DAY 1

Speaker

Euroscicon Conference on

3D PRINTING

August 05-06, 2019 | Paris, France

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August 05, 2019

Sessions

3D Imaging and Modelling | Wireless Communication | Future innovation On 3D Printing | Metal 3D Printing | 3D Printing in Industries | Internet Of Things (IoT) | 3D Bio printing | Advances in 3D Printing & Additive Manufacturing Technology | Future innovation On 3D Printing |3D Printing innovation organization & market

Session Chair
Biljana Jovic
University of Belgrade, Serbia

Session Introduction

Title: **The main principles of photorealism used in producing 3D rendered images for interior design**
Petyo Budakov, New Bulgarian University, Bulgaria

Title: **Microstructure of single track and bulk stainless steel 316L fabricated by laser powder bed fusion**
Lina Ji, Chongqing Institute of Green and Intelligent Technology, Chinese Academy of Sciences, China

Title: **4D textiles: how to program elastic textiles by 3D printing**
David Schmelzeisen, RWTH Aachen University, Germany

Title: **Binder jetting of metallic components using hierarchal binders**
Kate Black, University of Liverpool, UK

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Petyo Budakov, Am J Compt Sci Inform Technol 2019, Volume 07

THE MAIN PRINCIPLES OF PHOTOREALISM USED IN PRODUCING 3D RENDERED IMAGES FOR INTERIOR DESIGN

Petyo Budakov
New Bulgarian University, Bulgaria

The main goal of this article is to illustrate the fundamental photorealistic principles used by the CGI (computer generated images) designers in order to develop effective 3D rendered scenes. CGI has a strong and essential impact on the interior designer's workflow. Today's clients have very high expectations and very short attention spans. Thus, the interior designers face a challenge to constantly improve the quality of their projects. In order to achieve the expected results, the practitioners should optimize the time they spend to enhance their performance as well as reproducing fairly the realism of their projects. Being aware of the abilities that the contemporary 3D software and its related plug-ins provide will significantly facilitate the relations between interior designers and their clients. Hence, it is crucial for the designers to be completely aware of the main photorealistic principles and how they could be applied into their 3D projects in order to enhance the level of realism. This paper considers the application of those principles through the large number of tools provided by 3D Studio Max. The findings of this article would benefit the design workflow in terms of producing 3D images of interiors with a high level of realism and accuracy.

Biography

Petyo Budakov Graduated from the New Bulgarian University, Bulgaria with PhD in Digital Technologies and Visual Communication in December 2012. He is a Faculty at the NBU, Department "Cinema, advertising and show business" and a Visiting-Professor at Brand Academy, Hamburg, Germany, Kazakh British Technical University, Almaty, Kazakhstan, Beijing Normal University, Zhuhai, China, Zhejiang Wanli University, China, Peter the Great St. Petersburg Polytechnic University, Russia, Higher Colleges of Technology, Dubai, UAE, Tallinn University, Tallinn, Estonia. Most of his research has been devoted on the 3D digital media, brand identity development as well as designing and delivering effective information design. In 2016, he was awarded with a research grant by the German Academic Exchange Service (DAAD) at HMKW Berlin - University of Applied Sciences. He was selected as a Finalist for the Falling Walls Lab Finale at the Falling Walls 2016 in Berlin. He was privileged to give a talk to a large, high qualified audience, consisted of faculties from Stanford, Humboldt, Oxford and etc.

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Lina Ji et al., Am J Compt Sci Inform Technol 2019, Volume 07

MICROSTRUCTURE OF SINGLE TRACK AND BULK STAINLESS STEEL 316L FABRICATED BY LASER POWDER BED FUSION

Lina Ji[1,2], Sen Wang[1,2], Jiquan Liu[1,2], Wenjie Wu[1,2], Shuqian Fan[1,2]

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[2]Chongqing Key Laboratory of Additive Manufacturing Technology and Systems, CN

Single track printing is one of the basic units for additive manufacturing technique, which has significance on the process optimization and quality improvement of the final printed products. Single track printing of stainless steel 316L was studied and the morphology and microstructure of the molten pool were analyzed. The result showed that columnar grains were easy to grow perpendicular to the boundary of the molten pool due to the large temperature gradient, whereas equiaxed grains were prone to appear far away from the boundary. The cell spacing decreased with scanning speed increased, however, it did not change much with different laser power. The lattice parameters decreased with the decrease of laser volumetric energy density due to the phase reorganization. The microstructure of the printed pieces was anisotropic with equiaxed and columnar dendritic substructures alternative for the top surface. However, for the side surface, columnar dendritic substructures could grow across the interlayers and even through the whole surface.

