DAY 1

Keynote Forum

Euroscicon Conference on

3D Printing and Wireless Technology

September 17-18, 2018 | Lisbon, Portugal

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Edwin Joffrey Courtial et al, Am J Compt Sci Inform Technol 2018 Volume: 6
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GEL AIDED VISCOELASTIC BIOMATERIAL 3D PRINTING

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3D printing of viscoelastic materials with poor rheological properties is impossible in atmospheric conditions. Indeed, a significant yield stress character of the material is required to maintain the shape of the 3D object after deposition. This character might be achieved through material re-formulation but in the case of particular application such as biomedical implants, modification of rheological properties through change in material composition is excluded and alternative solutions must be found. The use of supporting gel systems can be proposed as an elegant solution to maintain the 3D object shape during printing and solidification. Nevertheless, the supporting gel systems are not perfect and some problems rise such as material bearing, poor layer cohesion and low gel self-healing. Rheological characterizations focused on hardness, yield stress and thixotropy measurements are then the best way to understand and predict the performance of the system. Thus, for each printing material intrinsic properties and solidification conditions, an adequate gel formulation must be defined to successfully obtain 3D printed objects. Hence, we propose an overview of this technique through different applications using a multi-state and muti-scale approach based on the correlation between rheological characterization and 3D printing observation. Our studies also come up with the use of biomaterial including living cells in supporting gel systems. In this case, the gel must have an additional function to assist cells maturation. Clear experimental results will be presented together with different cases studies of highly challenging 3D printing, demonstrating the superiority of the approach.

Biography

Edwin Joffrey Courtial has completed his PhD from IMP (Ingénierie des Matériaux Polymères) lab, Claude Bernard University of Lyon 1. He is working as a Researcher specialized in Materials Science and Rheological Behaviors at ICBMS lab, Lyon, France, inside the innovative platform 3D.FAB. His research focuses on correlation between biomaterials formulations and rheological behaviors to define 3D bioprintable conditions.

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Henrique A Almeida, Am J Compt Sci Inform Technol 2018 Volume: 6
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OPTIMIZED MODELLING AND DESIGN SCHEMES FOR TISSUE ENGINEERING SCAFFOLDS FOR 3D PRINTING

Henrique A Almeida

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The use of additive manufacturing in the medical field is expanding very fast due to the ability to produce complex, low weight and personalized medical devices in a wide range of biocompatible, degradable and non-degradable materials such as polymers, metals, ceramics and composites. It also allows printing biological materials such as cells. In this field, additive manufacturing is being used to produce passive devices for repairing and restore applications and active devices for repairing, restoring and regeneration. One of the key applications of additive manufacturing in the medical field is the 3D bioprinting of tissue engineering scaffolds. The design of optimized scaffolds for tissue engineering is a key topic of research, as the complex macro- and micro-architectures required for a scaffold depends not only on the mechanical properties, but also on the physical and molecular queues of the surrounding tissue within the defect site. Thus, the prediction of optimal features for tissue engineering scaffolds is very important for its mechanical, vascular or topological properties. The relationship between high scaffold porosity and high mechanical properties is contradictory, as it becomes even more complex due to the scaffold degradation process. In this research work, optimised design schemes based on 3D modelling (CAD (computer aided design) modelling techniques and biomimetic modelling from micro-CT (computed tomography) data) and numerical simulations (such as structural, vascular and topology optimisation schemes) will be presented in order to aid the design process of optimised scaffolds for tissue engineering applications.

Biography

Henrique Almeida is an Associate Professor at School for Technology and Management (ESTG) (Mechanical Engineering Department) and Research Member of Centro de Investigação em Informática e Comunicações of Polytechnic Institute of Leiria (IPL). He has received his PhD degree in Mechanical Engineering from University of Aveiro. He is a Member of the Editorial Board of journals from Springer *(Progress in Additive Manufacturing)*, Emerald (*Rapid Prototyping Journal*), Crimson Publishers and Editorial Board Reviewer of several journals from Frontiers (*Frontiers in Mechanical Engineering*). He has more than 250 publications as journal papers, book chapters and conference proceeding papers. He also has edited 10 books and 8 national Portuguese patents.

