂的影响
外文标题：	
摘要：	为了消除激光金属直接成形 DZ125L 高温合金薄壁件中的裂纹,研究了激光扫描方式对薄壁件(单道多层)熔覆层应力分布和开裂的影响。对比了两种扫描方式(单向扫描和往复扫描)对薄壁件的应力分布和开裂的影响。模拟和实验结果表明,单向扫描方式下薄壁件的应力分布不均匀,引起薄壁件的两端出现严重的翘曲且中间部分出现裂纹;往复扫描方式下薄壁件的应力分布相当均匀,没有出现翘曲和裂纹,熔覆层表面比较平整。
外文摘要：	
关键词：	激光光学;;扫描方式;;薄壁件;;残余应力;;裂纹 laser optics;scanning method;thin-wall;residual stress;crack
外文关键词：	
作者：	Doan Tatkhoa, 李涤尘, 卢秉恒, 张安峰, 贺斌, Do Xuantuoi
期刊名称：	中国激光
状态：	已发表
发表日期：	2012
期号：	10
卷号：	
起止页码：	38-45
收录情况：	
备注：	
最后更新时间：	2012-12-26 08:05:07

成果详情

记录 ID：	1000003952828
类别：	期刊论文
标题：	
外文标题：	Rapid prototyping of porcelain products by layer-wise slurry deposition (LSD) and direct laser sintering
摘要：	
外文摘要：	Purpose - The purpose of this paper is to study the rapid prototyping of porcelain products by using layer-wise slurry deposition (LSD), in order to reduce the time to market of new or customized porcelain products or artworks. Design/methodology/approach - The properties such as phase composition, microstructure, shrinkage, density, and mechanical strength, of laser sintered (LS) and biscuit fired (BF) samples, before and after post sintering in a furnace, were studied and compared with each other. Findings - The laser sintered sample was comparable with the biscuit fired sample in porosity but had just half the mechanical strength of the latter due to the layer-wise fabrication process. The feasibility of rapid prototyping of porcelain products was validated by the successful fabrication of some porcelain samples, which showed that the relatively low mechanical strength of the laser sintered sample was still high enough for the following handling processes, such as surface glazing and glost firing. Originality/value - The paper demonstrates the possibility of rapid prototyping of porcelain components and the models produced by using LSD process.
关键词：	
外文关键词：	Ceramics; Sintering; Mechanical properties of materials; Rapid prototypes; Rapid manufacturing; Porcelain; Layer-wise slurry deposition; Selective laser sintering
作者：	*Tian, Xiaoyong, Li, Dichen, Heinrich, Juergen G.
期刊名称：	Rapid Prototyping Journal
状态：	已发表
发表日期：	2012
期号：	5
卷号：	18
起止页码：	362-373
收录情况：	SCI
影响因子：	1.0230(2011)

引用次数： 0(2012-11-23 10:54:40)
备注：
最后更新时间： 2012-12-26 08:05:17

成果详情

记录 ID：	1000003952841
类别：	期刊论文
标题：	
外文标题：	The Influence of Cavity-defect Shapes on Resonant Peak of Three-dimensional Electromagnetic Band Gap Structure
摘要：	
外文摘要：	Localized mode is an important property of defect electromagnetic band gap (EBG) structure, which plays a key role in the application of EBG structure. The purpose of this article was to study the impact on localized properties by introducing cavities of different shapes into diamond EBG structure. Alumina-based ceramic diamond EBG structures were fabricated using stereolithography (SL), gel-casting and vacuum freeze-drying. When the microwave transmission properties of samples with cavities of different shapes were tested, the resonant peaks appeared within the band gap. By varying the cavity shape, the quality of the localized mode could be adjusted. The results have shown that localized mode with a high quality factor (Q factor) corresponded to the optimal cavity shape in EBG structure. The experimental results agreed well with simulation results. These excellent microwave properties of 3D EBG structure could be directly applied in microwave devices, such as microwave antenna and filter devices.
关键词：	
外文关键词：	
作者：	*Chen, Shibin, Li, Dichen, Han, Haoxue, Yang, Gai
期刊名称：	International Journal of Applied Ceramic Technology
状态：	已发表
发表日期：	2012/10 SEP-OCT
期号：	5
卷号：	9
起止页码：	953-959
收录情况：	SCI
影响因子：	1.3840(2011)
引用次数：	0(2012-11-23 10:45:59)
备注：	
最后更新时间：	2012-12-26 08:05:21

成果详情

记录 ID： 1000003966546
类别： 期刊论文
标题：
外文标题： Fabrication of a bio-inspired beta-Tricalcium phosphate/collagen scaffold based on ceramic stereolithography and gel casting for osteochondral tissue engineering
摘要：
外文摘要：

Purpose - The purpose of this paper is to fabricate and characterize osteochondral beta-tricalcium phosphate/collagen scaffold with bio-inspired design by ceramic stereolithography (CSL) and gel casting.

