

33rd International Manufacturing Conference - University of Limerick, Ireland

IMC³³

30th August – 1st September 2016

Conference Programme



Tuesday, 30th August

19:00 – 20:30 Welcome Reception, *The Pavilion*, North Campus, University of Limerick

Wednesday, 31st August

08:50 – 09:00

Open & Welcome

Analog Devices Building – Main Lecture Theatre (AD2-010)

Prof. Don Barry, President - University of Limerick

09:00 – 09:15

Keynote 1.1

Analog Devices Building – Main Lecture Theatre (AD2-010)

Manufacturing & The Irish Economy

Minister Denis Naughten, T.D. – Dept. of Communications, Climate Action and Environment

09:15 – 09:30

Keynote 1.2

Analog Devices Building – Main Lecture Theatre (AD2-010)

The Medtec View of Manufacturing Research

Mr John Neilan – Director of Engineering & Research, Cook Medical.

09:30 – 09:45

Keynote 1.3

Analog Devices Building – Main Lecture Theatre (AD2-010)

Industry 4.0 and Next Generation Manufacturing

Mr Ralf Lichte – Industry 4.0 Solutions Architect – European Development Centre, Mitsubishi Electric

09:45 – 10:00

Keynote 1.4

Analog Devices Building – Main Lecture Theatre (AD2-010)

The importance of supporting Discipline-Based Educational Research

Dr Niall Seery – Associate Professor at KTH - Royal Institute of Technology Stockholm

10:00 – 10:30

Tea/Coffee, Analog Devices Building Foyer

&

Official Opening of *Mitsubishi Electric Automation Laboratory*, Design & Manufacturing Technology Dept., Schrodinger Building, UL

Wednesday, 31st August10:30 – 11:30

Parallel Session 1A: Cutting Technologies
 Lecture Theatre AD2-010
 Chair: Peter Tiernan

10:30 – 10:45*Modelling of transient thermal conditions in cutting*

Mr. Thorsten Augspurger (WZL RWTH Aachen)
 Prof. Fritz Klocke (WZL RWTH Aachen)
 Dr. Benjamin Döbbeler (WZL RWTH Aachen)
 Dr. Matthias Brockmann (WZL RWTH)
 Dr. Sascha Gierlings (Fraunhofer IPT Aachen)
 Ms. Adriana Lima (WZL RWTH Aachen)

10:45 – 11:00*A review of the capabilities and limitations of high speed imaging applied to the study of machining processes*

Dr. Matt Cotterell (Cork Institute of Technology)

11:00 – 11:15*Tool wear mechanisms and tool wear modelling for CFRP drilling*

Mr. John McClelland (Queens University Belfast)
 Dr. Saurav Goel (Queens University Belfast)
 Dr. Adrian Murphy (Queens University Belfast)
 Dr. Yan Jin (Queens University Belfast)
 Mr. Michael Morgan (Northern Ireland Technology Centre)
 Dr. Caroline McClory (Northern Ireland Technology Centre)
 Mr. Colm Higgins (Northern Ireland Technology Centre)
 Mr. Rory Collins (Northern Ireland Technology Centre)

11:15 – 11:30*Mechanistic modelling of the cutting process of MDF with a part worn tool*

Dr. Seamus Gordon (Department of Design and Manufacturing Technology, University of Limerick)

11:45 – 12:00

Tea/Coffee, Analog Devices Building Foyer

Wednesday, 31st August10:30 – 11:30

Parallel Session 1B: Manufacturing Processes
 Lecture Room AD1-045
 Chair: Con Sheahan

10:30 – 10:45*A Tentative Manufacturing Process for Anti-Reflecting Coating of Photovoltaic Glass Cover Sheets*

Mr. Martin Ryan (Limerick Institute of Technology)

Dr. Michael Naughton (Limerick Institute of Technology)

10:45 – 11:00*Out-of-Autoclave (OOA) Polymer Composites Manufacture at the Irish Centre for Composites Research (IComp)*

Dr. Peter Hammond (University of Limerick)

Dr. Dipa Roy (University of Limerick)

Mr. Anada Roy (University of Limerick)

Ms. Winifred Obande (University of Limerick)

Mr. Gearoid Clancy (University of Limerick)

Dr. Anthony Comer (University of Limerick)

Dr. Ronan O'Higgins (University of Limerick)

