6TH INTERNATIONAL CONFERENCE
ON ADDITIVE TECHNOLOGIES

Preliminary **Conference Program**

When: November 29th and 30th, 2016

Where: Nürnberg, Germany, Mövenpick Konferenz Center Nürnberg Airport
(Flughafenstrasse 100, 90411 Nürnberg)

Invited Speakers

Olaf Diegel
Wohlers Associates
AM state of the industry

Countless organizations of all types and sizes are considering additive manufacturing (AM) and 3D printing-terms that are used interchangeably. They are hard at work trying to understand where it is going and where they fit in. Many are awestruck by the technology and investing large amounts of money. Diegel will underscore some of the developments that have led to this phenomenon and will emphasize some of the most important trends from the recent past. He will also share his thoughts about the importance of Design for Additive Manufacturing as a key to the adoption of AM by industry.

Ian Gibson
School of Engineering,
Deakin University
The changing face of AM in oral and maxillofacial surgery in Australia

In this talk Ian will cover his experiences in developing surgical solutions using AM technology, with particular emphasis on Oral and Maxillofacial surgery. Such surgical applications are on the increase and there are indications that AM may finally be accepted into the mainstream. However, the implications are far reaching and perhaps more complex than people may initially realise. Ian will discuss these implications in relation to the Australian context.

Ed Tackett
Additive Manufacturing Competency Center,
University of Louisville
AM in education

Ed Tackett is a nationally recognized educator in the AM field. Previously the director of The RapidTech Center at the Henry Samueli School of Engineering at the University of California, Irvine, Tackett leverages over 20 years in additive manufacturing training and education. Ed is instrumental in leading the UL AMCC in the development and delivery of its curriculum.

icat@rapiman.net **www.icat.si**

Andrea E. Reinhardt
microTec
3D-printed in Europe

Mrs. Andrea E. Reinhardt started in banking, studied at University Mannheim and is working in leading positions in the field of Additive Manufacturing and industrial applications of micro- and nanotechnologies since 1996. She supported as one of the share holders the startup and growth phase of microTEC and co-founded in 2001 NTC, a company active in the field of Sol-Gel materials used for coating in automotive and construction.

Deon de Beer
North West University, Potchefstroom, South Africa
AM in South Africa – a strategic outlook

As with all nations, the Republic of South Africa (RSA) has a unique set of circumstances and challenges. Emerging from economic isolation and stagnation, the RSA has some highly developed regions but also some pockets of poorly developed infrastructure. Therefore, developing countries can learn from the way it has sought to modernise its industries and to look for guidance. For the last two decades, AM's uptake and democratisation has advanced rapidly. Many other countries are following this path of late adoption and so can learn valuable lessons from what has happened in the RSA.

Preliminary Program

TOPIC 01

Computer Aided Engineering in Additive Manufacturing

Oster, Alexander (Autodesk Inc., United States of America)
Practical process simulation for metal Additive Manufacturing

Bayerlein, Fabian; Zeller, Christian; Zäh, Michael F. (Technical University of Munich, Germany)
Reduction of manufacturing-induced dimensional deviations in laser beam melting by pre-deformation

Bernard, Paul-Emile (1); Barboza, Josue (1); Delanaye, Michel (1); Remacle, Jean-François (2) (1: Geonx, Belgium; 2: Université catholique de Louvain, Belgium)
Additive Manufacturing simulation on GPU using high-order finite elements on cartesian grids

Soldner, Dominic (1,2); Steinmann, Paul (1,2); Mergheim, Julia (1,2) (1: Chair of Applied Mechanics (LTM), Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany; 2: Collaborative Research Center 814 - Additive Manufacturing, Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany)
Reducing computational cost of the simulation of selective laser melting of PA12

Kergaßner, Andreas (1,2); Mergheim, Julia (1,2); Steinmann, Paul (1,2) (1: Chair of Applied Mechanics (LTM), Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany; 2: Collaborative Research Center 814 - Additive Manufacturing, Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany)
Mesoscopic modelling of additively manufactured Inconel 718

Atzeni, Eleonora; Galati, Manuela; Iuliano, Luca; Minetola, Paolo; Salmi, Alessandro (Politecnico di Torino, Department of Management and Production Engineering (DIGEP), Italy)
Redesign for AM of a metal component through topology optimization: a case study

