Programme RAPDASA-RobMech-PRASA 2021

Wednesday 3 November 2021

TIME	DAY 1					
	Room1 (Diamond)					
09:00	Welcome and opening – Chairperson RAPDASA 2021 Mr Marius Vermeulen					
09:15	Welcoming by CSIR management: Dr Thulani Dlamini, President and CEO of CSIR					
09:30	Opening Address: Mr Beeuwen Gerryts, Chief Director: Technology localisation, beneficiation and advanced manufacturing, Department of Science and Innovation					
10:00	PLENARY SESSION: Chair: Prof Deon de Beer					
10:00	Keynote Address: Prof Ian Campbell, Emeritus Professor at Loughborough University: How a Collaborative International Partnership is Driving the DiCoMI Project Forward					
10:30	TEA/COFFEE BREAK					
10:50	Prof Paulo Bartolo Executive Director, Singapore Centre for 3D Printing: Advances in Additive Manufacturing: a journey from Manchester to Singapore					
11:20	Questions and answers					
11:30	TECHNICAL PRESENTATIONS					
	Room 1: (Diamond)		**Room 2:(Emerald)**		**Room 3:(Ruby)**	
	Industry track is upstairs in Crystal/Garnet/Onyx (see separate programme for industry presentations)					
	Room 1: Additive Manufacturing		Room 2: RobMech		Room 3: PRASA	
	Session Chair: Hardus Greyling		Session Chair: Prof Elisha Markus		Session Chair: Imdaadulah Adam	
	Theme: Additive Manufacturing Material Development		Theme: Robotics and Mechatronics		Theme: Pattern Recognition	
	Title	Presenter	Title	Presenter	Title	Presenter
11:30	Influence of powder characteristics on the spreadability of pre-alloyed WC-CO	Preyin Govender	Development of a multipurpose, outdoor autonomous ground vehicle for agricultural inspection	John Dickens	Digital Twinning of Lap-Based Marathon Infrastructure	André Broekman
11:50	Characterization of polypropylene powder produced by precipitation for powder bed fusion additive manufacturing	Joseph Nsengimana	VLOS and BVLOS RPAS Operators Certificate: Case Study for Inspection Requirements	Riaan Stopforth	Model-Based Design of Additive Manufacturing Operations for Improved Management, Control and Compliance	Duncan William Gibbons
12:10	Parameters affecting the mixing of powders for additive manufacturing and the results of mixing SiC and Ti6Al4V powders	Mamphutlane Seleso	An Octomap-based 3D costmap	Daniel Withey	Development of a graphical user interface as a learning tool for artificial intelligence	Natasha Botha
12:30	Laser metal deposition of TiB2/TiC/Ti6Al4V composites	Athernia Thunyiswa	Ground Robot Path Planning on 3D Mesh Surfaces Using Local Regions	Cebisile Mthabela	A comparative study towards particle identification employing semi-automated image processing in experimental SEM images	Beatrice van Eden
13:00	LUNCH BREAK					
	Room 1: Additive Manufacturing		Room 2: RobMech		Room 3: PRASA and Additive Manufacturing	
	Session Chair: Prof Sisa Pityana		Session Chair: Duwan Bester		Session Chair: Dr Lethu Chikosha	
	Theme: Additive Manufacturing Material Development		Theme: Robotics and Mechatronics		Theme: Pattern Recognition	
	Title	Presenter	Title	Presenter	Title	Presenter
14:00	Development of novel bioinks for bioprinting and tissue engineering	Jaundrie Fourie	Evaluation of visual odometry method in 3D LIDAR based mapping	Samuel Ogunniyi	One-Class Support Vector Machines for Boat Detection using Fully Polarimetric Radar	Thabang Matladi
	Theme: Additive Manufacturing Process Development				Theme: Product Development	
14:20	Risk based classification of powder bed defects	Francois Du Rand	Manufacturing and Evaluation of the Open-Source AR3 Robot Arm for Educational Uses	Stephen Marais	Framework for cemented tungsten carbide drill bit prototype fabrication using laser engineered net shaping	Natasha Sacks
14:40	Efficiency evaluation of a high-temperature preheating system for additive manufacturing	Rabelani Ramulifho	Development of a platform for the freeform extrusion of a continuous glass fiber reinforced photopolymer	Daniel Kirkman	Direct energy deposition of a cemented tungsten carbide rotary burr prototype	Emma Molobi