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MASSIVE MIMO TECHNIQUES APPLIED TO 5G SYSTEMS

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The evolution from 4G to 5G wireless systems is driven by the expected huge growth in user bit rates and overall system throughput. This requires a substantial spectral efficiency increase, while maintaining or even improving power efficiency. To accomplish this, one needs new transmission techniques, with the most promising ones being millimeter waves (mmW) and massive multiple-input multiple-output (m-MIMO). m-MIMO schemes involving several tens or even hundreds of antenna elements are expected to be central technologies for 5G systems. This can lead array power gain increments proportional to the number of antennas. The use of m-MIMO combined with single-carrier with frequency domain equalization (SC-FDE) modulations, which aims to reduce the peak-to-average power ratio is considered as compared to other block transmission techniques (e.g. OFDM). A low-complexity iterative frequency domain receiver based on the maximum ratio combining and equal gain combining approach is proposed. Moreover an iterative receiver, which considers an iterative detection and channel estimation, is proposed. The channel estimates usually obtained with the help of pilot symbols and/or training sequences are multiplexed with data symbols. Since this leads to spectral degradation, the use of superimposed pilots (i.e., pilots added to data) was recently proposed as an efficient alternative. Our performance results show that the proposed receiver allows excellent performance with the use of the channel data obtained from the channel estimation, while keeping the complexity at low level.

Biography

Mário Marques da Silva is an Associate Professor and the Director of the Department of Sciences and Technologies at Universidade Autónoma de Lisboa. He is also a Researcher at Instituto de Telecomunicações, in Lisbon, Portugal. He has been involved in multiple networking and telecommunications projects. His research interests include networking and mobile communications namely 5G communications, interference cancellation, MIMO systems, channel estimation, software defined radio, IP technologies and network security. He is the author of five books entitled "*Multimedia Communications and Networking*", "*Transmission Techniques for Emergent Multicast and Broadcast Systems*", "*Transmission Techniques for 4G Systems*", "MIMO Processing for 4G and Beyond: *Fundamentals and Evolution*" and "*Cable and Wireless Networks: Theory & Practice*" (all from CRC Press). Moreover, he is an Author of several dozens of journal and conference papers, a Member of IEEE and AFCEA, and Reviewer for a number of international scientific IEEE journals and conferences. Finally, he has chaired many conference sessions and has been serving in the organizing committee of relevant EURASIP and IEEE conferences.

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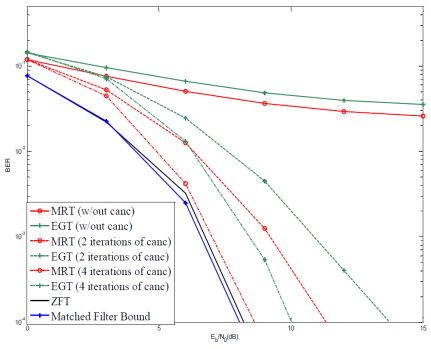

Figure 3 – BER results with 32×8 m-MIMO using Precoding

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GREEN TECHNOLOGY SUSTAINABILITY AND CLOUD COMPUTING FOR CORPORATE SOCIAL RESPONSIBILITY IN WIRELESS COMMUNICATION TECHNOLOG

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Associate Vice Chair, BCS Health & Care Executive
BCS IRMA, Social Media and Communication Co-ordinator

Cloud computing and engineering sustainability remains as an essential aspect of providing effective industrial portfolio for delivering cost savings systems that will enable the achievement of energy saving and environmental sustainable applications in both the business and industrial sectors. The issue of virtual usability and awareness management strategy may result in achieving excellence in energy efficiency and usage, environmental considerations and energy reuse strategic models. The return on investment (ROI) as strategic outcome of cloud computing model may restore and create value analysis for organisations with huge energy wastage without thinking of cost, environmental impact and carbon emissions. Cloud computing is a recent development of the future generation communication technology which contributes towards industrialization and commercialisation of product development in terms of virtual applications and service delivery through the internet for the purpose of cost benefit and usability of business and enterprise services. Cloud computing can be defined as the concept of delivering virtual services through the internet medium using electronic devices to achieve competitive edge with respect to cost savings, improvement of performance, efficiency and effectiveness. The services may focus within five of the different service domains such as public cloud, private cloud, hybrid cloud, community cloud and education cloud. The choice of each or combination of the cloud services will depend on value analysis, cost savings, improve performance, competitive edge and marketization of the deliverables and monetization in terms of financial benefits for the industries.

Biography

Professor Ezendu Ariwa is a Chartered Fellow of British Computer Society (BCS) and Chair of IEEE Consumer Electronics & Broadcast Technology Chapter, UK and Ireland. He is an Academic Supervisor at the University of Warwick, UK and held various academic and professional positions with many years of experience in the United Kingdom and Internationally. He has achieved good collaboration with multicultural SMEs in the United Kingdom, with respect to mentoring and working on joint professional development on ICT enterprise programmes. He has experience of doctoral research supervision and consultancy as well as doctoral external examiner for various Universities both in the UK and internationally on Information Risk Management, Green Communication and Wireless Technologies, and applicable computing in Smart Cities and Healthcare.

