

# FEARS 2019

The 19th edition of FEA Research Symposium

Ghent, Belgium  
iGHENT Tower

19th February 2019

# Programme



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FACULTY OF ENGINEERING  
AND ARCHITECTURE







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19<sup>th</sup> FEA Research Symposium  
iGent Tower, February 19, 2019

#FEARS2019



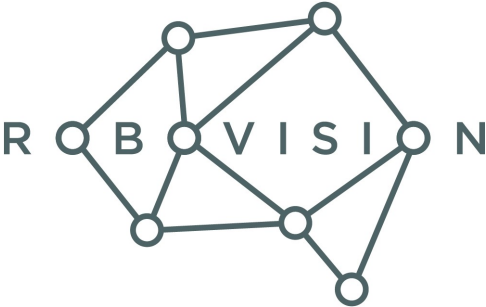
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# Preface

## Foreword by the Dean of the Faculty of Engineering and Architecture

Dear researcher,

This 19th edition of the research symposium offers again a unique opportunity to present your research work. We hope that this symposium can be a low-threshold event for junior researchers to show their first research results and that it can encourage them to continue along the chosen research path. Senior researchers may find this event the perfect opportunity to become acquainted with the various research activities performed at our faculty and to get inspired to cooperate with other research disciplines. Compared to previous editions the format of the symposium has been slightly updated and you will probably appreciate its vivid character, with plenty of opportunity to interact. We can also recommend you the attractive debate on the importance and societal impact of (fundamental) research work.

Dear promoter,

This symposium allows you to see your doctoral students at work, while at the same time offering you a platform to present your research activities to the faculty community in an informal way, to gain ideas and to contribute to the development of a close-knit research community.

Dear visitor,

Undoubtedly you are already familiar with our faculty and its researchers. At this fascinating event you may get a more global view of the activities and achievements within our faculty. May this symposium inspire you, provide you with some ideas for your own activities and encourage you to explore practical applications of academic research in collaboration with our researchers.

Dear sponsor,

Thanks to your contribution and support, young people are stimulated and inspired at the beginning of their research career. We hope this symposium will convince you that our research work is not locked up in the back rooms or attics of the university, quite the contrary, that it is linked with our daily life and, more importantly, that it can contribute to improvements and innovations in our lives.

Dear organizers,

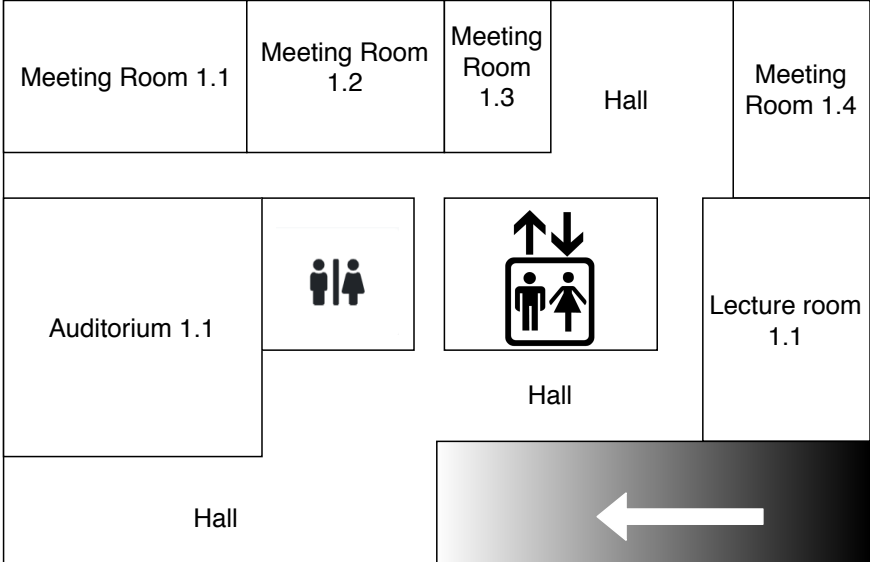
The faculty is greatly indebted to you. for your time and energy in the yearly organization of this symposium. We may underestimate the commitment and efforts involved in this organization. This commitment - largely unselfish - cannot be appreciated enough. We thank you very much and wish you a successful symposium and look forward to future editions!