15:00	Effect of particle size distribution on the resulting part density and mechanical properties in selectively laser melted cobalt chrome	Stuart Papworth	Core functional MES with machine monitoring using open-source software	Kshir Ramruthan	The role of AM polymers to improve the OEE of operations	Henk Harmse
15:20	Validation and investigation of deformation prediction and deformation compensation for additive manufacturing	Benic van Wyk	PID Control for a collaborative humanoid robot	Teboho Ntsinyi	Combined implicit and explicit techniques to create a bespoke optimized 3D printed lattice socket for a prosthetic hand	Jode Fourie
15:40	TEA/COFFEE BREAK					
16:00	Room 1: Additive Manufacturing		Room 2: RobMech		Room 3: Additive Manufacturing	
	Session Chair: Dr Wayne Koen		Session Chair: Dr Hein Möller		Session Chair: Duncan Gibbons	
	Theme: Additive Manufacturing Process Development		Theme: Robotics and Mechatronics		Theme: Product Development	
	Title	Presenter	Title	Presenter	Title	Presenter
16:00	Effect of Stress-relief anneal time on residual stress of Co-Cr-Mo parts manufactured with selective laser melting	Genevieve Rousseau	Design and manufacturing of an aggregate abrasion test device for testing in high acceleration field	Sipho Xungu	A mobile and portable pre-ICU AM-produced BI-PAP ventilator system in response to COVID19 challenges	Zaahid Imran
			Theme: Rapid Sand Casting			
16:20	Prediction of inter-layer adhesion in polymer additive manufacturing	Tobias Ott	Elimination of shrinkage porosity in low alloy steel using MAGMASOFT simulation software	Jonathan Kabasele	Medical product development for animals using AM and digital manufacturing	Philip van der Walt
16:40			Assessment of the financial feasibility of rapid sand-casting process using the payback period method	Anazo Msani		
18:30	COCKTAIL EVENT (CSIR ICC DECK)					

Thursday 4 November 2021

TIME	DAY 2					
	Room 1 (Diamond)					
08:00	Opening and Welcome: Chairperson RAPDASA 2021 conference organizing committee - Dr Hencharl Strauss					
08:10	PLENARY SESSIONS: Chair: Dr Ntombi Mathe **Room 1 (Diamond)**					
08:10	Markus Glasser, EOS: Bringing industrial 3D printing of serial production parts together with responsible manufacturing					
08:40	Karsten Heuser, VP Additive Manufacturing, Siemens Digital Industries: Manufacturing reinvented with robot-based additive manufacturing					
09:10	Prof Alessandro Fortunato: Selective laser melting in endoprostheses fabrication: opportunities and challenges					
09:40	Prof Mashudu Tshifularo, ENT specialist, University of Pretoria, Steve Biko academic Hospital: The role of 3D technology in medicine prosthesis (personal experience)					
10:10	Questions and answers					
10:20	TEA/COFFEE BREAK					
10:40	TECHNICAL PRESENTATIONS					
	Room 1: (Diamond)		**Room 2:(Emerald)**		**Room 3:(Ruby)**	
	Industry track is downstairs in Room 3 (Ruby from 11:40 onwards)					
	Room1 : Additive Manufacturing		Room 2: RobMech		Room 3: Additive Manufacturing	
	Session Chair: Prof Thorsten Becker		Session Chair: Prof Didier Nyembwe		Session Chair: CP Kloppers	
	Theme: Additive Manufacturing Process Development		Theme: Rapid Sand Casting		Theme: Product Development	
	Title	Presenter	Title	Presenter	Title	Presenter
10:40	Cold spray technology for metal 3D printing in rough environments and offshore applications	Invited speaker: Stefan Ritt	Characterization of waste sand generated during the Voxeljet rapid sand casting process	Accolade Motlhabane	Topology Optimisation for Mass Reduction in Additively Manufactured Rocket Engine Propellant Pumps	Byron Blakey-Milner
11:00	Heat Treatment Development for Residual Stress Reduction in SLM Manufactured CoCr Components	Juan Du Plessis	Pre-optimisation of a resin coated chromite sand for rapid sand casting applications	Neo Tshabalala	Geographical education of the visually impaired using Braille system on physical models	Sanat Agrawal
11:20	Laser optimized process parameters for suppressing columnar phase and Nb segregation in IN718 clad	Bathusile Masina	Suitability of Local Chromite Sand for use in Rapid sand casting	Julieth Langutani Chauke	An AM solution to a golfing predicament – a bespoke golf putter head and hosel with multiple configuration options for personalized club fitment	Wian van Aswegen
11:40			Assessment of Consol silica sand for three dimensional printing applications	Oyombo Dady	Industry track	
	Theme: Additive Manufacturing Part Characterisation		Theme: AM Post Processing and Qualification			
12:00	Qualitative measurement rubric for internal cranial prostheses STL evaluation	Henra Muller	Dimensional error testing of 3D printed samples and sterilisation techniques for orthopedic surgery	Leon Kotze	Industry track	
12:20	Investigation of the properties of direct energy deposition additive manufactured 304 stainless steel	Shaik Ebrahim Hoosain	High cycle fatigue performance of Ti6Al4V (ELI) parts produced with inherent direct metal laser sintering surface roughness	Hlakae Miya	Industry track	
12:40	Influence of Ti and Cu on the Corrosion Properties of Laser-Deposited High Entropy Alloys in NaOH solution	Modupeola Dada	Understanding the effect of characterising variability for batch production using laser powder bed fusion	Cindy Sithole	Industry track	
13:00	LUNCH BREAK					
	Room 1: Additive Manufacturing		Room 2: Additive Manufacturing		Room 3: Industry Presentations	
	Session Chair: Dr Lerato Tshabalala		Session Chair: Dr Ntombi Mathe			
	Theme: Additive Manufacturing Part Characterisation		Theme: AM Post Processing and Qualification			
	Title	Presenter	Title	Presenter		
14:00	An overview of the latest additive manufacturing research in the 3D Innovation group at Stellenbosch University	Anton Du Plessis	The effect of sandblasting and bead blasting on material removal rate of SLM parts using dry electrolyte polishing	Daniel Taljaard	Industry track	
14:20	Using the Vickers indentation method to measure surface residual stress in SLM IN718 specimens	Barend Coetsee Stander	Industry taking up on-demand Additive Manufacturing of spare parts	Duwan Bester	Industry track	