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MICROSTRUCTURE AND MECHANICAL PROPERTY CHARACTERIZATION OF INCOL718 ALLOY SPECIMEN PRINTED BY SELECTIVE LASER MELTING

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Incol718 alloy specimens were fabricated by the selective laser melting (SLM) method. The effect of parameters such as laser power and scanning speed on the microstructure and mechanical properties were investigated. It is found the energy density, a function of laser power, scanning speed and hatch distance is greatly related to the mechanical properties. The specimen fabricated with laser power 200 W, scanning speed 1000 mm/s, and hatch distance 0.1 mm and layer height 0.02 mm achieved best mechanical properties. The as-fabricated tensile strength reaches 800 MPa in the fabrication direction, 15% higher than the standard property, while the elongation keeps 32%. Its microstructure in the vertical section is regular columnar grains, 20 um wide. The stack of the melt pools are regular, and the level of each layer is smooth. The soundness and columnar grains result its high mechanical property.

Biography

Jinwu Kang has received his PhD from Tsinghua University. He is an Associate Professor of School of Materials Science and Engineering, Tsinghua University. He performed his research as Research Scientist at Worcester Polytechnic Institute, USA from May' 2001 to Jan' 2003. He has been doing research about the modelling and simulation of casting and heat treatment processes of casting, 3D printing of sand moulds and metallic parts in recent years. He proposed the description methods for the deformation of castings, intensive riser cooling of castings after their solidification and 3D printed hollow mould for castings to realize controlled cooling at whole scale. He has published 170 papers and received four academic awards from the Ministry of Education, China for his distinguished research. He is the Chief Editor of Materials Science and Engineering International Journal.

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USE OF 2-3 WAVE CHANNELS FOR SYMPTOM DETECTION AND TREATMENT

Issa Salim

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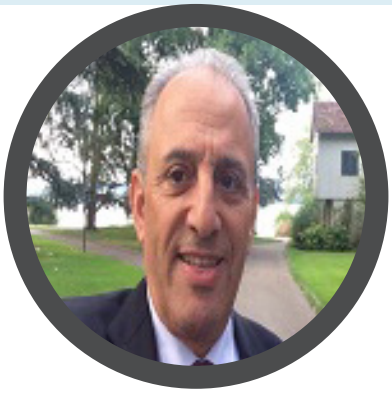
A method to diagnose and then provide therapy and/or treating humans to relieve or reduce the symptoms of various diseases and/or conditions and in certain embodiments reduce the factors causing the symptoms and/or diseases. The present method also relates to systems for determining heretofore unknown internal characteristics of patients and external environmental factors. Bioresonance therapy is a cybernetic (regulatory) method, which has proved its effectiveness in thousands of cases for more than 30 years. It is a painless method for diagnostic and treatment purposes and can be used for treating various illnesses. It is extremely efficient as it deals with the hidden causes provoking disease and is free of harmful side effects. The experts of the therapy use a special painless test method in order to find out if there are food intolerances, if certain organs are weak or if some toxins might have a negative influence on the body, etc. The following tests need to be done to identify the hidden causes of complaints: Test all organs frequency to define acute or chronic organs; test of blood, urine and stool frequencies on the organs; testing 33 kinds of tumour samples; testing the effect of the food in each organ spritely; test the medication and the dosage of the drug on the patient; test for virus, bacteria and parasite; test the hormone system by testing thyroid hormone in the blood and the tissues (breast and ovaries); test the vascular system, BP and AB index to prevent stroke and heart attack; and running and monitoring therapy programs. Since the method is testing the frequencies of the patients, the new way of testing is 2-3 channels wave testing; we are testing the frequency of the complains and at the same time we are testing the cause of the symptoms in each of the organs to find out which organ is causing the symptoms and the 3rd channel to test the frequency of food or medications effect. All 3 channel in the same time. Only by this way we can detect the cause of the pain or the tumor. Then the treatment in 2-3 frequency channels can be set according to the result of testing.



Biography

Issa Salim has completed his Master degree in medical cybernetic at the age of twenty six years from Ilmenau University in Germany and his PhD in monitoring the brain signals from Graz university in Austria. He is a Member of the Bioresonance international association. In addition, he was Deputy of World University Service in UN- Austria and the Director of electrophysiology EEG in Wurzburg Germany. He is the director of Medical Center Of Bioresonance in Rashid Hospital in DUBAI. He was awarded by Dubai's Government (Excellence Program for the year 2010) In recognition of his outstanding, creative achievements and initiatives.

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