Patrick De Baets, Dean  
Faculty of Engineering and Architecture

# Programme

- 08:30      **Registration and Sandwiches**  
Entrance iGent
- 09:00-09:15      **Opening of FEARS - dean Patrick De Baets**  
Student Foyer Ground floor
- 09:15-10:45      **Panel**  
Student Foyer Ground floor
- 11:00-12:00      **FEA pitch cup: Play-offs**  
Student Foyer Ground floor and Auditorium 1.1
- 12:00-13:30      **Poster Sessions and Lunch**  
Hall first floor and Lecture room 1.1
- 13:30-14:30      **FEA pitch cup: Finals**  
Student Foyer Ground floor
- 14:30-16:30      **Workshops**  
See Workshop section
- 16:45-17:45      **Plenary Session - Marc Lambotte**  
Student Foyer Ground floor
- 18:00      **Reception and Awards with a view over Ghent**  
12th floor

# Map first floor



# Panel: Does your work matter? – The impact of our research on society

Every researcher is working harder and harder to perform the best possible research. From the pure research work from the PhD student to the never ending grant writing of Postdocs and Professors. But can this hard labour be felt in the world beyond our university? How can we improve the impact of our research on society as a whole? Does society even know what research is performed at the university? Can research be performed in cooperation with the academic world and the outside world? A group of experts share their views on how our research can be more impactful in academia and beyond.

## Moderator: Dr. Hetty Helsmoortel

### Cancer Researcher and science communicator

She works as a postdoctoral researcher for the Faculty of Medicine and Health Sciences in Department of Biomolecular Medicine. She is also passionate about theatre and even has done higher education in Drama, which she merged with her profession as a scientist by doing science communication. She is often featured as a science expert on the Flemish broadcasting channels Canvas and Radio 1.



## Panel Member: Prof. Jeroen Dewulf

### Professor

Jeroen is a Professor in Veterinary Epidemiology since 2014 at the Faculty of Veterinary Medicine in the Department of Obstetrics, Reproduction and Herd health. He also is member of the scientific committee of the Belgian Federal Food Agency (BFFA) and founder and chair of the center of expertise on antimicrobial use and resistance in animals (AMCRA). According to Shanghai Ranking, the Veterinary Faculty of Ghent university is the best of its kind in the world.



## Panel Member: Dr. Wim Audenaert

### Founder of AM-TEAM & Sciencepreneurship

Wim studied environmental sciences at University College West-Flanders and pursued his PhD in Applied Biological Sciences at Ghent University. He remained as postdoctoral researcher at Ghent University and later became Resource Recovery Technology consortium manager at Ghent University, a strategic partnership between academia and industry. In 2017, Wim spun off a company called AM-TEAM, offering advanced modelling services for wastewater management for the industry. Recently, he also founded Sciencepreneurship, a new non-profit community for knowledge-driven people that want to improve, focussing on science and entrepreneurship.



## Panel Member: Prof. An Verberckmoes

### Professor

An is a professor at the Faculty of Engineering and Architecture in the Department of Materials, Textiles and Chemical Engineering. She studied Chemistry at the KU Leuven. After her studies, she pursued a PhD in Applied Biological Sciences also at KU Leuven. She worked for 10 years at ExxonMobil as chemist, after which she returned to academia at Hogeschool Gent as post-doctoral researcher in heterogeneous catalysis. In October 2011, she became a lecturer in Industrial Chemistry. Since 2013, she works for Ghent University as Assistant Professor.



## Panel Member: Johan Bil

### Valorisation advisor

Johan graduated from the Faculty of Engineering and Architecture in 1987 in Electrotechnical engineering. He worked at the IWT as Senior scientific advisor and was an investment manager at Baekeland Fonds. Now he is the senior valorisation advisor and business developer at the TechTransfer of Ghent University. He was the first dedicated staff member at Tech Transfer and has had a front row seat on how research can impact society.