Koepf, Johannes (1,2); Rai, Abha (1,2); Markl, Matthias (1,2); Körner, Carolin (1,2) (1: Chair of Materials Science and Engineering for Metals (WTM), Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany; 2: Collaborative Research Center 814 - Additive Manufacturing, Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany)
3D grain structure simulation for beam - Based Additive Manufacturing

Bruna-Rosso, Claire; Demir, Ali Gökhan; Previtali, Barbara; Vedani, Maurizio (Dipartimento di Meccanica, Politecnico di Milano, Italy)
Selective laser melting high efficiency modeling

Greifenstein, Jannis (1,2); Stingl, Michael (1,2) (1: Mathematical Optimization, Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany; 2: Collaborative Research Center 814 - Additive Manufacturing, Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany)
Robust optimal component design under consideration of local material defects

Major, Zoltan; Sheikhnejad-Bishe, Ommeaymen (Institute of Polymer Product Engineering Johannes Kepler Universität Linz, Austria)
Simulation of the electromechanical behavior of nanoparticles filled ink for 3D-printing

Schiochet Nasato, Daniel (1,3); Pöschel, Thorsten (1,3); Parteli, Eric J. R. (2,3) (1: Institute for Multiscale Simulation (MSS), Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany; 2: Department of Geosciences, University of Cologne, Germany; 3: Collaborative Research Center 814 - Additive Manufacturing, Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany)
Effect of vibrations applied to the transport roller in the quality of the powder bed during additive manufacturing

TOPIC 02

Education and Arts & Design for Additive Manufacturing

Gräßler, Iris (1,2); Taplick, Patrick (1,2) (1: Heinz Nixdorf Institute - Paderborn University, Germany; 2: Direct Manufacturing Research Center, Germany)
Supporting Additive Manufacturing by augmented reality

Abattouy, Mohammed (Faculty of sciences and technologies Tangier, Morocco)
Additive manufacturing laboratory inside Moroccan universities: a case study

Major, Zoltan; Reiter, Martin (Institute of Polymer Product Engineering Johannes Kepler Universität Linz, Austria)
Education of 3D printing and design for various ages and expertise levels

Havenga, Sarel Pretorius (1); de Beer, Deon (2); van Tonder, Malan (1); Campbell, Ian (3) (1: Vaal University of Technology, South Africa; 2: North West University, South Africa; 3: Loughborough University, United Kingdom)
Using acetone (propanone) as a post-production finishing technique: Crossing the divide between art and technology

TOPIC 03

Materials for Additive Manufacturing - Metals

Bauer, Thomas (1); Spierings, Adriaan B. (1); Wegener, Konrad (2) (1: Inspire AG, Switzerland; 2: ETH Zürich, Switzerland)
Effect of minor element additions to the processability of a nickel-based anti-magnetic shielding alloy

Sehrt, Jan T. (1); Kleszczynski, Stefan (1); Notthoff, Christian (2); Lau, Marcus (3); Barcikowski, Stephan (3) (1: University of Duisburg-Essen, Institute for Product Engineering, Manufacturing Technology, Germany; 2: University of Duisburg-Essen, Institute for Combustion and Gasdynamics, Nanoparticle Process Technology and Center for Nanointegration Duisburg-Essen (CENIDE), Germany; 3: University of Duisburg-Essen, Technical Chemistry I and Center for Nanointegration Duisburg-Essen (CENIDE), Germany)
Laser powder bed fusion of nano-WC-modified and nano-TiO_2-modified metal powders

Karg, Michael Cornelius Hermann (1,2,3); Ahuja, Bhrigu (1,2,3); Schmidt, Michael (1,2,3) (1: Institute of Photonic Technologies (LPT), Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany; 2: Collaborative Research Center 814 - Additive Manufacturing, Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany; 3: Erlangen Graduate School in Advanced Optical Technologies (SAOT), Germany)
In-situ creation of Aluminium-Copper alloys from powder mixtures of micro-scaled master alloys and dry coated nanoparticles during Additive Manufacturing by laser beam melting