Dr. Walter Stanley (University of Limerick)

11:00 – 11:15*Industry 4.0 vision considerations in a quality control sampling regime in a dairy manufacturing plant*

Mr. Krzysztof Zacharski (University of Limerick)

Dr. Mark Southern (The Dairy Processing Technology Centre, University of Limerick)

Dr. Alan Ryan (Department of Design and Manufacturing Technology, University of Limerick)

Prof. Catherine Adley (The Department of Chemical and Environmental Sciences, University of Limerick)

11:15 – 11:30*Additive manufacturing design approach to revamp commodity automotive products*

Mr. Anthony Maher (BorgWarner)

Mr. Stephen Sweeney (BorgWarner)

Mrs. Katherine O'sullivan (BorgWarner)

Mr. Erik Alcala (BorgWarner)

11:45 – 12:00

Tea/Coffee, Analog Devices Building Foyer

Wednesday, 31st August10:30 – 11:30

Parallel Session 1C: Engineering Education
 Lecture Room AD1-046
 Chair: Adrian O'Connor

10:30 – 10:45*The Evolution of 'Design Build Fly' Led Teaching in Aerospace Engineering*

Dr. Joseph Butterfield (Queens University Belfast)

Dr. Simao Marques (Queens University Belfast)

Dr. Dannielle Soban (Queens University Belfast)

Dr. Adrian Murphy (Queens University Belfast)

Prof. Mark Price (Queens University Belfast)

10:45 – 11:00*Spatial Ability in Education: A National Study*

Dr. Niall Seery (University of Limerick)

Mr. Jeffrey Buckley (University of Limerick)

Prof. Brian Bowe (Dublin Institute of Technology)

Mr. Darren Carthy (Dublin Institute of Technology)

11:00 – 11:15*New module delivery in the online learning environment: pedagogical approaches and industry/academic integration*

Dr. Ingrid Hunt (University of Limerick)

Mr. Rob Dalton (University of Limerick)

Dr. Michael O'Haodha (University of Limerick)

Ms. Adrienne Horan (University of Limerick)

Dr. Peter Williams (University of Limerick)

11:15 – 11:30*Buildbase - a student led facility for additive manufacturing*

Mr. Kevin Kelly (Trinity College Dublin)

Dr. Conor Buckley (Trinity College Dublin)

Mr. Michael McHugh (Trinity College Dublin)

11:45 – 12:00

Tea/Coffee, Analog Devices Building Foyer

Wednesday, 31st August12:00 – 13:00

Parallel Session 1D: Robotics & Automation
Lecture Theatre AD2-010
Chair: Seamus Gordon

12:00 – 12:15

Wearable Support Systems and Human-Robot Collaboration in the Industry 4.0 Production

Mr. Mario Bohla (University of Applied Sciences Hamburg)

Dr. Robert Goehlich (Airbus)

Prof. Prof. Dr. Randolf Isenberg (University of Applied Sciences Hamburg)

Dr. Ingo Krohne (Airbus)

Ms. Lisa Velten (University of Applied Sciences Hamburg)

Dr. Robert Weidner (Helmut Schmidt University Hamburg)

12:15 – 12:30

Design of a Stiffness Variable Continuum Robot

Mr. Sanjeev Ramkumar (University College Cork)

Dr. Guangbo Hao (University College Cork)

Mr. Yoav Olomutzki (University College Cork)

12:30 – 12:45

CNC Machine Tool - Kinematic and Dynamic Modelling

Ms. Niamh Coleman (Cork Institute of Technology)

Dr. Matt Cotterell (Cork Institute of Technology)

Mr. William France (Cork Institute of Technology)

Dr. Ger Kelly (Cork Institute of Technology)

13:15 – 14:15

Lunch, Analog Devices Building Foyer

Wednesday, 31st August12:00 – 13:00

Parallel Session 1E: Enterprise Modelling
Lecture Room AD1-045
Chair: Matt Cotterell

12:00 – 12:15**Modelling human centered knowledge systems for small Industry 4.0 businesses**

Dr. David Mulligan (Institute of Technology Sligo)
Dr. David Tormey (Institute of Technology Sligo)

12:15 – 12:30**Analysing the Applicability of Value Stream Mapping to the Dairy Processing Industry**