## Panel Member: Esther De Smet

### Research Policy advisor

Esther obtained a Master in Classical Languages and English from Ghent University and after a brief career in tourism she eventually returned to the University as a research policy advisor. In her function she shapes research policy from an international perspective and invests in science for society.





# Workshops

## Find the business opportunities in your research

Location: **Meeting room 1.4**

Organiser: Dare to Venture (Durf Ondernemen)

As a researcher you focus on the research question: Can you technically make this, how can you improve the quality, can you use different processes, ...? As the end of your research is coming closer, people start to asking 'Nice, but what can you do with it?'. This workshop will be a first step to the answer on that question. During the workshop you will be coached to make a 'Research canvas', a tool to help you look at your research from a distance. This is needed to be able to see opportunities and is thus the first step of the opportunity recognition process.

## Is sitting as unhealthy as not moving at all?

Location: **Meeting room 1.2**

Organiser: Greet Cardon

Too much sitting is recognized as a public health concern in Europe and beyond. Is it possible to compensate your sitting by physical activity or is a small intervention sufficient? In this workshop you will look for efficient and feasible strategies to tackle sedentary behavior in the workplace and implement the healthier lifestyle. Find out whether you are a koala, a gorilla, a zebra or a busy bee and get acquainted with Start-to-Stand!

## Sketch Noting: Create awesome visual notes

Location: **Lecture Room 1.1**

Organiser: Baryon

Sketchnoting is a visual and engaging way to take notes during conferences, presentations, or even daily life, and helps you to memorize better. No drawing skills? No worries! The only prerequisite for this workshop is a genuine curiosity to try new things. All the tools you need will be provided. Prepare for a lot of tips, examples, and of course... practice! The meetings and presentations you attend will never be boring again!

## **FabLab: 3D printing and laser cutting**

Location: **FabLab Building 130 (915)**, gather at entrance iGent  
Organiser: Kurt Van Houtte

Visit the high-tech Fablab and get familiar with rapid prototyping at UGent. This introductory workshop will spark new and exciting ideas on how 3D printers and laser cutting machines can assist you in your experimental research

## **Design thinking for creative problem solving**

Location: **Meeting room 1.1**  
Organiser: NerdLab

Design thinking utilizes elements from the product and prototype development process to arrive at innovative solutions. This process is not a linear path, it's an iterative concept that unfolds back and forth across different phases. During this workshop you will explore the different phases, define the problems to be solved and generate a large number of solution-oriented ideas. And of course we will build a prototype to make ideas even better!

## **AI Forum – How will AI shape our future?**

Location: **Auditorium 1.1**  
Organiser: Raphaël Weuts

What are intelligent machines and systems capable of today and how will we interact with them tomorrow? Do new technologies pose a threat to our safety and well-being? How are we protecting ourselves from our own algorithms? Discover the seemingly endless possibilities of AI and join the conversation

## **What after your PhD? – Grants in practice**

Location: **Meeting room 1.3**  
Organiser: Margo Baele

The world is producing more PhDs than ever before. Is it time to move on or would you like to stay in the academic world? In this workshop you will get to know how the European Research Council (ERC) and the Marie Skłodowska Curie programme (MSCA) support the most ambitious researchers in Europe who want to do frontier research. You will learn how to prepare yourself for an application and increase your chances of success.