Khademzadeh, Saeed (1); Carmignato, Simone (1); Bariani, Paolo F. (1); Parvin, Nader (2) (1: University of Padova, Italy; 2: Amirkabir University of Technology (Tehran Polytechnic), Iran)
Textural evolution during micro direct metal deposition of NiTi alloy

v. Müller, Alexander (1,2); Schlick, Georg (3); Anstätt, Christine (3); de Luca, Riccardo (1); Neu, Rudolf (1,2); Seidel, Christian (3); You, Jeong-Ha (1) (1: Max-Planck-Institut für Plasmaphysik, Germany; 2: Technische Universität München, Germany; 3: Fraunhofer IGCV, Germany)
Microstructural investigations of tungsten manufactured by means of laser beam melting

Dutta Majumdar, Jyotsna (1); Rittinghaus, Silja Katharina (2,3); Weisheit, Andreas (3) (1: Indian Institute of Technology Kharagpur, India; 2: Lehrstuhl für Lasertechnik LLT RWTH Aachen University, Aachen, Germany; 3: Fraunhofer-Institut für Lasertechnik ILT, Aachen, Germany)
Studies on direct laser clad Ti45Al5Nb0.5Si-TiB2 composites

Karg, Michael Cornelius Hermann (1,5,6); Hentschel, Oliver (1,5,6); Ahuja, Bhrigu (1,5,6); Junker, Daniel (2,6); Hassler, Ulf (3,6); Schäperkötter, Claus Simon (4,6); Haimerl, Andreas (4,6); Arnet, Horst (4,6); Merklein, Marion (2,6); Schmidt, Michael (1,5,6) (1: Institute of Photonic Technologies (LPT), Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany; 2: Institute of Manufacturing Technology (LFT), Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany; 3: Fraunhofer IIS/EZRT, Germany; 4: Schaeffler Technologies AG & Co. KG, Germany; 5: Erlangen Graduate School in Advanced Optical Technologies (SAOT), Germany; 6: Bayerischer Forschungsverbund ForNextGen - Next Generation Tooling, Germany)
Comparison of process characteristics and resulting microstructures of maraging steel 1.2709 in Additive Manufacturing via Laser Metal Deposition and Laser Beam Mealting in Powder Bed

TOPIC 04

Materials for Additive Manufacturing - Polymers

Carvalho, A.S.V. (1); Luis, J. (1); Pires, L.S.O. (1,2); Oliveira, J. M. (1,2) (1: School of Design, Management & Production Technologies Northern Aveiro, University of Aveiro, Oliveira de Azeméis, Portugal ; 2: CICECO-Aveiro Institute of Materials, University of Aveiro, Portugal)
Development of industrial ceramic pastes for robocasting 3D

Schönberger, Frank; Fage, Julien; Knieper, Alexander; Klumpp, Alexander; Beinert, Christian (Fraunhofer LBF, Germany)
Design of novel copolymers for compact and non-porous 3D inkjet printing

Schmutzler, Christoph; Doerrstein, Jörg; Zaeh, Michael F. (Technical University Munich, Germany)
Manufacturing of components by 3D printing using biological waste products

Gomez, Juan (1,2); Sachs, Marius (1,2); Schmidt, Jochen (1,2); Peukert, Wolfgang (1,2) (1: Institute of Particle Technology (LFG), Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany; 2: Collaborative Research Center 814 - Additive Manufacturing, Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany)
Tailoring properties of polypropylene powders for LBM applications using dry particle coating

Dörrstein, Jörg; Langhansl, Matthias; Zollfrank, Cordt (Technische Universität München, Professur für Biogene Polymere, Germany)
Modeling of the actuation potential of 3D-printed PLA-Cellulose composites

Kollmer, Jürgen (1); Dorfinger, Peter (1); Gorsche, Christian (2); Seidler, Konstanze (2); Liska, Robert (2); Stampfl, Jürgen (1) (1: Institute of Materials Science and Technology, TU Wien, Austria; 2: Institute of Applied Synthetic Chemistry, TU Wien, Austria)
Toughening and coloring of photopolymers for lithography-based 3D-printing

Fanselow, Stephanie (1,2); Peukert, Wolfgang (1,2); Schmidt, Jochen (1,2) (1: Institute of Particle Technology (LFG), Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany; 2: Collaborative Research Center 814 - Additive Manufacturing, Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany)
Production of polymer agglomerates by spray drying

Leitner, Ulrich; Heiden, Bernhard (FH-Kärnten Gemeinnützige Privatstiftung, Austria)
3D-Printing with coated materials - first experimental investigations and design considerations