Design/methodology/approach - Histological analysis was applied to explore the morphological characteristics of the transitional structure between the bone and the cartilage. The acquired data were used to design biomimetic biphasic scaffolds, which include the bone phase, cartilage phase, and their transitional structure. The engineered scaffolds were fabricated from beta-TCP-collagen by CSL and gel casting. The cartilage phase was added to the ceramic phase by gel-casting and freeze drying.

Findings - The resulting ceramic scaffolds were composed of a bone phase with the following properties: 700-900 mu m pore size, 200-500 mu m interconnected pores size, 50-65 percent porosity, fully interconnected, similar to 12 Mpa compressive strength. A suitable binding force between cartilage phase and ceramic phase was achieved by physical locking that was created by the biomimetic transitional structure. Cellular evaluation showed satisfactory results.

Research limitations/implications - This study is the first try to apply CSL to fabricate biological implants with beta-TCP and type-I collagen. There are still some defects in the composition of the slurry and the fabrication process.

Practical implications - This strategy of osteochondral scaffold fabrication can be implemented to construct an osteochondral complex that is similar to native tissue.

Originality/value - The CSL technique is highly accurate, as well as biologically secure, when fabricating ceramic

tissue engineering scaffolds and may be a promising method to construct hard tissue with delicate structures. The present strategy enhances the versatility of scaffold fabrication by RP.

关键词：

外文关键词：Biotechnology; Ceramics; Computer aided manufacturing; Stereolithography; Rapid prototyping; Scaffolds

作者：Bian, Weiguo, *Li, Dichen, Lian, Qin, Li, Xiang, Zhang, Weijie, Wang, Kunzheng, Jin, Zhongmin

期刊名称：Rapid Prototyping Journal

状态：已发表

发表日期：2012

期号：1

卷号：18

起止页码：68-80

收录情况：SCI

影响因子：1.0230(2011)

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备注：

最后更新时间：2012-12-26 09:08:04

成果详情

记录 ID：	1000003966560
类别：	期刊论文
标题：	面向重要实质器官的生物制造技术
外文标题：	
摘要：	在体外制造可修复人体受损组织与器官功能的活性替代物一直是人类的梦想。制造、材料与生命科学的交叉与融合发展,为生物组织与器官的体外制造提供了必要的技术、材料与生物学基础,从而实现了皮肤、骨、膀胱等简单活性组织的临床应用,但人体重要实质器官如肝脏、肺等的再造研究至今未取得突破性进展。重要实质器官内部复杂的微观结构系统及多细胞体系的构建是实现其体外制造的关键,也是当前生物组织与器官制造技术所面临的巨大挑战。从生物制造的角度,综述国内外在重要实质器官复杂微结构制造领域的主要技术方法及最新研究进展,通过分析与评价,对未来重要实质器官的生物制造技术发展进行展望。
外文摘要：	
关键词：	生物制造;;重要实质器官;;组织工程 Biofabrication Vital parenchymal organs Tissue engineering
外文关键词：	
作者：	贺健康, 刘亚雄, 连芩, 王玲, 靳忠民, 李涤尘
期刊名称：	中国生物工程杂志
状态：	已发表
发表日期：	2012
期号：	09
卷号：	
起止页码：	76-81
收录情况：	
备注：	
最后更新时间：	2012-12-26 09:08:07