## **Doing a PhD – What is it actually like?**

Location: **Student Foyer Ground Floor**

Organiser: FEARS committee

Did you know that Ghent University has pioneered during its 200-year history? The physicist Joseph Plateau did ground-breaking work for cinematography. Friedrich August Kekulé was the founder of modern organic and analytical chemistry. The founding father of the first plastic made from synthetic components was Leo Bakeland, a researcher and inventor from Ghent. Are you triggered to join for a high-quality doctoral supervision and training? Follow this workshop and get all the information about this exciting time in your educational life. In the first part of this workshop, Prof. Marie-Françoise Reyniers will talk about her life before, during and after her PhD. A Q&A session will be held with junior/senior PhD student that will answer your questions about PhD life

# Plenary Session: Research in the Real World

**Plenary speaker: Marc Lambotte - CEO of Agoria**

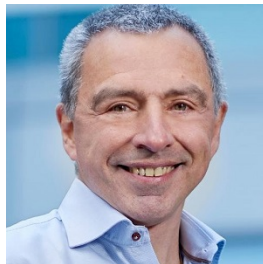
## **Abstract**

In his typical (direct) style, Marc Lambotte will share his views on the sense and non-sense of research as well on its impact on people, society and our planet. Relevant Belgian examples will illustrate his opinion on how research will influence prosperity. Significant societal challenges are driven by the outcomes of change that was initiated by research. We can all help turn the risks into opportunities.

## **Career**

Marc Lambotte initiated his career as a teacher in primary education, but quickly transitioned to the IT sector as a product manager within Unisys Belgium in 1985. He was promoted to marketing and sales support manager in 1992 and took a sales management role starting from 1995, where he was responsible for handling one of Unisys largest customers. Two years later he was named vice president and was promoted in 1999 to managing director. He became a leader in Belgium's management team and was appointed 'General Manager Belgium & Luxembourg' in May 2005. Since 2014, he is CEO of Agoria - the Belgian federation for the Technology Industry.

*"Marc Lambotte is a true international business leader with an outstanding reputation. He has a strong vision on how to develop a top organisation and knows how to execute on that. Marc is true networker and it's always a pleasure to meet and work with him."*



# Posters

1. Vitor Adriano, Stijn Hertelé & Wim De Waele  
**Effects of Weld Flaws on the Outcome of Fracture Toughness Tests**  
*Vitor.SoaresRabeloAdriano@ugent.be*
2. Sepideh Akrami, Vera van Beek, Esther Rosenbrand, Adam Bezuijen, Ulrich Förster & André Koelewijn  
**Backward Erosion Piping Mechanism and Course Sand Barrier as a Prevention Measure**  
*Sepideh.Akrami@ugent.be*
3. Jens Baetens, Greet Van Eetvelde & Lieven Vandevelde  
**Optimal Operation of Fans in a Cooling System, Considering Varying Electricity Prices**  
*j.Baetens@ugent.be*
4. Saeedeh Bakhtiari, Wim De Waele & Stijn Hertelé  
**Accelerated Ultra High Cycle Fatigue Testing**  
*Saeedeh.Bakhtiari@ugent.be*
5. Jana Becelaerea, Chris Vervaet, Richard Hoogenboom & Karen de Clerck  
**Therapeutic nanofibers? Innovative oral drug delivery for improved bioavailability**  
*Jana.Becelaere@ugent.be*
6. Hadhemi Bechaouech, Mohamed N. Ibrahim & Alex Van Den Bossche  
**Performance Comparison Between 12/8 and 12/16 combinations of switched reluctance machine**  
*Hadhemi.Bechaouech@ugent.be*
7. Brecht Berteloor, Jeroen Beeckman, Kristiaan Neyts, Gert Stuyven & Koenraad Vermeirsch  
**Digital Patterned Photoalignment of Liquid Crystals**  
*brecht.berteloot@ugent.be*
8. Atiyyah Binti Haji Musa, Benny Malengier, Jerry Ochola & Lieva Van Langenhove  
**Comfort of Textiles: A study of fabric handle measurements**  
*atiyyah.bintihajimusa@ugent.be*