Mr. Paul Hogan (Dairy Processing Technology Centre, University of Limerick)
Dr. Mark Southern (Dairy Processing Technology Centre, University of Limerick)
Prof. Catherine Adley (Department of Chemical and Environmental Sciences, University of Limerick)
Dr. Alan Ryan (Department of Design and Manufacturing Technology, University of Limerick, Limerick)

12:30 – 12:45**Validation of an Open Source Tool for Automated Input Data in Discrete Event Simulation**

Dr. Panagiotis Barlas (University of Limerick)
Prof. Cathal Heavey (University of Limerick)

12:45 – 13:00**Enterprise visualisation and performance for manufacturing decision makers with SMEs**

Dr. Con Sheahan (Enterprise Research Centre, University of Limerick)
Dr. Adrian Lynch (Enterprise Research Centre, University of Limerick)

13:15 – 14:15

Lunch, Analog Devices Building Foyer

Wednesday, 31st August12:00 – 13:00

Parallel Session 1F: CAD & Design
Lecture Room AD1-046
Chair: Jeff Buckley

12:00 – 12:15

Intelligent DMU creation: Nominal CAD model preparation for automated tolerance allocation

Ms. Imelda Friel (Queens University Belfast)

Dr. Joseph Butterfield (Queens University Belfast)

Dr. Adelaide Marzano (Queens University Belfast)

12:15 – 12:30

Modelling how Surface Roughness changes as End-Milling Machining Parameters are varied.

Ms. Rosarie McCloskey (Dublin Institute of Technology)

Dr. Kevin Delaney (Dublin Institute of Technology)

12:30 – 12:45

A one software environment engineering practical associative modelling state

Dr. Philip Ryan (Limerick Institute of Technology)

12:45 – 13:00

Machine Learning on Vibration Signals: A Focus on Feature Extraction Methods

Mr. Christopher Ryan (Limerick Institute of Technology)

Dr. Michael Naughton (Limerick Institute of Technology)

13:15 – 14:15

Lunch, Analog Devices Building Foyer

Wednesday, 31st August14:15 – 15:15

Parallel Session 1G: Manufacturing Innovation (1)

Lecture Theatre AD2-010

Chair: Joe Butterfield

14:15 – 14:30**Smart Manufacturing Platform for a Digitized Production of Safety-Critical Aircraft Components**

Dr. Sascha Gierlings (Fraunhofer)

Dr. Thomas Bobek (Fraunhofer IPT Aachen)

Dr. Thomas Bergs (Fraunhofer IPT Aachen)

Prof. Fritz Klocke (WZL RWTH Aachen)

Dr. Matthias Brockmann (WZL RWTH Aachen)

Mr. Thorsten Augspurger (WZL RWTH Aachen)

14:30 – 14:45**Printing in Nano Scale, an overview of the design, build and testing of a Combustion Chemical Vapour Deposition (CCVD) Machine**

Mr. Mark Barry (Limerick Institute of Technology)

14:45 – 15:00**An analysis of the Membrane Filtration techniques as a pre-evaporation procedure during Milk Powder Production**

Mr. Patrick Prendergast (The Dairy Processing Technology Centre, University of Limerick, Limerick)

Dr. Mark Southern (University of Limerick)

Dr. Alan Ryan (University of Limerick)

15:00 – 15:15**Continuous Manufacturing of Solid Oral Dosage Forms via Roller Compaction- Development of a Model Predictive Tool**

Dr. Barbara Schaller (University of Limerick)

Ms. Seyedeh Pishnamazi (University of Limerick)

Dr. Patrick Cronin (University of Limerick)

Mr. Ahmad Ziaee (University of Limerick)

Dr. Ahmad Albadarin (University of Limerick)

Dr. Denise Croker (University of Limerick)

Dr. Maurice Collins (University of Limerick)

Prof. Gavin Walker (The Dairy Processing Technology Centre, University of Limerick)

15:30 – 15:45**Tea/Coffee, Analog Devices Building Foyer**

Wednesday, 31st August14:15 – 15:15

Parallel Session 1H: Instrumentation & Automation for Industry 4.0

Lecture Room AD1-045

Chair: Paul Hermon

14:15 – 14:30**Analysis of Portable instrumentation in Industry for Maintenance Application**

Mr. Adrian Chaplin (Limerick Institute of Technology)