成果详情

记录 ID：	1000003966574
类别：	期刊论文
标题：	三维重建仿真模型及计算机辅助设计个性化假体在下颌骨缺损修复中的应用
外文标题：	
摘要：	目的探讨三维重建仿真模型及计算机辅助设计个性化假体在修复下颌骨缺损中应用的可行性,并分析其临床疗效。方法 2002 年 7 月-2009 年 11 月,收治 9 例下颌骨缺损患者。男 4 例,女 5 例;年龄 19～55 岁。均为下颌骨病变截除术后遗留大面积下颌骨缺损;其中颌骨良性病变 8 例,下颌牙龈癌 1 例。缺损部位:缺损跨越中线 2 例,包括髁状突缺损 4 例,局限于一侧且未累及颞下颌关节缺损 3 例。缺损范围为 9.0 cm×2.5 cm～17.0 cm×2.5 cm。术前行螺旋 CT 扫描后三维重建数字化颌骨模型,通过快速成型技术制备个性化假体。一期手术植入假体修复颌骨缺损,6 个月后行二期手术种植义齿。结果一期手术中个性化假体就位顺利,耗时 10～23 min;延伸板与骨面贴合良好。术后切口Ⅰ期愈合,面部外形满意,咬关系良好,张口时下颌偏斜纠正。二期手术时见种植体牢固无松动,基台穿龈后与对颌牙位置关系良好,达到术前设计理想位置。患者一期术后均获随访,随访时间 1～9 年。末次随访时复查 X 线片以及头颅后前位、颅基位、全口曲面断层 X 线片显示,个性化假体固定良好无松脱,外形对称。结论三维重建仿真模型及计算机辅助设计个性化假体应用于下颌骨缺损修复中能提高手术精度,节省手术时间。
外文摘要：	
关键词：	下颌骨缺损;;三维重建仿真模型;;计算机辅助设计;;快速成型 Mandibular bone defect Three-dimensional skull model Computer assisted design Rapid prototyping
外文关键词：	
作者：	龚振宇, 李国华, 刘彦普, 何黎升, 周冰, 李涤尘
期刊名称：	中国修复重建外科杂志
状态：	已发表
发表日期：	2012
期号：	01
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最后更新时间：	2012-12-26 09:08:12

成果详情

记录 ID：	1000003974494
类别：	期刊论文
标题：	
外文标题：	Process parameters appraisal of fabricating ceramic parts based on stereolithography using the Taguchi method
摘要：	
外文摘要：	In this work, the influences of stereolithography parameters (laser scanning speed, sliced layer thickness, laser spot compensation, etc.) and sintering schemes, consisting of sintering temperature, heating rate and holding time on the performance of green and final ceramic parts, have been investigated experimentally with the Taguchi method. In the stereolithography process, laser spot compensation was found to be the principal factor influencing the shrinkage of green samples. Optimum stereolithography parameters were obtained: hatch spacing 0.15 mm; laser scanning speed 1400 mm/s; sliced layer thickness 0.15 mm; and laser spot compensation 0.35 mm. A freeze-drying method was applied to minimize the drying shrinkage and avoid damages during the dehydration process of green samples. The optimum sintering scheme was also determined: heating rate 150 degrees C/h, sintering temperature 1200 degrees C and holding time 2 h. A bending strength of at least 10 MPa and open porosity of 35% were reached, making the ceramics adequate to produce investment casting molds.
关键词：	
外文关键词：	Ceramic stereolithography; process optimization; Taguchi method; sintering; mechanical properties
作者：	Chen, Zhangwei, Li, Dichen, Zhou, Weizhao
期刊名称：	PROCEEDINGS OF THE INSTITUTION OF MECHANICAL ENGINEERS PART B-JOURNAL OF ENGINEERING MANUFACTURE
状态：	已发表
发表日期：	2012/7
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起止页码：	1249-1258
收录情况：	SCI
影响因子：	0.7250(2011)
引用次数：	0(2012-12-26 09:41:52)

备注：

最后更新时间：　2012-12-26 09:41:52

成果详情

记录ID：	1000003988332
类别：	期刊论文
标题：	三维微流道支架直接压印成形方法
外文标题：	
摘要：	针对软质生物材料支架内部三维微结构成形难题，提出了结合分层制造、微压印与冷冻干燥技术的三维微流道支架直接压印成形方法。通过开发自动化成形设备，实现了材料溶液填充、微结构压印、结构预冻、层间粘结等工艺过程的可控化，从而解决了传统手工操作所造成的结构重复性差、成形效率低等问题。研究了模具表面等离子处理、亲水物质添加、改变溶液填充方式等工艺对自动化成形过程中微结构复型性能的影响。结果表明，向材料溶液中添加微量亲水物质并辅助溶液填充引导可实现软质水溶性天然生物材料内部复杂微流道结构的精确三维压印成形。通过工艺装备保证了成形过程的自动化和稳定性，从而实现了支架微结构制造的可重复性与可控性。更多还原AbstractFilter(';ChDivSummary';,';ChDivSummaryMore';,';ChDivSummaryReset';);
外文摘要：	
关键词：	
外文关键词：	
作者：	王烨, 贺健康, 刘亚雄, 庞师坤, 张文友, 李涤尘
期刊名	西安交通大学学报