TOPIC 05

Medical Applications of Additive Manufacturing

Kostevšek, Urška (1); Brajlih, Tomaž (1); Balič, Jože (1); Kadivnik, Žiga (2); Drstvenšek, Igor (1) (1: University of Maribor, Slovenia; 2: Ortotip Ltd. Maribor, Slovenia)
Research on achievable manufacturing speeds of selective laser melting in dental applications

Rajtukova, Viktoria (1); Toth, Teodor (1); Polacek, Irenej (1); Hudak, Radovan (1); Zivcak, Jozef (1); Kovacevic, Mila (2) (1: Technical University of Kosice, Slovak Republic; 2: University of Novi Sad, Serbia)
The comparison of internal surfaces of Ti-6Al-4V alloy and CoCr alloy frameworks for single crowns using SLM technology

Schnitzer, Marek; Hudák, Radovan; Živčák, Jozef; Kula, Tomas; Bocko, Jozef (Technical University of Kosice, Slovak Republic)
Cervical implant design, structural analysis, topological optimization and experimental verification

Wessarges, Yvonne; Gieseke, Matthias; Kiesow, Tobias; Kaierle, Stefan (Laser Zentrum Hannover e.V., Germany)
Selective Laser Melting of magnesium alloys for biomedical applications

Jiang, Cho-Pei (1); Hsu, Huang-Jan (2); Lee, Shyh-Yuan (3) (1: National Formosa University, Taiwan; 2: National Yang-Ming University, Taiwan; 3: National Yang-Ming University, Taiwan)
LCD-based Additive Manufacturing of dental model and occlusal splint

Velasco, Marco Antonio (1); Garzón-Alvarado, Diego Alexander (2); Rodríguez, Jhonatan (3); Restrepo, Deivi Gonzalo (3) (1: Servicio Nacional de Aprendizaje SENA, Colombia; 2: Universidad Nacional de Colombia, Colombia; 3: Universidad Santo Tomás, Colombia)
Evaluation of the mechanical properties of PLA scaffolds for bone tissue engineering as a function of the process parameters in fused filament fabrication (FFF)

Major, Zoltan (1); Berger, Veronika M. (1); Nussbaum, Gerhard (2); Ernst, Waltraud (3) (1: Institute of Polymer Product Engineering, Johannes Kepler Universität Linz, Austria; 2: Kompetenznetzwerk Informationstechnologie zur Förderung der Integration von Menschen mit Behinderungen (KI-I), Linz, Austria; 3: Institut für Frauen- und Geschlechterforschung, Johannes Kepler Universität Linz, Austria)
A new approach to mouthsticks - Material selection for Additive Manufacturing of mouthpieces

Homa, Johannes; Schwentenwein, Martin (Lithoz GmbH, Austria)
Novel AM concepts for biomedical applications

TOPIC 06

Additive Manufacturing Process - Metals

Calignano, Flaviana (1); Monaco, Federico (2); Calandri, Michele (3); Marchese, Giulio (3); Ambrosio, Elisa Paola (1); Lorusso, Massimo (1); Manfredi, Diego (1); Ugues, Daniele (3) (1: Center for Sustainable Futures (CSF) - Fondazione Istituto Italiano di Tecnologia (IIT), Italy; 2: Department of Energy (DENERG) - Politecnico di Torino, Italy; 3: Department of Applied Science and Technology (DISAT) -Politecnico di Torino, Italy)
Selective laser melting for heat exchanger

Atzeni, Eleonora; Galati, Manuela; Iuliano, Luca; Minetola, Paolo; Salmi, Alessandro (Politecnico di Torino, Department of Management and Production Engineering (DIGEP), Italy)
An integrated design methodology for components produced by Selective Laser Melting (SLM)

Scheitler, Christian (1,2); Rothfelder, Richard (1); Rasch, Michael (1,2); Ahuja, Bhrigu (1,2); Schmidt, Michael (1,2,5); Merklein, Carsten (3); Beer, Oskar (4) (1: Institute of Photonic Technologies (LPT), Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany; 2: Erlangen Graduate School in Advanced Optical Technologies (SAOT), Germany; 3: Schaeffler Technologies AG & Co. KG, Germany; 4: FAG Aerospace GmbH & Co. KG, Germany; 5: Bayerisches Laserzentrum GmbH (blz), Germany)
Laser beam melting of M50NiL: Influence of inert gas flow on resulting part properties