9. Laurens Bogaert, Gunther Roelkens & Johan Bauwelinck  
**Electro-optic co-design for radio-over-fiber 5G applications: beamforming and amplification**  
*laurens.bogaert@ugent.be*
10. Jarich Braeckevelt, Jon Wiggins, Pieter Mertens, Jeroen Dierckx & Steven Verstockt  
**Effect Of Position On Aerodynamics In Cycling**  
*jarich.braeckevelt@bioracermotion.com*
11. Ricardo Cajo, Thoa Mac Thi, Cosmin Copot, Douglas Plaza, Robain De Keyser & Clara Ionescu  
**Drones Formation Control for Emergency Equipment and Medicines Delivery Based on Optimal Controllers**  
*ricardoalfredo.cajodiaz@ugent.be*
12. H el ene Cervo, Ivan Kantor, Jean-Henry Ferrasse, Fran ois Mar echal & Greet Van Eetvelde  
**Blueprints for Industrial Symbiosis (Is) Detection – Chemical Sector**  
*helene.cervo@ugent.be*
13. Martijn Courteaux & Ruben Verhack  
**Steered Mixture-of-Experts for Light Field Video Compression**  
*Martijn.Courteaux@ugent.be*
14. Brecht De Beelde, David Plets, Emmeric Tanghe & Wout Joseph  
**Joint Antenna and Channel Modelling for Wireless Communication in Home Kitchen Environments**  
*Brecht.DeBeelde@ugent.be*
15. Jelle De Bock, Florian Vandecasteele & Steven Verstockt  
**Smarterroutes: A generic data-driven solution for personalized dynamic routing and environmental-characteristic driven**  
*jelle.debock@ugent.be*
16. Arne De Keyser & Guillaume Crevecoeur  
**Towards Optimal Exploitation of All-Electrical DualDrive Powertrains in Smart e-Motion Systems**  
*arndkeys.dekeyser@ugent.be*
17. Thibault Degrande, Frederic Vannieuwenborg & Sofie Verbrugge  
**To IOT or not to OIT**  
*thibault.degrande@ugent.be*
18. Luca Donatini  
**Waves in Ship Manoeuvring Simulators**  
*luca.donatini@ugent.be*

19. Maria Ghita, Dana Copot & Clara M. Ionescu  
**LuCan: Engineering Outcome for Personalized Therapy in Lung Cancer Patients**  
*ghitamaria@yahoo.com*
20. Mihaela Ghita, Dana Copot & Clara M. Ionescu  
**Modelling and Sensing of Medicine-Induced Analgesia During General Anesthesia (Mosema)**  
*mihaela.ghita@ugent.be*
21. Kris Hectors, Wim De Waele, Mia Loccufier & Hans De Backer  
**Fatigue Lifetime Prediction of Complex Welded Structures**  
*kris.ectors@ugent.be*
22. Jolan Heyse, Pieter van Mierlo, Charlotte Debbaut & Vincent Keereman  
**Modelling of the Vascular Accessibility of Human Brain Regions using 7T MRI**  
*jolan.heyse@ugent.be*
23. Joris Heyse, Maria Torres Vega, Femke De Backere & Filip De Turck  
**Contextual Bandit Learning-Based Viewport Prediction for 360 Video**  
*joris.heyse@ugent.be*
24. Luthffi Idzhar Ismail, Fazah Akhtar Hanapiah, Joni Dambre, Tony Belpaeme & Francis Wyffels  
**Leveraging Deep Learning for Eye Contact Analysis in Child-Robot Interaction**  
*Luthffiidzharbin.ismail@ugent.be*
25. Pankaj Jaiswal, Rahul Iyar & Wim De Waele  
**Enabling Qualification of Hybrid Structures for Lightweight and Safe Maritime Transport**  
*Pankaj.Jaiswal@ugent.be*
26. Mojtaba Khayatazad, Wim De Waele, Mia Loccufier & Hans De Backer  
**Structural Health Monitoring of Welded Steel Structures**  
*Mojtaba.khayatazad@ugent.be*
27. Nebojša Korica, Pedro S.F. Mendes, Guy B. Marin, & Joris W. Thybaut  
**Mixture Effects on Alkane and Cyclo-Alkane Hydroconversion Over PT/USY Catalyst**  
*nebojsa.korica@UGent.be*
28. Srdan Lazendic, Aleksandra Pizurica & Hendrik De Bie  
**Hypercomplex Algebras for Dictionary Learning**  
*Srdan.Lazendic@ugent.be*