Dr. Francis Hardiman (Limerick Institute of Technology)

Dr. Michael Naughton (Limerick Institute of Technology)

Dr. Peter Tiernan (University of Limerick)

14:30 – 14:45**Selection and installation procedure for water meters within the Irish dairy industry.**

Mr. Greg Lohan (The Dairy Processing Technology Centre, University of Limerick)

Dr. Alan Ryan (University of Limerick)

Mr. Alan O'Reilly (University of Limerick)

Ms. Elaine O'Connor (University of Limerick)

14:45 – 15:00**Fibre-optic sensors for Process Analytical Technology**

Mr. Niall O'Mahony (Institute of Technology Tralee)

Mr. Trevor Murphy (Institute of Technology Tralee)

Mr. Krishna Kaushal Panduru (Institute of Technology Tralee)

Dr. Daniel Riordan (Institute of Technology Tralee)

Dr. Joseph Walsh (Institute of Technology Tralee)

15:00 – 15:15**Control and Automation of Automotive HVAC units to allow Integration of PTC heaters for in-situ Testing and Data Collection**

Mr. Ivan Morris (Institute of Technology, Tralee)

15:30 – 15:45	Tea/Coffee, Analog Devices Building Foyer
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Wednesday, 31st August15:45 – 16:45

Parallel Session 11: Engineering Education (2)
 Lecture Theatre AD2-010
 Chair: Donal Canty

15:45 – 16:00**ECubers™ - An Industry-Led, Project-Based, Pedagogical Continuum**

Mr. Shane Loughlin (SL Controls & ACoE)
 Mr. John McGrory (Dublin Institute of Technology)

16:00– 16:15**Manufacturing Education - An online approach**

Dr. David Mulligan (Institute of Technology Sligo)
 Mr. Paul Ferry (Institute of Technology Sligo)

16:15– 16:30**A model of work-based learning for Graduates in Ireland**

Mr. Daithi Fallon (Cork Institute of Technology)
 Ms. Deirdre Goggin (Cork Institute of Technology)
 Dr. Ann Toebes (Cork Institute of Technology)
 Dr. Irene Sheridan (Cork Institute of Technology)

16:30 – 16:45**Facilitating effective teamwork in undergraduate engineering group projects**

Mr. Pearse O'Gorman (Ulster University)
 Dr. Margaret Morgan (Ulster University)

19:00 – 23:00**Conference Dinner**

Cornstore Restaurant, Thomas Street, Limerick

**** Bus will depart from front entrance of Analog Devices Building @ 18:30 ****

** Bus will return @ 23:00 to the Analog Devices Building via Kilmurray Lodge and Castletroy Park Hotel **

Wednesday, 31st August15:45 – 16:45

Parallel Session 1J: Engineering Design & Analysis
 Lecture Room AD1-045
 Chair: Kevin Kelly

15:45 – 16:00**Edible oil bottle Redesign for Automated Assembly and Productivity improvement**

Dr. Abdulwahab Abukwaik (College of Engineering & Informatics, NUIG)

16:00– 16:15**Utilisation of Glass Reinforced Plastics as Cost Effective Alternative to Traditional Materials in Access Panel Design for Waste Water Treatment Plants.**

Mr. Joel Uitterdijk (Relinea - GRP Systems Ltd. & Queens University Belfast)

Dr. Damian Quinn (Queens University Belfast)

Dr. Joseph Butterfield (Queens University Belfast)

Mrs. Karen Maguire (Relinea - GRP Systems Ltd.)

16:15– 16:30**The Level/Style Paradigm in DMAIC and how it Influences Effective Problem Solving**

Mr. Pat Coman (Institute of Technology Tallaght, Dublin)

Dr. Ann Ledwith (University of Limerick)

16:30 – 16.45**Analysis of the mechanical properties of hybrid composite reinforced with sisal/glass fibres and silica microparticles**

Ms. Bruna Ferreira (Limerick Institute of Technology)

Dr. Michael Naughton (Limerick Institute of Technology)

Dr. Túlio Panzera (Federal University of São João del Rei)

Mr. Júlio Santos (Federal University of São João del Rei)

19:00 – 23:00**Conference Dinner**

Cornstore Restaurant, Thomas Street, Limerick

**** Bus will depart from front entrance of Analog Devices Building @ 18:30 ****

** Bus will return @ 23:00 to the Analog Devices Building via Kilmurray Lodge and Castletroy Park Hotel **

Thursday, 1st September

08:50 – 09:00

Open Address

Analog Devices Building – Main Lecture Theatre (AD2-010)
Prof. Edmond Magner, Dean – Faculty of Science & Engineering, UL.