Li, Xiaopeng (1); Kruth, Jean-Pierre (1); Van Humbeeck, Jan (2) (1: University of Leuven (KU Leuven), Department of Mechanical Engineering, Leuven, Belgium; 2: University of Leuven (KU Leuven), Department of Metallurgy and Materials Engineering, Leuven, Belgium)
The influence of preheating temperature on the phase formation and texture of commercially pure titanium fabricated by selective laser melting

Schwanekamp, Tobias; Reuber, Martin (Rheinische Fachhochschule Köln, Germany)
Additive Manufacturing of application optimized composite carbide precision tools

Bischof, Corinna (1,2); Scheitler, Christian (1,2); Kneisel, Lukas (1); Schmidt, Michael (1,2,3) (1: Institute of Photonic Technologies (LPT), Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany; 2: Erlangen Graduate School in Advanced Optical Technologies (SAOT), Germany; 3: Bayerisches Laserzentrum GmbH (blz), Germany)
Influence of preheating temperature and carbon content on crack formation during Laser Beam Melting of AISI H11 tool steel

Lorusso, Massimo (1); Manfredi, Diego (1); Calignano, Flaviana (1); Ambrosio, Elisa Paola (1); Aversa, Alberta (2); Marchese, Giulio (2); Ugues, Daniele (2); Pavese, Matteo (2); Fino, Paolo (1,2) (1: Center for Sustainable Futures@Polito, Istituto Italiano di Tecnologia, Italy; 2: Department of Applied Science and Technology, Politecnico di Torino, Italy)
Understanding wear and friction behavior of DMLS Aluminum Matrix Composites by nanoscratching

Pobel, Christoph (1,2) (1: Materials Science (MWT), Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany; 2: Collaborative Research Center 814 - Additive Manufacturing, Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany)
Innovative processing strategies for selective electron beam melting of Ti-6Al-4V and IN718

Burns, Neil; Molyneux, Anthony; Geekie, Louise (Croft Additive Manufacturing Limited, Risley Warrington, United Kingdom)
Surface Finishing of metal AM parts

Merklein, Marion (1,4); Dubjella, Patrick (1,4); Schaub, Adam (1,4); Butzhammer, Lorenz (2,3,4); Schmidt, Michael (2,3,4) (1: Institute of Manufacturing Technology (LFT), Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany; 2: Institute of Photonic Technologies (LPT), Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany; 3: Erlangen Graduate School in Advanced Optical Technologies (SAOT), Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany; 4: Collaborative Research Center 814 - Additive Manufacturing, Germany)
Interaction of Additive Manufacturing and forming

TOPIC 07

Additive Manufacturing Process - Polymers

Zäh, Ralf-Kilian (ZeMA - Zentrum für Mechatronik und Automatisierungstechnik gGmbH, Germany)
Modern multi - material - 3D - manufacturing with separate toner layer structure production and component assembly

Fischer, Matthias; Schöppner, Volker (Paderborn University, Germany)
Fatigue behavior of ultem 9085 parts manufactured by fused deposition modeling

Kaufhold, Julia; Gauser, Tony; Kuhnert, Benjamin (Institut für Holztechnologie Dresden gGmbH, Germany)
Mechanical properties of 3D-printed wood-plastic-composites depending on process parameters

Drexler, Maximilian (1,2); Lanzl, Lydia (1,2); Wudy, Katrin (1,2); Drummer, Dietmar (1,2) (1: Collaborative Research Center 814 - Additive Manufacturing, Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany; 2: Institute of Polymer Technology (LKT), Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany)
Analysis of time dependent thermal properties for high heating rates in selective laser sintering

Yoo, In Seong; Stauber, Simon; Franke, Jörg (Institute for Factory Automation and Production Systems (FAPS), Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany)
Spatial mapping of temperature distribution in heated build envelope of a desktop 3D-printer

Pilipović, Ana; Zrakić, Igor (Faculty of Mechanical Engineering and Naval Architecture, Croatia)
Influence of processing parameters on the mechanical properties of FDM products

Wegner, Andreas (University of Duisburg-Essen, Germany)
Processing conditions and aging effects of a new polypropylene material for the laser sintering process