29. Marija Lazova & Michel De Paepe  
**Determining the Heat Transfer Phenomena of Supercritical Fluids Under Orc Condition**  
*Marija.Lazova@ugent.be*
30. Haolin Li  
**100-GS/s Sigma-Delta All-Digital Radio-over-Fiber Transmission for Millimeter-Wave Communications**  
*Haolin.li@ugent.be*
31. Bo Kang, Jefrey Lijffijt & Tijl De Bie  
**Knowledge Discovery from High-dimensional Data**  
*jefrey.Lijffijt@ugent.be*
32. Azer Maazoun, Stijn Matthys, David Lecompte & John Vantomme  
**New Technique to Protect RC Structures against Explosions**  
*azer.maazoun@ugent.be*
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**Development of Hybridgeotabs Design Methodology**  
*Rana.mahmoud@ugent.be*
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**Optimization of a Ship Turning Basin Using Manoeuvring Simulators**  
*marc.mansuy@ugent.be*
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**Fast Compression of Watermarked Videos**  
*hannes.mareen@ugent.be*
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**Human-Robot Collaborative Assembly Design Methodology**  
*Joao.CostaMateus@ugent.be*
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**Comprehensive Integration of Linguistic Features in a Human Inspired Speech Recognition Architecture**  
*Claudia.MatosVeliz@ugent.be*
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**Numerical Study Of Ship Wave Interaction Based on Potential Flow Theory**  
*Tianlong.Mei@ugent.be*



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**Nanofibres for composite toughening**  
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**Impact Resistance Increment of Concrete by External Strengthening via Fibre Reinforced Polymers**  
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**Iterative Seeding for Sequence to Graph Alignments**  
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**"Dangerous Fuels" for Cars - A Way to Save the World**  
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**Initiation and propagation modelling of white etching cracks (WEC) in roller bearings**  
*Gopalakrishnan.Ravi@ugent.be*
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**Combining Fibre Reinforced Composites and 3D printing: the Best of Both Worlds**  
*Sander.Rijckaert@ugent.be*

49. Hicham Saaid, Jason Voorneveld, Christiaan Schinkel, Frank Gijsen, Patrick Segers, Pascal Verdonck, Nico de Jong, Johan Bosch, Sasa Kenjeres, Jos Westenberg & Tom Claessens  
**Validation Of 4d Flow MRI in a Left Ventricle Phantom**  
*Hicham.Saaid@ugent.be*
50. Bram Steenwinckel, Pieter Heyvaert, Dieter De Paepe, Olivier Janssens, Sander Vanden Hautte, Anastasia Dimou, Filip De Turck, Sofie Van Hoecke & Femke Ongenaen  
**Automated Extraction of Knowledge from Risk Analyses**  
*bram.steenwinckel@ugent.be*
51. Aranka Steyaert, Pieter Audenaert & Jan Fostier  
**Accurate Determination of Node and Arc Multiplicities in De Bruijn Graphs Using Conditional Random Fields**  
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52. Charlotte Thyssen, Roel Van Holen & Stefaan Vandenberghe  
**Development of an Ultra-High Resolution Time-of-Flight PET Detector**  
*cathysse.thyssen@ugent.be*
53. Granch Berhe Tseghai, Wouter Dujardin, Serge Rijssegem, Brecht Tomme, Benny Malengier & Lieva Van Langenhove  
**Functional Shoe Construction for the Detection of Walking Pattern Anomalies in Parkinson's Disease Patients**  
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54. Tim Valkenier, Wim Ceelen & Stefaan Vandenberghe  
**Hyperspectral Imaging in Medical Fields to Assess Oxygen Saturation**  
*Tim.Valkenier@ugent.be*
55. Willem Van De Steene, T Van Waelegem, Kim Ragaert & Ludwig Cardon  
**Additively Manufactured Continuous Fibre Composites Really Taking Off?**  
*Willem.Vandesteene@ugent.be*
56. Brecht Vandevyvere  
**A Study of Real-Time Open Data Publication Strategies**  
*Brecht.Vandevyvere@ugent.be*
57. Lukas Van Iseghem, Jeroen Beeckman & Wim Bogaerts  
**Programmable silicon photonic circuits with liquid crystal**  
*lukas.vaniseghem@ugent.be*

