2023 yCAM FORUM

Leoben

30 Aug - 1 Sept 2023

PROGRAMME AT A GLANCE!

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MONTAN UNIVERSITÄT LEOBEN

Wednesday, 30th August 2023

08:15	**Registration**
OPENING -- Chaired by: Anna De Marzi, Johanna Sänger and Sarah Diener	
09:00	**Welcoming**
OPENING KEYNOTES -- Chaired by: Anna De Marzi, Johanna Sänger and Sarah Diener	
09:15	Lithography-based ceramic manufacturing in the field of modern medical engineering -- *Jessica Sohl*
09:35	The path from research to the industry standard -- *Thomas Mühler*
09:55	How Additive Manufacturing is becoming a game-changer for the production of clean hydrogen -- *Charlie Clark*
10:15	**Coffee break**
Material Jetting, Binder Jetting and Powder Bed Fusion – Chaired by: Marco Mariani and Hendrik Schubert	
10:45	Introduction
10:50	Development potential of Direct Inkjet Printing -- *Sven Kriegseis*
11:10	Binder Jetting 3D Printing of Potassium Sodium Niobate: sintering procedure optimisation -- *Francesco Bertolini*
11:30	Drying mechanism and kinetics in solvent evaporation of the cantilever method -- *Hendrik Schubert*
11:50	Porous alumina manufacturing by binder jetting 3D printing -- *Marco Mariani*
12:10	**Lunch**
Material extrusion with inks and pastes I – Chaired by: Marco D'Agostini and Subhadip Bhandari	
13:30	Introduction
13:35	Colloidal route towards novel sodium superionic conductor electrolyte (NASICON) with complex 3D structures fabricated by Direct ink writing (DIW) -- *Oxel Urra*
13:55	Field-assisted sintering of BaTiO3 ceramics fabricated by Direct Ink writing (DIW) -- *Subhadip Bhandari*
14:15	Near-universal slicing for continuous-extrusion DIW through differential growth algorithms -- *Marco D'Agostini*
14:35	Robocasting of reaction-bonded carbides: Multi-layer and core-shell printing—*Larissa Wahl*
14:55	**Poster Session I and Coffee break**
78	Preparation of Al2O3-TiB2 composite coating by Air Plasma spraying of SHS powders on steel substrate -- *Seyed Hossein Mirhosseini*
75	3D printing of AlN ceramic by Binder Jetting and SLA-DLP for electronic packaging -- *Quentin Aubailly*
111	3D printing of zirconia-based ceramics by lithography-based ceramic manufacturing (LCM) for structural and functional high-performance applications -- *Anna Lebhard*
92	Preparation and characterization of (Na1/2Bi1/2)TiO3-based piezoceramic suspensions for vat photopolymerization – *Tobias Pötzelsberger*
45	Fabrication of partially water-soluble sacrificial molds obtained by vat-photopolymerization -- *Micaela Aldana Pairone*
20	Suitability of fast sintering techniques for the consolidation TCP scaffolds manufactured by Digital Light Processing -- *Claudia Paredes*
100	Dimensional accuracy of zirconia dental bars fabricated by vat photopolymerization and material extrusion -- *Tadej Mirt*
97	Band-gap engineering studies of nano TiO2-based 3D porous FFF parts by thermal treatments -- *Pablo Ortega Columbrans*
62	Development of a partially water soluble binder for fused deposition of ceramic -- *Thomas Heim*
117	Structured NH3 sorbents fabricated by DIW of SrCl2-based composites -- *Ali Ezzine*
94	Printing microbatteries by Robocasting -- *Samuel Simaga*
64	Choosing the correct raster pattern and drying route for high density and high strength monolithic alumina toughened zirconia parts -- *Berfu Goeksel*

52	Elaboration of BaTiO3 piezoceramics by Direct Ink Writing for acoustic applications -- *Naël Mezdar*
87	Preparation of planetary simulant granulates with high flowability via spray drying for powder-based additive manufacturing in space -- *Chenggui He*
Material extrusion with inks and pastes II – Chaired by: Marco D'Agostini and Subhadip Bhandari	
16:00	Additive manufacturing of capillary suspensions for sustainable energy harvesting -- *Gaurav Vajpayee*
16:20	Ceramic Matrix Composites shaped by DIW of Pre-Ceramic Polymer based feedstocks -- *Filippo Da Rin Betta*
16:40	Ordered mesoporous silica-based robocasting feedstock formulation: impact of the inorganic binder content on flow, mechanical and structural properties. -- *Emiliano Dal Molin*
17:00	Dynamic Molding as a new opportunity for large size ceramics and ceramic-based composites additive manufacturing: two case studies -- *Ambra Paterlini*
17:30	**Welcome reception** **Montanunivesität Leoben** – Reception Hall