14:40	Fractography of polypropylene laser sintered tensile test specimens	Fredrick Mwania	Qualification and certification for fatigue life in additive manufacturing	Nic Macallister	Industry track	
15:00	Residual stress, porosity and surface roughness measurements for laser powder bed fusion manufactured Ti6Al4V at high laser powers	Nkutwane Washington Makoana			Industry track	
15:20	The efficacy of the inherent strain method in determining residual stress in IN718 SLM specimen	Herculaas Botha			Industry Track	
15:40	TEA/COFFEE BREAK					
	Room 1 (Diamond)					
16:00	PLENARY SESSION: Chair: Prof Ian Campbell					
16:00	Keynote Address: Dr Terry Wohlers, President of Wohlers Associates, Inc.: A Maturing Industry Advancing to the Next Level					
16:30	Questions and answers					
16:40	CLOSURE		CLOSURE		CLOSURE	
17:00	RAPDASA ANNUAL GENERAL MEETING - Room 1 (Diamond)					
19:00	GALA DINNER (CSIR ICC EXHIBITION HALL)					

Friday 5 November 2021

TIME	DAY 3					
	Room 1 (Diamond)					
08:00	Opening and Welcome: Chairperson RAPDASA 2021 conference organizing committee – Dr Hencharl Strauss					
08:15	PLENARY SESSIONS: Chair: Prof André van der Merwe					
08:15	Mr Johan Pretorius, Aerosud Group IT Leader, Leader and Strategist at OCTi Agile Consulting and MWorx™: Stabilise, Automate, Innovate and Accelerate					
08:45	Prof Olaf Diegel, Professor of Additive Manufacturing, University of Auckland, New Zealand: Design for additive manufacturing and design automation: A perfect synergy					
09:15	Prof Joel Vasco, Polytechnic of Leiria, Institute for Polymers and Composites, Portugal: The adoption of AM by the Automotive industry					
09:45	Questions and answers					
10:30	TEA BREAK – Sponsors live sessions					
	Room 1: (Diamond)		**Room 2:(Emerald)**		**Room 3:(Ruby)**	
	TECHNICAL PRESENTATIONS					
	Room 1: Additive Manufacturing					
	Session Chair: Dr Monnamme Tlotleng					
	Theme: Additive Manufacturing Part Characterisation					
	Title	Presenter				
10:50	Analysis of corrosion and mechanical properties of DMLS manufactured Ti6Al4V parts	Kabelo Raselabe				
11:10	Investigation of microstructure and hardness properties of in-situ TiB/Ti6Al4V ELI composite manufactured by laser metal deposition	Paul Lekoadi				
11:30	Microstructure and tensile properties of 3D printed Ti-48Al-2Nb-2Cr alloy manufactured by direct laser metal deposition	Sisa Pityana				
11:50	ACKNOWLEDGEMENTS: Chairperson of RAPDASA 2021 - Mr Marius Vermeulen					
12:00	CLOSING					
12:00	LUNCH					