09:00 – 09:15

Keynote 2.1

Analog Devices Building – Main Lecture Theatre (AD2-010)

The Impact of Industry 4.0 on Manufacturing Innovation

Dr Andrew Lynch – Chief Innovation Officer, Irish Manufacturing Research

09:15 – 09:30

Keynote 2.2

Analog Devices Building – Main Lecture Theatre (AD2-010)

J4 - Johnson & Johnson's Journey through I:4.0

Mr Mark McConnell Director J&J Manufacturing Automation Centre of Excellence

09:30 – 09:45

Keynote 2.3

Analog Devices Building – Main Lecture Theatre (AD2-010)

Industry 4.0: Analog Devices, Bridging the physical and digital worlds with technologies that sense, measure and connect

Mr John Liddy – Director of Operations at Analog Devices

09:45 – 10:00

Keynote 2.4

Analog Devices Building – Main Lecture Theatre (AD2-010)

Group Project Work in Manufacturing Engineering Education

Prof. Kevin Kelly – Dept. of Mechanical & Manufacturing Engineering, Trinity College. Dublin.

10:00 – 10:30

Tea/Coffee, Analog Devices Building Foyer

Thursday, 1st September10:30 – 11:30

Parallel Session 2A: Biomedical Engineering
Lecture Theatre (AD2-010)
Chair: Alan Ryan

10:30 – 10:45

Adaptation of the Almen strip test to better understand the influence of shell removal processes on the distortion of ASTM F75 biomedical femoral knee implants.

Mr. Brian Conroy (University of Limerick)

Dr. David Tanner (University of Limerick)

10:45 – 11:00

3D Bioprinting the Future of Tissue and Organ Engineering

Ms. Caroline Murphy (University of Limerick)

Dr. Maurice Collins (University of Limerick)

11:00 – 11:15

Influence of Tissue Scaffold Design on 3D Printed Constructs

Mr. Aurnyn Souness (University of Limerick)

Dr. Maurice Collins (University of Limerick)

11:15 – 11:30

Experimental and Abaqus FE Analysis of the Crimping Behaviour of a Viscoelastic Polymeric Braided Stent

Ms. Camelia Shanahan (University of Limerick)

Dr. Syed A. M. Tofail (University of Limerick)

Dr. Peter Tiernan (University of Limerick)

11:45 – 12:00	Tea/Coffee, Analog Devices Building Foyer
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Thursday, 1st September10:30 – 11:30

Parallel Session 2B: Engineering Education (3)
 Lecture Room AD1-045
 Chair: Seamus Gordon

10:30 – 10:45**An Exploratory Study into the Cognitive and Behavioural Influences on Problem Solving Performance**

Mr. Jeffrey Buckley (University of Limerick)

Ms. Una Howley (University of Limerick)

Dr. Niall Seery (University of Limerick)

10:45 – 11:00**Allocation of FYPD topics - a case study in Ulster University**

Dr. Margaret Morgan (Ulster University)

Mr. Pearse O'Gorman (Ulster University)

11:00 – 11:15**The Cross Culture Analysis of the Aeronautical Engineering Profession and Its Interaction with Gender in Ireland and Spain.**

Ms. Noema Garcia (University of Limerick, Ireland)

Dr. Ray Lynch (University of Limerick, Ireland)

Dr. Ann Ledwith (University of Limerick)

11:15 – 11:30**MIND Strengths: The Unique Cognitive Architecture of Engineering and Technology Students**

Dr. Niall Seery (University of Limerick)

Mr. Jeffrey Buckley (University of Limerick)

Mr. Tomás Hyland (University of Limerick)

Dr. Donal Canty (University of Limerick)

11:45 – 12:00

Tea/Coffee, Analog Devices Building Foyer

Thursday, 1st September

12:00 – 13:00

Parallel Session 2C: Energy & Process Optimisation
Lecture Theatre (AD2-010)
Chair: Peter Tiernan