58. Casper Van Gheluwe, Angel J. Lopez & Sidharta Gautama  
**Error Sources in the Analysis of Crowdsourced Spatial Tracking Data**  
*casper.vangheluwe@ugent.be*
59. Tim Van Mullem  
**Self-healing concrete a new and promising material but how to accurately test its potential?**  
*tim.vanmullem@ugent.be*
60. Lynn Verkroost, Hendrik Vansompel, Frederik De Belie & Peter Sergeant  
**Active Fault Compensation Based on Online Reconfiguration of Modular Axial Flux Drives**  
*Lynn.Ver kroost@ugent.be*
61. Olivier Verschate, Lode Daelemans, Wim Van Paepegem & Karen de Clerck  
**Understanding the small scale to predict the large scale**  
*Olivier.Deschatse@Ugent.be*
62. Ehsan Yadollahi, El-Houssaine Aghezzaf, Joris Walraevens & Birger Raa  
**Inventory Routing Problem and Stochastic Demands**  
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63. Iman Zand, Banafsheh Abasahl & Wim Bogaert  
**MEMS-based Zero-Power Reconfigurable Photonic Integrated Circuit**  
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64. Shiquan Zhao, Sheng Liu, Robain De Keyser & Clara Ionescu  
**Optimal Sliding Mode Controller with AGA for Drum Water Level of Ship Boiler**  
*Shiquan.Zhao@ugent.be*
65. Willem Faes, Ralph Bäßler, Johan Van Bael, Robbe Salenbien, Kim Verbeken & Michel De Paepe  
**Evaluating the Corrosion Resistance of Different Steel Types for Geothermal Applications**  
*Willem.faes@ugent.be*
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**Tribological Investigation of Tillage Tools**  
*adam.kalacska@ugent.be*
67. Nguyen Dang Phuc Nguyen & Johan Lauwaert  
**Energy Yield Calculations**  
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68. Alexandru Mara, Jeffrey Lijffijt & Tijn De Bie  
**EvalNE: A Framework for Evaluating Network Embeddings on Link Prediction**  
*alexandru.mara@ugent.be*
69. Ksenija Nikolic, Kim Verbeken & Roumen Petrov  
**Microstructural Features Controlling White Etching Cracks in Roller Bearing**  
*ksenija.nikolic@ugent.be*
70. Giorgia Rocatello, Gianluca De Santis, Sander De Bock, Matthieu De Beule, Peter Mortier & Patrick Segers  
**Optimization of a Transcatheter Heart Valve Frame using Patient-Specific Computer Simulation**  
*giorgia.rocatello@ugent.be*
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**Coupled Modelling of a Plant and Its Phylloclimate**  
*wito.plas@ugent.be*
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**Integrated Spectrometer with Single Pixel Readout for Mid-Infrared Spectroscopy**  
*anton.vasiliev@ugent.be*
73. Bavo Robben, Filip Beunis, Kristiaan Neyts & Filip Strubbe  
**Towards Fast Reflective Displays: the Effect of Inverse Micelle Countercharges**  
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# Organizing Committee

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# Word of Appreciation

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Thank you participant of the symposium! You are the very motivation for organizing this event. Without you, this symposium would not have any purpose nor any meaning. So thank you for participating in the FEA symposium. We hope that attending this event and learning about the research of your peers at Ghent University inspires you very well.

Organizing this event has taught me invaluable skills in teamwork, delegation, communication and people skills. These skills are often overlooked in the initial years of researching yet are imperative in a later career in both academia and industry. If you wish to join the organizing committee don't hesitate to contact me, all help is welcome.

Sincerely yours,

Kevin Dekemele  
Chair of FEA Research Symposium 2019  
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# The 19th edition of FEA Research Symposium Ghent, Belgium



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