Biography

Lina Ji has completed her PhD in condensed matter physics at the age of 29 years from Institute of Phyics, Chinese Academy of Sciences and postdoctoral studies from Singapore National University and University of Minnesota. After that, she joined the 3D printing Center in Chongqing Institute of Green and Intelligent Technology, Chinese Academy of Sciences as an associate professor. Her research is mainly on additive manufacturing of refractory materials and metal-matrix composites. She has published more than 25 papers in top journals.

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4D TEXTILES: HOW TO PROGRAM ELASTIC TEXTILES BY 3D PRINTING

David Schmelzeisen[1], Jan Serode[1], Alon Tal[1], Hannah Koch[1], Karin Vlug[2], Bas Froon[2], Christopher Pastore[3], Scott Stapleton[4], Thomas Gries[1]

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[2] UNSEAM, Amsterdam, Netherlands
[3] Thomas Jefferson University, Philadelphia, PA USA
[4] Department of Mechanical Engineering, University of Massachusetts Lowell, USA

Combining 3D printing and textile materials is still a relatively new research area. This represents a growth area that offers the promise of "4D Textiles" - hybrid textile/3D printed structures that can change structural form with time. The underlying principle behind these hybrid material systems is the stored energy in the textile material prior to printing causes a change in form when the energy is released. The shape change of the textile is defined by the design and arrangement of the 3d printed rigid elements. This talk explains design principles for 4d textiles using applied examples from the fields of clothing and architecture.

Biography

David Schmelzeisen studied mechanical engineering at the RWTH Aachen University. During his PhD he started researching on production technologies for smart textiles and is focusing on hybrid 4D printing technologies. He is responsible for the research group of 4D textiles at the Institut für Textiltechnik (ITA) der RWTH Aachen University. Furthermore he supports apparel manufacturers to meet the demand of near-shoring, fast production and sustainable design.

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Kate Black et al., Am J Compt Sci Inform Technol 2019, Volume 07

BINDER JETTING OF METALLIC COMPONENTS USING HIERARCHAL BINDERS

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School of Engineering-University of Liverpool, UK

In this research a novel approach of rapidly manufacturing high-quality metallic parts, by additive manufacturing has been developed. Current binder jet technology has limitations in fabricating parts with sufficiently high-densities. This is due to the use of organic binders which subsequently need to be burnt out, resulting in components that are intrinsically porous and weak. In this work, we have developed a series of hierarchal metallic binders that do not need to be removed and form part of the overall build material. The metallic binders also act as in situ infiltration and improve overall part densities and structural integrity. The binders contain metallic particles ranging from molecular to micron size. In this work the effect of metallic binders on shrinkage, porosity and tensile strength have been assessed. The ability to manufacture parts with lower porosity and therefore improved tolerances and performance will enable a greater variety of industries to adopt additive manufacturing technology.

Biography

Kate Black has received her PhD in Material Science from the University of Liverpool in 2008. She then went on to join the University of Cambridge as a Research Associate, in the Centre for Advance Photonic and Electronics, principally working on the development of novel materials for supercapacitors. She is now serving as a Senior Lecturer in the Centre for Materials and Structures at the University of Liverpool, School of Engineering. Her research interests are primarily focused on the development of novel functional materials, using inkjet and binder jet printing. Her main area of expertise is in the development of novel reactive organo-metallic inks (ROM) that can be exploited to produce a wide a variety of functional materials, such as conductors, insulators and semiconductors. She was voted as Top 50 women in Engineering by WES in 2018 and is a Board Member of the Young Academy of Europe.

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Young Research Forum

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Reza Gheisari et al., Am J Compt Sci Inform Technol 2019, Volume 07

3D-PRINTING OF ARTIFICIAL DIELECTRICS USING LOW TEMPERATURE ELECTROCERAMI

Reza Gheisari, Athanasios Goulas, George Chi-Tangyie, Chih-Kuo Lee, Avishek Ghosh, Shiyu Zhang, Dawei Wang, Annapoorani Ketharam, Darren Cadman and Daniel Engstrom

Loughborough University, UK

Additive manufacturing (AM) is a novel technology for producing prototypes as well as functional parts in a layer by layer manner. AM technologies have recently gained increased importance, as they allow production of complex geometries with high levels of accuracy and repeatability in a cost-effective way. Artificial dielectrics and metamaterials have extraordinary properties and are capable of controlling electromagnetic (EM) wave propagation and tailoring EM properties. Currently, manufacturing of metamaterials is costly and time consuming as several processes are required such as micromachining, etching and assembling. We are presenting initial results, investigating multi-material AM of ceramics and metals as an alternative manufacturing method and their RF properties.

Biography

Reza Gheisari has obtained his MSc in Advanced Manufacturing Technology and Systems Management from the University of Manchester. The focus of his MSc dissertation was on fabrication of hybrid micro moulds using additive manufacturing techniques to replicate polymeric micro-cantilevers for MEMS relays. He is currently pursuing his PhD at Loughborough University, working on additive manufacturing of 3D metamaterials.

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