12:00 – 12:15

An analysis of existing energy recovery technologies with a view to implementation in the dairy processing sector

Mr. Alan O'Reilly (University of Limerick)

Dr. Alan Ryan (Department of Design and Manufacturing Technology, University of Limerick, Limerick)

Mr. Greg Lohan (DPTC - UL)

Ms. Elaine O'Connor (DPTC - UL)

12:15 – 12:30

Development of a methodology for calculating the impact of climate change on long term and short term overheating patterns in low energy dwellings

Mr. Evan Finegan (Cork Institute of Technology)

Dr. Ger Kelly (Cork Institute of Technology)

Dr. Garrett O'Sullivan (Cork Institute of Technology)

12:30 – 12:45

An application of six sigma in pharmaceutical production

Dr. Dikshitkumar Khamar (Department of Design and Manufacturing Technology, University of Limerick)

Dr. Rosaleen Mylotte (Department of Design and Manufacturing Technology, University of Limerick)

Dr. Sean Moore (Department of Design and Manufacturing Technology, University of Limerick)

Prof. Gavin Walker (The Dairy Processing Technology Centre, University of Limerick)

12:45 – 13:00

Manufactured recycled glass beds for water purification systems

Ms. Olena Madden (Limerick Institute of Technology)

Dr. Michael Daragh Naughton (Limerick Institute of Technology)

13:15 – 14:15

Lunch, Analog Devices Building Foyer

Thursday, 1st September12:00 – 13:00

Parallel Session 2D: Manufacturing Innovation (2)
 Lecture Room AD1-045
 Chair: Daragh Naughton

12:00 – 12:15**Identifying the Impact of Incomplete Datasets on Process Cycle Time Prediction in an Aerospace Assembly Line**

Mr. David Allen (Queens University Belfast)
 Dr. Joseph Butterfield (Queens University Belfast)
 Dr. Adrian Murphy (Queens University Belfast)
 Dr. Matthew Mullan (Bombardier Aerospace)
 Mr. Stephen Cowan (Bombardier Aerospace)

12:15 – 12:30**A generic workflow platform to support PLM in small medium enterprises**

Mr. Matthew Daniels (University of Limerick)
 Prof. Cathal Heavey (University of Limerick)
 Dr. Mark Southern (University of Limerick)

12:30 – 12:45**Virtual Reality as a tool to Assist Learning in Aerospace Assembly**

Ms. Zara Gibson (Queens University Belfast)
 Mr. Michael McGeown (Queens University Belfast)
 Dr. Joseph Butterfield (Queens University Belfast)
 Dr. Adelaide Marzano (Queens University Belfast)
 Dr. Brian Murphy (Queens University Belfast)

12:45 – 13:00**An investigation of the Irish milk processing industry's current fresh water standards**

Ms. Elaine O'Connor (University of Limerick)
 Dr. Alan Ryan (University of Limerick)

13:15 – 14:15

Lunch, Analog Devices Building Foyer

Thursday, 1st September14:15 – 15:15

Parallel Session 2E: Computational Modelling
 Lecture Theatre (AD2-010)
 Chair: David Tanner

14:15 – 14:30**Computational Fluid Dynamics, Rapid Prototyping and Design of Materials Sampling Processes for PAT**

Mr. Trevor Murphy (Institute of Technology Tralee)
 Mr. Niall O'Mahony (Institute of Technology Tralee)
 Mr. Krishna Kaushal Panduru (Institute of Technology Tralee)
 Dr. Daniel Riordan (Institute of Technology Tralee)
 Dr. Joseph Walsh (Institute of Technology Tralee)

14:30 – 14:45**Computational modelling, simulation and experimental study of chip formation when turning titanium, brass and stainless steel.**

Ms. Teresa Méndez (University of Vigo)
 Prof. Enrique Ares Gomez (University of Vigo)
 Dr. Matt Cotterell (Cork Institute of Technology)
 Dr. Ger Kelly (Cork Institute of Technology)
 Prof. Gustavo Peláez Lourido (University of Vigo)

14:45 – 15:00**A Structural Analysis of a NACA0018 H-Rotor Darrieus VAWT blade.**

Dr. Ger Kelly (Cork Institute of Technology)
 Mr. Christopher Kenny (Cork Institute of Technology)
 Dr. Andrew Cashman (Cork Institute of Technology)