Lohn, Johannes (University of Paderborn, Germany)
Laser sintering of PA6

Wudy, Katrin (1,2); Lanzl, Lydia (1,2); Greiner, Sandra (1); Drexler, Maximilian (1,2); Drummer, Dietmar (1,2) (1: Institute of Polymer Technology (LKT), Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany; 2: Collaborative Research Center 814 - Additive Manufacturing, Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany)
Selective laser sintering of a polypropylene polyamide 12 blend: Bulk and component properties

TOPIC 08

Applications of Additive Manufacturing

Hallmann, Sina (Technische Universität Hamburg, Germany)
Process development for hybrid punching dies by Selective Laser Melting of steel material

Kopf, Robin; Lingen, Alexander; Lanza, Gisela (Karlsruhe Institute of Technology (KIT), Germany)
Developing laser metal fusion towards a cost efficient series production

Steinwender, Arko (1,2); Kritzinger, Werner (1,2) (1: Fraunhofer Austria Research GmbH, Austria; 2: Vienna University of Technology, Austria)
Systematic approach for the identification of new industrial application fields for AMT

Gebauer, Mathias (1); Müller, Bernhard (1); Polster, Stefan (1); Spierings, Adriaan (2); Stoll, Philipp (2); Feld, Tobias (3); Klinger, Marcel (4); Zurbrügg, Andreas (5) (1: Fraunhofer Institute for Machine Tools and Forming Technology, Germany; 2: inspire AG, Switzerland; 3: BRAUN CarTec GmbH, Germany; 4: Gut Metallumformung AG, Switzerland; 5: Ringele AG, Switzerland)
High performance sheet metal forming tooling by Additive Manufacturing

Graf, Gregor; Donisi, Sven (Rosswag GmbH, Germany)
Additive manufacturing in small and medium-sized enterprises - The Forge-SLM-Hybrid

Pfister, Andreas (1); Fischer, Sybille (1); Galitz, Verena (1); Lyons, Brett (2); Robinson, Christopher (2); Kubiak, Steven (3); Booth, Rick (4) (1: EOS GmbH, Germany; 2: The Boeing Company, USA; 3: Stratasys Direct Manufacturing, USA; 4: Advanced Laser Materials, LLC; USA)
Laser sintering of carbon fiber filled PEKK: A new high-performance composite tailored for aerospace applications

Hiller, Simon (1); Moisa, Michelle (2); Morar, Dominik (2); Kemper, Hans-Georg (2); Lasi, Heiner (1) (1: Ferdinand-Steinbeis-Institut, Germany; 2: University of Stuttgart, Germany)
Implementation approaches for Additive Manufacturing enabled value chains - an exploration

Nemecek, Stanislav (1,2); Wágner, František (1) (1: Matex PM, Czech Republic; 2: Raptech, Czech Republic)
Properties of dies produced by additive manufacturing

Singh, Amit Kumar (1); Amirfazli, Alidad (2) (1: MNIT Jaipur, India; 2: York University, Canada)
3D printing technologies for microfluidic device fabrication: A review paper

TOPIC 09

Quality Assurance for Additive Manufacturing

Paramasivam, Vinothkumar; Santhanakrishnan, Soundarapandian (Indian institute of Technology Madras, Chennai, India)
Vision based control system for quality improvement of additively-manufactured parts

Fulga, Simina (1,2); Davidescu, Arjana (2); Effenberger, Ira (1); Verl, Alexander (3) (1: Fraunhofer Institute for Manufacturing Engineering and Automation IPA, Germany; 2: Politehnica University Timisoara, Romania; 3: Institute for Control Engineering of Machine Tools and Manufacturing Systems, Germany)
Tasks for in-line quality control and in-situ optimisation of Additive Manufacturing Powder Bed Fusion Processes

Fulga, Simina (1,2); Davidescu, Arjana (2); Effenberger, Ira (1); Verl, Alexander (3) (1: Fraunhofer Institute for Manufacturing Engineering and Automation IPA, Germany; 2: Politehnica University Timisoara, Romania; 3: Institute for Control Engineering of Machine Tools and Manufacturing Systems, Germany)
In-line Quality Control System for a reliable Additive Manufacturing -layer by layer inspection