Thursday, 31st August 2023

Mechanical testing – Chaired by: Maximilian Staudacher and Sarah Diener	
09:00	Strength and failure of AM ceramics: what fractography can tell us -- *Tanja Lube*
09:30	Design concepts for 3D-printing alumina-based multi-material ceramics with exceptional mechanical properties -- *Josef Schlacher*
09:50	A novel strength testing method for additively manufactured ceramics -- *Maximilian Staudacher*
10:10	Validation of the CharAM test methodology in two round robin tests -- *Uwe Scheithauer*
10:30	**Coffee break**
Vat photopolymerization I – Chaired by: Mateus Mota Morais and Johanna Sänger	
11:00	Introduction
11:05	Computational Modelling for Ceramic Stereolithography Process -- *Fiona Spirrett*
11:35	Proper selection of solvent for a 3Y-TZP zirconia suspension decreases viscosity and retaining low post-processing shrinkage -- *Giovanna Rubo de Rezende*
11:55	Nanostructuring approach for the fabrication of carbides via digital light processing -- *Alice Zanini*
12:15	Creep behavior of 2PP-printed technical ceramics -- *Johanna Sänger*
12:35	**Lunch**
Vat photopolymerization II – Chaired by: Mateus Mota Morais and Johanna Sänger	
13:35	Holographic photopolymerization combined to microfluidics for the fabrication of lab-in-lab microdevices and complex 3D micro-objects – *Fabrice Rossignol*
14:05	Development of high solid-load slurry for the SLA 3D Printing of yttria-stabilized zirconia electrolytes for SOFCs application -- *Anastasiia Novokhatska*
14:20	Fabrication of calcium carbonate parts with multiscale porosity: comparing vat-photopolymerization and geopolymer casting -- *Mateus Mota Morais*
14:35	**Poster Session II and Coffee break**
74	Application of Potassium-based geopolymer in medical waste treatment: adsorption of Clenbuterol and comparative analysis with PAC -- *Mattia Muracchioli*
65	Direct Ink Writing of filter geometries from capillary suspension-based inks - *Felipe Melo Rigon*
63	Influence of various mixing procedures of Direct Ink Writing of Ceria stabilized zirconia -- *Mia Kovač*
59	Filament-based additive manufacturing of refractory products for demanding thermos-mechanical conditions -- *Piotr Malczyk*

58	Experimental approach to analyze the processing conditions for cement-based materials in binder jetting 3D printing process -- *Mursaleen Shahid*
46	Hydroxyapatite and tricalcium phosphate sinter-joined with zirconia to selectively enhance large bone implants manufactured by Digital Light Processing-based Vat Photopolymerization -- Sarah Nistler
48	Shaping of dense silicon carbide by paste-based 3D micro-extrusion -- *Samanwitha Kolli*
47	Multi-material metal-ceramic components manufactured by Selective Powder Deposition followed by pressure-assisted sintering -- *Margherita Beretta*
43	Adding a low-cost heating system to a DLP printer reduces the viscosity and increases the printability of ceramic suspensions -- *Mateus Mota Morais*
42	Direct Ink Writing of inorganic glasses out of aqueous ink based on PEO-PPO-PEO copolymer -- *Przemysław Gołębiewski*
33	Morphological comparison between thermoelectric films deposited by aerosol jet printing (AJP) and spin coating -- *Matteo d'Angelo*
118	Thermal shock behavior of 3D-printed alumina ceramics with spatially tailored porosity -- *Luisa Mateus*
32	Preparation of BaTiO3 suspensions containing platelet particles for textured ceramics using digital light processing -- *Přemysl Šťastný*
9	Ceramic composite filaments for wide-spread commercial application -- *Peter Veteska*
19	3D-printing of SiC by Digital Light Processing -- *Maria Mykland*
Material extrusion with ceramic filaments – Chaired by: Uwe Scheithauer and Milan Vukšić	
	Introduction
16:05	Mechanical properties of dental zirconia ceramics fabricated by additive manufacturing -- *Milan Vukšić*
16:25	Silicon carbide additive manufacturing for space mirrors -- *Maëlys Gauthé*
16:45	Elaboration of Metal-Ceramic Multi-Material Refractory Components manufactured via Fused Filament Fabrication Technique for Corrosive Working Conditions -- *Patricia Kaiser*
19:00	**Gala Dinner** **Arkadenhof Schwarzer Adler** - Hauptpl. 11, 8700 Leoben

Friday, 1st September 2023

Space – Chaired by: David Karl and Johanna Sänger	
09:00	3D-printing of lunar regolith ceramics with high mechanical properties via a stereolithography-based approach -- *Maxim Isachenkov*
09:20	Habitat construction on Mars using material extrusion AM of dried clay adobe structures under simulated Martian conditions -- *Sara Santos*
9:40	**Coffee break**
Emerging, hybrid and multimaterial – Chaired by: Anna De Marzi and Andrea Zocca	
10:30	The potential of liquid feedstock for the additive manufacturing of ceramics --*Giorgia Franchin*
11:00	Tailoring structural and functional properties of AM ceramics through rapid sintering -- *Anna-Katharina Hofer*
11:20	Defect-free Hybrid Manufacturing of Advanced Ceramics -- *Louis Masters*
12:00	**Closing of yCAM 2023**

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