称：
状态：已发表
发表日期：2012/7
期号：
卷号：
起止页码：
收录情况：
备注：
最后更新时间：2012-12-26 10:47:54

成果详情

记录ID： 1000003988334

类别： 期刊论文

标题： PEGDA 水凝胶的光固化成形工艺及其性能评价

外文标题：

摘要： 采用光固化成形技术制备具有生物相容性的定制化三维结构软骨组织工程聚乙二醇双丙烯酸酯(PEGDA)水凝胶，并对其成形工艺参数进行对比研究。对 PEG (400) DA 溶液光固化成形单条线及单层面的形貌尺寸进行测量，研究 PEG(400)DA 体积分数，激光扫描速度以及扫描线间距等参数对其影响。对制备的 PEGDA 水凝胶成形尺寸、成分、吸水率、压缩弹性模量等进行评价。结果表明：随着曝光量以及 PEG(400) DA 体积分数的增加，水凝胶单条线的固化厚度与固化宽度均增加;随着激光扫描填充向量间距的增加，水凝胶单层面的固化厚度减小;随着 PEG (400) DA 体积分数的增加，固化后的水凝胶吸水率降低，压缩弹性模量增大。采用体积分数为 30%的 PEG (400) DA 溶液，激光器功率为 0.1 W，扫描速度为 1800 mm/s，填充向量间距为 0.15mm，能够制备出定制化膝关节水凝胶软骨支架，其吸水率为 191.67%，平均压缩弹性模量为 0.75 MPa，满足软骨组织工程的需求。更多还原AbstractFilter(';ChDivSummary';,';ChDivSummaryMore';,';ChDivSummaryReset';);

外文摘要：

关键词：

外文关键词：

作者： 朱林重 1, 连芩 1, 靳忠民 1, 2, 张维杰 1, 李涤尘 1 利兹

期刊名称：西安交通大学学报

状态：已发表

发表日期：2012/8

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卷号：

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收录情况：

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最后更新时间：2012-12-26 10:47:54

成果详情

记录 ID：	1000003988335
类别：	期刊论文
标题：	PEGDA 水凝胶的光固化成形工艺及其性能评价
外文标题：	Fabrication and Evaluation of PEGDA Hydrogel by Stereo-Lithography for Cartilage Tissue Engineering
摘要：	采用光固化成形技术制备三维结构软骨组织工程聚乙二醇双丙烯酸酯(PEGDA)水凝胶,并对其成形工艺参数进行对比研究.对聚乙二醇(400)双丙烯酸酯(PEG(400)DA)溶液光固化成形单条线及单层面的形貌尺寸进行测量,研究PEG(400)DA 体积分数、激光扫描速度以及扫描线间距等参数对测量结果影响.对制备的 PEGDA 水凝胶成形尺寸、成分、吸水率、压缩弹性模量等进行评价,结果表明:随着曝光量以及 φ(PEG(400)DA)的增加,水凝胶单条线的固化厚度与固化宽度均增加;随着激光扫描填充向量间距的增加,水凝胶单层面的固化厚度减小;随着 φ(PEG(400)DA)的增加,固化后的水凝胶吸水率降低,压缩弹性模量增大.采用 φ(PEG(400)DA)为 30%的溶液,激光器功率为 0.1W,扫描速度为 1 800mm/s,填充向量间距为 0.15mm,能够制备出定制化膝关节水凝胶软骨支架,其吸水率为 191.67%,平均压缩弹性模量为 0.75 MPa,满足软骨组织工程的需求.
外文摘要：	
关键词：	光固化成形;PEG(400)DA;曝光量;软骨组织工程
外文关键词：	
作者：	朱林重, 连芩, 靳忠民, 张维杰, 李涤尘, ZHU Linzhong1 LIAN Qin1 JIN Zhongmin1,2 ZHANG Weij, 2.School of Mechanical Engineering,University of L
期刊名称：	西安交通大学学报
状态：	已发表
发表日期：	2012/8/27
期号：	10
卷号：	
起止页码：	121-126
收录情况：	
备注：	
最后更新时间：	2012-12-26 10:47:54