Hassler, Ulf (1); Grulich, Tobias (1); Seifert, Lars (1); Kostka, Günther (1); Hentschel, Oliver (2) (1: Fraunhofer IIS, Germany; 2: Institute of Photonic Technologies (LPT), Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany)
Multimodal in-situ monitoring and defect detection for laser metal deposition by using infrared thermography and sheet-of-light imaging

Heinl, Martin (1,2); Hausotte, Tino (1,2); Galovskyi, Bogdan (1,2) (1: Institute of Manufacturing Metrology (FMT), Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany; 2: Collaborative Research Center 814 - Additive Manufacturing, Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany)
Dimensional and surface measurements of additive manufactured workpieces

Chivel, Yuri (MerPhotonics, France)
Optical monitoring and control in additive technologies

Fuchs, Lukas; Grebner, Martin (EOS GmbH Electro Optical Systems, Germany)
Innovation in process monitoring – How to achieve real in-process quality control in Direct Metal Laser Sintering (DMLS)

Marmor, Thomas; Grebner, Martin (EOS GmbH Electro Optical Systems, Germany)
Best practices: AM Quality validation for restricted industries

TOPIC 10

Additive Manufacturing Technologies

Grguraš, Damir; Kramar, Davorin; Homar, David; Pusavec, Franci; Kopac, Janez (Faculty of Mechanical Engineering, Ljubljana, Slovenia)
Optimization of the technological parameters in the hybrid manufacturing of 3D printing and milling

Chivel, Yuri (MerPhotonics, France)
New approache in selective laser cladding

Kloke, Agnes; Neff, Martin; Dr. Duffner, Eberhard (ARBURG, Germany)
ARBURG Plastic Freeforming and the resulting part quality

Graf, Benjamin (1); Petrat, Torsten (1); Gumenyuk, Andrey (1,4); Schuch, Michael (3); Rethmeier, Michael (1,2,4)
(1: Fraunhofer IPK, Germany; 2: Technische Universität Berlin, Germany; 3: Wehrwissenschaftliches Institut für Werk- und Betriebsstoffe (WIWeB); 4: Bundesanstalt für Materialforschung und -prüfung (BAM), Germany)
Combined laser additive manufacturing with powderbed and powder nozzle for turbine parts

Chivel, Yuri (MerPhotonics, France)
Selective laser sintering/melting of multi-material parts

Hopmann, Christian; Lammert, Nicolai (Institut für Kunststoffverarbeitung (IKV) in Industrie und Handwerk an der RWTH Aachen, Germany)
Integrated combination of additive and subtractive manufacturing for thermoplastic materials

Zhang, Wei; Priefer, Marian; Olenina, Mariia; Ossenbrink, Ralf; Michailov, Vesselin (Brandenburg University of Technology Cottbus - Senftenberg, Germany)
Additive manufacturing by laser beam build-up welding

Stichel, Thomas (1,2); Laumer, Tobias (1,2); Amend, Philipp (1,2); Roth, Stephan (1,2,3) (1: Bayerisches Laserzentrum GmbH (blz), Germany; 2: Collaborative Research Center 814 - Additive Manufacturing, Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany; 3: Erlangen Graduate School in Advanced Optical Technologies (SAOT), Germany)
Multi-material deposition of polymer powders with vibrating nozzles inside laser beam melting machines

Erler, Martin; Ebert, Robby; Gronau, Stafan; Horn, Matthias; Kloetzer, Sascha; Exner, Horst (Laserinstitut Hochschule Mittweida, Germany)
High rate micro cladding

Schwarzer, Eric; Scheithauer, Uwe; Richter, Hans-Jürgen; Moritz, Tassilo (Fraunhofer IKTS, Germany)
Exploration of new possibilities in Additive Manufacturing by using lithography-based ceramic manufacturing (LCM)

Scheithauer, Uwe; Schwarzer, Eric; Weingarten, Steven; Richter, Hans-Jürgen; Moritz, Tassilo (Fraunhofer IKTS, Germany)
Thermoplastic 3D-Printing (T3DP) – An additive manufacturing process for single- and multi-material components

Baumgartner, Sonja (1); Schönherr, Julia-Anna (1); Schedle, Andreas (2); Stampfl, Jürgen (1) (1: TU Wien, Austria; 2: University Clinic of Dentistry Vienna, Austria)
Precision of stereolithography-based additive manufactured ceramic parts