15:00 – 15:15**The Thermal Analysis of a Data Center using Computational Fluid Dynamics.**

Ms. Mitera Balkaran (Cork Institute of Technology)
 Dr. Ger Kelly (Cork Institute of Technology)
 Dr. Andrew Cashman (Cork Institute of Technology)

15:30 – 15:45

Tea/Coffee, Analog Devices Building Foyer

Thursday, 1st September14:15 – 15:15

Parallel Session 2F: Engineering Education (4)
Lecture Room AD1-045
Chair: Alan Ryan

14:15 – 14:30

Enhancing the manufacturing knowledge of undergraduate engineering students: A case study of a Design-Build-Test challenge involving folding bicycles

Mr. Paul Hermon (Queens University Belfast)

14:30 – 14:45

Technology Mediated Assessment of Dynamic Spatial Ability

Mr. Jeffrey Buckley (University of Limerick)

Mr. Colm O'Neill (University of Limerick)

Dr. Niall Seery (University of Limerick)

14:45 – 15:00

Assessing Visual Perception in Virtual Reality Environments

Mr. Jeffrey Buckley (University of Limerick)

Mr. Joseph Phelan (University of Limerick)

Dr. Niall Seery (University of Limerick)

Dr. Donal Canty (University of Limerick)

15:00 – 15:15

The impact of using tutorial videos upon engineering students' learning

Dr. Abas Hadaway (Ulster University)

Dr. Justin Quinn (Ulster University)

Dr. Shaun McFadden (Ulster University)

<u>15:30 – 15:45</u>	Tea/Coffee, Analog Devices Building Foyer
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Thursday, 1st September15:45 – 16:30

Parallel Session 2G: Quality Control & Manufacturing Management
 Lecture Theatre (AD2-010)
 Chair: Matt Cotterell

15:45 – 16:00**An analysis of cheese packaging defects in the Irish Dairy Industry.**

Mr. Steven Normoyle (The Dairy Processing Technology Centre, University of Limerick, Limerick)
 Dr. Mark Southern (The Dairy Processing Technology Centre, University of Limerick)
 Dr. Alan Ryan (Department of Design and Manufacturing Technology, University of Limerick)

16:00– 16:15**WORKFLOW THEN & NOW: A Brief Review of Workflow Technology for PLM use in Manufacturing SMEs**

Mr. Matthew Daniels (University of Limerick)
 Prof. Cathal Heavey (University of Limerick)
 Dr. Mark Southern (University of Limerick)

16:15– 16:30**Determination of density-dependant Drucker-Prager parameters using an experimental calibration procedure**

Dr. Ahmad Baroutaji (Cork Institute of Technology)
 Mr K. Bryan (Cork Institute of Technology)
 Mr S. Lenihan (Cork Institute of Technology)

16:45 – 17:00**Conference Closing Session - Analog Devices Building – Main Lecture Theatre**

Thursday, 1st September15:45 – 16:30

Parallel Session 2H: Biomaterial Materials and Coating Technology

Lecture Room AD1-045

Chair: Camelia Shanahan

15:45 – 16:00**3D Bioprinting the Future of Tissue and Organ Engineering**

Ms. Caroline Murphy (University of Limerick)

Dr. Maurice Collins (University of Limerick)

16:00– 16:15**Evaluation of Hydrophobic Protective Coatings on Composites for Marine Applications**

Ms. Heather O' Connor (University College Dublin)

Prof. Denis Dowling (University College Dublin)

16:15– 16:30**Evaluation of Self-setting Ceramics as a Biomaterial Design to Fabricate Dissolvable Microneedles**

Ms. Caroline O'Sullivan (Cork Institute of Technology)

Ms. Marta Carracedo (Cork Institute of Technology)

Mr. Pablo Migel Castro (Cork Institute of Technology)

Mr. Evin Allen (University College Cork)

Mr. Michael Mcauliffe (Cork Institute of Technology)

Ms. Sonja Vucen (University College Cork)

<u>16:45 – 17:00</u> Conference Closing Session - Analog Devices Building – Lecture Theatre (AD2-010)

IMC33 Conference Sponsors

The generous support of the conference sponsors is acknowledged:



Dr. Peter Tiernan

Chair, IMC33 (Aug. 31st – Sept. 1st 2016, University of Limerick, Ireland)