成果详情

记录 ID：	1000003988337
类别：	期刊论文
标题：	空心涡轮叶片型芯/型壳一体化陶瓷铸型快速制造技术研究
外文标题：	
摘要：	<正>涡轮叶片是热动力设备的核心部件,叶片冷却结构和制造质量直接影响其热效率及使用性能。利用现有的熔模铸造技术难以制造具有空间交错冷却结构的空心叶片。叶片制造已成为阻碍我国发展高性能热动力装备的关键技术瓶颈。本文将光固化快速成型技术、凝胶注模成型技术和精铸技术集成在一起,探索叶片型壳/型芯结构整体制造新技术原理,为未来新型冷却叶片制造提供可行的技术路线。
外文摘要：	
关键词：	陶瓷铸型;空心涡轮叶片;冷却结构;叶片制造;一体化;型壳;快速成型技术;直接影响;熔模铸造技术;型芯结构
外文关键词：	
作者：	吴海华, 李涤尘
期刊名称：	机械工程学报
状态：	已发表
发表日期：	2012/10/5
期号：	19
卷号：	
起止页码：	147
收录情况：	
备注：	
最后更新时间：	2012-12-26 10:47:54

成果详情

记录 ID：	1000003988338
类别：	期刊论文
标题：	三维微流道支架直接压印成形方法
外文标题：	Direct Imprinting of Three-Dimensional Microfluidic Scaffolds
摘要：	针对软质生物材料支架内部三维微结构成形难题,提出了结合分层制造、微压印与冷冻干燥技术的三维微流道支架直接压印成形方法.通过开发自动化成形设备,实现了材料溶液填充、微结构压印、结构预冻、层间黏结等工艺过程的可控化,从而解决了传统手工操作所造成的结构重复性差、成形效率低等问题.研究了模具表面等离子处理、亲水物质添加、改变溶液填充方式等工艺对自动化成形过程中微结构复型性能的影响.结果表明,向材料溶液中添加微量亲水物质并辅助溶液填充引导,可实现软质水溶性天然生物材料内部复杂微流道结构的精确三维压印成形.通过工艺装备保证了成形过程的自动化和稳定性,从而实现了支架微结构制造的可重复性与可控性.
外文摘要：	
关键词：	三维微流道;压印成形;分层制造;组织工程
外文关键词：	
作者：	王烨, 贺健康, 刘亚雄, 庞师坤, 张文友, 李涤尘, WANG Ye,HE Jiankang,LIU Yaxiong,PANG Shikun,ZHANG
期刊名称：	西安交通大学学报
状态：	已发表
发表日期：	2012/7/5
期号：	10
卷号：	
起止页码：	116-120
收录情况：	
备注：	
最后更新时间：	2012-12-26 10:47:54

成果详情

记录 ID：	1000003988339
类别：	期刊论文
标题：	纳米二氧化钛改性光固化树脂的研究
外文标题：	Study on nano-titanium dioxide modified UV-curable resin
摘要：	以纳米 TiO2 的丙二醇甲醚醋酸酯(PMA)分散液为添加剂改性激光快速成型用光固化树脂 SPR4000,通过对树脂及固化物的酸值、分子质量、IR、DSC、热重分析、流变性及力学和热性能测试等研究了改性后光固化树脂的性能,并用扫描电镜对纳米 TiO2 在树脂中的分散情况进行了观察。结果表明添加的二氧化钛质量分数为 0.75%时,体系力学性能最好,拉伸强度提高 15.25%,冲击强度提高 41.35%,弯曲强度提高 41.75%,耐热性也有所提高。纳米二氧化钛 PMA 分散液的加入解决了纳米二氧化钛在树脂中的分散稳定性问题,保证了树脂体系的固化速度及交联密度,满足了制作工艺,提高了光固化树脂 SPR4000 的力学性能。
外文摘要：	
关键词：	光固化树脂;纳米二氧化钛;改性;拉伸强度;冲击强度;弯曲强度
外文关键词：	
作者：	张莹莹，段玉岗，李涤尘，康小青，ZHANG Ying-ying,DUAN Yu-gang,LI Di-chen,KANG Xiao-
期刊名称：	热固性树脂
状态：	已发表
发表日期：	2012/11/30
期号：	06
卷号：	
起止页码：	48-52
收录情况：	
备注：	
最后更新时间：	2012-12-26 10:47:55

成果详情

记录 ID：	1000004020751
类别：	专利
专利名称：	一种光固化快速成型树脂的化学腐蚀去除方法
外文专利名称：	
专利说明：	本发明公开了一种适用于空心涡轮叶片陶瓷铸型一体化制造的光固化快速成型树脂件的去除方法，该方法主要通过化学方法将光固化树脂件腐蚀去除，腐蚀液为多种化学物质组成的混合物，通过将现有树脂件在腐蚀液中或将腐蚀液注入树脂件浸泡一定时间，腐蚀液与树脂件发生逐层反应，然后将树脂件缓慢逐层均匀溶解，实现树脂件的去除。该工艺可以通过腐蚀液的浓度和温度来控制反应速度，从而实现树脂件腐蚀过程的精确控制。该腐蚀工艺可以使树脂件的去除更加简单可控，即使在常温下也可以实现，避免了以往空心涡轮叶片陶瓷铸型树脂模具烧失中造成的一系列问题(例如：开裂、应力变形等)，给空心涡轮叶片陶瓷铸型一体化制造带来了极大的方便。
外文专利说明：	
关键词：	
外文关键词：	
作者：	李涤尘, 韩香广, 吴海华, 段玉岗, 鲁中良, 李奕宁, 刘飞
申请（专利）号：	CN201210113238.6
申请日期：	2012/4/18
专利类别：	发明专利
生效日期：	
发证单位：	
国家或地区：	
城市：	710049 陕西省西安市咸宁西路 28 号
备注：	
最后更新时间：	2012-12-26 16:46:02

成果详情

记录 ID：	1000004020752
类别：	专利
专利名称：	多节式低阻力碳纤维预浸带柔性输送通道
外文专利名称：	
专利说明：	本发明公开了一种用于纤维铺放成型过程的多节式低阻力碳纤维预浸带柔性输送通道，包括连接安装结构、外通道、内通道和连接关节；多节刚性的外通道和内通道连接关节的作用下形成铰链连接，多个内通道、连接关节以及外通道组成连续通道，碳纤维预浸带通过连续通道输送。多节式输送通道使碳纤维预浸带在输送过程中同输送通道的接触面积减小，降低了碳纤维预浸带传输过程中的粘附和摩擦阻力。同时，能够防止碳纤维预浸带在输送过程中扭转，减小碳纤维预浸带在输送通道内的粘附性。本发明可以使碳纤维预浸带在长距离输送过程中的阻力小，防扭转变形，同时具有容易拆装和清洗方便的优点。
外文专利说明：	
关键词：	
外文关键词：	
作者：	段玉岗, 李涤尘, 陈耀, 张小辉, 刘潇龙, 卢秉恒
申请（专利）号：	CN201210079979.7
申请日期：	2012/3/23
专利类别：	发明专利
生效日期：	
发证单位：	
国家或地区：	
城市：	710049 陕西省西安市咸宁西路 28 号
备注：	
最后更新时间：	2012-12-26 16:46:02

成果详情

记录 ID：	1000004020857
类别：	专利
专利名称：	一种填充金属粉浆料的光固化模具及其制作方法
外文专利名称：	
专利说明：	本发明设计一种光固化树脂模具，包括公模和母模。所述公模和母模结构体抽壳 1-3mm，并将模具的一个非配合面去除。采用光固化快速成形技术制作树脂模具，模具内部填充金属粉、基体树脂、偶联剂和促进剂形成的浆料,然后采用真空注型机对浆料进行 2-5min 脱泡处理，填充至模具空腔直至填满，模具表面均匀涂平。6-24h 后树脂固化，将模具表面使用砂纸打磨，可以得到含有金属粉的树脂模具。本发明通过光固化快速成形技术和浆料填充得到的模具，其精度可达到 CT4 等级，且模具导热性好、强度较高，保证蜡模成形时能均匀快速冷却。本方法相对于传统技术无需制造金属模具，节省材料和成本，且能制作出 CT4-CT5 等级的精密铸造用蜡模。
外文专利说明：	
关键词：	
外文关键词：	
作者：	李涤尘, 杨东升, 宗学文, 鲁中良
申请（专利）号：	CN201210196850.4
申请日期：	2012/6/14
专利类别：	发明专利
生效日期：	
发证单位：	
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